

# C CAN\_V2 VS. US\_V6 TEXT COMPARISONS



# **C-1** SERVICE PACKAGE TEXT COMPARISON

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
AD1	ITS Data Mart	This market package provides a focused archive that houses data collected and owned by a single agency, district, private sector provider, research institution, or other organization. This focused archive typically includes data covering a single transportation mode and one jurisdiction that is collected from an operational data store and archived for future use. It provides the basic data quality, data privacy, and meta data management common to all ITS archives and provides general query and report access to archive data users.	AD1	ITS Data Mart	This marketservice pactowned by a single agenorganization. This focution organization. This focution of the second
AD2	ITS Data Warehouse	This market package includes all the data collection and management capabilities provided by the ITS Data Mart, and adds the functionality and interface definitions that allow collection of data from multiple agencies and data sources spanning across modal and jurisdictional boundaries. It performs the additional transformations and provides the additional meta data management features that are necessary so that all this data can be managed in a single repository with consistent formats. The potential for large volumes of varied data suggests additional on-line analysis and data mining features that are also included in this market package in addition to the basic query and reporting user access features offered by the ITS Data Mart.	AD2	ITS Data Warehouse	This marketservice pac provided by the ITS Da allow collection of data and jurisdictional boun additional meta data ma managed in a single rep varied data suggests ad included in this market access features offered
AD3	ITS Virtual Data Warehouse	This market package provides the same broad access to multimodal, multidimensional data from varied data sources as in the ITS Data Warehouse Market Package, but provides this access using enhanced interoperability between physically distributed ITS archives that are each locally managed. Requests for data that are satisfied by access to a single repository in the ITS Data Warehouse Market Package are parsed by the local archive and dynamically translated to requests to remote archives which relay the data necessary to satisfy the request.	AD3	ITS Virtual Data Warehouse	This marketservice pac multidimensional data Packageservice packag physically distributed T are satisfied by access t Packageservice packag requests to remote arch
APTS01	Transit Vehicle Tracking	This market package monitors current transit vehicle location using an Automated Vehicle Location System. The location data may be used to determine real time schedule adherence and update the transit system's schedule in real-time. Vehicle position may be determined either by the vehicle (e.g., through GPS) and relayed to the infrastructure or may be determined directly by the communications infrastructure. A two-way wireless communication link with the Transit Management Subsystem is used for relaying vehicle position and control measures. Fixed route transit systems may also employ beacons along the route to enable position determination and facilitate communications with each vehicle at fixed intervals. The Transit Management Subsystem processes this information, updates the transit schedule and makes real-time schedule information available to the Information Service Provider.	APTS01	Transit Vehicle Tracking	This marketservice pac Vehicle Location Syste adherence and update t determined either by th may be determined dire communication link wi position and control me along the route to enably vehicle at fixed interval updates the transit sche Information Service Pro
APTS02	Transit Fixed-Route Operations	This market package performs automated dispatch and system monitoring for fixed-route and flexible-route transit services. This service performs scheduling activities including the creation of schedules, blocks and runs, as well as operator assignment. This service determines the transit vehicle trip performance against the schedule using AVL data and provides information displays at the Transit Management Subsystem. Static and real time transit data is exchanged with Information Service Providers where it is integrated with that from other transportation modes (e.g. rail, ferry, air) to provide the public with integrated and personalized dynamic schedules.	APTS02	Transit Fixed-Route Operations	This marketservice pac fixed-route and flexible including the creation of service determines the data and provides infor real time transit data is integrated with that fro public with integrated a
APTS03	Demand Response Transit Operations	This market package performs automated dispatch and system monitoring for demand responsive transit services. This service performs scheduling activities as well as operator assignment. In addition, this market package performs similar functions to support dynamic features of flexible-route transit services. This package monitors the current status of the transit fleet and supports allocation of these fleet resources to service incoming requests for transit service while also considering traffic conditions. The Transit Management Subsystem provides the necessary data processing and information display to assist the transit operator in making optimal use of the transit fleet. This service includes the capability for a traveler request for personalized transit services to be made through the Information Service Provider (ISP) Subsystem. The ISP may either be operated by a transit management center or be independently owned and operated by a separate service provider. In the first scenario, the traveler makes a direct request to a specific paratransit service. In the second scenario, a third party service provider determines that the paratransit service is a viable means of satisfying a traveler request and makes a reservation for the traveler.	APTS03	Demand Response Transit Operations	This marketservice paction demand responsive transport dynamic feature current status of the transport dynamic feature current

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backage performs automated dispatch and system monitoring for ransit services. This service performs scheduling activities as well as In addition, this <u>marketservice</u> package performs similar functions to tures of flexible-route transit services. This package monitors the transit fleet and supports allocation of these fleet resources to service or transit service while also considering traffic conditions. The Transit tem provides the necessary data processing and information display to rator in making optimal use of the transit fleet. This service includes travelertraveller request for personalized transit services to be made ion Service Provider (ISP) Subsystem. The ISP may either be management <u>centercentre</u> or be independently owned and operated by ovider. In the first scenario, the <u>travelertraveller</u> makes a direct request this service. In the second scenario, a third party service provider paratransit service is a viable means of satisfying a <u>travelertraveller</u> reservation for the <u>travelertraveller</u>.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
APTS04	Transit Fare Collection Management	This market package manages transit fare collection on-board transit vehicles and at transit stops using electronic means. It allows transit users to use a traveler card or other electronic payment device. Readers located either in the infrastructure or on-board the transit vehicle allow electronic fare payment. Data is processed, stored, and displayed on the transit vehicle and communicated as needed to the Transit Management Subsystem. Two other market packages, ATMS10: Electronic Toll Collection and ATMS16: Parking Facility Management also provide electronic payment services. These three market packages in combination provide an integrated electronic payment system for transportation services.	APTS04	Transit Fare Collection Management	This marketservice pact transit stops using elect or other electronic payr board the transit vehicle displayed on the transit Subsystem. Two other ATMS16: Parking Fac three marketservice pac system for transportation
APTS05	Transit Security	<ul> <li>This market package provides for the physical security of transit passengers and transit vehicle operators. On-board equipment is deployed to perform surveillance and sensor monitoring in order to warn of potentially hazardous situations. The surveillance equipment includes video (e.g., CCTV cameras), audio systems and/or event recorder systems. The sensor equipment includes threat sensors (e.g., chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors (e.g., metal detectors). Transit user or transit vehicle operator activated alarms are provided on-board. Public areas (e.g., transit stops, park and ride lots, stations) are also monitored with similar surveillance and sensor equipment and provided with transit user activated alarms. In addition this market package provides surveillance and sensor monitoring of non-public areas of transit facilities (e.g., transit yards) and transit infrastructure such as bridges, tunnels, and transit railways or bus rapid transit (BRT) guideways. The surveillance equipment includes threat sensors and object detection sensors a described above as well as, intrusion or motion detection sensors and infrastructure integrity monitoring (e.g., rail track continuity checking or bridge structural integrity monitoring).</li> <li>The surveillance and sensor information is transmitted to the Emergency Management Subsystem and the Transit Management Subsystem, indicating two possible approaches to implementing this market package.</li> <li>In addition the market package supports remote transit vehicle disabling by the Transit Management Subsystem and transit vehicle operator authentication.</li> </ul>	APTS05	Transit Security	This marketservice pact transit vehicle operators sensor monitoring in or equipment includes vid systems. The sensor eq industrial chemical, bio sensors (e.g., metal dete provided on-board. Pul public areas (e.g. transir also monitored with sin user activated alarms. H monitoring of non publ infrastructure such as be guideways. The surveil equipment includes thre as, intrusion or motion- track continuity checkin The surveillance and se Subsystem,- and Transi public secure areas. Or are transmitted to both- Transit Management St market package.
APTS06	Transit Fleet Management	This market package supports automatic transit maintenance scheduling and monitoring. On-board condition sensors monitor system status and transmit critical status information to the Transit Management Subsystem. Hardware and software in the Transit Management Subsystem processes this data and schedules preventative and corrective maintenance. The market package also supports the day to day management of the transit fleet inventory, including the assignment of specific transit vehicles to blocks.	APTS06	Transit Fleet Management	This <u>marketservice</u> pack monitoring. On-board c information to the Tran Management Subsyster maintenance. The <u>mark</u> transit fleet inventory, i
APTS07	Multi-modal Coordination	This market package establishes two way communications between multiple transit and traffic agencies to improve service coordination. Multimodal coordination between transit agencies can increase traveler convenience at transit transfer points and clusters (a collection of stops, stations, or terminals where transfers can be made conveniently) and also improve operating efficiency. Transit transfer information is shared between Multimodal Transportation Service Providers and Transit Agencies.	APTS07	Multi-modal Coordination	This marketservice pact and traffic agencies to i transit agencies can incr clusters (a collection of conveniently) and also shared between Multim ordination between traff performance of the tran degrading overall perfo between the transit vehi supported by this packa

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sensor information is transmitted to the Emergency Management <u>usit Management Subsystem</u>, as are transit user activated alarms in On board alarms, activated by transit users or transit vehicle operators h-<u>. In addition</u> the Emergency Management Subsystem and the Subsystem, indicating two possible approaches to implementing this

t<u>service</u> package supports remote transit vehicle disabling by the Subsystem and transit vehicle operator authentication.

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ackage establishes two way communications between multiple transit o improve service coordination. Multimodal coordination between acrease travelertraveller convenience at transit transfer points and of stops, stations, or terminals where transfers can be made o improve operating efficiency. Transit transfer information is modal Transportation Service Providers and Transit Agencies. <u>Coaffic and transit management is intended to improve on-time</u> ansit system to the extent that this can be accommodated without formance of the traffic network. More limited local co-ordination thicle and the individual intersection for signal priority is also kage.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
APTS08	Transit Traveler Information	This market package provides transit users at transit stops and on-board transit vehicles with ready access to transit information. The information services include transit stop annunciation, imminent arrival signs, and real-time transit schedule displays that are of general interest to transit users. Systems that provide custom transit trip itineraries and other tailored transit information services are also represented by this market package.	APTS08	Transit <del>Traveler<u>Traveller</u> Information</del>	This marketservice pactive pactive vehicles with ready accession annunciation, immof general interest to transit in package.
APTS09	Transit Signal Priority	This market package determines the need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations. The signal priority may result from limited local coordination between the transit vehicle and the individual intersection for signal priority or may result from coordination between transit management and traffic management centers. Coordination between traffic and transit management is intended to improve on-time performance of the transit system to the extent that this can be accommodated without degrading overall performance of the traffic network.	APTS09	Transit Signal Priority	This marketservice pactintersections and reque may result from limited intersection for signal p management and traffic transit management is in the extent that this can traffic network.
APTS10	Transit Passenger Counting	This market package counts the number of passengers entering and exiting a transit vehicle using sensors mounted on the vehicle and communicates the collected passenger data back to the management center. The collected data can be used to calculate reliable ridership figures and measure passenger load information at particular stops.	APTS10	Transit Passenger Counting	This marketservice pact vehicle using sensors n data back to the manag reliable ridership figure
ATIS01	Broadcast Traveler Information	This market package collects traffic conditions, advisories, general public transportation, toll and parking information, incident information, roadway maintenance and construction information, air quality and weather information, and broadcasts the information to travelers using technologies such as FM subcarrier, satellite radio, cellular data broadcasts, and Internet web casts. The information may be provided directly to travelers or provided to merchants and other traveler service providers so that they can better inform their customers of travel conditions. Different from the market package ATMS6 - Traffic Information Dissemination, which provides localized HAR and DMS information capabilities, ATIS1 provides a wide area digital broadcast service. Successful deployment of this market package relies on availability of real-time traveler information from roadway instrumentation, probe vehicles or other sources.	ATIS01	Broadcast <u>Traveler</u> Information	This marketservice pactransportation, toll and and construction inform information to travelers cellular data broadcasts directly to travelerstray providers so that they of from the marketservice provides localized HAI digital broadcast service availability of real-time vehicles or other source
ATIS02	Interactive Traveler Information	This market package provides tailored information in response to a traveler request. Both real-time interactive request/response systems and information systems that "push" a tailored stream of information to the traveler based on a submitted profile are supported. The traveler can obtain current information regarding traffic conditions, roadway maintenance and construction, transit services, ride share/ride match, parking management, detours and pricing information. Although the Internet is the predominate network used for traveler information dissemination, a range of two-way wide-area wireless and fixed-point to fixed-point communications systems may be used to support the required data communications between the traveler and Information prior to a trip or en route including phone via a 511-like portal and web pages via kiosk, personal digital assistant, personal computer, and a variety of in-vehicle devices. This market package also allows value-added resellers to collect transportation information that can be aggregated and be available to their personal devices or remote traveler systems to better inform their customers of transportation conditions. Successful deployment of this market package relies on availability of real-time transportation data from roadway instrumentation, transit, probe vehicles or other means. A traveler may also input personal preferences and identification information via a "traveler card" that can convey information to the system about the traveler as well as receive updates from the system so the card can be updated over time.	ATIS02	Interactive TravelerTraveller Information	This marketservice pact request. Both real-time "push" a tailored strear are supported. The tra- conditions, roadway maparking management, of predominate network us way wide-area wireless used to support the required Information Service Pretraveler traveler traveler to accor- like portal and web page variety of in-vehicle der resellers to collect trans- their personal devices of of transportation condition on availability of real-to- probe vehicles or other identification information system about the travel can be updated over time
ATIS03	Autonomous Route Guidance	This market package relies on in-vehicle sensory, location determination, computational, map database, and interactive driver interface equipment to enable route planning and detailed route guidance based on static, stored information. No communication with the infrastructure is assumed or required. Identical capabilities are available to the traveler outside the vehicle by integrating a similar suite of equipment into portable devices.	ATIS03	Autonomous Route Guidance	This <u>marketservice</u> pac computational, map da planning and detailed r communication with th available to the <u>travele</u> equipment into portabl

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backage relies on in-vehicle sensory, location determination, database, and interactive driver interface equipment to enable route d route guidance based on static, stored information. No the infrastructure is assumed or required. Identical capabilities are determination of the vehicle by integrating a similar suite of ble devices.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
ATIS04	Dynamic Route Guidance	This market package offers advanced route planning and guidance that is responsive to current conditions. The package combines the autonomous route guidance user equipment with a digital receiver capable of receiving real-time traffic, transit, and road condition information, which is considered by the user equipment in provision of route guidance.	ATIS04	Dynamic Route Guidance	This marketservice pact responsive to current co user equipment with a c road condition informat route guidance.
ATIS05	ISP Based Trip Planning and Route Guidance	This market package offers the user trip planning and en-route guidance services. It generates a trip plan, including a multimodal route and associated service information (e.g., parking information), based on traveler preferences and constraints. Routes may be based on static information or reflect real time network conditions. Unlike ATIS3 and ATIS4, where the user equipment determines the route, the route determination functions are performed in the Information Service Provider Subsystem in this market package. The trip plan may be confirmed by the traveler and advanced payment and reservations for transit and alternate mode (e.g., airline, rail, and ferry) trip segments, and ancillary services (e.g., parking reservations) are accepted and processed. The confirmed trip plan may include specific routing information that can be supplied to the traveler as general directions or as turn-by-turn route guidance depending on the level of user equipment.	ATIS05	ISP Based Trip Planning and Route Guidance	This marketservice pact It generates a trip plan, (e.g., parking information may be based on static and ATIS4, where the up functions are performed marketservice package. advanced payment and ferry) trip segments, an processed. The confirm supplied to the travelet depending on the level
ATIS06	Transportation Operations Data Sharing	This market package makes real-time transportation operations data available to transportation system operators. The Information Service Provider collects, processes, and stores current information on traffic and travel conditions and other information about the current state of the transportation network and makes this information available to transportation system operators, facilitating the exchange of qualified, real-time information between agencies. Using the provided information, transportation system operators can manage their individual systems based on an overall view of the regional transportation Service Provider may be implemented as a web application that provides a web-based access to system operators, an enterprise database that provides a network interface to remote center applications, or any implementation that supports regional sharing of real-time transportation operations data.	ATIS06	Transportation Operations Data Sharing	This marketservice pac transportation system o and stores current infor the current state of the transportation system o information between ag operators can manage t transportation system. the Information Service web-based access to sy interface to remote cerr sharing of real-time transport
ATIS07	Yellow Pages and Reservation	This market package provides yellow pages and reservation services to the user. These additional traveler services may be provided using the same basic user equipment used for Interactive Traveler Information. This market package provides multiple ways for accessing information either while en route in a vehicle using wide-area wireless communications or pre-trip via fixed-point to fixed-point connections.	ATIS07	Yellow Pages <u>Traveller</u> Services Payment and Reservation	This marketservice pactors services to the user. The same basic user equipmer marketservice package route in a vehicle using fixed-point connections
ATIS08	Dynamic Ridesharing	This market package provides dynamic ridesharing/ride matching services to travelers. This service could allow near real time ridesharing reservations to be made through the same basic user equipment used for Interactive Traveler Information. This ridesharing/ride matching capability also includes arranging connections to transit or other multimodal services.	ATIS08	Dynamic Ridesharing	This market <u>service</u> pact travelers <u>travellers</u> . This made through the same Information. This rides connections to transit of
ATIS09	In Vehicle Signing	This market package augments regulatory, warning, and informational signs and signals by providing information directly to drivers through in-vehicle devices. The information provided would include static sign information (e.g., stop, curve warning, guide signs, service signs, and directional signs) and dynamic information (e.g., current signal states including highway intersection and highway-rail intersection status and local conditions warnings identified by local environmental sensors). It includes short range communications between field equipment and the vehicle and connections to the Traffic Management Subsystem for monitoring and control. This market package also includes the capability for maintenance and construction, transit, and emergency vehicles to transmit sign information to vehicles in the vicinity so that in vehicle signing can be used without fixed infrastructure in work zones, around incidents, and in areas where transit operations impacts traffic.	ATIS09	In Vehicle Signing	This marketservice pact signals by providing inf information provided w guide signs, service sign signal states including h conditions warnings ide communications betwee Management Subsystem includes the capability h to transmit sign informat used without fixed infra transit operations impact

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ackage makes real-time transportation operations data available to operators. The Information Service Provider collects, processes, ormation on traffic and travel conditions and other information about e transportation network and makes this information available to operators, facilitating the exchange of qualified, real-time agencies. Using the provided information, transportation system e their individual systems based on an overall view of the regional . The regional transportation operations data resource represented by ce Provider may be implemented as a web application that provides a system operators, an enterprise database that provides a network intercentre applications, or any implementation that supports regional cransportation operations data.

ackage provides <u>yellow pagesbusiness directory</u> and reservation These additional <u>travelertraveller</u> services may be provided using the pment used for Interactive <u>TravelerTraveller</u> Information. This ge provides multiple ways for accessing information either while en ng wide-area wireless communications or pre-trip via fixed-point to ons.

ackage provides dynamic ridesharing/ride matching services to his service could allow near real time ridesharing reservations to be ne basic user equipment used for Interactive <u>TravelerTraveller</u> esharing/ride matching capability also includes arranging or other multimodal services.

ackage augments regulatory, warning, and informational signs and information directly to drivers through in-vehicle devices. The d would include static sign information (e.g., stop, curve warning, signs, and directional signs) and dynamic information (e.g., current g highway intersection and highway-rail intersection status and local identified by local environmental sensors). It includes short range ween field equipment and the vehicle and connections to the Traffic tem for monitoring and control. This <u>marketservice</u> package also ty for maintenance and construction, transit, and emergency vehicles rmation to vehicles in the vicinity so that in vehicle signing can be affrastructure in work zones, around incidents, and in areas where pacts traffic.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
ATIS10	VII Traveler Information	This market package provides location-specific information to travelers in vehicles using Vehicle Infrastructure Integration (VII). Dedicated short range communications is used to deliver real-time traveler information including travel times, incident information, road conditions, and emergency traveler information to vehicles as they pass VII roadside equipment along their route. This market package provides public information that is available to all equipped vehicles in the vicinity of the roadside equipment.	ATIS10	VII <del>Travelor</del> <u>Traveller</u> Information	This market <u>service</u> pack vehicles using Vehicle 1 communications is used times, incident informat to vehicles as they pass package provides public vicinity of the roadside
ATMS01	Network Surveillance	This market package includes traffic detectors, other surveillance equipment, the supporting field equipment, and fixed-point to fixed-point communications to transmit the collected data back to the Traffic Management Subsystem. The derived data can be used locally such as when traffic detectors are connected directly to a signal control system or remotely (e.g., when a CCTV system sends data back to the Traffic Management Subsystem). The data generated by this market package enables traffic managers to monitor traffic and road conditions, identify and verify incidents, detect faults in indicator operations, and collect census data for traffic strategy development and long range planning. The collected data can also be analyzed and made available to users and the Information Service Provider Subsystem.	ATMS01	Network Surveillance	This marketservice pack supporting field equipm collected data back to th locally such as when tra remotely (e.g., when a C Subsystem). The data g monitor traffic and road operations, and collect of planning. The collected Information Service Pro-
ATMS02	Traffic Probe Surveillance	This market package provides an alternative approach for surveillance of the roadway network. Two general implementation paths are supported by this market package: 1) wide-area wireless communications between the vehicle and center is used to communicate vehicle operational information and status directly to the center, and 2) dedicated short range communications between passing vehicles and the roadside is used to provide equivalent information to the center. The first approach leverages wide area communications equipment that may already be in the vehicle to support personal safety and advanced traveler information services. The second approach utilizes vehicle equipment that supports toll collection, in-vehicle signing, and other short range communications applications identified within the architecture. The market package enables transportation operators and traveler information providers to monitor road conditions, identify incidents, analyze and reduce the collected data, and make it available to users and private information providers. It requires one of the communications options identified above, on-board equipment, data reduction software, and fixed-point to fixed- point links between centers to share the collected information. Both "Opt out" and "Opt in" strategies are available to ensure the user has the ability to turn off the probe functions to ensure individual privacy. Due to the large volume of data collected by probes, data reduction techniques are required, such as the ability to identify and filter out-of-bounds or extreme data reports.	ATMS02	Traffic Probe Surveillance	This marketservice pack roadway network. Two package: 1) wide-area v used to communicate ve centercentre, and 2) ded the roadside is used to p approach leverages wid vehicle to support perso second approach utilize signing, and other short architecture. The market travelertraveller information analyze and reduce the information providers. board equipment, data r centerscentres to share to are available to ensure to individual privacy. Due techniques are required, data reports.
ATMS03	Surface Street Control	This market package provides the central control and monitoring equipment, communication links, and the signal control equipment that support local surface street control and/or arterial traffic management. A range of traffic signal control systems are represented by this market package ranging from fixed-schedule control systems to fully traffic responsive systems that dynamically adjust control plans and strategies based on current traffic conditions and priority requests. This market package is generally an intra- jurisdictional package that does not rely on real-time communications between separate control systems to achieve area-wide traffic signal coordination. Systems that achieve coordination across jurisdictions by using a common time base or other strategies that do not require real time coordination would be represented by this package. This market package is consistent with typical urban traffic signal control systems.	ATMS03	Surface Street Control	This marketservice pact communication links, a control and/or arterial th represented by this mar fully traffic responsive on current traffic condit an intra-jurisdictional p separate control system achieve coordination ac that do not require real marketservice package

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ackage provides location-specific information to <u>travelerstravellers</u> in e Infrastructure Integration (VII). Dedicated short range sed to deliver real-time <u>travelertraveller</u> information including travel nation, road conditions, and emergency <u>travelertraveller</u> information ss VII roadside equipment along their route. This <u>marketservice</u> olic information that is available to all equipped vehicles in the de equipment.

ackage includes traffic detectors, other surveillance equipment, the pment, and fixed-point to fixed-point communications to transmit the o the Traffic Management Subsystem. The derived data can be used traffic detectors are connected directly to a signal control system or a CCTV system sends data back to the Traffic Management ta generated by this <u>marketservice</u> package enables traffic managers to bad conditions, identify and verify incidents, detect faults in indicator ct census data for traffic strategy development and long range eted data can also be analyzed and made available to users and the Provider Subsystem.

ackage provides an alternative approach for surveillance of the wo general implementation paths are supported by this marketservice a wireless communications between the vehicle and centercentre is vehicle operational information and status directly to the edicated short range communications between passing vehicles and provide equivalent information to the centercentre. The first ide area communications equipment that may already be in the sonal safety and advanced traveler traveller information services. The zes vehicle equipment that supports toll collection, in-vehicle ort range communications applications identified within the ketservice package enables transportation operators and mation providers to monitor road conditions, identify incidents, e collected data, and make it available to users and private . It requires one of the communications options identified above, ona reduction software, and fixed-point to fixed-point links between e the collected information. Both "Opt out" and "Opt in" strategies e the user has the ability to turn off the probe functions to ensure Due to the large volume of data collected by probes, data reduction ed, such as the ability to identify and filter out-of-bounds or extreme

ackage provides the central control and monitoring equipment, , and the signal control equipment that support local surface street l traffic management. A range of traffic signal control systems are marketservice package ranging from fixed-schedule control systems to ve systems that dynamically adjust control plans and strategies based ditions and priority requests. This <u>marketservice</u> package is generally l package that does not rely on real-time communications between ems to achieve area-wide traffic signal coordination. Systems that across jurisdictions by using a common time base or other strategies al time coordination would be represented by this package. This ge is consistent with typical urban traffic signal control systems.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
ATMS04	Freeway Control	<ul> <li>This market package provides central monitoring and control, communications, and field equipment that support freeway management. It supports a range of freeway management control strategies including ramp metering, interchange metering, mainline lane controls, mainline metering, and other strategies including variable speed controls. This package incorporates the instrumentation included in the Network Surveillance Market Package to support freeway monitoring and adaptive strategies as an option.</li> <li>This market package also includes the capability to utilize surveillance information for detection of incidents. Typically, the processing would be performed at a traffic management center; however, developments might allow for point detection with roadway equipment. For example, a CCTV might include the capability to detect an incident based upon image changes. Additionally, this market package allows general advisory and traffic control information to be provided to the driver while en route.</li> </ul>	ATMS04	Freeway Control	This marketservice pact field equipment that sup management control str lane controls, mainline This package incorpora Market Packageservice an option. 
ATMS05	HOV Lane Management	This market package manages HOV lanes by coordinating freeway ramp meters and connector signals with HOV lane usage signals. Preferential treatment is given to HOV lanes using special bypasses, reserved lanes, and exclusive rights-of-way that may vary by time of day. Vehicle occupancy detectors may be installed to verify HOV compliance and to notify enforcement agencies of violations.	ATMS05	HOV Lane Management	This marketservice pact and connector signals w HOV lanes using specia vary by time of day. V compliance and to notif
ATMS06	Traffic Information Dissemination	This market package provides driver information using roadway equipment such as dynamic message signs or highway advisory radio. A wide range of information can be disseminated including traffic and road conditions, closure and detour information, incident information, and emergency alerts and driver advisories. This package provides information to drivers at specific equipped locations on the road network. Careful placement of the roadway equipment provides the information at points in the network where the drivers have recourse and can tailor their routes to account for the new information. This package also covers the equipment and interfaces that provide traffic information from a traffic management center to the media (for instance via a direct tie-in between a traffic management center and radio or television station computer systems), Transit Management, Emergency Management, and Information Service Providers. A link to the Maintenance and Construction Management subsystem allows real time information on road/bridge closures due to maintenance and construction activities to be disseminated.	ATMS06	Traffic Information Dissemination	This marketservice pack dynamic message signs disseminated including incident information, ar information to drivers a placement of the roadw where the drivers have a information. This pack information from a traffic tie-in between a traffic to systems), Transit Mana Providers. A link to the real time information or activities to be dissemin
ATMS07	Regional Traffic Management	This market package provides for the sharing of traffic information and control among traffic management centers to support regional traffic management strategies. Regional traffic management strategies that are supported include coordinated signal control in a metropolitan area and coordination between freeway operations and arterial signal control within a corridor. This market package advances the Surface Street Control and Freeway Control Market Packages by adding the communications links and integrated control strategies that enable integrated interjurisdictional traffic management. The nature of optimization and extent of information and control sharing is determined through working arrangements between jurisdictions. This package relies principally on roadside instrumentation supported by the Surface Street Control and Freeway Control Market Packages and adds hardware, software, and fixed-point to fixed-point communications capabilities to implement traffic management strategies that are coordinated between allied traffic management centers. Several levels of coordination are supported from sharing of information through sharing of control between traffic management centers.	ATMS07	Regional Traffic Management	This marketservice pacl among traffic managem strategies. Regional tra signal control in a metro arterial signal control w Street Control and Free communications links a interjurisdictional traffic information and control jurisdictions. This pack Surface Street Control a hardware, software, and implement traffic mana, management <u>centerscen</u> information through sha

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ackage provides central monitoring and control, communications, and support freeway management. It supports a range of freeway strategies including ramp metering, interchange metering, mainline e metering, and other strategies including variable speed controls. rates the instrumentation included in the Network Surveillance ce package to support freeway monitoring and adaptive strategies as

package also includes the capability to utilize surveillance tion of incidents. Typically, the processing would be performed at a entercentre; however, developments might allow for point detection nent. For example, a CCTV might include the capability to detect an mage changes. Additionally, this <u>marketservice</u> package allows traffic control information to be provided to the driver while en route.

ackage manages HOV lanes by coordinating freeway ramp meters s with HOV lane usage signals. Preferential treatment is given to cial bypasses, reserved lanes, and exclusive rights-of-way that may Vehicle occupancy detectors may be installed to verify HOV tify enforcement agencies of violations.

ackage provides driver information using roadway equipment such as ns or highway advisory radio. A wide range of information can be ng traffic and road conditions, closure and detour information, and emergency alerts and driver advisories. This package provides is at specific equipped locations on the road network. Careful lway equipment provides the information at points in the network re recourse and can tailor their routes to account for the new ckage also covers the equipment and interfaces that provide traffic affic management <u>centercentre</u> to the media (for instance via a direct ic management <u>centercentre</u> and radio or television station computer nagement, Emergency Management, and Information Service the Maintenance and Construction Management subsystem allows on road/bridge closures due to maintenance and construction ninated.

ackage provides for the sharing of traffic information and control ement <u>centerscentres</u> to support regional traffic management traffic management strategies that are supported include coordinated etropolitan area and coordination between freeway operations and I within a corridor. This <u>marketservice</u> package advances the Surface reeway Control <u>Market Packagesservice packages</u> by adding the as and integrated control strategies that enable integrated offic management. The nature of optimization and extent of rol sharing is determined through working arrangements between ackage relies principally on roadside instrumentation supported by the ol and Freeway Control <u>Market Packagesservice packages</u> and adds and fixed-point to fixed-point communications capabilities to magement strategies that are coordinated between allied traffic <u>centres</u>. Several levels of coordination are supported from sharing of sharing of control between traffic management <u>centerscentres</u>.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
ATMS08	Traffic Incident Management System	This market package manages both unexpected incidents and planned events so that the impact to the transportation network and traveler safety is minimized. The market package includes incident detection capabilities through roadside surveillance devices (e.g. CCTV) and through regional coordination with other traffic management, maintenance and construction management and emergency management centers as well as rail operations and event promoters. Information from these diverse sources is collected and correlated by this market package to detect and verify incidents and implement an appropriate response. This market package supports traffic operations personnel in developing an appropriate response in coordination with emergency management, maintenance and construction management, and other incident response personnel to confirmed incidents. The response may include traffic control strategy modifications or resource coordination to affected travelers using the Traffic Information Dissemination market package and dissemination of incident information to travelers through the Broadcast Traveler Information or Interactive Traveler Information market packages. The roadside equipment used to detect and verify incidents also allows the operator to monitor incident status as the response unfolds. The coordination with emergency field personnel. The coordination can also extend to tow trucks and other allied response agencies and field service personnel.	ATMS08	Traffic Incident Management System	This marketservice pack the impact to the transpor- marketservice package i surveillance devices (e.g management, maintenan centerscentres as well as diverse sources is collect verify incidents and imp supports traffic operatio with emergency manage incident response person control strategy modific Incident response also in using the Traffic Inform incident information to a Information or Interactiv roadside equipment used incident status as the ress might be through a CAL personnel. The coordina agencies and field service
ATMS09	Traffic Decision Support and Demand Management	This market package recommends courses of action to traffic operations personnel based on an assessment of current and forecast road network performance. Recommendations may include predefined incident response plans and regional surface street and freeway control strategies that correct network imbalances. Where applicable, this market package also recommends transit, parking, and toll strategies to influence traveler route and mode choices to support travel demand management (TDM) programs and policies managing both traffic and the environment. TDM recommendations are coordinated with transit, parking, and toll administration centers to support regional implementation of TDM strategies. Incident response and congestion management recommendations are implemented by the local traffic management center and coordinated with other regional centers by other market packages (see ATMS07-Regional Traffic Management and ATMS08-Traffic Incident Management). All recommendations are based on historical evaluation, real-time assessment, and forecast of the roadway network performance based on predicted travel demand patterns. Traffic data is collected from sensors and surveillance equipment, other traffic management centers. Forecasted traffic loads are derived from historical data and route plans supplied by the Information Service Provider Subsystem. This market package also collects air quality, parking availability, transit usage, and vehicle occupancy data to support TDM, where applicable.	ATMS09	Traffic <u>Decision</u> <u>SupportForecast</u> and Demand Management	This marketservice pack based on an assessment Recommendations may street and freeway contr this marketservice packa influence travelercentre (TDM) programs and por recommendations are contres (TDM) programs and por recommendations are contres centerscentres to support and congestion manager management centercents marketservice packages Traffic Incident Manager real-time assessment, ar predicted travel demand equipment, other traffic from historical data and Subsystem. This market transit usage, and vehicl
ATMS10	Electronic Toll Collection	This market package provides toll operators with the ability to collect tolls electronically and detect and process violations. The fees that are collected may be adjusted to implement demand management strategies. Field-Vehicle Communication between the roadway equipment and the vehicle is required as well as Fixed Point-Fixed Point interfaces between the toll collection equipment and transportation authorities and the financial infrastructure that supports fee collection. Toll violations are identified and electronically posted to vehicle owners. Standards, inter-agency coordination, and financial clearinghouse capabilities enable regional, and ultimately national interoperability for these services. Two other market packages, APTS04: Transit Fare Collection Management and ATMS16: Parking Facility Management also provide electronic payment services. These three market packages in combination provide an integrated electronic payment system for transportation services.	ATMS10	Electronic Toll Collection	This marketservice pack electronically and detect adjusted to implement de between the roadway eq Point interfaces between the financial infrastructur electronically posted to of financial clearinghouse of interoperability for these Collection Management electronic payment servit integrated electronic pay

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ckage manages both unexpected incidents and planned events so that portation network and traveler traveller safety is minimized. The e includes incident detection capabilities through roadside e.g. CCTV) and through regional coordination with other traffic ance and construction management and emergency management as rail operations and event promoters. Information from these ected and correlated by this marketservice package to detect and nplement an appropriate response. This marketservice package ions personnel in developing an appropriate response in coordination gement, maintenance and construction management, and other onnel to confirmed incidents. The response may include traffic ications or resource coordination between centercentre subsystems. includes presentation of information to affected travelers travellers mation Dissemination marketservice package and dissemination of o travelers through the Broadcast Traveler Traveller tive <u>Traveler Traveller</u> Information <u>marketservice</u> packages. The sed to detect and verify incidents also allows the operator to monitor response unfolds. The coordination with emergency management AD system or through other communication with emergency field ination can also extend to tow trucks and other allied response vice personnel.

ckage recommends courses of action to traffic operations personnel nt of current and forecast road network performance. ay include predefined incident response plans and regional surface ntrol strategies that correct network imbalances. Where applicable, ckage also recommends transit, parking, and toll strategies to re route and mode choices to support travel demand management policies managing both traffic and the environment. TDM coordinated with transit, parking, and toll administration ort regional implementation of TDM strategies. Incident response gement recommendations are implemented by the local traffic ntre and coordinated with other regional <u>centerscentres</u> by other es (see ATMS07-Regional Traffic Management and ATMS08agement). All recommendations are based on historical evaluation, and forecast of the roadway network performance based on nd patterns. Traffic data is collected from sensors and surveillance fic management centerscentres. Forecasted traffic loads are derived nd route plans supplied by the Information Service Provider ketservice package also collects air quality, parking availability, icle occupancy data to support TDM, where applicable.

ackage provides toll operators with the ability to collect tolls tect and process violations. The fees that are collected may be t demand management strategies. Field-Vehicle Communication equipment and the vehicle is required as well as Fixed Point-Fixed een the toll collection equipment and transportation authorities and cture that supports fee collection. Toll violations are identified and to vehicle owners. Standards, inter-agency coordination, and se capabilities enable regional, and ultimately national ese services. Two other market packages, APTS04: Transit Fare ent and ATMS16: Parking Facility Management also provide ervices. These three market packages in combination provide an payment system for transportation services.

ent and roadside readers that these systems utilize can also be used to tics for highway authorities. This data can be collected as a natural collection process or collected by separate readers that are dedicated on.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
ATMS11	Emissions Monitoring and Management	This market package monitors individual vehicle emissions and provides general air quality monitoring using distributed sensors to collect the data. The collected information is transmitted to the emissions management subsystem for processing. Both area wide air quality monitoring and point emissions monitoring are supported by this market package. For area wide monitoring, this market package measures air quality, identifies sectors that are non-compliant with air quality standards, and collects, stores and reports supporting statistical data. For point emissions monitoring, this market package collects data from on-board diagnostic systems and measures tail pipe emissions to identify vehicles that exceed emissions standards and/or clean vehicles that could be released from standard emissions tests, depending on policy and regulations. Summary emissions information or warnings can also be displayed to drivers. The gathered information can be used to implement environmentally sensitive TDM programs, policies, and regulations.	ATMS11	Emissions Monitoring and Management	This marketservice pack air quality monitoring u information is transmitt area wide air quality mo marketservice package. air quality, identifies sec collects, stores and repor marketservice package pipe emissions to identi- clean vehicles that could and regulations. Summ drivers. The gathered in TDM programs, policie
ATMS12	Roadside Lighting System Control	This market package includes systems that manage electrical lighting systems by monitoring operational conditions and using the lighting controls to vary the amount of light provided along the roadside. These systems allow a center to control lights based on traffic conditions, time-of-day, and the occurrence of incidents. Such systems can increase the safety of a roadway segment by increasing lighting and conserve energy at times when conditions warrant a reduction in the amount of lighting.	ATMS12	Roadside Lighting System Control	This marketservice pact monitoring operational light provided along the based on traffic condition can increase the safety at times when condition
ATMS13	Standard Railroad Grade Crossing	This market package manages highway traffic at highway-rail intersections (HRIs) where operational requirements do not dictate more advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Both passive (e.g., the crossbuck sign) and active warning systems (e.g., flashing lights and gates) are supported. (Note that passive systems exercise only the single interface between the roadway subsystem and the driver in the architecture definition.) These traditional HRI warning systems may also be augmented with other standard traffic management devices. The warning systems are activated on notification by interfaced wayside equipment of an approaching train. The equipment at the HRI may also be interconnected with adjacent signalized intersections so that local control can be adapted to highway-rail intersection activities. Health monitoring of the HRI equipment and interfaces is performed; detected abnormalities are reported to both highway and railroad officials through wayside interfaces and interfaces to the traffic management subsystem.	ATMS13	Standard Railroad Grade Crossing	This marketservice pack where operational requi operational speeds are 1 and active warning syst passive systems exercis driver in the architectur augmented with other si activated on notification equipment at the HRI m that local control can be of the HRI equipment a both highway and railro management subsystem
ATMS14	Advanced Railroad Grade Crossing	This market package manages highway traffic at highway-rail intersections (HRIs) where operational requirements demand advanced features (e.g., where rail operational speeds are greater than 80 miles per hour). This market package includes all capabilities from the Standard Railroad Grade Crossing Market Package and augments these with additional safety features to mitigate the risks associated with higher rail speeds. The active warning systems supported by this market package include positive barrier systems that preclude entrance into the intersection when the barriers are activated. Like the Standard Package, the HRI equipment is activated on notification by wayside interface equipment which detects, or communicates with the approaching train. In this market package, the wayside equipment provides additional information about the arriving train so that the train's direction of travel, estimated time of arrival, and estimated duration of closure may be derived. This enhanced information may be conveyed to the driver prior to, or in context with, warning system activation. This market package also includes additional detection capabilities that enable it to detect an entrapped or otherwise immobilized vehicle within the HRI and provide an immediate notification to highway and railroad officials.	ATMS14	Advanced Railroad Grade Crossing	This marketservice pack where operational requi speeds are greater than capabilities from the Sta and augments these with higher rail speeds. The include positive barrier barriers are activated. In notification by wayside approaching train. In the additional information a estimated time of arrival enhanced information in system activation. This capabilities that enable the HRI and provide an
ATMS15	Railroad Operations Coordination	This market package provides an additional level of strategic coordination between freight rail operations and traffic management centers. Rail operations provides train schedules, maintenance schedules, and any other forecast events that will result in highway-rail intersection (HRI) closures. This information is used to develop forecast HRI closure times and durations that may be used in advanced traffic control strategies or to enhance the quality of traveler information.	ATMS15	RailroadMultimodal Operations Coordination	This marketservice pack freight rail operations a train schedules, mainten highway-rail intersection HRI closure times and o to enhance the quality of

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ackage monitors individual vehicle emissions and provides general g using distributed sensors to collect the data. The collected nitted to the emissions management subsystem for processing. Both monitoring and point emissions monitoring are supported by this ge. For area wide monitoring, this <u>marketservice</u> package measures sectors that are non-compliant with air quality standards, and eports supporting statistical data. For point emissions monitoring, this ge <u>collects data from on board diagnostic systems and measures tail</u> <u>outifyand identifies</u> vehicles that exceed emissions standards-<u>and/or</u> <u>ould be released from standard emissions tests, depending on policy</u> nmary emissions information or warnings can also be displayed to d information can be used to implement environmentally sensitive cies, and regulations.

ackage includes systems that manage electrical lighting systems by al conditions and using the lighting controls to vary the amount of the roadside. These systems allow a <u>centercentre</u> to control lights itions, time-of-day, and the occurrence of incidents. Such systems y of a roadway segment by increasing lighting and conserve energy ons warrant a reduction in the amount of lighting.

ackage manages highway traffic at highway-rail intersections (HRIs) quirements do not dictate more advanced features (e.g., where rail re less than 80 miles per hour). Both passive (e.g., the crossbuck sign) ystems (e.g., flashing lights and gates) are supported. (Note that cise only the single interface between the roadway subsystem and the ture definition.) These traditional HRI warning systems may also be r standard traffic management devices. The warning systems are tion by interfaced wayside equipment of an approaching train. The I may also be interconnected with adjacent signalized intersections so a be adapted to highway-rail intersection activities. Health monitoring at and interfaces is performed; detected abnormalities are reported to ilroad officials through wayside interfaces and interfaces to the traffic em.

ackage manages highway traffic at highway-rail intersections (HRIs) uirements demand advanced features (e.g., where rail operational n 80 miles per hour). This <u>marketservice</u> package includes all Standard Railroad Grade Crossing <u>Market Packageservice package</u> with additional safety features to mitigate the risks associated with the active warning systems supported by this <u>marketservice</u> package er systems that preclude entrance into the intersection when the

Like the Standard Package, the HRI equipment is activated on de interface equipment which detects, or communicates with the this <u>marketservice</u> package, the wayside equipment provides n about the arriving train so that the train's direction of travel, val, and estimated duration of closure may be derived. This n may be conveyed to the driver prior to, or in context with, warning his <u>marketservice</u> package also includes additional detection le it to detect an entrapped or otherwise immobilized vehicle within an immediate notification to highway and railroad officials.

ackage provides an additional level of strategic coordination between s and traffic management <u>centerscentres</u>. Rail operations provides atenance schedules, and any other forecast events that will result in ction (HRI) closures. This information is used to develop forecast ad durations that may be used in advanced traffic control strategies or y of <u>travelertraveller</u> information.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
ATMS16	Parking Facility Management	This market package provides enhanced monitoring and management of parking facilities. It assists in the management of parking operations, coordinates with transportation authorities, and supports electronic collection of parking fees. This market package collects current parking status, shares this data with Information Service Providers and Traffic Management, and collects parking fees using the same in-vehicle equipment utilized for electronic toll collection or contact or proximity traveler cards used for electronic payment. Two other market packages, APTS04: Transit Fare Collection Management and ATMS10: Electronic Toll Collection also provide electronic payment services. These three market packages in combination provide an integrated electronic payment system for transportation services.	ATMS16	Parking Facility Management	This marketservice pac facilities. It assists in t transportation authoriti marketservice package Service Providers and vehicle equipment utili travelertraveller cards APTS04: Transit Fare also provide electronic combination provide au
ATMS17	Regional Parking Management	This market package supports communication and coordination between equipped parking facilities and also supports regional coordination between parking facilities and traffic and transit management systems. This market package also shares information with transit management systems and information service providers to support multimodal travel planning, including parking reservation capabilities. Information including current parking availability, system status, and operating strategies are shared to enable local parking facility management that supports regional transportation strategies.	ATMS17	Regional Parking Management	This marketservice pac parking facilities and a traffic and transit mana information with transi multimodal travel plan including current parki enable local parking fa
ATMS18	Reversible Lane Management	This market package provides for the management of reversible lane facilities. In addition to standard surveillance capabilities, this market package includes sensory functions that detect wrong-way vehicles and other special surveillance capabilities that mitigate safety hazards associated with reversible lanes. The package includes the field equipment, physical lane access controls, and associated control electronics that manage and control these special lanes. This market package also includes the equipment used to electronically reconfigure intersections and manage right-of-way to address dynamic demand changes and special events.	ATMS18	Reversible Lane Management	This marketservice pac addition to standard su functions that detect w mitigate safety hazards equipment, physical la and control these speci used to electronically r dynamic demand chang
ATMS19	Speed Monitoring	This market package monitors the speeds of vehicles traveling through a roadway system. If the speed is determine to be excessive, roadside equipment can suggest a safe driving speed. Environmental conditions may be monitored and factored into the safe speed advisories that are provided to the motorist. This service can also support notifications to an enforcement agency to enforce the speed limit on a roadway system.	ATMS19	<u>Variable</u> Speed <u>MonitoringLimit and</u> <u>Enforcement</u>	This market <u>service</u> pace roadway system. If the suggest a safe driving s into the safe speed adv support notifications to variable) on a roadway
ATMS20	Drawbridge Management	This market package supports systems that manage drawbridges at rivers and canals and other multimodal crossings (other than railroad grade crossings which are specifically covered by other market packages). The equipment managed by this market package includes control devices (e.g., gates, warning lights, dynamic message signs) at the drawbridge as well as the information systems that are used to keep travelers appraised of current and forecasted drawbridge status.	ATMS20	Drawbridge Management	This marketservice pact and other multimodal of covered by other market package includes contre the drawbridge as well appraised of current an
ATMS21	Roadway Closure Management	This market package closes roadways to vehicular traffic when driving conditions are unsafe, maintenance must be performed, and other scenarios where access to the roadway must be prohibited. The market package includes automatic or remotely controlled gates or barriers that control access to roadway segments including ramps and traffic lanes. Remote control systems allow the gates to be controlled from a central location or from a vehicle at the gate/barrier location, improving system efficiency and reducing personnel exposure to unsafe conditions during severe weather and other situations where roads must be closed. Surveillance systems allow operating personnel to visually verify the safe activation of the closure system and driver information systems (e.g., DMS) provide closure information to motorists in the vicinity of the closure. The equipment managed by this market package includes the control and monitoring systems, the field devices (e.g., gates, warning lights, DMS, CCTV cameras) at the closure location(s), and the information systems that notify other systems of a closure. This market package covers general road closure applications; specific closure systems that are used at railroad grade crossings, drawbridges, reversible lanes, etc. are covered by other ATMS market packages.	ATMS21	Roadway Closure Management	This marketservice pac are unsafe, maintenance roadway must be prohi controlled gates or barn traffic lanes. Remote co location or from a vehi reducing personnel exp situations where roads visually verify the safe (e.g., DMS) provide ch equipment managed by systems, the field device location(s), and the infi- marketservice package that are used at railroade other ATMS marketser
AVSS01	Vehicle Safety Monitoring	This market package will diagnose critical components of the vehicle and warn the driver of potential dangers. On-board sensors will determine the vehicle's condition, performance, on-board safety data, and display information.	AVSS01	Vehicle Safety Monitoring	This marketservice pac driver of potential dang performance, on-board

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backage provides enhanced monitoring and management of parking in the management of parking operations, coordinates with ities, and supports electronic collection of parking fees. This ge collects current parking status, shares this data with Information d Traffic Management, and collects parking fees using the same intilized for electronic toll collection or contact or proximity is used for electronic payment. Two other <u>marketservice</u> packages, re Collection Management and ATMS10: Electronic Toll Collection his payment services. These three <u>marketservice</u> packages in an integrated electronic payment system for transportation services.

backage supports communication and coordination between equipped also supports regional coordination between parking facilities and unagement systems. This <u>marketservice</u> package also shares not management systems and information service providers to support anning, including parking reservation capabilities. Information this availability, system status, and operating strategies are shared to facility management that supports regional transportation strategies.

backage provides for the management of reversible lane facilities. In surveillance capabilities, this <u>marketservice</u> package includes sensory wrong-way vehicles and other special surveillance capabilities that ds associated with reversible lanes. The package includes the field lane access controls, and associated control electronics that manage ecial lanes. This <u>marketservice</u> package also includes the equipment y reconfigure intersections and manage right-of-way to address anges and special events.

backage monitors the speeds of vehicles <u>travelingtravelling</u> through a the speed is determine to be excessive, roadside equipment can g speed. Environmental conditions may be monitored and factored dvisories that are provided to the motorist. This service can also to an enforcement agency to enforce the speed limit <u>(static or</u> ay system.

backage supports systems that manage drawbridges at rivers and canals al crossings (other than railroad grade crossings which are specifically rketservice packages). The equipment managed by this marketservice ntrol devices (e.g., gates, warning lights, dynamic message signs) at ell as the information systems that are used to keep travelerstravellers and forecasted drawbridge status.

backage closes roadways to vehicular traffic when driving conditions nce must be performed, and other scenarios where access to the bibited. The marketservice package includes automatic or remotely arriers that control access to roadway segments including ramps and control systems allow the gates to be controlled from a central chicle at the gate/barrier location, improving system efficiency and exposure to unsafe conditions during severe weather and other ds must be closed. Surveillance systems allow operating personnel to fe activation of the closure system and driver information systems closure information to motorists in the vicinity of the closure. The by this marketservice package includes the control and monitoring vices (e.g., gates, warning lights, DMS, CCTV cameras) at the closure nformation systems that notify other systems of a closure. This ge covers general road closure applications; specific closure systems ad grade crossings, drawbridges, reversible lanes, etc. are covered by service packages.

backage will diagnose critical components of the vehicle and warn the angers. On-board sensors will determine the vehicle's condition, and safety data, and display information.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
AVSS02	Driver Safety Monitoring	This market package will determine the driver's condition, and warn the driver of potential dangers. On-board sensors will determine the driver's condition, performance, on-board safety data, and display information.	AVSS02	Driver Safety Monitoring	This market <u>service</u> pact potential dangers. On-l on-board safety data, ar
AVSS03	Longitudinal Safety Warning	This market package allows for longitudinal warning. It utilizes safety sensors and collision sensors. It requires on-board sensors to monitor the areas in front of and behind the vehicle and present warnings to the driver about potential hazards.	AVSS03	Longitudinal Safety Warning	This marketservice pact collision sensors. It req the vehicle and present
AVSS04	Lateral Safety Warning	This market package allows for lateral warning. It utilizes safety sensors and collision sensors. It requires on-board sensors to monitor the areas to the sides of the vehicle and present warnings to the driver about potential hazards.	AVSS04	Lateral Safety Warning	This marketservice pact collision sensors. It req vehicle and present war
AVSS05	Intersection Safety Warning	This market package monitors vehicles approaching an intersection and warns drivers when hazardous conditions are detected. The market package detects impending violations (e.g., red-light violations) and potential conflicts between vehicles occupying or approaching the intersection (e.g., situations where a left turn would be unsafe because of approaching traffic). When a potentially hazardous condition is detected, a warning is communicated to the involved vehicles using short range communications and/or signs/signals in the intersection.	AVSS05	Intersection Safety Warning	This marketservice pact drivers when hazardous impending violations (e occupying or approachi unsafe because of appro detected, a warning is c communications and/or
AVSS06	Pre-Crash Restraint Deployment	This market package provides in-vehicle sensors and on-board communications to monitor the vehicle's local environment, determine collision probability and deploy a pre-crash safety system. It will include on-board sensors to measure lateral and longitudinal gaps and together with weather and roadway conditions will determine lateral and longitudinal collision probability. It will exchange messages with other equipped vehicles to determine the precise location of surrounding vehicles. It will deploy a pre-crash safety system when a crash is imminent.	AVSS06	Pre-CrashCollision Restraint Deployment	This marketservice pact monitor the vehicle's lo crash safety system. It gaps and together with longitudinal collision pi to determine the precise system when a crash is
AVSS07	Driver Visibility Improvement	This market package will enhance driver visibility using an enhanced vision system. On- board display hardware is needed	AVSS07	Driver Visibility Improvement	This marketservice pact system. On-board sense imaging of obstacles un
AVSS08	Advanced Vehicle Longitudinal Control	This market package automates the speed and headway control functions on board the vehicle. It utilizes safety sensors and collision sensors combined with vehicle dynamics processing to control the throttle and brakes. It requires on-board sensors to measure longitudinal gaps and a processor for controlling the vehicle speed.	AVSS08	Advanced Vehicle Longitudinal Control	This marketservice pact the vehicle. It utilizes s dynamics processing to measure longitudinal ga
AVSS09	Advanced Vehicle Lateral Control	This market package automates the steering control on board the vehicle. It utilizes safety sensors and collision sensors combined with vehicle dynamics processing to control the steering. It requires on-board sensors to measure lane position and lateral deviations and a processor for controlling the vehicle steering.	AVSS09	Advanced Vehicle Lateral Control	This marketservice pact safety sensors and colli- the steering. It requires and a processor for con
AVSS10	Intersection Collision Avoidance	This market package will determine the probability of an intersection collision and provide timely warnings to approaching vehicles so that avoidance actions can be taken. This market package builds on the Intersection Safety Warning field and in-vehicle equipment and adds equipment in the vehicle that can take control of the vehicle to avoid intersection violations and potential collisions. The same sensors and communications equipment in the roadway infrastructure are used to assess vehicle locations and speeds near an intersection. This information is determined and communicated to the approaching vehicle using a short range communications system. The vehicle uses this information to develop control actions which alter the vehicle's speed and steering control and potentially activate its pre-crash safety system.	AVSS10	Intersection Collision Avoidance	This marketservice pact provide timely warning This marketservice pact equipment and adds equintersection violations a equipment in the roadw near an intersection. The approaching vehicle usi information to develop and potentially activate

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backage will determine the driver's condition, and warn the driver of on-board sensors will determine the driver's condition, performance, , and display information.

ackage allows for longitudinal warning. It utilizes safety sensors and requires on-board sensors to monitor the areas in front of and behind ent warnings to the driver about potential hazards.

backage allows for lateral warning. It utilizes safety sensors and requires on-board sensors to monitor the areas to the sides of the warnings to the driver about potential hazards.

ackage monitors vehicles approaching an intersection and warns ous conditions are detected. The <u>marketservice</u> package detects is (e.g., red-light violations) and potential conflicts between vehicles ching the intersection (e.g., situations where a left turn would be proaching traffic). When a potentially hazardous condition is s communicated to the involved vehicles using short range /or signs/signals in the intersection.

backage provides in-vehicle sensors and on-board communications to a local environment, determine collision probability and deploy a pre-It will include on-board sensors to measure lateral and longitudinal th weather and roadway conditions will determine lateral and a probability. It will exchange messages with other equipped vehicles cise location of surrounding vehicles. It will deploy a pre-crash safety is imminent.

ackage will enhance driver visibility using an enhanced vision ensing and display hardware is needed to provide detection and under low visibility driving conditions.

backage automates the speed and headway control functions on board es safety sensors and collision sensors combined with vehicle to control the throttle and brakes. It requires on-board sensors to a gaps and a processor for controlling the vehicle speed.

ackage automates the steering control on board the vehicle. It utilizes llision sensors combined with vehicle dynamics processing to control res on-board sensors to measure lane position and lateral deviations ontrolling the vehicle steering.

backage will determine the probability of an intersection collision and ings to approaching vehicles so that avoidance actions can be taken. backage builds on the Intersection Safety Warning field and in-vehicle equipment in the vehicle that can take control of the vehicle to avoid as and potential collisions. The same sensors and communications dway infrastructure are used to assess vehicle locations and speeds This information is determined and communicated to the

using a short range communications system. The vehicle uses this op control actions which alter the vehicle's speed and steering control ate its pre-crash safety system.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
AVSS11	Automated Vehicle Operations	This market package enables "hands-off" operation of the vehicle on automated portions of the highway system. Implementation requires lateral lane holding, vehicle speed and steering control. Communications between vehicles and between the vehicles and supporting infrastructure equipment supports cooperative checkin to the automated portion of the system and transition to automated mode, coordination of maneuvers between vehicles in automated mode, and checkout from the automated system as the driver resumes control of the vehicle.	AVSS11	Automated <del>Vehicle</del> Operations <u>Highway</u> System	This market package en of the highway system. steering control. Comm supporting infrastructur of the system and transi vehicles in automated m resumes control of the y and provides general ain The collected information processing. Both area y supported by this service measures air quality, ide and collects, stores and this market package col emissions to identify ye could be released from y Summary emissions inf gathered information ca policies, and regulations
AVSS12	Cooperative Vehicle Safety Systems	This market package enhances the on-board longitudinal and lateral warning stand-alone systems by exchanging messages with other surrounding vehicles and roadside equipment. Vehicles send out information concerning their location, speed, and direction to surrounding vehicles. The roadside equipment provides information about potential safety hazards in the vehicle path such as stalled (unequipped) vehicles, wrong-way drivers, debris, or water hazards. The on-board systems can then process this information and present warnings to the driver including headway warnings, merge warnings, unsafe passing warnings, and warnings about hazards detected in the vehicle path. Special messages from approaching emergency vehicles may also be received and processed.	AVSS12	Cooperative Vehicle Safety Systems	This <u>marketservice</u> pact alone systems by excha equipment. Vehicles set to surrounding vehicles safety hazards in the ve drivers, debris, or water and present warnings to passing warnings, and v messages from approac
CVO01	Fleet Administration	This market package provides the capabilities to manage a fleet of commercial vehicles. The Fleet and Freight Management subsystem provides the route for a commercial vehicle by either utilizing an in-house routing software package or an Information Service Provider. Routes generated by either approach are constrained by hazardous materials and other restrictions (such as height or weight). Any such restricted areas are determined by the Commercial Vehicle Administration. A route would be electronically sent to the Commercial Vehicle with any appropriate dispatch instructions. The location of the Commercial Vehicle can be monitored by the Fleet and Freight Management subsystem and routing changes can be made depending on current road network conditions. Once a route has been assigned, changes must be coordinated between the Fleet and Freight Management subsystem and the Commercial Vehicle. Commercial Vehicle Drivers would be alerted to any changes in route from the planned route and given an opportunity to justify a rerouting. Any unauthorized or unexpected route changes by the Commercial Vehicle will register a route deviation alert with the Fleet and Freight Management subsystem. The Fleet and Freight Management subsystem can also notify local public safety agencies of the route deviation when appropriate (e.g., if there is safety sensitive HAZMAT being carried), by sending an alarm to the Emergency Management subsystem.	CVO01	Fleet Administration	This marketservice pack vehicles. The Fleet and commercial vehicle by of Information Service Pro- hazardous materials and areas are determined by electronically sent to the The location of the Con Management subsystem network conditions. Or between the Fleet and F Commercial Vehicle Dr route and given an oppor route changes by the Co Fleet and Freight Manag can also notify local put there is safety sensitive Management subsystem

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enables "hands off" operation of the vehicle on automated portions a. Implementation requires lateral lane holding, vehicle speed and munications between vehicles and between the vehicles and are equipment supports cooperative checkin to the automated portion sition to automated mode, coordination of maneuvers between mode, and checkout from the automated system as the driver vehicle. This service package monitors individual vehicle emissions air quality monitoring using distributed sensors to collect the data. tion is transmitted to the emissions management subsystem for wide air quality monitoring and point emissions monitoring are ice package. For area wide monitoring, this market package dentifies sectors that are non-compliant with air quality standards, d reports supporting statistical data. For point emissions monitoring. ollects data from on-board diagnostic systems and measures tail pipe vehicles that exceed emissions standards and/or clean vehicles that n standard emissions tests, depending on policy and regulations. nformation or warnings can also be displayed to drivers. The can be used to implement environmentally sensitive TDM programs, ns.

ackage enhances the on-board longitudinal and lateral warning standhanging messages with other surrounding vehicles and roadside send out information concerning their location, speed, and direction es. The roadside equipment provides information about potential vehicle path such as stalled (unequipped) vehicles, wrong-way ter hazards. The on-board systems can then process this information to the driver including headway warnings, merge warnings, unsafe d warnings about hazards detected in the vehicle path. Special aching emergency vehicles may also be received and processed.

ackage provides the capabilities to manage a fleet of commercial d Freight Management subsystem provides the route for a y either utilizing an in-house routing software package or an Provider. Routes generated by either approach are constrained by nd other restrictions (such as height or weight). Any such restricted by the Commercial Vehicle Administration. A route would be the Commercial Vehicle with any appropriate dispatch instructions. ommercial Vehicle can be monitored by the Fleet and Freight em and routing changes can be made depending on current road Once a route has been assigned, changes must be coordinated Freight Management subsystem and the Commercial Vehicle. Drivers would be alerted to any changes in route from the planned portunity to justify a rerouting. Any unauthorized or unexpected Commercial Vehicle will register a route deviation alert with the nagement subsystem. The Fleet and Freight Management subsystem public safety agencies of the route deviation when appropriate (e.g., if re HAZMAT being carried), by sending an alarm to the Emergency em.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
CVO02	Freight Administration	This market package tracks the movement of cargo and monitors the cargo condition. Interconnections are provided to intermodal freight shippers and intermodal freight depots for tracking of cargo from source to destination. In addition to the usual cargo monitoring required to insure that cargo gets from origin to destination, the Fleet and Freight Management subsystem monitors shipments to make sure that no tampering or breach of security occurs to the cargo on commercial vehicles. Any such tampering will be reported to the Fleet and Freight Management subsystem. In addition to exceptions (e.g., alerts) that are reported, on-going indications of the state of the various freight equipment are reported to the Fleet and Freight Management subsystem. The commercial vehicle driver is also alerted of any tampering or breach of cargo security. Freight managers may decide to take further action on the alerts and/or provide responses that explain that the alerts are false alarms. If no explanation is received, the Fleet and Freight Management subsystem.	CVO02	Freight Administration	This marketservice pact and monitors the cargos freight shipperscustome from source to destinati insure that cargo getsth Management subsystem security occurs to the ea such tampering will be addition to exceptions ( the various freight equi Fleet and Freight Mana of any exceptions or tar may decide to take furth the alerts are false alarm Management subsystem
CVO03	Electronic Clearance	This market package provides for automated clearance at roadside check facilities. The roadside check facility communicates with the Commercial Vehicle Administration subsystem to retrieve infrastructure snapshots of critical carrier, vehicle, and driver data to be used to sort passing vehicles. This allows a good driver/vehicle/carrier to pass roadside facilities at highway speeds using transponders and Field-Vehicle Communications to the roadside. Results of roadside clearance activities will be passed on to the Commercial Vehicle Administration. The roadside check facility may be equipped with Automated Vehicle Identification (AVI), weighing sensors, transponder read/write devices and computer workstations.	CVO03	Electronic Clearance	This marketservice pact The roadside check faci subsystem to retrieve in be used to sort passing v facilities at highway spe roadside. Results of roa Vehicle Administration Vehicle Identification (a computer workstations.
CVO04	CV Administrative Processes	This market package provides for electronic application, processing, fee collection, issuance, and distribution of CVO credential and tax filing. Through this process, carriers, drivers, and vehicles may be enrolled in the electronic clearance program provided by a separate market package which allows commercial vehicles to be screened at mainline speeds at roadside check facilities. Through this enrollment process, current profile databases are maintained in the Commercial Vehicle Administration subsystem and snapshots of this database are made available to the roadside check facilities at the roadside to support the electronic clearance process.	CVO04	CV Administrative Processes	This marketservice pacl issuance, and distribution drivers, and vehicles man separate marketservice mainline speeds at road profile databases are man snapshots of this databases roadside to support the
		Commercial Vehicle Administration subsystems can share credential information with other Commercial Vehicle Administration subsystems, so that it is possible for any Commercial Vehicle Administration subsystem to have access to all credentials, credential fees, credentials status and safety status information. In addition, it is possible for one Commercial Vehicle Administration subsystem to collect HAZMAT route restrictions information from other Commercial Vehicle Administration subsystems and then act as a clearinghouse for this route restrictions information for Information Service Providers, Map Update Providers, and Fleet and Freight Management subsystems.			Commercial Vehicle Ad other Commercial Vehi Commercial Vehicle Ad fees, credentials status a Commercial Vehicle Ad information from other clearinghouse for this ro Map Update Providers,
CVO05	International Border Electronic Clearance	This market package provides for automated clearance at international border crossings. It augments the Electronic Clearance market package by allowing interface with border administration and border inspection related functions. This market package processes the entry documentation for vehicle, cargo, and driver, checks compliance with import/export and immigration regulations, handles duty fee processing, and reports the results of the crossing event to manage release of commercial vehicle, cargo, and driver across an international border. It interfaces with administrative systems used by customs and border protection, immigration, carriers, and service providers (e.g., brokers) and inspection systems at international border crossings to generate, process, and store entry documentation.	CVO05	International Border Electronic Clearance	This marketservice pack crossings. It augments interface with border ad marketservice package checks compliance with processing, and reports vehicle, cargo, and drive systems used by custom providers (e.g., brokers) generate, process, and s
CVO06	Weigh-In-Motion	This market package provides for high speed weigh-in-motion with or without Automated Vehicle Identification (AVI) capabilities. This market package provides the roadside equipment that could be used as a stand-alone system or to augment the Electronic Clearance (CVO03) market package.	CVO06	Weigh-In-Motion	This marketservice pack Automated Vehicle Iden provides the roadside en the <u>CVO03:</u> Electronic

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ackage tracks the movement of <u>cargointermodal freight equipment</u> <u>reequipment</u> condition. Interconnections are provided to intermodal <u>mers</u> and intermodal <u>freight depotsterminals</u> for tracking of cargo ation. In addition to the usual <u>cargoequipment</u> monitoring required to they get from origin to destination, the Fleet and Freight em monitors shipments to make sure that no tampering or breach of <u>cargointermodal freight equipment</u> on commercial vehicles. Any be reported to the Fleet and Freight Management subsystem. In s (e.g., alerts) that are reported, on-going indications of the state of uipment <u>(temperature, shock and vibration, etc.)</u> are reported to the magement subsystem. The commercial vehicle driver is also alerted tampering or breach of <u>cargoequipment</u> security. Freight managers rther action on the alerts and/or provide responses that explain that urms. If no explanation is received, the Fleet and Freight em may notify the Emergency Management subsystem.

ackage provides for automated clearance at roadside check facilities. acility communicates with the Commercial Vehicle Administration infrastructure snapshots of critical carrier, vehicle, and driver data to g vehicles. This allows a good driver/vehicle/carrier to pass roadside speeds using transponders and Field-Vehicle Communications to the roadside clearance activities will be passed on to the Commercial on. The roadside check facility may be equipped with Automated a (AVI), weighing sensors, transponder read/write devices and as.

ackage provides for electronic application, processing, fee collection, ation of CVO credential and tax filing. Through this process, carriers, may be enrolled in the electronic clearance program provided by a package which allows commercial vehicles to be screened at adside check facilities. Through this enrollment process, current maintained in the Commercial Vehicle Administration subsystem and base are made available to the roadside check facilities at the ne electronic clearance process.

Administration subsystems can share credential information with shicle Administration subsystems, so that it is possible for any Administration subsystem to have access to all credentials, credential s and safety status information. In addition, it is possible for one Administration subsystem to collect HAZMAT route restrictions er Commercial Vehicle Administration subsystems and then act as a s route restrictions information for Information Service Providers, rs, and Fleet and Freight Management subsystems.

ackage provides for automated clearance at international border ts the Electronic Clearance <u>marketservice</u> package by allowing administration and border inspection related functions. This ge processes the entry documentation for vehicle, cargo, and driver, ith import/export and immigration regulations, handles duty fee ts the results of the crossing event to manage release of commercial river across an international border. It interfaces with administrative oms and border protection, immigration, carriers, and service rs) and inspection systems at international border crossings to a store entry documentation.

ackage provides for high speed weigh-in-motion with or without dentification (AVI) capabilities. This <u>marketservice</u> package equipment that could be used as a stand-alone system or to augment ic Clearance (CVO03) marketservice package.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
CVO07	Roadside CVO Safety	This market package provides for automated roadside safety monitoring and reporting. It automates commercial vehicle safety inspections at the roadside check locations. The capabilities for performing the safety inspection are shared between this market package and the On-board CVO and Freight Safety & Security (CVO08) Market Package which enables a variety of implementation options. The basic option, directly supported by this market package, facilitates safety inspection of vehicles that have been pulled off the highway, perhaps as a result of the automated screening process provided by the Electronic Clearance (CVO03) Market Package. In this scenario, only basic identification data and status information is read from the electronic tag on the commercial vehicle. The identification data from the tag enables access to additional safety data maintained in the infrastructure which is used to support the safety inspection, and may also inform the pull-in decision if system timing requirements can be met. More advanced implementations, supported by the On-board CVO and Freight Safety & Security (CVO08) market package, utilize additional on-board vehicle safety monitoring and reporting capabilities in the commercial vehicle to augment the roadside safety check.	CVO07	Roadside CVO Safety	This marketservice pack reporting. It automates locations. The capabilit marketservice package (CV008) Market Package options. The basic opti- safety inspection of veh the automated screening Market Packageservice information is read from data from the tag enable which is used to suppor system timing requirem the <u>CV008</u> : On-board O package, utilize addition the commercial vehicle
CVO08	On-board CVO and Freight Safety and Security	This market package provides for on-board commercial vehicle safety monitoring and reporting. It is an enhancement of the Roadside CVO Safety Market Package and includes roadside support for reading on-board safety data via tags. Safety warnings are provided to the driver as a priority with secondary requirements to notify the Commercial Vehicle Check roadside elements. This market package allows for the Fleet and Freight Management subsystem to have access to the on-board safety data. In addition to safety data, this market package provides a means for monitoring the security of the Commercial Vehicle along with the cargo, containers, trailers, and other equipment that are being hauled. Commercial Vehicle on-board tamper and breach sensors provide an indication of any security irregularities and the sensor data is provided to the Fleet and Freight Management subsystem along with particular notification of any breach alerts. Commercial Vehicle Drivers may be aware of the sensor readings and can provide an explanation back to the Fleet and Freight Management subsystem via the Commercial Vehicle. Commercial vehicle and freight security breaches are also sent to the commercial vehicle check.	CVO08	On-board CVO and Freight Safety and Security	This marketservice pack and reporting. It is an e package and includes ro warnings are provided to Commercial Vehicle CI Fleet and Freight Mana addition to safety data, security of the Commer equipment that are bein sensors provide an india to the Fleet and Freight breach alerts. Commer- provide an explanation Commercial Vehicle. Of the commercial vehicle
CVO09	CVO Fleet Maintenance	This market package supports maintenance of CVO fleet vehicles with on-board monitoring equipment and Automated Vehicle Location (AVL) capabilities within the Fleet and Freight Management Subsystem. Records of vehicle mileage, repairs, and safety violations are maintained to assure safe vehicles on the highway.	CVO09	CVO Fleet Maintenance	This marketservice pack monitoring equipment a Fleet and Freight Mana violations are maintaine
CVO10	HAZMAT Management	This market package integrates incident management capabilities with commercial vehicle tracking to assure effective treatment of HAZMAT material and incidents. HAZMAT tracking is performed by the Fleet and Freight Management Subsystem. The Emergency Management subsystem is notified by the Commercial Vehicle if an incident occurs and coordinates the response. The response is tailored based on information that is provided as part of the original incident notification or derived from supplemental information provided by the Fleet and Freight Management Subsystem. The latter information can be provided prior to the beginning of the trip or gathered following the incident depending on the selected policy and implementation.	CVO10	HAZMAT Management <u>Hazardous</u> Material Planning and Incident Response	This marketservice pack vehicle tracking to assur HAZMAT tracking is p Emergency Managemen occurs and coordinates provided as part of the of information provided by information can be prov incident depending on t
CVO11	Roadside HAZMAT Security Detection and Mitigation	This market package provides the capability to detect and classify security sensitive HAZMAT on commercial vehicles using roadside sensing and imaging technology. Credentials information can be accessed to verify if the commercial driver, vehicle and carrier are permitted to transport the identified HAZMAT. If the credentials analysis and sensed HAZMAT information do not agree, the vehicle can be signaled to pull off the highway, and if required, an alarm can be sent to Emergency Management to request they monitor, traffic stop or disable the vehicle.	CVO11	Roadside HAZMATHazardous Material Security Detection and Mitigation	This marketservice pack HAZMAT on commerce Credentials information carrier are permitted to sensed HAZMAT inform highway, and if required monitor, traffic stop or the

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ackage provides for automated roadside safety monitoring and es commercial vehicle safety inspections at the roadside check ilities for performing the safety inspection are shared between this e and the CVO08: On-board CVO and Freight Safety & Security kageservice package which enables a variety of implementation btion, directly supported by this marketservice package, facilitates ehicles that have been pulled off the highway, perhaps as a result of ing process provided by the <u>CVO03</u>: Electronic Clearance (<del>CVO03</del>) ce package. In this scenario, only basic identification data and status om the electronic tag on the commercial vehicle. The identification bles access to additional safety data maintained in the infrastructure ort the safety inspection, and may also inform the pull-in decision if ments can be met. More advanced implementations, supported by d CVO and Freight Safety & Security (CVO08) marketservice ional on-board vehicle safety monitoring and reporting capabilities in le to augment the roadside safety check.

ackage provides for on-board commercial vehicle safety monitoring n enhancement of the Roadside CVO Safety <u>Market Packageservice</u> roadside support for reading on-board safety data via tags. Safety d to the driver as a priority with secondary requirements to notify the Check roadside elements. This <u>marketservice</u> package allows for the nagement subsystem to have access to the on-board safety data. In a, this <u>marketservice</u> package provides a means for monitoring the hercial Vehicle along with the cargo, containers, trailers, and other eing hauled. Commercial Vehicle on-board tamper and breach dication of any security irregularities and the sensor data is provided the Management subsystem along with particular notification of any hercial Vehicle Drivers may be aware of the sensor readings and can on back to the Fleet and Freight Management subsystem via the . Commercial vehicle and freight security breaches are also sent to

Commercial vehicle and freight security breaches are also sent to the check.

ackage supports maintenance of CVO fleet vehicles with on-board t and Automated Vehicle Location (AVL) capabilities within the nagement Subsystem. Records of vehicle mileage, repairs, and safety ned to assure safe vehicles on the highway.

ackage integrates incident management capabilities with commercial sure effective treatment of HAZMAT material and incidents. Is performed by the Fleet and Freight Management Subsystem. The ment subsystem is notified by the Commercial Vehicle if an incident es the response. The response is tailored based on information that is are original incident notification or derived from supplemental by the Fleet and Freight Management Subsystem. The latter rovided prior to the beginning of the trip or gathered following the n the selected policy and implementation.

ackage provides the capability to detect and classify security sensitive ercial vehicles using roadside sensing and imaging technology. on can be accessed to verify if the commercial driver, vehicle and to transport the identified HAZMAT. If the credentials analysis and formation do not agree, the vehicle can be signaled to pull off the red, an alarm can be sent to Emergency Management to request they or disable the vehicle.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
CVO12	CV Driver Security Authentication	This market package provides the ability for Fleet and Freight Management to detect when an unauthorized commercial vehicle driver attempts to drive their vehicle based on stored driver identity information. If an unauthorized driver has been detected, Fleet and Freight Management can activate commands to safely disable the commercial vehicle. Alarms can also be sent to emergency management to inform them of a potential commercial vehicle hijacking or theft and potential hazardous situation. In addition, Emergency Management can request Fleet and Freight Management to disable a specific vehicle in their fleet.	CVO12	CV Driver Security Authentication	This marketservice pact detect when an unauthor based on stored driver in Fleet and Freight Mana vehicle. Alarms can al commercial vehicle hij Emergency Manageme vehicle in their fleet.
CVO13	Freight Assignment Tracking	This market package provides for the planning and tracking of three aspects of commercial vehicle shipments. For each shipment, the commercial vehicle, the freight equipment, and the commercial vehicle driver are monitored for consistency with the planned assignment. Any unauthorized changes are determined by the Fleet and Freight Management subsystem and then the appropriate people and subsystems are notified. Data collected by the On-board CV and Freight Safety & Security and the On-board Driver Authentication equipment packages used in other market packages are also used to monitor the three aspects of assignment for this market package. In addition to this market package, Fleet and Freight Managers may also monitor routes and itineraries and this capability is included in Fleet Administration.	CVO13	Freight Assignment Tracking	This marketservice pac commercial vehicle shi equipment, and the com planned assignment. A Management subsystem collected by the On-box Authentication equipm monitor the three aspect marketservice package, itineraries and this capa
EM01	Emergency Call-Taking and Dispatch	This market package provides basic public safety call-taking and dispatch services. It includes emergency vehicle equipment, equipment used to receive and route emergency calls, and wireless communications that enable safe and rapid deployment of appropriate resources to an emergency. Coordination between Emergency Management Subsystems supports emergency notification between agencies. Wide area wireless communications between the Emergency Management Subsystem and an Emergency Vehicle supports dispatch and provision of information to responding personnel.	EM01	Emergency Call-Taking and Dispatch	This marketservice pac It includes emergency v calls, and wireless com resources to an emerge supports emergency no between the Emergency dispatch and provision
EM02	Emergency Routing	This market package supports automated vehicle location and dynamic routing of emergency vehicles. Traffic information, road conditions, and suggested routing information are provided to enhance emergency vehicle routing. Special priority or other specific emergency traffic control strategies can be coordinated to improve the safety and time-efficiency of responding vehicle travel on the selected route(s). The Emergency Management Subsystem provides the routing for the emergency fleet based on real-time conditions and has the option of requesting a route from the Traffic Management subsystem. The Emergency Vehicle may also be equipped with dedicated short range communications for local signal preemption and the transmission of alerts to surrounding vehicles. The service provides for information exchange between care facilities and both the Emergency Management Subsystem and emergency vehicles.	EM02	Emergency Routing	This marketservice pace emergency vehicles. T information are provide specific emergency traf- time-efficiency of respondence Management Subsystem conditions and has the subsystem. The Emerge communications for loc vehicles. The service p the Emergency Manage
EM03	Mayday and Alarms Support	This market package allows the user (driver or non-driver) to initiate a request for emergency assistance and enables the Emergency Management Subsystem to locate the user, gather information about the incident, and determine the appropriate response. The request for assistance may be manually initiated or automated and linked to vehicle sensors. This market package also includes general surveillance capabilities that enable the Emergency Management Subsystem to remotely monitor public areas (e.g., rest stops, parking lots) to improve security in these areas. The Emergency Management Subsystem may be operated by the public sector or by a private sector telematics service provider.	EM03	MaydayPersonal Security and AlarmsMAYDAY Support	This marketservice pace emergency assistance a user, gather information request for assistance m sensors. This marketse enable the Emergency 2 stops, parking lots) to i Subsystem may be ope provider.
EM04	Roadway Service Patrols	This market package supports roadway service patrol vehicles that monitor roads that aid motorists, offering rapid response to minor incidents (flat tire, accidents, out of gas) to minimize disruption to the traffic stream. If problems are detected, the roadway service patrol vehicles will provide assistance to the motorist (e.g., push a vehicle to the shoulder or median). The market package monitors service patrol vehicle locations and supports vehicle dispatch to identified incident locations. Incident information collected by the service patrol is shared with traffic, maintenance and construction, and traveler information systems.	EM04	Roadway Service Patrols	This marketservice pact that aid motorists, offer gas) to minimize disrup service patrol vehicles shoulder or median). The and supports vehicle di collected by the service travelertraveller inform

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backage provides the ability for Fleet and Freight Management to thorized commercial vehicle driver attempts to drive their vehicle er identity information. If an unauthorized driver has been detected, anagement can activate commands to safely disable the commercial also be sent to emergency management to inform them of a potential hijacking or theft and potential hazardous situation. In addition, ment can request Fleet and Freight Management to disable a specific

backage provides for the planning and tracking of three aspects of shipments. For each shipment, the commercial vehicle, the freight commercial vehicle driver are monitored for consistency with the Any unauthorized changes are determined by the Fleet and Freight tem and then the appropriate people and subsystems are notified. Data board CV and Freight Safety & Security and the On-board Driver oment packages used in other <u>marketservice</u> packages are also used to beets of assignment for this <u>marketservice</u> package. In addition to this ge, Fleet and Freight Managers may also monitor routes and apability is included in Fleet Administration.

backage provides basic public safety call-taking and dispatch services. By vehicle equipment, equipment used to receive and route emergency communications that enable safe and rapid deployment of appropriate gency. Coordination between Emergency Management Subsystems notification between agencies. Wide area wireless communications ncy Management Subsystem and an Emergency Vehicle supports on of information to responding personnel.

backage supports automated vehicle location and dynamic routing of Traffic information, road conditions, and suggested routing ided to enhance emergency vehicle routing. Special priority or other raffic control strategies can be coordinated to improve the safety and sponding vehicle travel on the selected route(s). The Emergency tem provides the routing for the emergency fleet based on real-time ne option of requesting a route from the Traffic Management ergency Vehicle may also be equipped with dedicated short range local signal preemption and the transmission of alerts to surrounding e provides for information exchange between care facilities and both agement Subsystem and emergency vehicles.

backage allows the user (driver or non-driver) to initiate a request for e and enables the Emergency Management Subsystem to locate the tion about the incident, and determine the appropriate response. The e may be manually initiated or automated and linked to vehicle tservice package also includes general surveillance capabilities that by Management Subsystem to remotely monitor public areas (e.g., rest o improve security in these areas. The Emergency Management perated by the public sector or by a private sector telematics service

backage supports roadway service patrol vehicles that monitor roads fering rapid response to minor incidents (flat tire, accidents, out of ruption to the traffic stream. If problems are detected, the roadway es will provide assistance to the motorist (e.g., push a vehicle to the The <u>marketservice</u> package monitors service patrol vehicle locations dispatch to identified incident locations. Incident information ice patrol is shared with traffic, maintenance and construction, and rmation systems.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
EM05	Transportation Infrastructure Protection	This market package includes the monitoring of transportation infrastructure (e.g., bridges, tunnels and management centers) for potential threats using sensors and surveillance equipment and barrier and safeguard systems to control access, preclude an incident, and mitigate the impact of an incident if it occurs. Threats can result from acts of nature (e.g., hurricanes, earthquakes), terrorist attacks or other incidents causing damage to the infrastructure (e.g., stray barge hitting a bridge support). Infrastructure may be monitored with acoustic, environmental threat (such as nuclear, biological, chemical, and explosives), infrastructure condition and integrity, motion and object sensors and video and audio surveillance equipment. Data from such sensors and surveillance equipment may be processed in the field or sent to a center for processing. The data enables operators at the center to detect and verify threats. When a threat is detected, agencies are notified. Detected threats or advisories received from other agencies result in an increased level of system preparedness. In response to threats, barrier and safeguard systems may be activated by Traffic Management Subsystems to deter an incident, control access to an area or mitigate the impact of an incident. Barrier systems include gates, barriers and other automated and remotely controlled systems that manage entry to transportation infrastructure. Safeguard systems include blast shields, exhaust systems and other automated and remotely controlled systems that mitigate impact of an incident.	EM05	Transportation Infrastructure Protection	This marketservice pack bridges, tunnels and man surveillance equipment a incident, and mitigate the nature (e.g., hurricanes, the infrastructure (e.g., s monitored with acoustic explosives), infrastructu and audio surveillance e may be processed in the operators at the <u>centerce</u> agencies are notified. D an increased level of sys systems may be activate access to an area or miti barriers and other autom transportation infrastruc other automated and rem
EM06	Wide-Area Alert	This market package uses ITS driver and traveler information systems to alert the public in emergency situations such as child abductions, severe weather events, civil emergencies, and other situations that pose a threat to life and property. The alert includes information and instructions for transportation system operators and the traveling public, improving public safety and enlisting the public's help in some scenarios. The ITS technologies will supplement and support other emergency and homeland security alert systems such as the Emergency Alert System (EAS). When an emergency situation is reported and verified and the terms and conditions for system activation are satisfied, a designated agency broadcasts emergency information to traffic agencies, transit agencies, information service providers, toll operators, and others that operate ITS systems. The ITS systems, in turn, provide the alert information to transportation system operators and the traveling public using ITS technologies such as dynamic message signs, highway advisory radios, in- vehicle displays, transit displays, 511 traveler information systems, and traveler information web sites.	EM06	Wide-Area Alert	This marketservice pack alert the public in emerge civil emergencies, and o includes information and travelingtravelling publi scenarios. The ITS tech homeland security alert emergency situation is re activation are satisfied, a agencies, transit agencie operate ITS systems. The transportation system op such as dynamic message displays, 511 travelertra
EM07	Early Warning System	This market package monitors and detects potential, looming, and actual disasters including natural disasters (hurricanes, earthquakes, floods, winter storms, tsunamis, etc.) and technological and man-made disasters (hazardous materials incidents, nuclear power plant accidents, and acts of terrorism including nuclear, chemical, biological, and radiological weapons attacks). The market package monitors alerting and advisory systems, ITS sensors and surveillance systems, field reports, and emergency call-taking systems to identify emergencies and notifies all responding agencies of detected emergencies.	EM07	Early Warning System	This marketservice pack including natural disaster and technological and m plant accidents, and acts radiological weapons att systems, ITS sensors and systems to identify emer emergencies.

#### C\_V2 Description

ackage includes the monitoring of transportation infrastructure (e.g., management <u>centerscentres</u>) for potential threats using sensors and nt and barrier and safeguard systems to control access, preclude an e the impact of an incident if it occurs. Threats can result from acts of es, earthquakes), terrorist attacks or other incidents causing damage to ., stray barge hitting a bridge support). Infrastructure may be tic, environmental threat (such as nuclear, biological, chemical, and cture condition and integrity, motion and object sensors and video e equipment. Data from such sensors and surveillance equipment the field or sent to a <u>centercentre</u> for processing. The data enables recentre to detect and verify threats. When a threat is detected,

Detected threats or advisories received from other agencies result in system preparedness. In response to threats, barrier and safeguard ated by Traffic Management Subsystems to deter an incident, control hitigate the impact of an incident. Barrier systems include gates, omated and remotely controlled systems that manage entry to ucture. Safeguard systems include blast shields, exhaust systems and remotely controlled systems that mitigate impact of an incident.

ackage uses ITS driver and travelertraveller information systems to ergency situations such as child abductions, severe weather events, d other situations that pose a threat to life and property. The alert and instructions for transportation system operators and the blic, improving public safety and enlisting the public's help in some echnologies will supplement and support other emergency and ert systems such as the Emergency Alert System (EAS). When an s reported and verified and the terms and conditions for system d, a designated agency broadcasts emergency information to traffic cies, information service providers, toll operators, and others that The ITS systems, in turn, provide the alert information to operators and the travelingtravelling public using ITS technologies sage signs, highway advisory radios, in-vehicle displays, transit traveller information systems, and travelertraveller information web

ackage monitors and detects potential, looming, and actual disasters sters (hurricanes, earthquakes, floods, winter storms, tsunamis, etc.) I man-made disasters (hazardous materials incidents, nuclear power cts of terrorism including nuclear, chemical, biological, and attacks). The <u>marketservice</u> package monitors alerting and advisory and surveillance systems, field reports, and emergency call-taking nergencies and notifies all responding agencies of detected

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
US_V6 Acr EM08	US_V6 Name Disaster Response and Recovery	This market package enhances the ability of the surface transportation system to respond to and recover from disasters. It addresses the most severe incidents that require an extraordinary response from outside the local community. All types of disasters are addressed including natural disasters (hurricanes, earthquakes, floods, winter storms, tsunamis, etc.) and technological and man-made disasters (hazardous materials incidents, nuclear power plant accidents, and national security emergencies such as nuclear, chemical, biological, and radiological weapons attacks). The market package supports coordination of emergency response plans, including general plans developed before a disaster as well as specific tactical plans with short time horizon that are developed as part of a disaster response. The market package provides enhanced access to the scene for response personnel and resources, provides better information about the transportation system in the vicinity of the disaster, and maintains situation awareness regarding the disaster itself. In addition, this market package tracks and coordinates the transportation resources - the transportation professionals, equipment, and materials - that constitute a portion of the disaster response. In this market package, the Emergency Management subsystem represents the federal, regional, state, and local Emergency Operations Centers and the Incident Commands that are established to respond to the disaster. The interface between the Emergency Management subsystems provides situation awareness and resource coordination among transportation and other allied response agencies. In its role, traffic management implements special traffic control strategies and detours and restrictions to effectively manage traffic in and around the disaster. Maintenance and construction provides damage assessment of road network facilities and manages service restoration. Transit management provides a similar assessment of status for transit facilities and modifies transit operations to meet	C_V2 Acr EM08	C_V2 Name Disaster Response and Recovery	This marketservice packa, respond to and recover from an extraordinary response addressed including nature tsunamis, etc.) and technom nuclear power plant accide chemical, biological, and -The marketservice packa including general plans desshort time horizon that are package provides enhanced provides better information and maintains situation avemarketservice package transportation professional disaster response. The market package identice and the public safety, endoorganizations that form the Emergency Operations Cort of the disaster. The interference of the disaster. The interference of the disaster response of the disaster of
		This market package builds on the basic traffic incident response service that is provided by ATMS08, the Traffic Incident Management market package. This market package addresses the additional complexities and coordination requirements that are associated with the most severe incidents that warrant an extraordinary response from outside the local jurisdictions and require special measures such as the activation of one or more emergency operations centers. Many users of the National ITS Architecture will want to consider both ATMS08 and this market package since every region is concerned with both day-to-day management of traffic-related incidents and occasional management of disasters that require extraordinary response.			This market package build by ATMS08, the Traffic I addresses the additional c with the most severe incic local jurisdictions and req emergency operations cer consider both ATMS08 and day to day management c disasters that require extra
		Disaster Response and Recovery is also supported by EM10, the "Disaster Traveler Information" market package that keeps the public informed during a disaster response. See that market package for more information.			Disaster Response and Re Information" market pack See that market package f

# C\_V2 Description

ackage enhances the ability of the surface transportation system to er from disasters. It addresses the most severe incidents that require onse from outside the local community. All types of disasters are natural disasters (hurricanes, earthquakes, floods, winter storms, chnological and man-made disasters (hazardous materials incidents, ccidents, and national security emergencies such as nuclear, and radiological weapons attacks).

ackage supports coordination of emergency response plans, ins developed before a disaster as well as specific tactical plans with at are developed as part of a disaster response. The <u>marketservice</u> anced access to the scene for response personnel and resources, mation about the transportation system in the vicinity of the disaster, on awareness regarding the disaster itself. In addition, this ge tracks and coordinates the transportation resources - the bionals, equipment, and materials - that constitute a portion of the

ntifies the key points of integration between transportation systems nergency management, public health, and other allied the overall disaster response. In this market package, the t subsystem represents the federal, regional, state, and local Centers and the Incident Commands that are established to respond rface between the Emergency Management Subsystem and the provides situation awareness and resource coordination among allied response agencies. In its role, traffic management ic control strategies and detours and restrictions to effectively ound the disaster. Maintenance and construction provides damage ork facilities and manages service restoration. Transit similar assessment of status for transit facilities and modifies et the special demands of the disaster. As immediate public safety and disaster response transitions into recovery, this market package to normal transportation system operation, recovering resources, sportation facility repair, supporting data collection and revised ther recovery activities.

builds on the basic traffic incident response service that is provided ffic Incident Management market package. This market package hal complexities and coordination requirements that are associated incidents that warrant an extraordinary response from outside the I require special measures such as the activation of one or more scenters. Many users of the National ITS Architecture will want to 08 and this market package since every region is concerned with both ent of traffic related incidents and occasional management of extraordinary response.

d Recovery is also supported by EM10, the "Disaster Traveler package that keeps the public informed during a disaster response. age for more information.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
EM09	Evacuation and Reentry Management	This market package supports evacuation of the general public from a disaster area and manages subsequent reentry to the disaster area. The market package addresses evacuations for all types of disasters, including disasters like hurricanes that are anticipated and occur slowly, allowing a well-planned orderly evacuation, as well as disasters like terrorist acts that occur rapidly, without warning, and allow little or no time for preparation or public warning.	EM09	Evacuation and Reentry Management	This marketservice pack and manages subsequent evacuations for all types anticipated and occur slo disasters like terrorist ac for preparation or public
		This market package supports coordination of evacuation plans among the federal, state, and local transportation, emergency, and law enforcement agencies that may be involved in a large-scale evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, and along the evacuation route are informed of the plan. Information is shared with traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes. Reversible lanes, shoulder use, closures, special signal control strategies, and other special strategies may be implemented to maximize capacity along the evacuation routes. Transit resources play an important role in an evacuation, removing many people from an evacuated area while making efficient use of limited capacity. Additional shared transit resources may be added and managed in evacuation scenarios. Resource requirements are forecast based on the evacuation plans, and the necessary resources are located, shared between agencies if necessary, and deployed at the right locations at the appropriate times.			_This <u>marketservice</u> pact <u>stateprovincial</u> , and loca may be involved in a lar <u>provinces/</u> states and cou the evacuation route are management agencies to evacuation traffic, include evacuation routes. Reve strategies, and other spece evacuation routes. Trans- many people from an eva- Additional shared transit Resources are located, sha locations at the appropri-
		Evacuations are also supported by EM10, the "Disaster Traveler Information" market package, which keeps the public informed during evacuations. See that market package for more information.			Evacuations are also sup package, which keeps th for more information.

# C\_V2 Description

ackage supports evacuation of the general public from a disaster area ent reentry to the disaster area. The <u>marketservice</u> package addresses bes of disasters, including disasters like hurricanes that are slowly, allowing a well-planned orderly evacuation, as well as acts that occur rapidly, without warning, and allow little or no time blic warning.

package supports coordination of evacuation plans among the federal, bocal transportation, emergency, and law enforcement agencies that large-scale evacuation. All affected jurisdictions (e.g., counties) at the evacuation origin, evacuation destination, and along are informed of the plan. Information is shared with traffic s to implement special traffic control strategies and to control cluding traffic on local streets and arterials as well as the major eversible lanes, shoulder use, closures, special signal control special strategies may be implemented to maximize capacity along the ransit resources play an important role in an evacuation, removing evacuated area while making efficient use of limited capacity. nsit resources may be added and managed in evacuation scenarios. ts are forecast based on the evacuation plans, and the necessary shared between agencies if necessary, and deployed at the right priate times.

supported by EM10, the "Disaster Traveler Information" market s the public informed during evacuations. See that market package

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
EM10	Disaster Traveler Information	This market package uses ITS to provide disaster-related traveler information to the general public, including evacuation and reentry information and other information concerning the operation of the transportation system during a disaster. This market package collects information from multiple sources including traffic, transit, public safety, emergency management, shelter provider, and travel service provider organizations. The collected information is processed and the public is provided with real-time disaster and evacuation information using ITS traveler information systems.	EM10	Disaster Traveler <u>Traveller</u> Information	This marketservice pack information to the gener information concerning marketservice package of public safety, emergenc organizations. The collectime disaster and evacua
		A disaster will stress the surface transportation system since it may damage transportation facilities at the same time that it places unique demands on these facilities to support public evacuation and provide access for emergency responders. Similarly, a disaster may interrupt or degrade the operation of many traveler information systems at the same time that safety-critical information must be provided to the traveling public. This market package keeps the public informed in these scenarios, using all available means to provide information about the disaster area including damage to the transportation system, detours and closures in effect, special traffic restrictions and allowances, special transit schedules, and real-time information on traffic conditions and transit system performance in and around the disaster.			A disaster will stress the facilities at the same tim public evacuation and p interrupt or degrade the that safety critical infor- package keeps the publi information about the di and closures in effect, sp and real time informatic around the disaster.
		This market package also provides emergency information to assist the public with evacuations when necessary. Information on mandatory and voluntary evacuation zones, evacuation times, and instructions are provided. Available evacuation routes and destinations and current and anticipated travel conditions along those routes are provided so evacuees are prepared and know their destination and preferred evacuation route. Information on available transit services and traveler services (shelters, medical services, hotels, restaurants, gas stations, etc.) is also provided. In addition to general evacuation information, this market package provides specific evacuation trip planning information that is tailored for the evacuee based on origin, selected destination, and evacuee-specified evacuation requirements and route parameters.			This marketservice pack evacuations when neces evacuation times, and ir destinations and current so evacuees are prepare Information on available services, hotels, restaura evacuation information, planning information th and evacuee-specified e
		This market package augments the ATIS market packages that provide traveler information on a day-to-day basis for the surface transportation system. This market package provides focus on the special requirements for traveler information dissemination in disaster situations.			This market package au information on a day to package provides focus in disaster situations.
MC01	Maintenance and Construction Vehicle and Equipment Tracking	This market package will track the location of maintenance and construction vehicles and other equipment to ascertain the progress of their activities. These activities can include ensuring the correct roads are being plowed and work activity is being performed at the correct locations.	MC01	Maintenance and Construction Vehicle and Equipment Tracking	This market <u>service</u> pack vehicles and other equip can include ensuring the performed at the correct
MC02	Maintenance and Construction Vehicle Maintenance	This market package performs vehicle maintenance scheduling and manages both routine and corrective maintenance activities on vehicles and other maintenance and construction equipment. It includes on-board sensors capable of automatically performing diagnostics for maintenance and construction vehicles, and the systems that collect this diagnostic information and use it to schedule and manage vehicle maintenance.	MC02	Maintenance and Construction Vehicle Maintenance	This marketservice pack routine and corrective m construction equipment. diagnostics for maintena diagnostic information a
MC03	Road Weather Data Collection	This market package collects current road and weather conditions using data collected from environmental sensors deployed on and about the roadway (or guideway in the case of transit related rail systems). In addition to fixed sensor stations at the roadside, sensing of the roadway environment can also occur from sensor systems located on Maintenance and Construction Vehicles. The collected environmental data is used by the Weather Information Processing and Distribution Market Package to process the information and make decisions on operations. The collected environmental data may be aggregated, combined with data attributes and sent to meteorological systems for data qualification and further data consolidation. The market package may also request and receive qualified data sets from meteorological systems.	MC03	Road Weather Data Collection	This marketservice pack collected from environm the case of transit relater sensing of the roadway Maintenance and Constr Weather Information Pr process the information data may be aggregated for data qualification an request and receive qual

### C\_V2 Description

ackage uses ITS to provide disaster-related travelertraveller neral public, including evacuation and reentry information and other ng the operation of the transportation system during a disaster. This we collects information from multiple sources including traffic, transit, ncy management, shelter provider, and travel service provider oblected information is processed and the public is provided with realcuation information using ITS travelertraveller information systems.

the surface transportation system since it may damage transportation time that it places unique demands on these facilities to support I provide access for emergency responders. Similarly, a disaster may he operation of many traveler information systems at the same time formation must be provided to the traveling public. This market blic informed in these scenarios, using all available means to provide disaster area including damage to the transportation system, detours , special traffic restrictions and allowances, special transit schedules, ation on traffic conditions and transit system performance in and

ackage also provides emergency information to assist the public with eessary. Information on mandatory and voluntary evacuation zones, a instructions are provided. Available evacuation routes and ent and anticipated travel conditions along those routes are provided ured and know their destination and preferred evacuation route. ble transit services and travelertraveller services (shelters, medical urants, gas stations, etc.) is also provided. In addition to general on, this marketservice package provides specific evacuation trip that is tailored for the evacuee based on origin, selected destination, d evacuation requirements and route parameters.

augments the ATIS market packages that provide traveler to day basis for the surface transportation system. This market us on the special requirements for traveler information dissemination

ackage will track the location of maintenance and construction uipment to ascertain the progress of their activities. These activities the correct roads are being plowed and work activity is being ect locations.

ackage performs vehicle maintenance scheduling and manages both e maintenance activities on vehicles and other maintenance and nt. It includes on-board sensors capable of automatically performing enance and construction vehicles, and the systems that collect this n and use it to schedule and manage vehicle maintenance.

ackage collects current road and weather conditions using data nmental sensors deployed on and about the roadway (or guideway in ated rail systems). In addition to fixed sensor stations at the roadside, any environment can also occur from sensor systems located on astruction Vehicles. The collected environmental data is used by the Processing and Distribution Market Packageservice package to on and make decisions on operations. The collected environmental ed, combined with data attributes and sent to meteorological systems and further data consolidation. The marketservice package may also ualified data sets from meteorological systems.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
MC04	Weather Information Processing and Distribution	This market package processes and distributes the environmental information collected from the Road Weather Data Collection market package. This market package uses the environmental data to detect environmental hazards such as icy road conditions, high winds, dense fog, etc. so system operators and decision support systems can make decision on corrective actions to take. The continuing updates of road condition information and current temperatures can be used by system operators to more effectively deploy road maintenance resources, issue general traveler advisories, issue location specific warnings to drivers using the Traffic Information Dissemination market package, and aid operators in scheduling work activity.	MC04	Weather Information Processing and Distribution	This marketservice pact collected from the Road marketservice package as icy road conditions, I support systems can ma of road condition inform more effectively deploy advisories, issue location Dissemination marketse
MC05	Roadway Automated Treatment	This market package automatically treats a roadway section based on environmental or atmospheric conditions. Treatments include fog dispersion, anti-icing chemicals, etc. The market package includes the environmental sensors that detect adverse conditions, the automated treatment system itself, and driver information systems (e.g., dynamic message signs) that warn drivers when the treatment system is activated.	MC05	Roadway Automated Treatment	This marketservice pact environmental or atmost chemicals, etc. The market adverse conditions, the (e.g., dynamic message
MC06	Winter Maintenance	This market package supports winter road maintenance including snow plow operations, roadway treatments (e.g., salt spraying and other anti-icing material applications), and other snow and ice control activities. This package monitors environmental conditions and weather forecasts and uses the information to schedule winter maintenance activities, determine the appropriate snow and ice control response, and track and manage response operations.	MC06	Winter Maintenance	This marketservice pact operations, roadway tre applications), and other environmental conditio winter maintenance act and track and manage r
MC07	Roadway Maintenance and Construction	This market package supports numerous services for scheduled and unscheduled maintenance and construction on a roadway system or right-of-way. Maintenance services would include landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, CCTV, etc.). Environmental conditions information is also received from various weather sources to aid in scheduling maintenance and construction activities.	MC07	Roadway Maintenance and Construction	This marketservice pact maintenance and constr would include landscap routine maintenance act maintenance of both IT controllers, traffic detect Environmental condition in scheduling maintena
MC08	Work Zone Management	This market package manages work zones, controlling traffic in areas of the roadway where maintenance, construction, and utility work activities are underway. Traffic conditions are monitored using CCTV cameras and controlled using dynamic message signs (DMS), Highway Advisory Radio (HAR), gates and barriers. Work zone information is coordinated with other groups (e.g., ISP, traffic management, other maintenance and construction centers). Work zone speeds and delays are provided to the motorist prior to the work zones. This market package provides control of field equipment in all maintenance and construction areas, including fixed, portable, and truck-mounted devices supporting both stationary and mobile work zones.	MC08	Work Zone Management	This marketservice pac roadway where mainten Traffic conditions are n message signs (DMS), information is coordina maintenance and constr to the motorist prior to field equipment in all n truck-mounted devices
MC09	Work Zone Safety Monitoring	This market package includes systems that improve work crew safety and reduce collisions between the motoring public and maintenance and construction vehicles. This market package detects vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment or other potential safety hazards. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone. The market package supports both stationary and mobile work zones. The intrusion detection and alarm systems may be collocated or distributed, allowing systems that detect safety issues far upstream from a work zone (e.g., detection of over dimension vehicles before they enter the work zone).	MC09	Work Zone Safety Monitoring	This marketservice pact collisions between the n marketservice package and drivers of imminen are also monitored so th safe zone. The markets The intrusion detection systems that detect safe dimension vehicles before
MC10	Maintenance and Construction Activity Coordination	This market package supports the dissemination of maintenance and construction activity to centers that can utilize it as part of their operations, or to the Information Service Providers who can provide the information to travelers.	MC10	Maintenance and Construction Activity Coordination	This market <u>service</u> pact activity to <u>centerscentre</u> Service Providers who

#### C\_V2 Description

ackage processes and distributes the environmental information bad Weather Data Collection <u>marketservice</u> package. This ge uses the environmental data to detect environmental hazards such s, high winds, dense fog, etc. so system operators and decision make decision on corrective actions to take. The continuing updates ormation and current temperatures can be used by system operators to loy road maintenance resources, issue general <u>travelertraveller</u> tion specific warnings to drivers using the Traffic Information <u>tservice</u> package, and aid operators in scheduling work activity.

backage automatically treats a roadway section based on mospheric conditions. Treatments include fog dispersion, anti-icing marketservice package includes the environmental sensors that detect he automated treatment system itself, and driver information systems age signs) that warn drivers when the treatment system is activated.

ackage supports winter road maintenance including snow plow treatments (e.g., salt spraying and other anti-icing material her snow and ice control activities. This package monitors tions and weather forecasts and uses the information to schedule activities, determine the appropriate snow and ice control response, e response operations.

backage supports numerous services for scheduled and unscheduled instruction on a roadway system or right-of-way. Maintenance services cape maintenance, hazard removal (roadway debris, dead animals), activities (roadway cleaning, grass cutting), and repair and ITS and non-ITS equipment on the roadway (e.g., signs, traffic etectors, dynamic message signs, traffic signals, CCTV, etc.). itions information is also received from various weather sources to aid mance and construction activities.

ackage manages work zones, controlling traffic in areas of the tenance, construction, and utility work activities are underway. e monitored using CCTV cameras and controlled using dynamic b), Highway Advisory Radio (HAR), gates and barriers. Work zone inated with other groups (e.g., ISP, traffic management, other astruction <u>centerscentres</u>). Work zone speeds and delays are provided to the work zones. This <u>marketservice</u> package provides control of 1 maintenance and construction areas, including fixed, portable, and es supporting both stationary and mobile work zones.

backage includes systems that improve work crew safety and reduce the motoring public and maintenance and construction vehicles. This ge detects vehicle intrusions in work zones and warns crew workers then tencroachment or other potential safety hazards. Crew movements to that the crew can be warned of movement beyond the designated tetservice package supports both stationary and mobile work zones. on and alarm systems may be collocated or distributed, allowing afety issues far upstream from a work zone (e.g., detection of over before they enter the work zone).

ackage supports the dissemination of maintenance and construction <u>atres</u> that can utilize it as part of their operations, or to the Information to can provide the information to <u>travelers</u>.

US_V6 Acr	US_V6 Name	US_V6 Description	C_V2 Acr	C_V2 Name	
MC11	Environmental Probe Surveillance	This market package collects data from vehicles in the road network that can be used to directly measure or infer current environmental conditions. It leverages vehicle on-board systems that measure temperature, sense current weather conditions (rain and sun sensors) and also can monitor aspects of the vehicle operational status (e.g., use of headlights, wipers, and traction control system) to gather information about local environmental conditions. It includes the on-board vehicle systems that collect and report environmental probe data, the infrastructure equipment that collects the probe data and the centers that aggregate and share the collected probe data.	MC11	Environmental Probe Surveillance	This marketservice pack used to directly measure on-board systems that n sensors) and also can m headlights, wipers, and environmental condition environmental probe da centerscentres that aggr
MC12	Infrastructure Monitoring	This market package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts) using both fixed and vehicle-based infrastructure monitoring sensors. Fixed sensors monitor vibration, stress, temperature, continuity, and other parameters and mobile sensors and data logging devices collect information on current infrastructure condition. This market package also monitors vehicle probes for vertical acceleration data and other probe data that may be used to determine current pavement condition.	MC12	Infrastructure Monitoring	This marketservice pack associated hardware, an both fixed and vehicle-l vibration, stress, temper data logging devices co marketservice package other probe data that ma

# C\_V2 Description

ackage collects data from vehicles in the road network that can be ure or infer current environmental conditions. It leverages vehicle t measure temperature, sense current weather conditions (rain and sun monitor aspects of the vehicle operational status (e.g., use of nd traction control system) to gather information about local ions. It includes the on-board vehicle systems that collect and report data, the infrastructure equipment that collects the probe data and the gregate and share the collected probe data.

ackage monitors the condition of pavement, bridges, tunnels, and other transportation-related infrastructure (e.g., culverts) using e-based infrastructure monitoring sensors. Fixed sensors monitor perature, continuity, and other parameters and mobile sensors and collect information on current infrastructure condition. This ge also monitors vehicle probes for vertical acceleration data and may be used to determine current pavement condition.



# **C-2** PHYSICAL OBJECT TEXT COMPARISON

US_V6 Name	US_V6 Description	C_V2 Name	
Alerting and Advisory Systems	This terminator represents the federal, state, and local alerting and advisory systems that provide alerts, advisories, and other potential threat information that is relevant to surface transportation systems. This includes systems such as the Information Sharing and Analysis Centers (ISACS), the National Infrastructure Protection Center (NIPC), the Homeland Security Advisory System (HSAS), and other systems that provide intelligence about potential, imminent, or actual attacks on the transportation infrastructure or its supporting information systems.	Alerting and Advisory Systems	This terminator represents the federal provide alerts, advisories, and other p systems. This includes systems such National Infrastructure Protection Ce other systems that provide intelligence infrastructure or its supporting inform
	This terminator also represents the early warning and emergency alert systems operated by federal, state, county, and local agencies that provide advisories and alerts regarding all types of emergencies including natural hazards (floods, hurricanes, tornados, earthquakes), accidents (chemical spills, nuclear power plant emergencies) and other civil emergencies such as child abduction alerts that impact transportation system operation and/or require immediate public notification. Note that weather related watches and warnings, such as those issued by the National Hurricane Center, are provided by both this terminator and the Weather Service terminator since many alerting and advisory systems and the National Weather Service both provide severe weather and related hazards information.		This terminator also represents the eastateprovincial, county, and local age emergencies including natural hazard spills, nuclear power plant emergenci impact transportation system operation related watches and warnings, such a both this terminator and the Weather the National Weather Service both press
	The alerts and advisories that are provided by the systems represented by this terminator are based on analysis of potential threat information that is collected from a variety of sources, including information collected by ITS systems. The bidirectional interface with this terminator allows potential threat information that is collected by ITS systems to be provided to the alerting and advisory systems to improve their ability to identify threats and provide useful and timely information.		The alerts and advisories that are pro- analysis of potential threat informatic collected by ITS systems. The bidire information that is collected by ITS s improve their ability to identify threa
	The types of information provided by this terminator include general assessments and incident awareness information, advisories that identify potential threats or recommendations to increase preparedness levels, alerts regarding imminent or in-progress emergencies, and specific threat information such as visual imagery used for biometric image processing.		The types of information provided by information, advisories that identify p levels, alerts regarding imminent or i visual imagery used for biometric im Service and Meteorological Service I
Archived Data Administrator	This terminator represents the human operator who provides overall data management, administration, and monitoring duties for the ITS data archive. Unlike the manager of the operational databases, the archive data administrator's role is focused on the archive and covers areas such as establishing user authentication controls, monitoring data quality, and initiating data import requests.	Archived Data Administrator	This terminator represents the human and monitoring duties for the ITS dat archive data administrator's role is fo authentication controls, monitoring d
Archived Data Management Subsystem	The Archived Data Management Subsystem collects, archives, manages, and distributes data generated from ITS sources for use in transportation administration, policy evaluation, safety, planning, performance monitoring, program assessment, operations, and research applications. The data received is formatted and tagged with attributes that define the data source, conditions under which it was collected, data transformations, and other information (i.e. meta data) necessary to interpret the data. The subsystem can fuse ITS generated data with data from non-ITS sources and other archives to generate information products utilizing data from multiple functional areas, modes, and jurisdictions. The subsystem prepares data products that can serve as inputs to federal, state, and local data reporting systems. This subsystem may be implemented in many different ways. It may reside within an operational center and provide focused access to a particular agency's data archives. Alternatively, it may operate as a distinct center that collects data from multiple agencies and sources and provides a general data warehouse service for a region.	Archived Data Management Subsystem	The Archived Data Management Sub from ITS sources for use in transport performance monitoring, program ass is formatted and tagged with attribute collected, data transformations, and of The subsystem can fuse ITS generate generate information products utilizin The subsystem prepares data product local data reporting systems. This su reside within an operational <u>centercer</u> archives. Alternatively, it may opera and sources and provides a general data
Archived Data User Systems	This terminator represents the systems users employ to access archived data. The general interface provided from this terminator allows a broad range of users (e.g. planners, researchers, analysts, operators) and their systems (e.g. databases, models, analytical tools, user interface devices) to acquire data and analyses results from the archive.	Archived Data User Systems	This terminator represents the system provided from this terminator allows operators) and their systems (e.g. dat data and analyses results from the arc
Asset Management	This terminator represents the systems that support decision-making for maintenance, upgrade, and operation of physical transportation assets. Asset management integrates and includes the pavement management systems, bridge management systems, and other systems that inventory and manage the highway infrastructure and other transportation-related assets. The types of assets that are inventoried and managed will vary, and may include the maintenance and construction vehicles and equipment as well as "soft" assets such as human resources and software. Asset management systems monitor the condition, performance, and availability of the infrastructure and evaluate and prioritize alternative reconstruction, rehabilitation, and maintenance strategies.	Asset Management	This terminator represents the system operation of physical transportation a management systems, bridge manage highway infrastructure and other tran and managed will vary, and may incl well as "soft" assets such as human re condition, performance, and availabil reconstruction, rehabilitation, and ma

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ral, stateprovincial, and local alerting and advisory systems that r potential threat information that is relevant to surface transportation ch as the Information Sharing and Analysis Centers (ISACS), the Center (NIPC), the Homeland Security Advisory System (HSAS), and nce about potential, imminent, or actual attacks on the transportation rmation systems.

early warning and emergency alert systems operated by federal, gencies that provide advisories and alerts regarding all types of ards (floods, hurricanes, tornados, earthquakes), accidents (chemical ncies) and other civil emergencies such as child abduction alerts that ation and/or require immediate public notification. Note that weather that the state issued by the National Hurricane Center, are provided by er Service terminator since many alerting and advisory systems and provide severe weather and related hazards information.

ovided by the systems represented by this terminator are based on ion that is collected from a variety of sources, including information rectional interface with this terminator allows potential threat systems to be provided to the alerting and advisory systems to eats and provide useful and timely information.

by this terminator include general assessments and incident awareness potential threats or recommendations to increase preparedness in progress emergencies, and specific threat information such as mage processing. may also be provided the National Meteorological Provider terminators.

an operator who provides overall data management, administration, data archive. Unlike the manager of the operational databases, the focused on the archive and covers areas such as establishing user g data quality, and initiating data import requests.

ubsystem collects, archives, manages, and distributes data generated ortation administration, policy evaluation, safety, planning, assessment, operations, and research applications. The data received utes that define the data source, conditions under which it was d other information (i.e. meta data) necessary to interpret the data. ated data with data from non-ITS sources and other archives to zing data from multiple functional areas, modes, and jurisdictions. Incts that can serve as inputs to federal, stateFederal, Provincial, and subsystem may be implemented in many different ways. It may centre and provide focused access to a particular agency's data erate as a distinct centercentre that collects data from multiple agencies data warehouse service for a region.

ems users employ to access archived data. The general interface vs a broad range of users (e.g. planners, researchers, analysts, latabases, models, analytical tools, user interface devices) to acquire archive.

ems that support decision-making for maintenance, upgrade, and n assets. Asset management integrates and includes the pavement gement systems, and other systems that inventory and manage the ansportation-related assets. The types of assets that are inventoried acclude the maintenance and construction vehicles and equipment as a resources and software. Asset management systems monitor the bility of the infrastructure and evaluate and prioritize alternative maintenance strategies.

US_V6 Name	US_V6 Description	C_V2 Name	
Basic Commercial Vehicle	This terminator represents the motorized commercial vehicle platform that interfaces with and hosts ITS electronics. This terminator represents a vehicle that is used to transport goods which are operated by professional drivers, typically administered as part of a larger fleet, and regulated by a Fleet-Freight Manager. This classification applies to all such vehicles ranging from small panel vans used in local pick-up and delivery services to large, multi-axle tractor-trailer rigs operating on long haul routes.	Basic Commercial Vehicle	This terminator represents the motori electronics. This terminator represent professional drivers, typically admini Manager. This classification applies t pick-up and delivery services to large
Basic Maintenance and Construction Vehicle	This terminator represents a specialized form of the Basic Vehicle used by maintenance fleets. It supports the on-board equipment that control the non-ITS systems such as the actual operation of the snow plow, as well as any non-ITS sensor equipment that monitors the amount of materials (e.g., sand or salt) on-board. The monitoring of the Basic Maintenance and Construction Vehicle mechanical condition and mileage provides the major inputs for maintenance vehicle activity scheduling.	Basic Maintenance and Construction Vehicle	This terminator represents a specializ supports the on-board equipment that snow plow, as well as any non-ITS se salt) on-board. The monitoring of the condition and mileage provides the m
Basic Transit Vehicle	This terminator represents a specialized form of the Basic Vehicle that interfaces with and hosts ITS electronics. The Basic Transit Vehicle may be a bus, paratransit vehicle, light rail vehicle, or other vehicle designed to carry passengers. The Basic Transit Vehicle includes the non-ITS on-board systems (e.g., engine, brakes, drive train, odometer). The monitoring of the Basic Transit Vehicle mechanical condition and mileage provides the major inputs for vehicle maintenance activity scheduling. The Basic Transit Vehicle can also accept disable commands resulting from a remote vehicle disable command or from a failure of the vehicle operator to be properly authenticated.	Basic Transit Vehicle	This terminator represents a specializ electronics. The Basic Transit Vehic vehicle designed to carry passengers. (e.g., engine, brakes, drive train, odor condition and mileage provides the m Transit Vehicle can also accept disab from a failure of the vehicle operator
Basic Vehicle	This terminator represents the basic vehicle platform that interfaces with and hosts ITS electronics. The Basic Vehicle terminator provides an interface to drive train, driver convenience and entertainment systems, and other non-ITS electronics on-board the vehicle. This interface allows general vehicle systems (e.g., the stereo speaker system) to be shared by ITS and non-ITS systems. It also allows monitoring and control of the vehicle platform for advanced vehicle control system applications.	Basic Vehicle	This terminator represents the basic v Basic Vehicle terminator provides an systems, and other non-ITS electronic systems (e.g., the stereo speaker syste monitoring and control of the vehicle
Border Inspection Administration	This terminator represents back-office systems and databases run by U.S. domestic and foreign governmental agencies responsible for the regulation of trade, and the enforcement of customs and immigration laws. These agencies include U.S. Department of Homeland Security (DHS) and its counterparts in Canada and Mexico. DHS includes components like Customs and Border Protection (CBP), Immigration and Customs Enforcement (ICE), and Transportation Security Administration (TSA). Other agencies include secondary trade agencies (e.g., U.S. Food and Drug Administration, U.S. Department of Agriculture, other USDOT departments, etc.), and agencies from other trading nations. The systems they manage coordinate activities related to the border crossings. Data is collected and disseminated to other government systems and users. These systems support import/export cargo processing and enforcement operations at the border, including programs such as FAST, Automated Commercial Environment (ACE), Nexus (Canada), SENTRI (Mexico), and US-VISIT.	Border Inspection Administration	This terminator The Border Inspection databases run by U.S. domestic Canac regulation of trade, and the enforcem Department of Homeland Security (D components like Customs and Border and Transportation Security Administ (e.g., U.S. Food and Drug Administration) etc.), and agencies from other trading Customs and Border Protection (CBF other related agencies for immigration) coordinate activities related to the bord government systems and users. Thes operations at the border, including pro- Commercial Environment (ACE), Ne
Border Inspection Systems	This terminator represents data systems used at the border for the inspection of people or goods. Supports immigration, customs (trade), agricultural, and FDA inspections as applicable. Includes sensors and surveillance systems to identify and classify drivers and their cargo as it approaches a border crossing, the systems used to interface with the back-office administration systems and provide information on status of the crossing or events to other agency systems.	Border Inspection Systems	This terminator The Border Inspection the inspection of people or goodsS Canada inspections as applicable. Ind drivers and their cargo as it approach office administration systems and pro- systems.
Care Facility	This terminator represents a hospital or another emergency care facility. It may also represent a third party quality of care information provider.	Care Facility	This terminator represents a hospital facilities and any other location capal facility. It may also represent a third

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borized commercial vehicle platform that interfaces with and hosts ITS ents a vehicle that is used to transport goods which are operated by inistered as part of a larger fleet, and regulated by a Fleet-Freight es to all such vehicles ranging from small panel vans used in local rge, multi-axle tractor-trailer rigs operating on long haul routes.

lized form of the Basic Vehicle used by maintenance fleets. It hat control the non-ITS systems such as the actual operation of the sensor equipment that monitors the amount of materials (e.g., sand or the Basic Maintenance and Construction Vehicle mechanical e major inputs for maintenance vehicle activity scheduling.

lized form of the Basic Vehicle that interfaces with and hosts ITS nicle may be a bus, paratransit vehicle, light rail vehicle, or other rs. The Basic Transit Vehicle includes the non-ITS on-board systems dometer). The monitoring of the Basic Transit Vehicle mechanical e major inputs for vehicle maintenance activity scheduling. The Basic able commands resulting from a remote vehicle disable command or or to be properly authenticated.

c vehicle platform that interfaces with and hosts ITS electronics. The an interface to drive train, driver convenience and entertainment nics on-board the vehicle. This interface allows general vehicle (stem) to be shared by ITS and non-ITS systems. It also allows cle platform for advanced vehicle control system applications.

ion Administration Subsystem represents back-office systems and hadian and foreignU.S. governmental agencies responsible for the ement of customs and immigration laws. These agencies include U.S. (DHS) and its counterparts in Canada and Mexico. DHS includes der Protection (CBP), Immigration and Customs Enforcement (ICE), histration (TSA). Other agencies include secondary trade agencies stration, U.S. Department of Agriculture, other USDOT departments, ng nations. the Canadian Border Services Agency (CBSA) and U.S. BP) and the U.S. Department of Homeland Security (DHS), as well as thon, agriculture, security and enforcement. The systems they manage border crossings. Data is collected and disseminated to other uese systems support import/export cargo processing and enforcement programs such as Free and Secure Trade (FAST<sub>7</sub>), Automated Nexus (Canada), SENTRI (Mexico), and US-VISIT.

ion Systems Subsystem represents data systems used at the border for -Supports immigration, customs (trade), agricultural, and FDAHealth Includes sensors and surveillance systems to identify and classify ches a border crossing, the systems used to interface with the backprovide information on status of the crossing or events to other agency

al or another<u>hospitals</u>, trauma centres, field emergency treatment pable of receiving injured persons and providing emergency care rd party quality of care information provider.

US_V6 Name	US_V6 Description	C_V2 Name	
Commercial Vehicle Administration	The Commercial Vehicle Administration Subsystem will operate at one or more fixed locations within a region. This subsystem performs administrative functions supporting credentials, tax, and safety regulations. It issues credentials, collects fees and taxes, and supports enforcement of credential requirements. This subsystem communicates with the Fleet Management Subsystems associated with the motor carriers to process credentials applications and collect fuel taxes, weight/distance taxes, and other taxes and fees associated with commercial vehicle operations. The subsystem also receives applications for, and issues special Oversize/Overweight and HAZMAT permits in coordination with other cognizant authorities. The subsystem coordinates with other Commercial Vehicle Administration Subsystems (in other states/regions) to support nationwide access to credentials and safety information for administration and enforcement functions. This subsystem supports communications with Commercial Vehicle Check Subsystems operating at the roadside to enable credential checking and safety information collection. The collected safety information is processed, stored, and made available to qualified stakeholders to identify carriers and drivers that operate unsafely.	Commercial Vehicle Administration	The Commercial Vehicle Administrative region. This subsystem performs administrative regulations, for both interprovince and it issues credentials, collects fees and subsystem communicates with the Fluprocess credentials applications and cassociated with commercial vehicle compercial Oversize/Overweight and HA The subsystem coordinates with othe statesprovinces/regions/countries) to administration and enforcement functive Vehicle Check Subsystems operating information collection. The collected qualified stakeholders to identify carried states and subsystems and the states of the states of the subsystem coordinates with other states of the subsystem coordinates with other states of the subsystems operating information collection. The collected states of the state
Commercial Vehicle Check	The Commercial Vehicle Check Subsystem supports automated vehicle identification at mainline speeds for credential checking, roadside safety inspections, and weigh-in-motion using two-way data exchange. These capabilities include providing warnings to the commercial vehicle drivers, their fleet managers, and proper authorities of any safety problems that have been identified, accessing and examining historical safety data, and automatically deciding whether to allow the vehicle to pass or require it to stop with operator manual override. The Commercial Vehicle Check Subsystem also provides supplemental inspection services to current capabilities by supporting expedited brake inspections, the use of operator hand-held devices, mobile screening sites, on-board safety database access, and the enrollment of vehicles and carriers in the electronic clearance program.	Commercial Vehicle Check	The Commercial Vehicle Check Sub- for credential checking, <u>international</u> using two-way data exchange. These drivers, their fleet managers, and pro- accessing and examining historical sa to pass or require it to stop with opera also provides supplemental inspection inspections, the use of operator hand- access, and the enrollment of vehicles
Commercial Vehicle Driver	This terminator represents the human entity that operates vehicles transporting goods including both long haul trucks and local pick up and delivery vans. This terminator is complementary to the Driver terminator in that it represents those interactions which are unique to Commercial Vehicle Operations. Data flowing from the Commercial Vehicle Driver terminator will include those system inputs specific to Commercial Vehicle Operations, such as information back to the Fleet-Freight Manager. Data flowing to the Commercial Vehicle Driver may include system outputs such as commands to pull into a roadside safety inspection facility. Showing the Driver as a terminator includes the user interface devices within the ITS architecture boundary. The Commercial Vehicle Driver will be expected to interact with the ITS interface devices designed to provide support for their usage.	Commercial Vehicle Driver	This terminator represents the human haul trucks and local pick up and deli terminator in that it represents those i Data flowing from the Commercial V to Commercial Vehicle Operations, s to the Commercial Vehicle Driver ma safety inspection facility. Showing th the ITS architecture boundary. The C interface devices designed to provide
Commercial Vehicle Subsystem	This subsystem resides in a commercial vehicle and provides the sensory, processing, storage, and communications functions necessary to support safe and efficient commercial vehicle operations. The Commercial Vehicle Subsystem provides two-way communications between the commercial vehicle drivers, their fleet managers, attached freight equipment, and roadside officials, and provides HAZMAT response teams with timely and accurate cargo contents information after a vehicle incident. This subsystem provides the capability to collect and process vehicle, cargo information from the attached freight equipment, and driver safety data and status and alert the driver whenever there is a potential safety or security problem. Basic identification, security and safety status data are supplied to inspection facilities at mainline speeds. In addition, the subsystem will automatically collect and record mileage, fuel usage, and border crossings.	Commercial Vehicle Subsystem	This subsystem resides in a commerc communications functions necessary Commercial Vehicle Subsystem prov drivers, their fleet managers, attached response teams with timely and accur subsystem provides the capability to a freight equipment, and driver safety of safety or security problem. Basic ider facilities at mainline speeds. In additi fuel usage, and border crossings.
CVO Information Requestor	This terminator represents any organization or individual requesting information from the CVO Information Exchange network. It typically represents insurance companies requesting safety information on carriers, a driver requesting his/her own driving record, etc.	CVO Information Requestor	This terminator represents any organi Information Exchange network. It typ information on carriers, a driver reque
CVO Inspector	This terminator represents the human entities who perform regulatory inspection of Commercial Vehicles in the field. CVO Inspectors support the roadside inspection, weighing, and checking of credentials either through automated preclearance or manual methods. The CVO Inspector is an inspection and enforcement arm of the regulatory agencies with frequent direct interface with the Commercial Vehicles and their Drivers.	CVO Inspector	This terminator represents the human Vehicles in the field. CVO Inspector credentials either through automated inspection and enforcement arm of the Commercial Vehicles and their Drive
DMV	This terminator represents a specific (state) public organization responsible for registering vehicles, e.g., the Department of Motor Vehicles.	DMVDepartment of Motor Vehicles	This terminator represents a specific vehicles, e.g., the DepartmentMinistr

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tration Subsystem will operate at one or more fixed locations within a administrative functions supporting credentials, tax, and safety and international movement of commercial vehicles and their cargo. nd taxes, and supports enforcement of credential requirements. This Fleet Management Subsystems associated with the motor carriers to d collect fuel taxes, weight/distance taxes, and other taxes and fees e operations. The subsystem also receives applications for, and issues IAZMAT permits in coordination with other cognizant authorities. her Commercial Vehicle Administration Subsystems (in other to support nationwide access to credentials and safety information for nctions. This subsystem supports communications with Commercial ng at the roadside to enable credential checking and safety ted safety information is processed, stored, and made available to arriers and drivers that operate unsafely.

absystem supports automated vehicle identification at mainline speeds al border clearance, roadside safety inspections, and weigh-in-motion ese capabilities include providing warnings to the commercial vehicle roper authorities of any safety problems that have been identified, safety data, and automatically deciding whether to allow the vehicle erator manual override. The Commercial Vehicle Check Subsystem ion services to current capabilities by supporting expedited brake ad-held devices, mobile screening sites, on-board safety database eles and carriers in the electronic clearance program.

an entity that operates vehicles transporting goods including both long elivery vans. This terminator is complementary to the Driver e interactions which are unique to Commercial Vehicle Operations. I Vehicle Driver terminator will include those system inputs specific , such as information back to the Fleet-Freight Manager. Data flowing may include system outputs such as commands to pull into a roadside the Driver as a terminator includes the user interface devices within c Commercial Vehicle Driver will be expected to interact with the ITS de support for their usage.

ercial vehicle and provides the sensory, processing, storage, and ry to support safe and efficient commercial vehicle operations. The ovides two-way communications between the commercial vehicle ned freight equipment, and roadside officials, and provides HAZMAT curate cargo contents information after a vehicle incident. This to collect and process vehicle, cargo information from the attached y data and status and alert the driver whenever there is a potential dentification, security and safety status data are supplied to inspection lition, the subsystem will automatically collect and record mileage,

anization or individual requesting <u>CVO</u> information from the <u>CVO</u> typically represents insurance companies requesting safety questing his/her own driving record, etc.

an entities who perform regulatory inspection of Commercial tors support the roadside inspection, weighing, and checking of ed preclearance or manual methods. The CVO Inspector is an f the regulatory agencies with frequent direct interface with the ivers.

ic (stateprovincial) public organization responsible for registering stry of Motor Vehicles Transportation.

US_V6 Name	US_V6 Description	C_V2 Name	
Driver	This terminator represents the human entity that operates a licensed vehicle on the roadway. Included are operators of private, Transit, Commercial, and Emergency vehicles where the data being sent or received is not particular to the type of vehicle. Thus this terminator originates driver requests and receives driver information that reflects the interactions which might be useful to all drivers, regardless of vehicle classification. The Driver terminator is the operator of the Basic Vehicle terminator. Information and interactions which are unique to drivers of a specific vehicle type (e.g., fleet interactions with transit, commercial, or emergency vehicle drivers) are covered separately.	Driver	This terminator represents the humar are operators of private, Transit, Con data being sent or received is not par requests and receives driver informat drivers, regardless of vehicle classific terminator. Information and interacti interactions with transit, commercial <u>This general description of the perso</u> "operators".
Driver Identification Card	This terminator represents the portable entity (e.g., a smart card) that enables the transfer of electronic identification information about a driver. This may include license information, biometrics, and other data to identify the driver. Typically the card will be issued by a government agency (e.g. a state driver licensing agency).	Driver Identification Card	This terminator represents the portability identification information about a drived data to identify the driver. Typically licensing agency).
Emergency Management	The Emergency Management Subsystem represents public safety, emergency management, and other allied agency systems that support incident management, disaster response and evacuation, security and public safety communications centers including public safety call taker and dispatch centers operated by police (including transit police), fire, and emergency medical services. It includes the functions associated with Emergency Operations Centers that are activated at local, regional, state, and federal levels for emergencies and the portable and transportable systems that support Incident Command System operations at an incident. This subsystem also represents other allied systems including centers associated with towing and recovery, freeway service patrols, HAZMAT response teams, and mayday service providers.	Emergency Management	<ul> <li>The Emergency Management Subsyspublic safety, emergency management, disasted detachments, HAZMAT response and public safety oriented ITS application with fixed and mobile public safety or dispatch centers operated by police (includes the functions associated with regional, state, and federal levels for Incident Command System operation systems including centers associated response teams, and mayday service.</li> <li>The subsystem manages sensor and set the roadway infrastructure (including and the public transportation system stations, facilities such as transit yard guideways). The subsystem provides areas not a part of the public transport for a Emergency Management Subsystem agencies. The subsystem creates, stor plans to facilitate this coordinated redamage assessments, response status keep all allied agencies appraised of Management Subsystems. Interface transit vehicles to facilitate response transit vehicles to facilitate response transit vehicles to facilitate response transit ward for the public notification is ward.</li> <li>The subsystem tracks and manages emotion information from the other corroutes that will provide the most time provides real-time input for emergen coordination in tailoring traffic contro of special traffic restrictions and closs that adapt the transportation system tracks and context on the system tracks and context on the system tracks and context of the system tracks and manages emotion information from the other corroutes that will provide the most time provides real-time input for emergen coordination in tailoring traffic contro of special traffic restrictions and closs that adapt the transportation system tracks and manages emergency that adapt the transportation system tracks and context of the system tracks and context of the system tracks and context of the system tracks and manages emotion in tailoring traffic contro of special traffic restrictions and closs that adapt the transportation system tracks and context of the transportation the system track</li></ul>

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an entity that operates a <u>licensed</u>-vehicle on the roadway. Included ommercial, <u>andMaintenance</u>, Emergency <u>and other</u> vehicles where the articular to the type of vehicle. Thus this terminator originates driver nation that reflects the interactions which might be useful to all fication. The Driver terminator is the operator of the Basic Vehicle ctions which are unique to drivers of a specific vehicle type (e.g., fleet al, <u>maintenance</u>, or emergency vehicle drivers) are covered separately. son who operates a vehicle could apply even to motorcycle or bicycle

able entity (e.g., a smart card) that enables the transfer of electronic driver. This may include license information, biometrics, and other by the card will be issued by a government agency (e.g. a state driver

system represents operates in various emergency centres supporting tent, including police, fire and other allied agency systems that steremergency medical service stations, search and rescue special and evacuation, security monitoring teams, and other security and ions.service patrols. The subsystem includes the functions associated y communications centers including public safety call taker and e (including transit police), fire, and emergency medical services. It with Emergency Operations Centers that are activated at local, for emergencies and the portable and transportable systems that support ons at an incident. This subsystem also represents other allied ed with towing and recovery, freeway service patrols, HAZMAT we providers.

I surveillance equipment used to enhance transportation security of ng bridges, tunnels, interchanges, and other key roadway segments) n (including transit vehicles, public areas such as transit stops and ards, and transit infrastructure such as rail, bridges, tunnels, or bus es security/surveillance services to improve traveler security in public portation system.

<u>I federal levels.</u> This subsystem monitors alerts, advisories, and other r and responds to identified emergencies. It interfaces with other ms to support coordinated emergency response involving multiple tores, coordinates, and utilizes emergency response and evacuation response. As the response progresses, situation information including us, evacuation information, and resource information are shared to of the responsecoordinated response with other Emergency ce with the Transit Management Subsystem allows coordinated use of se to major emergencies and to support evacuation efforts. The m also provides a focal point for coordination of the emergency and vided to the traveling public, including wide area alerts when arranted.

emergency vehicle fleets using real time road network status and center subsystems to aide in selecting the emergency vehicle(s) and mely response. Interface with the Traffic Management Subsystem ency vehicle response selection and routing and allows for strategic atrol to support emergency vehicle ingress and egress, implementation osures, evacuation traffic control plans, and other special strategies a to better meet the unique demands of an emergency.

US_V6 Name	US_V6 Description	C_V2 Name	
Emergency Personnel	This terminator represents personnel that are responsible for police, fire, emergency medical services, towing, service patrols, and other special response team (e.g., hazardous material clean-up) activities at an incident site. These personnel are associated with the Emergency Vehicle Subsystem during dispatch to the incident site, but often work independently of the Emergency Vehicle Subsystem while providing their incident response services. Emergency personnel may include an Officer in Charge (OIC) and a crew. When managing an incident following standard Incident Command System practices, the on-site emergency personnel form an organizational structure under the auspices of an Incident Commander.	Emergency Personnel	This terminator represents personnel towing, service patrols, and other spe an incident site. These personnel are to the incident site, but often work in their incident response services. Em- crew. When managing an incident for emergency personnel form an organi
Emergency System Operator	This terminator represents the human entity that monitors all ITS emergency requests, (including those from the E911 Operator) and sets up pre-defined responses to be executed by an emergency management system. The operator may also override predefined responses where it is observed that they are not achieving the desired result. This terminator includes dispatchers who manage an emergency fleet (police, fire, ambulance, HAZMAT, etc.) or higher order emergency managers who provide response coordination during emergencies.	Emergency System Operator	This terminator represents the humar from the E911 Operator) and sets up system. The operator may also over achieving the desired result. This ter (police, fire, ambulance, HAZMAT, coordination during emergencies.
Emergency Telecommunications System	This terminator represents the telecommunications systems that connect a caller with a Public Safety Answering Point (PSAP). These systems transparently support priority wireline and wireless caller access to the PSAP through 9-1-1 and other access mechanisms like 7 digit local access numbers, and motorist aid call boxes. The calls are routed to the appropriate PSAP, based on caller location when this information is available. When available, the caller's location and call-back number are also provided to the PSAP by this interface. This facility may also be used to notify the public - residents and businesses - of emergency situations using a Reverse 911 capability.	Emergency Telecommunications System	This terminator represents the telecon Answering Point (PSAP). These sys access to the PSAP through 9-1-1 an motorist aid call boxes. The calls ar information is available. When avail the PSAP by this interface. This faci - of emergency situations using a Re-
Emergency Vehicle Subsystem	This subsystem resides in an emergency vehicle and provides the sensory, processing, storage, and communications functions necessary to support safe and efficient incident response. The subsystem represents a range of vehicles including those operated by police, fire, and emergency medical services. In addition, this subsystem represents other incident response vehicles including towing and recovery vehicles and freeway service patrols. The Emergency Vehicle Subsystem includes two-way communications to support coordinated response to emergencies in accordance with an associated Emergency Management Subsystem. Emergency vehicles are equipped with automated vehicle location capability for monitoring by vehicle tracking and fleet management functions in the Emergency Management Subsystem. Using these capabilities, the appropriate emergency vehicle to respond to each emergency is determined. Route guidance capabilities within the vehicle enable safe and efficient routing to the emergency. In addition, the emergency vehicle may be equipped to support signal preemption through communications with the Roadway Subsystem.	Emergency Vehicle Subsystem	This subsystem resides in an emerger communications functions necessary represents a range of vehicles includi In addition, this subsystem represents vehicles and freeway service patrols. communications to support coordinat Emergency Management Subsystem, capability for monitoring by vehicle Management Subsystem. Using thes emergency is determined. Route gui routing to the emergency. In addition preemption through communications
Emissions Management	This subsystem operates at a fixed location and may co-reside with the Traffic Management Subsystem or may operate in its own distinct location depending on regional preferences and priorities. This subsystem provides the capabilities for air quality managers to monitor and manage air quality. These capabilities include collecting emissions data from distributed emissions sensors within the roadway subsystem. These sensors monitor general air quality within each sector of the area and also monitor the emissions of individual vehicles on the roadway. The sector emissions measures are collected, processed, and used to identify sectors exceeding safe pollution levels. This information is provided to traffic management to implement strategies intended to reduce emissions in and around the problem areas. Emissions data associated with individual vehicles, supplied by the Roadway Subsystem, is also processed and monitored to identify vehicles that exceed standards. This subsystem provides any functions necessary to inform the violators and otherwise ensure timely compliance with emissions standards.	Emissions Management	This subsystem operates at a fixed lo or may operate in its own distinct loc subsystem provides the capabilities f capabilities include collecting emissi subsystem. These sensors monitor g emissions of individual vehicles on t processed, and used to identify secto traffic management to implement stra areas. Emissions data associated wit processed and monitored to identify functions necessary to inform the vic standards.
Emissions Management Operator	This terminator represents personnel that monitor, operate, and manage emissions monitoring and management systems. These personnel monitor system operation and monitor collected emissions and air quality information and direct system operation through data and command inputs.	Emissions Management Operator	This terminator represents personnel management systems. These person air quality information and direct sys
Enforcement Agency	This terminator represents the systems that receive reports of violations detected by various ITS facilities including individual vehicle emissions, toll violations, CVO violations, excessive speed in work zones, etc.	Enforcement Agency	This terminator represents the system including individual vehicle emission etc.speed or red light running violation
Environment	This terminator represents the natural surroundings in which the ITS operates. These surroundings include conditions such as snow, rain, fog, pollution, dust, temperature, humidity, solar radiation, and man made electromagnetic (RF) effects. Environmental conditions must be monitored by the ITS Architecture so that Travelers may be informed and control strategies can reflect adverse environmental conditions in a timely fashion.	Environment	This terminator represents the natura include conditions such as snow, rain man made electromagnetic (RF) effe <u>mudslides)</u> . Environmental condition <u>TravelersTravellers</u> may be informed in a timely fashion.

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el that are responsible for police, fire, emergency medical services, pecial response team (e.g., hazardous material clean-up) activities at re associated with the Emergency Vehicle Subsystem during dispatch independently of the Emergency Vehicle Subsystem while providing mergency personnel may include an Officer in Charge (OIC) and a following standard Incident Command System practices, the on-site nizational structure under the auspices of an Incident Commander.

an entity that monitors all ITS emergency requests, (including those up pre-defined responses to be executed by an emergency management erride predefined responses where it is observed that they are not terminator includes dispatchers who manage an emergency fleet  $\Gamma$ , etc.) or higher order emergency managers who provide response

communications systems that connect a caller with a Public Safety ystems transparently support priority wireline and wireless caller and other access mechanisms like 7 digit local access numbers, and are routed to the appropriate PSAP, based on caller location when this ailable, the caller's location and call-back number are also provided to acility may also be used to notify the public - residents and businesses Reverse 911 capability.

gency vehicle and provides the sensory, processing, storage, and ry to support safe and efficient incident response. The subsystem uding those operated by police, fire, and emergency medical services. Ints other incident response vehicles including towing and recovery ls. The Emergency Vehicle Subsystem includes two-way nated response to emergencies in accordance with an associated m. Emergency vehicles are equipped with automated vehicle location e tracking and fleet management functions in the Emergency ese capabilities, the appropriate emergency vehicle to respond to each uidance capabilities within the vehicle enable safe and efficient ion, the emergency vehicle may be equipped to support signal ns with the Roadway Subsystem.

location and may co-reside with the Traffic Management Subsystem ocation depending on regional preferences and priorities. This is for air quality managers to monitor and manage air quality. These assions data from distributed emissions sensors within the roadway general air quality within each sector of the area and also monitor the in the roadway. The sector emissions measures are collected, tors exceeding safe pollution levels. This information is provided to trategies intended to reduce emissions in and around the problem with individual vehicles, supplied by the Roadway Subsystem, is also by vehicles that exceed standards. This subsystem provides any violators and otherwise ensure timely compliance with emissions

el that monitor, operate, and manage emissions monitoring and onnel monitor system operation and monitor collected emissions and ystem operation through data and command inputs.

ems that receive reports of violations detected by various ITS facilities ions, toll violations, CVO violations, excessive speed in work zones, tion, etc.

ral surroundings in which the ITS operates. These surroundings ain, fog, pollution, dust, temperature, humidity, solar radiation, and fects-<u>and environmental hazards (flooding, landslides, and</u> ions must be monitored by the ITS Architecture so that ed and control strategies can reflect adverse environmental conditions

US_V6 Name	US_V6 Description	C_V2 Name	
Equipment Repair Facility	This terminator represents the facilities that configure, service, and repair vehicles and other support equipment used in roadway infrastructure construction and maintenance. The equipment repair facility receives preventative and corrective maintenance schedules and vehicle configuration requirements, performs the necessary configuration and maintenance work on the vehicles and equipment, and provides vehicle and equipment status back to the architecture.	Equipment Repair Facility	This terminator represents the facilitie equipment used in roadway infrastruct receives preventative and corrective reperforms the necessary configuration provides vehicle and equipment statu
Event Promoters	This terminator represents Special Event Sponsors that have knowledge of events that may impact travel on roadways or other modal means. Examples of special event sponsors include sporting events, conventions, motorcades/parades, and public/political events. These promoters interface to the ITS to provide event information such as date, time, estimated duration, location, and any other information pertinent to traffic movement in the surrounding area.	Event Promoters	This terminator represents Special Ev on roadways or other modal means. I conventions, motorcades/parades, and provide event information such as day pertinent to traffic movement in the s
Financial Institution	This terminator represents the organization that handles all electronic fund transfer requests to enable the transfer of funds from the user of the service to the provider of the service. The functions and activities of financial clearinghouses are subsumed by this entity.	Financial Institution	This terminator represents the organize transfer of funds from the user of the of financial clearinghouses are subsur-
Fleet and Freight Management	The Fleet and Freight Management Subsystem provides the capability for commercial drivers and fleet or freight managers to receive real-time routing information and access databases containing vehicle and/or freight equipment locations as well as carrier, vehicle, freight equipment and driver information. In addition, the capability to purchase credentials electronically shall also be provided, with automated and efficient connections to financial institutions and regulatory agencies, along with post-trip automated mileage and fuel usage reporting. The Fleet and Freight Management Subsystem also provides the capability for fleet managers to monitor the safety and security of their commercial vehicle drivers and fleet. The subsystem also supports application for hazmat credentials and makes information about hazmat cargo available to agencies as required. Within this subsystem lies all the functionality associated with subsystems and components necessary to enroll and participate in international goods movement programs aimed at enhancing trade and transportation safety and security.	Fleet and Freight Management	The Fleet and Freight Management S or freight managers to receive real-tir and/or, freight equipment and cargo I driver information. In addition, the ca provided, with automated and efficien along with post-trip automated mileas Subsystem also provides the capabilit of their commercial vehicle drivers, <u>f</u> hazmat <u>HAZMAT</u> credentials and ma agencies as required. Within this subs components necessary to enroll and p enhancing trade and transportation sa the capability to manage intermodal s containers. The subsystem also supp container pickup, delivery, and status Logistics Management Provider, who containers. Other intermodal Capabili with other Intermodal Fleet Managen
Fleet-Freight Manager	This terminator represents the human entities that are responsible for the dispatching and management of Commercial Vehicle fleets (e.g. traditional Fleet Managers) and Freight Equipment assets. It may be many people in a large tracking organization but it can also be a single person (owner driver) in the case of single vehicle fleets. The Fleet-Freight Manager provides instructions and coordination for Commercial Vehicles and Freight Equipment, including electronic clearance and tax filing, and receives the status of the vehicles and freight equipment in the fleet that they manage. The Fleet-Freight Manager is expected to interface with ITS on a regular basis to enhance productivity. Many interfaces with the system are also provided through normal user interfaces.	Fleet-Freight Manager	This terminator represents the human Commercial Vehicle fleets (e.g. tradi many people in a large tracking organ of single vehicle fleets. The Fleet-Free Commercial Vehicles and Freight Eq the status of the vehicles and freight of is expected to interface with ITS on a system are also provided through nor

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ities that configure, service, and repair vehicles and other support ructure construction and maintenance. The equipment repair facility e maintenance schedules and vehicle configuration requirements, on and maintenance work on the vehicles and equipment, and atus back to the architecture.

Event Sponsors that have knowledge of events that may impact travel a. Examples of special event sponsors include sporting events, and public/political events. These promoters interface to the ITS to

date, time, estimated duration, location, and any other information e surrounding area.

nization that handles all electronic fund transfer requests to enable the he service to the provider of the service. The functions and activities sumed by this entity.

t Subsystem provides the capability for commercial drivers and fleet time routing information and access databases containing vehicle o locations as well as carrier, vehicle, freight equipment, cargo and capability to purchase credentials electronically shall also be ient connections to financial institutions and regulatory agencies, eage and fuel usage reporting. The Fleet and Freight Management ility for fleet and freight managers to monitor the safety and security <u>, fleet</u> and <u>fleetcargo</u>. The subsystem also supports application for makes information about hazmatHAZMAT cargo available to ubsystem lies all the functionality associated with subsystems and participate in international goods movement programs aimed at safety and security. The subsystem supports regulatory functions and shipment of cargo, including the dispatch and tracking of intermodal pports an interface with the Intermodal Terminal Subsystem for tus. In addition, the subsystem can interface with a Distribution and ho can provide an outsourced management and tracking of intermodal ilities include interfacing with the Freight Consolidation Station and ement Subsystems for co-ordination of shipping between modes.

an entities that are responsible for the dispatching and management of additional Fleet Managers) and Freight Equipment assets. It may be ganization but it can also be a single person (owner driver) in the case Freight Manager provides instructions and coordination for Equipment, including electronic clearance and tax filing, and receives at equipment in the fleet that they manage. The Fleet-Freight Manager n a regular basis to enhance productivity. Many interfaces with the normal user interfaces.

US_V6 Name	US_V6 Description	C_V2 Name	
Freight Equipment	This terminator represents a freight container, intermodal chassis or trailer and provides information to support safe, secure and efficient freight operations. This terminator provides equipment safety data and status and can alert the appropriate systems of an incident, breach, or tamper event. This terminator provides accurate position information to support in-transit visibility of freight equipment.	Intermodal Freight Equipment	This terminator represents a freight co support safe, secure and efficient freig status and can alert the appropriate sy provides accurate position information Intermodal Freight Equipment subsys intermodal container and chassis. Co allow horizontal and vertical transfers built to standardized dimensions to all Container subsystem is to provide a u frame on wheels that an intermodal co subsystem can also have the capabilit atmosphere integrity, status of control any other aspects peculiar to the speci fasteners, and other systems. The subs communication of that location to app periodic status reporting activity. The including sensing and alarms for unau suitable for Customs preclearance, an the container's systems and stored dat integrated unit with a chassis and the require the ability to interface via eith subsystem to allow monitoring of the
Government Reporting Systems	This terminator represents the system and associated personnel that prepare the inputs to support the various local, state, and federal government transportation data reporting requirements (e.g. Highway Performance Monitoring System, Fatality Analysis Reporting System) using data collected by ITS systems. This terminator represents a system interface that would provide access to the archived data that is relevant to these reports. In most cases, this terminator would manually combine data collected from the ITS archives with data from non ITS sources to assemble and submit the required information.	Government Reporting Systems	This terminator represents the system various local, stateprovincial, and fed Highway Performance Monitoring Sy ITS systems. This terminator represe data that is relevant to these reports. E collected from the ITS archives with o information.
Information Service Provider	This subsystem collects, processes, stores, and disseminates transportation information to system operators and the traveling public. The subsystem can play several different roles in an integrated ITS. In one role, the ISP provides a data collection, fusing, and repackaging function, collecting information from transportation system operators and redistributing this information to other system operators in the region and other ISPs. In this information redistribution role, the ISP provides a bridge between the various transportation systems that produce the information and the other ISPs and their subscribers that use the information. The second role of an ISP is focused on delivery of traveler information to subscribers and the public at large. Information provided includes basic advisories, traffic and road conditions, transit schedule information, yellow pages information, ridematching information, and parking information. The subsystem also provides the capability to provide specific directions to travelers by receiving origin and destination requests from travelers, generating route plans, and returning the calculated plans to the users. In addition to general route planning for travelers, the ISP also supports specialized route planning for vehicle fleets. In this third role, the ISP function may be dedicated to, or even embedded within, the dispatch system, and the Vehicle Subsystem through available communications links. Both basic one-way (broadcast) and personalized two-way information provision are supported. The ISP is most commonly implemented as an Internet web site, but it represents any traveler information distribution service including systems that support distribution through Field-Vehicle Communications networks. The ISP accomplishes these roles using constantly evolving technologies like the Internet (World Wide Web pages), direct broadcast communications (email alerts, pagers, satellite radio network data broadcast), communications through Field-Vehicle Communications functions for throug	Information Service Provider	This subsystem collects, processes, st operators and the traveling public. Th In one role, the ISP provides a data co from transportation system operators region and other ISPs. In this informa- various transportation systems that pr use the information. The second role subscribers and the public at large. In conditions, transit schedule information capability to provide specific direction from travelerstravellers, generating for addition to general route planning for for vehicle fleets. In this third role, th dispatch system. Reservation service is provided to the travelertraveller thr TravelerTraveller Support Subsystem links. Both basic one-way (broadcast The ISP is most commonly implement information distribution service inclu- radio networks) and systems that supp short range communications networks technologies like the Internet (World pagers, satellite radio network data br Communications_dedicated short range

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container, intermodal chassis or trailer and provides information to eight operations. This terminator provides equipment safety data and systems of an incident, breach, or tamper event. This terminator ion to support in transit visibility of freight equipment. The ystem includes the sensors and systems incorporated into an Containers are strengthened and stackable boxes that carry freight and ers between modes (truck transport, rail, or marine vessel). They are allow efficient handling. The most basic capability of the Intermodal unique identification via wireless interrogation. The chassis is the container is secured to for roadway transport by a truck. The lity to sense cargo conditions, including temperature, controlled ol systems (like refrigeration), peak and total shock/vibration, and cific cargo, as well as chassis safety data for the brakes, container bsystem can potentially support the determination of location and the ppropriate infrastructure elements, either on demand or as part of a ne subsystem also can support a number of security measures, authorized breaches of the container seals, electronic locking devices and basic security measures to prevent unauthorized interrogation of lata. The intermodal container subsystem must also function as an e Commercial Vehicle subsystem for roadway transport. This would ther wireless or wire harness means to the Commercial Vehicle ne container's status as part of the composite vehicle.

m and associated personnel that prepare the inputs to support the ederal government transportation data reporting requirements (e.g. System, Fatality Analysis Reporting System) using data collected by sents a system interface that would provide access to the archived . In most cases, this This terminator would manually combine data h data from non ITS sources to assemble and submit the required

stores, and disseminates transportation information to system The subsystem can play several different roles in an integrated ITS. collection, fusing, and repackaging function, collecting information s and redistributing this information to other system operators in the mation redistribution role, the ISP provides a bridge between the produce the information and the other ISPs and their subscribers that ble of an ISP is focused on delivery of traveler traveller information to Information provided includes basic advisories, traffic and road tion, yellow pagesbusiness directory information, ridematching on- and weather information. The subsystem also provides the ions to travelerstravellers by receiving origin and destination requests route plans, and returning the calculated plans to the users. In or travelerstravellers, the ISP also supports specialized route planning the ISP function may be dedicated to, or even embedded within, the ces are also provided in advanced implementations. The information hrough the Personal Information Access Subsystem, Remote m, and the Vehicle Subsystem through available communications st) and personalized two-way information provision are supported. ented as an Internet web site, but it represents any traveler traveller luding systems that broadcast digital transportation data (e.g., satellite pport distribution through Field Vehicle Communications dedicated ks. The ISP accomplishes these roles using constantly evolving d Wide Web pages), direct broadcast communications (email alerts, broadcasts), communications through Field Vehicle ge communications networks, etc.

US_V6 Name	US_V6 Description	C_V2 Name	
Intermodal Freight Depot	This terminator represents a depot operated either by a depot manager or an alternate mode freight shipper which represents the point of exchange where freight is moved from one mode to another. The depot has knowledge about activities that may impact travel on roadways such as large groups of trucks entering the highway after unloading a ship or freight train. The depot interfaces to the ITS to coordinate freight movement with Fleet-Freight Managers, gather information on traffic conditions affecting the depot, and to provide information on intermodal freight activities that is pertinent to traffic movement in the surrounding area.	Intermodal <del>Freight</del> <del>Depot<u>Terminal</u></del>	This terminator represents a depot of shipper which represents the point of depot has knowledge about activities entering the highway after unloading freight movement with Fleet-Freight depot, and to provide information on the surrounding area. The Intermodal modal change points. This would inc rail, and/or water shipping modes. The subsystem is the container; less-than- facility (e.g. Freight Consolidation St efficiently handling the movement of electronic gate control for entrance at facility, alerting appropriate parties of temporarily stored containers. The su their functions, where international c implement weigh-in-motion and othe commercial vehicle – chassis – contained Intermodal Terminal subsystem can se prevent unauthorised personnel or versity.
Intermodal Freight Shipper	This terminator represents organizations that engage in the shipment of freight by multiple means, in addition to road-going trucks. They enable ITS to move goods on routes that require the use of other modes of transportation such as heavy rail, air, sea, etc. This terminator includes third party logistics providers (i.e. brokers, freight forwarders, etc) that interface with Fleet-Freight Managers to transfer cargo from one mode to another. This definition includes those responsible for the movement of freight across international borders. These entities are responsible for filing required declarations, and have an acute interest in the status of international shipments.	Intermodal <del>Freight</del> Shipper <u>Customer</u>	This terminator represents organizati addition to road going trucks., either They enable ITS to move goods on r heavy rail, air, sea, etc. This termina forwarders, etc) that interfaceinterfac another. This definition includes thos borders. These entities are responsibl status of international shipments.
ISP Operator	This terminator is the human entity that may be physically present at the ISP to monitor the operational status of the facility and provide human interface capabilities to travelers and other ISP subsystems.	ISP Operator	This terminator is the human entity the status of the facility and provide hum subsystems.
Location Data Source	This terminator provides accurate position information. Systems which use GPS, terrestrial trilateration, or driver inputs are all potential examples of Location Data Sources. This terminator contains sensors such as radio position receivers (e.g. GPS) and/or dead reckoning sensors (e.g. odometer, differential odometer, magnetic compass, gyro, etc.). This terminator implies that some additional functionality associated with developing an absolute position is outside the system and will not be directly modeled by the logical or physical architecture representations of the system.	Location Data Source	This terminator provides accurate por or driver inputs are all potential exam such as radio position receivers (e.g. odometer, magnetic compass, gyro, e associated with developing an absolu the logical or physical architecture re
Maintenance and Construction Administrative Systems	This terminator represents the various administrative systems that support the operation of ITS systems for maintenance and construction operations. The interfaces to this terminator support general administrative data interchanges between ITS and non-ITS systems. This includes: interfaces to purchasing for equipment and consumables resupply, interfaces to human resources that manage training and special certification for field crews and other personnel, and interfaces to contract administration functions that administer and monitor the work performance for maintenance and construction contracts.	Maintenance and Construction Administrative Systems	This terminator represents the variou for maintenance and construction ope administrative data interchanges betw purchasing for equipment and consur and special certification for field crew functions that administer and monitor
Maintenance and Construction Center Personnel	This terminator represents the people that directly interface with the systems in the Maintenance and Construction Management subsystem. These personnel interact with fleet dispatch and management systems, road maintenance systems, incident management systems, work plan scheduling systems, and work zone management systems. They provide operator data and command inputs to direct system operations to varying degrees depending on the type of system and the deployment scenario. All functionality associated with these services that might be automated in the course of ITS deployment is modeled as internal to the architecture.	Maintenance and Construction CenterCentre Personnel	This terminator represents the people Construction Management subsystem systems, road maintenance systems, i work zone management systems. The operations to varying degrees depend functionality associated with these se modeled as internal to the architectur

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perated either by a depot manager or an alternate mode freight of exchange where freight is moved from one mode to another. The es that may impact travel on roadways such as large groups of trucks g a ship or freight train. The depot interfaces to the ITS to coordinate t Managers, gather information on traffic conditions affecting the n intermodal freight activities that is pertinent to traffic movement in al Terminal subsystem represents the terminal areas corresponding to clude any interfaces between roadway freight transportation and air. The basic unit of cargo handled by the Intermodal Terminal n-container load handling will typically be handled at a different Station). The Intermodal Terminal subsystem is responsible for of freight containers between transport modes. This can include and exit from the facility, automated guidance of vehicles within the of container arrivals and departures, and inventory and location of subsystem also provides support for customs agencies to perform cargo may be handled. The Intermodal Terminal subsystem may also her commercial vehicle inspection capabilities to ensure that tainer assemblages that leave the facility are roadworthy. The support security functionality both to secure containers and to vehicles from violating the facilities.

ations that engage in the shipment of freight-by multiple means, in er originator (consigner or shipper) or recipient of the cargo shipment. In routes that require the use of other modes of transportation such as nator includes third party logistics providers (i.e. brokers, freight Caces with Fleet-Freight Managers to transfer cargo from one mode to lose responsible for the movement of freight across international ible for filing required declarations, and have an acute interest in the

that may be physically present at the ISP to monitor the operational man interface capabilities to travelers travellers and other ISP

position information. Systems which use GPS, terrestrial trilateration, amples of Location Data Sources. This terminator contains sensors g. GPS) and/or dead reckoning sensors (e.g. odometer, differential , etc.). This terminator implies that some additional functionality plute position is outside the system and will not be directly modeled by representations of the system.

ous administrative systems that support the operation of ITS systems operations. The interfaces to this terminator support general etween ITS and non-ITS systems. This includes: interfaces to sumables resupply, interfaces to human resources that manage training rews and other personnel, and interfaces to contract administration tor the work performance for maintenance and construction contracts.

ble that directly interface with the systems in the Maintenance and em. These personnel interact with fleet dispatch and management s, incident management systems, work plan scheduling systems, and 'hey provide operator data and command inputs to direct system nding on the type of system and the deployment scenario. All services that might be automated in the course of ITS deployment is ture.

US_V6 Name	US_V6 Description	C_V2 Name	
Maintenance and Construction Field Personnel	This terminator represents the people that perform maintenance and construction field activities including vehicle and equipment operators, field supervisory personnel, field crews, and work zone safety personnel. Information flowing from the Maintenance and Construction Field Personnel terminator will include those system inputs specific to maintenance and construction operations, such as information regarding work zone status, or the status of maintenance actions. The field personnel are also monitored within the work zone to enhance work zone safety. Information provided to Maintenance and Construction Field Personnel includes system outputs such as dispatch requests, maintenance and construction actions to be performed, and work zone safety warnings.	Maintenance and Construction Field Personnel	This terminator represents the people including vehicle and equipment ope safety personnel. Information flowin terminator will include those system information regarding work zone stat also monitored within the work zone and Construction Field Personnel inc construction actions to be performed.
Maintenance and Construction Management	The Maintenance and Construction Management Subsystem monitors and manages roadway infrastructure construction and maintenance activities. Representing both public agencies and private contractors that provide these functions, this subsystem manages fleets of maintenance, construction, or special service vehicles (e.g., snow and ice control equipment). The subsystem receives a wide range of status information from these vehicles and performs vehicle dispatch, routing, and resource management for the vehicle fleets and associated equipment. The subsystem participates in incident response by deploying maintenance and construction resources to an incident scene, in coordination with other center subsystems. The subsystem manages equipment at the roadside, including environmental sensors and automated systems that monitor and mitigate adverse road and surface weather conditions. The subsystem manages the repair and maintenance of both non-ITS and ITS equipment including the traffic controllers, detectors, dynamic message signs, signals, and other equipment associated with the roadway infrastructure. Additional interfaces to weather information providers (the weather service and surface transportation weather service providers) provide current and forecast weather information that can be fused with other data sources and used to support advanced decision support systems that increase the efficiency and effectiveness of maintenance and construction operations. The subsystem remotely monitors and manages ITS capabilities in work zones, gathering, storing, and disseminating work zone information to other systems. It manages traffic in the vicinity of the work zone and advises drivers of work zone status (either directly at the roadside or through an interface with the Information Service Provider or Traffic Management subsystems.) It schedules and manages the location and usage of maintenance activities are tracked and coordinated with other systems, improving the	Maintenance and Construction Management	The Maintenance and Construction M infrastructure construction and maint contractors that provide these function special service vehicles (e.g., snow a status information from these vehicle for the vehicle fleets and associated e deploying maintenance and construct centercentre subsystems. The subsystems sensors and automated systems that r The subsystem manages the repair ar traffic controllers, detectors, dynamic roadway infrastructure. Additional in surface transportation weather servic can be fused with other data sources the efficiency and effectiveness of m _The subsystem remotely monitors a disseminating work zone information zone and advises drivers of work zon the Information Service Provider or T location and usage of maintenance as The subsystem manages the repair ar
	quality and accuracy of information available regarding closures and other roadway construction and maintenance activities.		and maintenance activities are tracke accuracy of information available reg activities.
Maintenance and Construction Vehicle	This subsystem resides in a maintenance, construction, or other specialized service vehicle or equipment and provides the sensory, processing, storage, and communications functions necessary to support highway maintenance and construction. All types of maintenance and construction vehicles are covered, including heavy equipment and supervisory vehicles. The subsystem provides two-way communications between drivers/operators and dispatchers and maintains and communicates current location and status information. A wide range of operational status is monitored, measured, and made available, depending on the specific type of vehicle or equipment. For example, for a snow plow, the information would include whether the plow is up or down and material usage information. The subsystem may also contain capabilities to monitor vehicle systems to support maintenance of the vehicle itself and other sensors that monitor environmental conditions including the road condition and surface weather information. This subsystem can represent a diverse set of mobile environmental sensing platforms, including wheeled vehicles and any other vehicle that collects and reports environmental information.	Maintenance and Construction Vehicle	This subsystem resides in a maintenal and provides the sensory, processing, highway maintenance and construction including heavy equipment and super- between drivers/operators and dispar- information. A wide range of operat on the specific type of vehicle or equi- include whether the plow is up or do- contain capabilities to monitor vehicle sensors that monitor environmental co- information. This subsystem can rep- including wheeled vehicles and any op-
Map Update Provider	This terminator represents a provider of map databases used to support ITS services. It supports the provision of the databases that are used by travelers (e.g., navigable maps used for route guidance and display maps used at traveler information points) as well as those that are used by system operators (e.g., map data used by Traffic Operators to monitor and manage the road network, map data used by Fleet Managers to manage a vehicle fleet). This terminator may represent a third-party provider or an internal organization that produces map data for agency use. Products may include simple display maps, map data sets that define road network topology, or full geographic information system databases that are used to support ITS.	Map Update Provider	This terminator represents a provider provision of the databases that are us guidance and display maps used at # system operators (e.g., map data used map data used by Fleet Managers to provider or an internal organization t display maps, map data sets that defi databases that are used to support IT

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ble that perform maintenance and construction field activities perators, field supervisory personnel, field crews, and work zone ving from the Maintenance and Construction Field Personnel m inputs specific to maintenance and construction operations, such as tatus, or the status of maintenance actions. The field personnel are ne to enhance work zone safety. Information provided to Maintenance ncludes system outputs such as dispatch requests, maintenance and ed, and work zone safety warnings.

A Management Subsystem monitors and manages roadway intenance activities. Representing both public agencies and private tions, this subsystem manages fleets of maintenance, construction, or and ice control equipment). The subsystem receives a wide range of cles and performs vehicle dispatch, routing, and resource management d equipment. The subsystem participates in incident response by action resources to an incident scene, in coordination with other system manages equipment at the roadside, including environmental t monitor and mitigate adverse road and surface weather conditions. and maintenance of both non ITS and ITS equipment including the nic message signs, signals, and other equipment associated with the l interfaces to weather information providers (the weather service and rice providers) provide current and forecast weather information that es and used to support advanced decision support systems that increase maintenance and construction operations.

s and manages ITS capabilities in work zones, gathering, storing, and on to other systems. It manages traffic in the vicinity of the work one status (either directly at the roadside or through an interface with r Traffic Management subsystems.) It schedules and manages the assets (such as portable dynamic message signs).

and maintenance of both non-ITS and ITS equipment. Construction ked and coordinated with other systems, improving the quality and regarding closures and other roadway construction and maintenance

nance, construction, or other specialized service vehicle or equipment ng, storage, and communications functions necessary to support etion. All types of maintenance and construction vehicles are covered, pervisory vehicles. The subsystem provides two-way communications patchers and maintains and communicates current location and status ational status is monitored, measured, and made available, depending quipment. For example, for a snow plow, the information would lown and material usage information. The subsystem may also icle systems to support maintenance of the vehicle itself and other l conditions including the road condition and surface weather epresent a diverse set of mobile environmental sensing platforms, y other vehicle that collects and reports environmental information.

ler of map databases used to support ITS services. It supports the used by <u>travelerstravellers</u> (e.g., navigable maps used for route <u>travelertraveller</u> information points) as well as those that are used by sed by Traffic Operators to monitor and manage the road network, o manage a vehicle fleet). This terminator may represent a third-party in that produces map data for agency use. Products may include simple effine road network topology, or full geographic information system TTS.

US_V6 Name	US_V6 Description	C_V2 Name	
Media	This terminator represents the information systems that provide traffic reports, travel conditions, and other transportation-related news services to the traveling public through radio, TV, and other media. Traffic and travel advisory information that are collected by ITS are provided to this terminator. It is also a source for traffic flow information, incident and special event information, and other events which may have implications for the transportation system.	Media	This terminator represents the inform conditions, and other transportation-to other media. Traffic and travel adviss terminator. It is also a source for tran- other events which may have implicated
Multimodal Crossings	This terminator represents the control equipment that interfaces to a non-road based transportation system at an interference crossing with the roadway. The majority of these crossings are railroad grade crossings that are more specifically addressed by the "Wayside Equipment" terminator. This multimodal crossing terminator addresses similar interface requirements, but for other specialized intersections like draw bridges at rivers and canals. These crossings carry traffic that may take priority over the road traffic at the intersection. The data provided will in its basic form be a simple "stop road traffic" indication. However more complex data flows may be provided that give the time at which right-of-way will be required and the duration of that right-of-way requirement.	Multimodal Crossings	This terminator represents the control system at an interference crossing will crossings that are more specifically a crossing terminator addresses similar draw bridges at rivers and canals. The traffic at the intersection. The data p indication. However more complex will be required and the duration of the
Multimodal Transportation Service Provider	This terminator provides the interface through which Transportation Service Providers can exchange data with ITS. They are the operators of non-roadway transportation systems (e.g. airlines, ferry services, passenger carrying heavy rail) and providers of non-motorized transportation facilities. This two-way interface enables coordination for efficient movement of people across multiple transportation modes. It also enables the traveler to efficiently plan itineraries which include segments using modes not directly included in the ITS User Services.	Multimodal Transportation Service Provider	This terminator provides the interface data with ITS. They are the operators passenger carrying heavy rail) and pr interface enables coordination for eff also enables the <u>travelertraveller</u> to e directly included in the ITS User Ser
Other Archives	This terminator represents distributed archived data systems or centers whose data can be accessed and shared with a local archive. The interface between the Other Archives Terminator and the Archived Data Management Subsystem allows data from multiple archives to be accessed on demand or imported and consolidated into a single repository.	Other Archives	This terminator represents distributed accessed and shared with a local arch Archived Data Management Subsyst imported and consolidated into a sing
Other CVAS	This terminator is intended to provide a source and destination for ITS data flows between peer (e.g. inter-regional) commercial vehicle administration functions. It enables commercial vehicle administration activities to be coordinated across different jurisdictional areas. In the Physical Architecture, this terminator is a reciprocal Commercial Vehicle Administration Subsystem (CVAS). This terminator encompasses all functions associated with commercial vehicle safety, registration, and operating authority for non-U.S. based commercial motor vehicle carriers. The agencies represented herein may include Federal, state, provincial, and local regulatory entities outside the U.S.	Other CVAS	This terminator is intended to provid inter-regional) commercial vehicle as administration activities to be coordi Architecture, this terminator is a reci This terminator encompasses all func operating authority for non-U.S. base herein may include Federal, state, pro-
Other Data Sources	This terminator represents the myriad systems and databases containing data not generated from subsystems and terminators represented in the National ITS Architecture that can provide predefined data sets to the ITS archive. The terminator can provide economic, cost, demographic, land use, law enforcement, and other data that is not collected by ITS systems and would otherwise be unavailable within an ITS data archive.	Other Data Sources	This terminator represents the myriad subsystems and terminators represen predefined data sets to the ITS archiv use, law enforcement, and other data unavailable within an ITS data archiv
Other Emergency Management	Representing other Emergency Management centers, systems or subsystems, this terminator provides a source and destination for ITS data flows between various communications centers operated by public safety agencies, emergency management agencies, other allied agencies, and private companies that participate in coordinated management of highway-related incidents, including disasters. The interface represented by this terminator enables emergency management activities to be coordinated across jurisdictional boundaries and between functional areas. In the Physical Architecture this terminator is a reciprocal Emergency Management Subsystem (EM) implying the requirements for general networks connecting many allied agencies. The interface between this terminator and the EM supports coordination of incident management information between many different centers providing Public Safety Answering Point (both public or private sector implementations), Public Safety Dispatch, Emergency Operations Centers, and other functions that participate in the detection, verification, response, recovery and clearance of incidents, including disasters. This terminator also supports interface to other allied agencies like utility companies that also participate in the coordinated response to selected highway-related incidents.	Other Emergency Management	Representing other Emergency Mana provides a source and destination for operated by public safety agencies, e companies that participate in coordin The interface represented by this terr across jurisdictional boundaries and terminator is a reciprocal Emergency general networks connecting many a supports coordination of incident ma providing Public Safety Answering F Dispatch, Emergency Operations Cerv verification, response, recovery and of supports interface to other allied agen response to selected highway-related
Other ISP	Representing other distinct Information Service Providers, this terminator is intended to provide a source and destination for ITS data flows between peer information and service provider functions. It enables cooperative information sharing between providers as conditions warrant. In the Physical Architecture this terminator is a reciprocal Information Service Provider (ISP) Subsystem.	Other ISP	Representing other distinct Informati source and destination for ITS data fl enables cooperative information shar Architecture this terminator is a recip

# C\_V2 Description

rmation systems that provide traffic reports, travel<u>and weather</u> n-related news services to the traveling public through radio, TV, and visory information that are collected by ITS are provided to this raffic flow information, incident and special event information, and teations for the transportation system.

trol equipment that interfaces to a non-road based transportation with the roadway. The majority of these crossings are railroad grade y addressed by the "Wayside Equipment" terminator. This multimodal ilar interface requirements, but for other specialized intersections like These crossings carry traffic that may take priority over the road a provided will in its basic form be a simple "stop road traffic" ex data flows may be provided that give the time at which right-of-way of that right-of-way requirement.

ace through which Transportation Service Providers can exchange ors of non-roadway transportation systems (e.g. airlines, ferry services, providers of non-motorized transportation facilities. This two-way efficient movement of people across multiple transportation modes. It o efficiently plan itineraries which include segments using modes not ervices.

ted archived data systems or <u>centerscentres</u> whose data can be rchive. The interface between the Other Archives Terminator and the stem allows data from multiple archives to be accessed on demand or ingle repository.

ide a source and destination for ITS data flows between peer (e.g. administration functions. It enables commercial vehicle dinated across different jurisdictional areas. In the Physical eciprocal Commercial Vehicle Administration Subsystem (CVAS). Inctions associated with commercial vehicle safety, registration, and ased commercial motor vehicle carriers. The agencies represented provincial, and local regulatory entities outside the U.S.

riad systems and databases containing data not generated from sented in the National-ITS Architecture for Canada that can provide hive. The terminator can provide economic, cost, demographic, land ata that is not collected by ITS systems and would otherwise be chive.

anagement centerscentres, systems or subsystems, this terminator for ITS data flows between various communications centerscentres , emergency management agencies, other allied agencies, and private linated management of highway-related incidents, including disasters. erminator enables emergency management activities to be coordinated d between functional areas. In the Physical Architecture this cy Management Subsystem (EM) implying the requirements for allied agencies. The interface between this terminator and the EM nanagement information between many different centerscentres g Point (both public or private sector implementations), Public Safety CentersCentres, and other functions that participate in the detection, d clearance of incidents, including disasters. This terminator also gencies like utility companies that also participate in the coordinated ed incidents.

ation Service Providers, this terminator is intended to provide a a flows between peer information and service provider functions. It having between providers as conditions warrant. In the Physical eciprocal Information Service Provider (ISP) Subsystem.

US_V6 Name	US_V6 Description	C_V2 Name	
Other MCM	Representing another Maintenance and Construction Management center or subsystem, this terminator is intended to provide a source and destination for ITS information flows between maintenance and construction management functions. It enables maintenance and construction operations to be coordinated across jurisdictions or between public and private sectors. In the Physical Architecture, this terminator is a reciprocal Maintenance and Construction Management Subsystem (MCMS).	Other MCM	Representing another Maintenance a terminator is intended to provide a se maintenance and construction manag operations to be coordinated across j Architecture, this terminator is a reci- (MCMS).
Other MCV	<ul> <li>This terminator represents another ITS Maintenance and Construction Vehicle Subsystem. It provides a source and destination for ITS information transfers between maintenance and construction vehicles. These information</li> <li>transfers allow vehicle operational status, environmental information, and</li> <li>work zone intrusion warnings or alarms to be shared between vehicles.</li> </ul>	Other MCV	This terminator represents another I' source and destination for ITS inform These information transfers allow vehicle operational s work zone intrusion warnings or ala
Other Parking	Representing another parking facility, system or subsystem, this terminator provides a source and destination for information that may be exchanged between peer parking systems. This terminator enables parking management activities to be coordinated between different parking operators or systems in a region. In the Physical Architecture this terminator is a reciprocal Parking Management Subsystem.	Other Parking	Representing another parking facilit destination for information that may enables parking management activit in a region. In the Physical Architec
Other Roadway	Representing another roadway system or subsystem, this terminator supports "field device" to "field device" communication and coordination, and provides a source and destination for information that may be exchanged between roadway subsystems. The interface to this terminator enables direct coordination between field equipment. Examples include the direct interface between sensors and other roadway devices (e.g., Dynamic Message Signs) and the direct interface between roadway devices (e.g., between a Signal System Master and Signal System Local equipment).	Other Roadway	Representing another roadway syster device" communication and coordin may be exchanged between roadway coordination between field equipmen roadway devices (e.g., Dynamic Mer between a Signal System Master and
Other Toll Administration	Representing another Toll Administration center or subsystem, this terminator is intended to provide a source and destination for ITS information flows between toll administration functions. This interface allows reconciliation of toll charges across different agencies by allowing the exchange of information about clients who have incurred charges in jurisdictions of toll collection agencies other than their home (billing) customer service center. This interface enables "reciprocity" between participating customer service centers. In the Physical Architecture, this terminator is a reciprocal Toll Administration Subsystem (TAS).	Other Toll Administration	Representing another Toll Administr provide a source and destination for interface allows reconciliation of tol information about clients who have i their home (billing) customer service participating customer service center Toll Administration Subsystem (TA)
Other Traffic Management	Representing another Traffic Management center, system or subsystem, this terminator is intended to provide a source and destination for ITS data flows between peer (e.g. inter-regional) traffic management functions. It enables traffic management activities to be coordinated across different jurisdictional areas. In the Physical Architecture, this terminator is a reciprocal Traffic Management Subsystem (TMS).	Other Traffic Management	Representing another Traffic Manag intended to provide a source and des management functions. It enables t jurisdictional areas. In the Physical Subsystem (TMS).
Other Transit Management	Representing another Transit Management center, system or subsystem, this terminator is intended to provide a source and destination for ITS data flows between peer (e.g. inter-regional) transit management functions. It enables transit management activities to be coordinated across geographic boundaries or different jurisdictional areas. In the Physical Architecture this terminator represents a reciprocal Transit Management Subsystem (TRMS).	Other Transit Management	Representing another Transit Manag intended to provide a source and des management functions. It enables to boundaries or different jurisdictional reciprocal Transit Management Subs
Other Vehicle	This terminator represents another ITS vehicle system or subsystem and provides a source and destination for ITS information transfers between peer vehicle systems to support vehicle-to-vehicle communication and coordination. These features are associated with advanced vehicle safety systems and services that require communications between vehicles.	Other Vehicle	This terminator represents another I'destination for ITS information trans communication and coordination. T and services that require communication
Parking Management	The Parking Management Subsystem provides electronic monitoring and management of parking facilities. It supports a Field-Vehicle Communications link to the Vehicle Subsystem that allows electronic collection of parking fees and monitors and controls parking meters that support conventional parking fee collection. It also includes the instrumentation, signs, and other infrastructure that monitors parking lot usage and provides local information about parking availability and other general parking information. This portion of the subsystem functionality must be located in the parking facility where it can monitor, classify, and share information with customers and their vehicles. The subsystem also interfaces with the financial infrastructure and broadly disseminates parking information to other operational centers in the region. Note that the latter functionality may be located in a back office, remote from the parking facility.	Parking Management	The Parking Management Subsystem facilities. It supports a Field-Vehicle electronic collection of parking fees parking fee collection. It also includ parking lot usage and provides local information. This portion of the sub can monitor, classify, and share info interfaces with the financial infrastru operational <u>centerscentres</u> in the regi office, remote from the parking facil
Parking Operator	This terminator is the human entity that may be physically present at the parking lot facility to monitor the operational status of the facility.	Parking Operator	This terminator is the human entity the operational status of the facility.

# C\_V2 Description

and Construction Management <u>centercentre</u> or subsystem, this source and destination for ITS information flows between agement functions. It enables maintenance and construction s jurisdictions or between public and private sectors. In the Physical aciprocal Maintenance and Construction Management Subsystem

ITS Maintenance and Construction Vehicle Subsystem. It provides a simulation transfers between maintenance and construction vehicles.

status, environmental information, and

larms to be shared between vehicles.

lity, system or subsystem, this terminator provides a source and ay be exchanged between peer parking systems. This terminator vities to be coordinated between different parking operators or systems recture this terminator is a reciprocal Parking Management Subsystem.

stem or subsystem, this terminator supports "field device" to "field lination, and provides a source and destination for information that vay subsystems. The interface to this terminator enables direct ment. Examples include the direct interface between sensors and other Message Signs) and the direct interface between roadway devices (e.g., and Signal System Local equipment).

stration <u>centercentre</u> or subsystem, this terminator is intended to or ITS information flows between toll administration functions. This oll charges across different agencies by allowing the exchange of e incurred charges in jurisdictions of toll collection agencies other than ice <u>centercentre</u>. This interface enables "reciprocity" between ters<u>centres</u>. In the Physical Architecture, this terminator is a reciprocal AS).

agement <u>centercentre</u>, system or subsystem, this terminator is lestination for ITS data flows between peer (e.g. inter-regional) traffic s traffic management activities to be coordinated across different al Architecture, this terminator is a reciprocal Traffic Management

agement <u>centercentre</u>, system or subsystem, this terminator is estination for ITS data flows between peer (e.g. inter-regional) transit is transit management activities to be coordinated across geographic hal areas. In the Physical Architecture this terminator represents a bsystem (TRMS).

TTS vehicle system or subsystem and provides a source and ansfers between peer vehicle systems to support vehicle-to-vehicle These features are associated with advanced vehicle safety systems ications between vehicles.

em provides electronic monitoring and management of parking cle Communications link to the Vehicle Subsystem that allows es and monitors and controls parking meters that support conventional udes the instrumentation, signs, and other infrastructure that monitors al information about parking availability and other general parking ubsystem functionality must be located in the parking facility where it formation with customers and their vehicles. The subsystem also tructure and broadly disseminates parking information to other egion. Note that the latter functionality may be located in a back cility.

y that may be physically present at the parking lot facility to monitor y.

US_V6 Name	US_V6 Description	C_V2 Name	
Pedestrians	This terminator provides input (e.g. a request for right of way at an intersection) from a specialized form of the Traveler who is not using any type of vehicle (including bicycles) as a form of transport. Pedestrians may comprise those on foot and those in wheelchairs.	Pedestrians	This terminator provides input (e.g. a of the <u>TravelerTraveller</u> who is not u Pedestrians may comprise those on for
Personal Information Access	This subsystem provides the capability for travelers to receive formatted traffic advisories from their homes, place of work, major trip generation sites, personal portable devices, over multiple types of electronic media. These capabilities also provide basic routing information and allow users to select those transportation modes that allow them to avoid congestion, or more advanced capabilities to allow users to specify those transportation parameters that are unique to their individual needs and receive travel information. This subsystem provides travelers with the capability to receive route planning from the infrastructure at fixed locations such as in their homes, their place of work, and at mobile locations using personal portable devices and vehicle-based devices. In addition to end user devices, this subsystem may also represent a device that is used by a merchant or other service provider to receive traveler information and relay important information to their customers. This subsystem also provides the capability to initiate a distress signal and cancel a prior-issued manual request for help.	Personal Information Access	This subsystem provides the capabili their homes, place of work, major trip electronic media. These capabilities those transportation modes that allow users to specify those transportation p travel <u>and weather</u> information. This receive route planning from the infra- work, and at mobile locations using p end user devices, this subsystem may provider to receive <u>travelertraveller</u> in This subsystem also provides the cap request for help.
Potential Obstacles	Any object that possesses the potential of being sensed and struck and thus also possesses physical attributes. Potential Obstacles include roadside obstructions, other vehicles, pedestrians, infrastructure elements or any other element which is in a potential path of the vehicle. This terminator represents the physical obstacles which possess properties which enable detection using sensory functions included as part of the ITS architecture. These physical attributes are represented as a data input to the system.	Potential Obstacles	Any object that possesses the potentia attributes. Potential Obstacles includ elements or any other element which physical obstacles which possess pro- part of the ITS architecture. These p
Public Health System	This terminator represents the systems operated by hospitals or regional public health departments that can respond to requests for specific information regarding emergencies involving biohazards - such as biological attacks, hazardous materials spills, or other threats to public health. This terminator can provide recommended courses of action to emergency management to improve the response, quarantining, or evacuation based on the type of hazard involved.	Public Health System	This terminator represents the system can respond to requests for specific in biological attacks, hazardous materia provide recommended courses of acti- quarantining, or evacuation based on
Rail Operations	This terminator represents the (usually) centralized control point for a substantial segment of a freight railroad's operations and maintenance activities. It is roughly the railroad equivalent to a highway Traffic Management Center. It is the source and destination of information that can be used to coordinate rail and highway traffic management and maintenance operations. It is also the source and destination for incident, incident response, disaster, or evacuation information that is exchanged with Emergency Management. This terminator would also represent a railroad's management information system, if that system is the source or destination for this information. The use of a single terminator for multiple sources and destination for information exchange with railroads is meant to imply the need for a single, consistent interface between a given railroad's operations and maintenance activities and ITS.	Rail Operations	This terminator represents the (usuall railroad's operations and maintenance Management <u>CenterCentre</u> . It is the s rail and highway traffic management for incident, incident response, disast Management. This terminator would system is the source or destination fo sources and destination for informatic consistent interface between a given
Remote Traveler Support	This subsystem provides access to traveler information at transit stations, transit stops, other fixed sites along travel routes (e.g., rest stops, merchant locations), and major trip generation locations such as special event centers, hotels, office complexes, amusement parks, and theaters. Traveler information access points include kiosks and informational displays supporting varied levels of interaction and information access. At transit stops, simple displays providing schedule information and imminent arrival signals can be provided. This basic information may be extended to include multi-modal information including traffic conditions and transit schedules along with yellow pages information to support mode and route selection at major trip generation sites. Personalized route planning and route guidance information can also be provided based on criteria supplied by the traveler. The subsystem also supports electronic payment of transit fares.	n as Support ation nd ent on to route	This subsystem provides access to tra- fixed sites along travel routes (e.g., re- such as special event <u>centerscentres</u> , <u>TravelerTraveller</u> information access levels of interaction and information information and imminent arrival sig include multi-modal information incl with <u>yellow pagesbusiness directory</u> generation sites. Personalized route p on criteria supplied by the <u>travelertra</u> fares.
	In addition to the traveler information provisions, this subsystem also supports security and safety monitoring of public areas. This monitoring includes traveler activated silent alarms, as well as surveillance and sensor equipment. The surveillance equipment includes video (e.g. CCTV cameras) and/or audio systems. The sensor equipment includes threat sensors (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors (e.g. metal detectors).		In addition to the travelertraveller inf safety monitoring of public areas. Th well as surveillance and sensor equip cameras) and/or audio systems. The s industrial chemical, biological, explo metal detectors).

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g. a request for right of way at an intersection) from a specialized form t using any type of vehicle (including bicycles) as a form of transport. a foot and those in wheelchairs.

ility for travelerstravellers to receive formatted traffic advisories from trip generation sites, personal portable devices, over multiple types of es also provide basic routing information and allow users to select ow them to avoid congestion, or more advanced capabilities to allow n parameters that are unique to their individual needs and receive his subsystem provides travelerstravellers with the capability to trastructure at fixed locations such as in their homes, their place of g personal portable devices and vehicle-based devices. In addition to hay also represent a device that is used by a merchant or other service r information and relay important information to their customers. apability to initiate a distress signal and cancel a prior-issued manual

ntial of being sensed and struck and thus also possesses physical ude roadside obstructions, other vehicles, pedestrians, infrastructure ich is in a potential path of the vehicle. This terminator represents the properties which enable detection using sensory functions included as e physical attributes are represented as a data input to the system.

ems operated by hospitals or regional public health departments that c information regarding emergencies involving biohazards - such as rials spills, or other threats to public health. This terminator can action to emergency management to improve the response, on the type of hazard involved.

ally) centralized control point for a substantial segment of a freight nee activities. It is roughly the railroad equivalent to a highway Traffic e source and destination of information that can be used to coordinate ent and maintenance operations. It is also the source and destination aster, or evacuation information that is exchanged with Emergency uld also represent a railroad's management information system, if that for this information. The use of a single terminator for multiple ation exchange with railroads is meant to imply the need for a single, en railroad's operations and maintenance activities and ITS.

traveler<u>traveller</u> information at transit stations, transit stops, other , rest stops, merchant locations), and major trip generation locations <u>s</u>, hotels, office complexes, amusement parks, and theaters. ess points include kiosks and informational displays supporting varied on access. At transit stops, simple displays providing schedule ignals can be provided. This basic information may be extended to acluding traffic <u>and weather</u> conditions and transit schedules along <u>ry</u> information to support mode and route selection at major trip e planning and route guidance information can also be provided based traveller. The subsystem also supports electronic payment of transit

information provisions, this subsystem also supports security and This monitoring includes travelertraveller activated silent alarms, as hipment. The surveillance equipment includes video (e.g. CCTV e sensor equipment includes threat sensors (e.g. chemical agent, toxic plosives, and radiological sensors) and object detection sensors (e.g.

US_V6 Name	US_V6 Description	C_V2 Name	
Roadway Environment	This terminator represents the physical condition and geometry of the road surface and the conditions surrounding the roadway. The geometry of the roadway and the road surface characteristics must be sensed and interpreted to support automated vehicle control services. Surrounding conditions may include fog, ice, snow, rain, wind, etc. which will influence the way in which a vehicle can be safely operated on the roadway. The condition of the roadway must be monitored by the architecture to enable corrective action and information dissemination regarding roadway conditions which may adversely affect travel. This physical interface carries these physical condition and geometry attributes which must be sensed, interpreted, and processed by functions internal to the system to achieve ITS User Service functionality.	Roadway Environment	This terminator represents the physic surrounding the roadway. The geom sensed and interpreted to support aut include fog, ice, snow, rain, wind, et operated on the roadway. The condi corrective action and information dis affect travel. This physical interface be sensed, interpreted, and processed functionality.
Roadway Subsystem	This subsystem includes the equipment distributed on and along the roadway that monitors and controls traffic and monitors and manages the roadway itself. Equipment includes traffic detectors, environmental sensors, traffic signals, highway advisory radios, dynamic message signs, CCTV cameras and video image processing systems, grade crossing warning systems, and freeway ramp metering systems. HOV lane management, reversible lane management functions, and barrier systems that control access to transportation infrastructure such as roadways, bridges and tunnels are also supported. This subsystem also provides the capability for environmental monitoring including sensors that measure road conditions, surface weather, and vehicle emissions. In adverse conditions, automated systems can be used to apply anti-icing materials, disperse fog, etc. Work zone systems including work zone surveillance, traffic control, driver warning, and work crew safety systems are also included. To enhance security, safeguard systems such as blast shields, exhaust systems and other automated and remotely controlled systems to protect transportation infrastructure is also provided. In advanced implementations, this subsystem supports automated vehicle safety systems by safely controlling access to and egress from an Automated Highway System through monitoring of, and communications with, AHS vehicles. Intersection collision avoidance functions are provided by determining the probability of a collision in the intersection and sending appropriate warnings and/or control actions to the approaching vehicles.	Roadway Subsystem	This subsystem includes the equipmet traffic and monitors and manages the environmental sensors, traffic signals and video image processing systems, systems. HOV lane management, re- control access to transportation infras as well as transit priority, and emerge the capability for <u>emissions and</u> envi- road conditions, surface weather, and be used to apply anti-icing materials, surveillance, traffic control, driver w enhance security, safeguard systems remotely controlled systems to protec- implementations, this subsystem sup to and egress from an Automated Hig with, AHS vehicles. Intersection col- probability of a collision in the inters the approaching vehicles. <u>Advanced</u> for non vehicular road users, and use
Secure Area Environment	This terminator represents the environment around any area that is monitored by surveillance or sensor equipment. These areas include public areas frequented by transit users or travelers as well as transportation facilities and infrastructure.	Secure Area Environment	This terminator represents the enviro equipment. These areas include pub transportation facilities and infrastrue and transit transfer and multimodal to
Security Monitoring Subsystem	This subsystem includes surveillance and sensor equipment used to provide enhanced security and safety for transportation facilities or infrastructure. The equipment represented by this subsystem is located in non-public areas of transportation facilities (e.g. maintenance and transit yards) or located on or near non-roadway parts of the transportation infrastructure (e.g. transit railway and guideways). This subsystem also includes surveillance and sensor equipment located on or near major roadway features such as bridges, tunnels, and interchanges, when the equipment's primary function is one of security and safety. If the primary function of the equipment is traffic surveillance or incident detection, then the surveillance or sensors would be covered as part of the Roadway Subsystem. Similarly, the surveillance and sensor equipment includes video (e.g. CCTV cameras) and/or audio systems. The sensor equipment includes threat sensors (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), object detection (e.g. metal detectors), intrusion or motion detection, and infrastructure integrity monitoring (e.g. rail track continuity checking or bridge structural integrity monitoring). Limited processing of collected sensor and surveillance data is also included in this subsystem to support threat detection and classification.	Security Monitoring Subsystem	This subsystem includes surveillance for transportation facilities or infrastr non-public areas of transportation fac non-roadway parts of the transportati subsystem also includes surveillance such as bridges, tunnels, and intercha safety. If the primary function of the surveillance or sensors would be cov and sensor equipment for public area <u>TravelerTraveller</u> Support Subsystem and/or audio systems. The sensor equ chemical, biological, explosives, and intrusion or motion detection, and im or bridge structural integrity monitor also included in this subsystem to sup-
Shelter Providers	This terminator provides information about the shelters that open with the threat of a disaster and are operated and maintained until the threat has passed. This terminator may represent individual shelters if they have the capability to provide current information directly to ITS or it may represent a managing organization such as the American Red Cross that operates the shelters and collects and provides aggregate shelter information for a region.	Shelter Providers	This terminator provides information operated and maintained until the thr they have the capability to provide or organization such as the American R aggregate shelter information for a re
Storage Facility	This terminator represents the facilities that provide storage and forward staging for equipment and materials used in maintenance and construction operations. It provides status information on the types and quantities of materials and equipment that are available at the facility.	Storage Facility	This terminator represents the faciliti materials used in maintenance and cc and quantities of materials and equip

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sical condition and geometry of the road surface and the conditions metry of the roadway and the road surface characteristics must be utomated vehicle control services. Surrounding conditions may etc. which will influence the way in which a vehicle can be safely dition of the roadway must be monitored by the architecture to enable lissemination regarding roadway conditions which may adversely ce carries these physical condition and geometry attributes which must ed by functions internal to the system to achieve ITS User Service

ment distributed on and along the roadway that monitors and controls he roadway itself. Equipment includes traffic detectors, als, highway advisory radios, dynamic message signs, CCTV cameras ns, grade crossing warning systems, and freeway ramp metering reversible lane management functions, and barrier systems that rastructure such as roadways, bridges and tunnels are also-supported. gency vehicle pre-emption functions. This subsystem also provides vironmental conditions monitoring including sensors that measure nd vehicle emissions. In adverse conditions, automated systems can ls, disperse fog, etc. Work zone systems including work zone warning, and work crew safety systems are also included. To as such as blast shields, exhaust systems and other automated and tect transportation infrastructure is also provided. In advanced upports automated vehicle safety systems by safely controlling access Highway System (AHS) through monitoring of, and communications ollision avoidance functions are provided by determining the ersection and sending appropriate warnings and/or control actions to ed sensor systems are supported which provide automated protection sers in such vehicles as bicycles and motorcycles.

ronment around any area that is monitored by surveillance or sensor ablic areas frequented by transit users or <u>travelerstravellers</u>, as well as ructure, <u>and includes bus stops</u>, <u>park and ride (PAR) facilities</u>, <u>kiosks</u>, transfer locations.

ce and sensor equipment used to provide enhanced security and safety structure. The equipment represented by this subsystem is located in facilities (e.g. maintenance and transit yards) or located on or near ation infrastructure (e.g. transit railway and guideways). This ce and sensor equipment located on or near major roadway features hanges, when the equipment's primary function is one of security and he equipment is traffic surveillance or incident detection, then the overed as part of the Roadway Subsystem. Similarly, the surveillance eas of transportation facilities is covered in the Remote

em. The surveillance equipment includes video (e.g. CCTV cameras) equipment includes threat sensors (e.g. chemical agent, toxic industrial nd radiological sensors), object detection (e.g. metal detectors), infrastructure integrity monitoring (e.g. rail track continuity checking oring). Limited processing of collected sensor and surveillance data is support threat detection and classification.

on about the shelters that open with the threat of a disaster and are hreat has passed. This terminator may represent individual shelters if current information directly to ITS or it may represent a managing Red Cross that operates the shelters and collects and provides region.

ities that provide storage and forward staging for equipment and construction operations. It provides status information on the types ipment that are available at the facility.

US_V6 Name	US_V6 Description	C_V2 Name	
Surface Transportation Weather Service	This terminator represents the providers of value-added sector specific meteorological services. These providers utilize National Weather Service data and predictions (including the qualified environmental data from the Clarus system), road condition information and local environmental data provided by the traffic management or maintenance organizations, and their own models to provide surface transportation related weather observations and forecasts including pavement temperature and conditions.	Surface Transportation WeatherMeteorological Service Provider	This terminator represents the provide (possibly private) providers utilize Na (including the qualified environmenta networks), road condition information or maintenance <u>management</u> organiza related weather observations and fore
Telecommunications System for Traveler Information	This terminator provides the caller interface and voice processing (voice recognition/synthesis) that supports voice-enabled traveler telephone information systems. It provides wireline and wireless caller access to 511 systems and other telephone access mechanisms like 7 or 10 digit local access numbers. It represents the boundary of the architecture where a call is received and processed and includes voice portal capabilities in scenarios where a distinct voice portal exists between ITS Centers and telecommunications providers. The terminator gathers traveler information, alerts, and advisories from information service provider(s) and uses this information to support voice-based interactions with a traveler.	Telecommunications System for Traveler <u>Traveller</u> Information	This terminator provides the caller im supports voice-enabled travelertravel wireless caller access to 511 systems access numbers. It represents the bou includes voice portal capabilities in se <u>CentersCentres</u> and telecommunication alerts, and advisories from information based interactions with a travelertrave
Toll Administration	The Toll Administration Subsystem provides general payment administration capabilities and supports the electronic transfer of authenticated funds from the customer to the transportation system operator. This subsystem supports traveler enrollment and collection of both pre-payment and post-payment transportation fees in coordination with the existing, and evolving financial infrastructure supporting electronic payment transactions. The system may establish and administer escrow accounts depending on the clearinghouse scheme and the type of payments involved. This subsystem posts a transaction to the customer account and generates a bill (for post-payment accounts), debits an escrow account, or interfaces to the financial infrastructure to debit a customer designated account. It supports communications with the Toll Collection Subsystem to support fee collection operations. The subsystem also sets and administers the pricing structures and includes the capability to implement road pricing policies in coordination with the Traffic Management Subsystem. The electronic financial infrastructure shall be cryptographically protected and authenticated to preserve privacy and ensure authenticity and auditability.	Toll Administration	The Toll Administration Subsystem p the electronic transfer of authenticated This subsystem supports travelertrave payment transportation fees in coordi supporting electronic payment transac depending on the clearinghouse scher transaction to the customer account an account, or interfaces to the financial communications with the Toll Collect also sets and administers the pricing s policies in coordination with the Traf in which this subsystem is an interme cryptographically protected and auther auditability.
Toll Administrator	The Toll Administrator is the human entity that manages the back office payment administration systems for a electronic toll system. This terminator monitors the systems that support the electronic transfer of authenticated funds from the customer to the system operator. The terminator monitors customer enrollment and supports the establishment of escrow accounts depending on the clearinghouse scheme and the type of payments involved. The terminator also establishes and administers the pricing structures and policies.	Toll Administrator	The Toll Administrator is the human for a electronic toll system. This tern authenticated funds from the custome enrollment and supports the establish and the type of payments involved. T structures and policies.
Toll Collection	The Toll Collection Subsystem provides the capability for vehicle operators to pay tolls without stopping their vehicles using locally determined pricing structures and includes the capability to implement various variable road pricing policies. Each transaction is accompanied by feedback to the customer indicating the general status of the customer account. A record of the transactions is provided to the Toll Administration Subsystem for reconciliation and so that the customer can periodically receive a detailed record of the transactions.	Toll Collection	The Toll Collection Subsystem provide their vehicles using locally determine various variable road pricing policies, indicating the general status of the cu Administration Subsystem for record record of the transactions.
Toll Operator	The Toll Operator is the human entity that may be physically present at the toll plaza to monitor the operational status of the plaza.	Toll Operator	The Toll Operator is the human entity operational status of the plaza.
Traffic	The Traffic terminator represents the collective body of vehicles that travel on surface streets, arterials, highways, expressways, tollways, freeways, or any other vehicle travel surface. Traffic depicts the vehicle population from which traffic flow surveillance information is collected (average occupancy, average speed, total volume, average delay, etc.), and to which traffic control indicators are applied (intersection signals, stop signs, ramp meters, lane control barriers, variable speed limit indicators, etc.). All sensory and control elements that interface to this vehicle population are internal to ITS.	Traffic	The Traffic terminator represents the highways, expressways, tollways, free vehicle population from which traffic average speed, total volume, average (intersection signals, stop signs, ramp All sensory and control elements that

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viders of value-added sector specific meteorological services. These National <u>WeatherMeteorological</u> Service data and predictions ntal data from the <u>Clarus systemnational ESS data exchange</u> tion and local environmental data provided by the traffic management tizations, and their own models to provide surface transportation precasts including pavement temperature and conditions.

interface and voice processing (voice recognition/synthesis) that <u>reller</u> telephone information systems. It provides wireline and ns and other telephone access mechanisms like 7 or 10 digit local boundary of the architecture where a call is received and processed and a scenarios where a distinct voice portal exists between ITS ations providers. The terminator gathers <u>travelertraveller</u> information, tion service provider(s) and uses this information to support voice-aveller.

n provides general payment administration capabilities and supports ated funds from the customer to the transportation system operator. <u>aveller</u> enrollment and collection of both pre-payment and postrdination with the existing, and evolving financial infrastructure sactions. The system may establish and administer escrow accounts heme and the type of payments involved. This subsystem posts a t and generates a bill (for post-payment accounts), debits an escrow ial infrastructure to debit a customer designated account. It supports ection Subsystem to support fee collection operations. The subsystem g structures and includes the capability to implement road pricing raffic Management Subsystem. The electronic financial transactions mediary between the customer and the financial infrastructure shall be thenticated to preserve privacy and ensure authenticity and

an entity that manages the back office payment administration systems erminator monitors the systems that support the electronic transfer of mer to the system operator. The terminator monitors customer shment of escrow accounts depending on the clearinghouse scheme . The terminator also establishes and administers the pricing

wides the capability for vehicle operators to pay tolls without stopping ined pricing structures and includes the capability to implement ies. Each transaction is accompanied by feedback to the customer customer account. A record of the transactions is provided to the Toll pociliation and so that the customer can periodically receive a detailed

tity that may be physically present at the toll plaza to monitor the

he collective body of vehicles that travel on surface streets, arterials, freeways, or any other vehicle travel surface. Traffic depicts the fic flow surveillance information is collected (average occupancy, age delay, etc.), and to which traffic control indicators are applied mp meters, lane control barriers, variable speed limit indicators, etc.). hat interface to this vehicle population are internal to ITS.

US_V6 Name	US_V6 Description	C_V2 Name	
Traffic Management	The Traffic Management Subsystem monitors and controls traffic and the road network. It represents centers that manage a broad range of transportation facilities including freeway systems, rural and suburban highway systems, and urban and suburban traffic control systems. This subsystem communicates with the Roadway Subsystem to monitor and manage traffic flow and monitor the condition of the roadway, surrounding environmental conditions, and field equipment status. This subsystem coordinates with the Maintenance and Construction Management Subsystem to maintain the road network and coordinate and adapt to maintenance activities, closures, and detours. Incidents are detected, verified, and incident information is provided to allied agencies, drivers (through Roadway Subsystem highway advisory radio and dynamic message signs), and information service providers. This subsystem also manages traffic and transportation resources to support allied agencies in responding to, and recovering from, incidents ranging from minor traffic incidents through major disasters. When required, special traffic management strategies are implemented to support evacuation and reentry. The Traffic Management Subsystem supports HOV lane management and coordination, road pricing, and other demand management policies that can alleviate congestion and influence mode selection. It also manages reversible lane facilities and barrier and safeguard systems that control access to transportation infrastructure. The subsystem communicates with other Traffic Management Subsystems to coordinate traffic information and control strategies in neighboring jurisdictions. It also coordinates with rail operations to support safer and more efficient highway traffic management at highway-rail intersections. Finally, the Traffic Management Subsystem provides the capabilities to exercise control over those devices utilized for automated highway system (AHS) traffic and vehicle control.	Traffic Management	The Traffic Management Subsystem centerscentres that manage a broad ra suburban highway systems, and urban communicates with the Roadway Sub condition of the roadway, surroundin subsystem coordinates with the Main road network and coordinate and ada detected, verified, and incident inforr Subsystem highway advisory radio at This subsystem also manages traffic responding to, and recovering from, i disasters. When required, special tra- and reentry. The Traffic Managemen road pricing, and other demand mana- selection. It also manages reversible to transportation infrastructure. The s Subsystems to coordinate traffic info- coordinates with rail operations to su highway-rail intersections. Finally, t exercise control over those devices un control.
Traffic Operations Personnel	This terminator represents the human entity that directly interfaces with vehicle traffic operations. These personnel interact with traffic control systems, traffic surveillance systems, incident management systems, work zone management systems, and travel demand management systems to accomplish ITS services. They provide operator data and command inputs to direct systems' operations to varying degrees depending on the type of system and the deployment scenario. All functionality associated with these services that might be automated in the course of ITS deployment is modeled as internal to the architecture.	Traffic Operations Personnel	This terminator represents the human personnel interact with traffic control systems, work zone management syst services. They provide operator data degrees depending on the type of syst these services that might be automate architecture.
Transit Management	The Transit Management Subsystem manages transit vehicle fleets and coordinates with other modes and transportation services. It provides operations, maintenance, customer information, planning and management functions for the transit property. It spans distinct central dispatch and garage management systems and supports the spectrum of fixed route, flexible route, paratransit services, transit rail, and bus rapid transit (BRT) service. The subsystem's interfaces allow for communication between transit departments and with other operating entities such as emergency response services and traffic management systems. This subsystem receives special event and real-time incident data from the traffic management subsystem. It provides current transit operations data to other center subsystems. It interfaces with the Emergency Management Subsystem to allow coordinated use of transit vehicles to facilitate response to major emergencies or evacuations. The Transit Management Subsystem collects and stores accurate ridership levels and implements fare structures for use in electronic fare collection. It collects operational and maintenance data from transit vehicles, manages vehicle service histories, and assigns vehicle operators and maintenance personnel to vehicles and routes. The Transit Management Subsystem also provides the capability for automated planning and scheduling of public transit operations. The scheduling capability includes schedule writing, block building and runcutting. The subsystem furnishes travelers with real-time travel information, continuously updated schedules, schedule adherence information, transfer options, and transit routes and fares. In addition, the subsystem supports transit vehicles. It also includes the capability to support transit vehicle operator initiated, on-board transit vehicles. It also includes the capability to support transit vehicle operator authentication and the capability to remotely disable a transit vehicle. The subsystem includes the capability to alert operators and	Transit Management	The Transit Management Subsystem and transportation services. It provide management functions for the transit systems and supports the spectrum of rapid transit (BRT) service. The subsy departments and with other operating management systems. This subsystem management subsystem. It provides c interfaces with the Emergency Manag facilitate response to major emergence and stores accurate ridership levels ar collects operational and maintenance assigns vehicle operators and mainter Subsystem also provides the capability subsystem furnishes travelerstraveller schedules, schedule adherence inform supports the capability to manage its in very advanced applications, on an extended through co-ordination with the subsystem supports transit securit and operator initiated, on-board trans operator authentication and the capabi- the capability to alert operators and p

# C\_V2 Description

m monitors and controls traffic and the road network. It represents range of transportation facilities including freeway systems, rural and ban and suburban traffic control systems. This subsystem Subsystem to monitor and manage traffic flow and monitor the ling environmental conditions, and field equipment status. This aintenance and Construction Management Subsystem to maintain the dapt to maintenance activities, closures, and detours. Incidents are ormation is provided to allied agencies, drivers (through Roadway and dynamic message signs), and information service providers. ic and transportation resources to support allied agencies in n, incidents ranging from minor traffic incidents through major raffic management strategies are implemented to support evacuation ent Subsystem supports HOV lane management and coordination, nagement policies that can alleviate congestion and influence mode ble lane facilities and barrier and safeguard systems that control access subsystem communicates with other Traffic Management formation and control strategies in neighboring jurisdictions. It also support safer and more efficient highway traffic management at the Traffic Management Subsystem provides the capabilities to utilized for automated highway system (AHS) traffic and vehicle

an entity that directly interfaces with vehicle traffic operations. These rol systems, traffic surveillance systems, incident management ystems, and travel demand management systems to accomplish ITS ata and command inputs to direct systems' operations to varying ystem and the deployment scenario. All functionality associated with ated in the course of ITS deployment is modeled as internal to the

m manages transit vehicle fleets and coordinates with other modes ides operations, maintenance, customer information, planning and sit property. It spans distinct central dispatch and garage management of fixed route, flexible route, paratransit services, transit rail, and bus bsystem's interfaces allow for communication between transit ng entities such as emergency response services and traffic em receives special event and real-time incident data from the traffic s current transit operations data to other <del>center</del>centre subsystems. It nagement Subsystem to allow coordinated use of transit vehicles to encies or evacuations. The Transit Management Subsystem collects and implements fare structures for use in electronic fare collection. It ce data from transit vehicles, manages vehicle service histories, and tenance personnel to vehicles and routes. The Transit Management ility for automated planning and scheduling of public transit ity includes schedule writing, block building and runcutting. The llers with real-time travel information, continuously updated rmation, transfer options, and transit routes and fares. The subsystem ts assets to support connection protection, either on a vehicle basis or, an individual traveller basis. This connection protection can be further th other transit agencies, or other modes of transportation. In addition, rity features. This includes monitoring silent alarms, both passenger nsit vehicles. It also includes the capability to support transit vehicle ability to remotely disable a transit vehicle. The subsystem includes sit vehicle being off the assigned route. The subsystem also includes police to potential incidents identified by these security features.

US_V6 Name	US_V6 Description	C_V2 Name	
Transit Operations Personnel	This terminator represents the human entities that are responsible for fleet management, maintenance operations, and scheduling activities of the transit system. These different roles represent a variety of individuals in the transit industry. Within the transit industry the person responsible for fleet management is known by many names: Street Supervisor (most common), Starter, Dispatcher, Supervisor, Traffic Controller, Transportation Coordinator. This entity actively monitors, controls, and modifies the transit fleet routes and schedules on a day to day basis (dynamic scheduling). The modifications will be to take account of abnormal situations such as vehicle breakdown, vehicle delay, detours around work zones or incidents (detour management and service restoration), and other causes of route or schedule deviations. This entity may also be responsible for demand responsive transit operation and for managing emergency situations within the transit network such as silent alarms on board transit vehicles, or the remote disabling of the vehicle. In addition the Transit Operations Personnel may be responsible for assigning vehicle operators to routes, checking vehicle operators in and out, and managing transit stop issues. The Transit Operations Personnel terminator also represents the personnel in the transit garage that are responsible for maintenance of the transit fleets, including monitoring vehicle status, matching vehicles with operators, and maintenance checking of transit vehicles. Finally, the Transit Operations Personnel terminator represents the people responsible for planning, development, and management of transit routes and schedules.	Transit Operations Personnel	This terminator represents the humar operations, and scheduling activities individuals in the transit industry. We management is known by many name Supervisor, Traffic Controller, Transe modifies the transit fleet routes and se modifications will be to take account detours around work zones or incident route or schedule deviations. This effort operation and for managing emergent board transit vehicles, or the remote Personnel may be responsible for asse out, and managing transit stop issuess personnel in the transit garage that ar monitoring vehicle status, matching vehicles. Finally, the Transit Operatt planning, development, and manager
Transit Vehicle Operator	This terminator represents the human entity that receives and provides additional information that is specific to operating the ITS functions in all types of transit vehicles. To support transit vehicle security features, the Transit Vehicle Operator can input to the Transit Vehicle Subsystem a silent alarm. The operator can also be required to enter an authentication command (used to enable operation of the vehicle). The information received by the operator would include status of on-board systems. Additional information received depends upon the type of transit vehicle. In the case of fixed route transit vehicles, the Transit Vehicle Operator would receive operator instructions that might include actions to take to correct schedule deviations. In the case of flexible fixed routes and demand response routes the information would also include dynamic routing or passenger pickup information.	Transit Vehicle Operator	This terminator represents the human specific to operating the ITS function security features, the Transit Vehicle The operator can also be required to vehicle). The information received the Additional information received dep transit vehicles, the Transit Vehicle of actions to take to correct schedule de routes the information would also information
Transit Vehicle Subsystem	This subsystem resides in a transit vehicle and provides the sensory, processing, storage, and communications functions necessary to support safe and efficient movement of passengers. The types of transit vehicles containing this subsystem include buses, paratransit vehicles, light rail vehicles, other vehicles designed to carry passengers, and supervisory vehicles. The subsystem collects accurate ridership levels and supports electronic fare collection. The subsystem supports a traffic signal prioritization function that communicates with the roadside subsystem to improve on-schedule performance. Automated vehicle location functions enhance the information available to the Transit Management Subsystem enabling more efficient operations. On-board sensors support transit vehicle maintenance. The subsystem supports on-board security and safety monitoring. This monitoring includes transit user or vehicle operator activated alarms (silent or audible), as well as surveillance and sensor equipment. The surveillance equipment includes threat sensors (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors (e.g. metal detectors). In addition, the subsystem supports vehicle operator authentication prior to operation of the vehicle and remote vehicle disabling. The subsystem also furnishes travelers with real-time travel information, continuously updated schedules, transfer options, routes, and fares.	Transit Vehicle Subsystem	This subsystem resides in a transit very communications functions necessary transit vehicles containing this subsy vehicles designed to carry passengers ridership levels and supports electron prioritization function that communic performance. Automated vehicle loc Management Subsystem enabling mo- maintenance. The subsystem suppor includes transit user or vehicle opera sensor equipment. The surveillance and/or event recorder systems. The se- industrial chemical, biological, explo- metal detectors). In addition, the sub- of the vehicle and remote vehicle dis- time travel <u>and weather</u> information,
Traveler	This terminator represents any individual who uses transportation services. The interfaces to the traveler provide general pre-trip and en-route information supporting trip planning, personal guidance, and requests for assistance in an emergency that are relevant to all transportation system users. The terminator represents users of a public transportation system and addresses interfaces these users have within a transit vehicle or at transit facilities such as roadside stops and transit centers. This general terminator is supplemented in the architecture by the specific "Driver" terminator that supports interfaces that are specific to drivers.	Traveler <u>Traveller</u>	This terminator represents any indivi traveler <u>traveller</u> provide general pre- guidance, and requests for assistance The terminator represents users of a p have within a transit vehicle or at tran- general terminator is supplemented in interfaces that are specific to drivers.
Traveler Card	This terminator represents the entity that enables the actual transfer of electronic information from the user of a service (I.e. a traveler) to the provider of the service. This may include the transfer of funds through means of an electronic payment instrument. The device, like a smart card, may also hold and update the traveler's information such as personal profiles or trip histories.	Traveler <u>Traveller</u> Card	This terminator represents the entity user of a service (I.e. a travelertravel funds through means of an electronic and update the traveler'straveller's in

# C\_V2 Description

an entities that are responsible for fleet management, maintenance es of the transit system. These different roles represent a variety of Within the transit industry the person responsible for fleet mes: Street Supervisor (most common), Starter, Dispatcher, nsportation Coordinator. This entity actively monitors, controls, and l schedules on a day to day basis (dynamic scheduling). The nt of abnormal situations such as vehicle breakdown, vehicle delay, lents (detour management and service restoration), and other causes of s entity may also be responsible for demand responsive transit ency situations within the transit network such as silent alarms on e disabling of the vehicle. In addition the Transit Operations ssigning vehicle operators to routes, checking vehicle operators in and es. The Transit Operations Personnel terminator also represents the are responsible for maintenance of the transit fleets, including g vehicles with operators, and maintenance checking of transit ations Personnel terminator represents the people responsible for ement of transit routes and schedules.

an entity that receives and provides additional information that is ons in all types of transit vehicles. . To support transit vehicle ele Operator can input to the Transit Vehicle Subsystem a silent alarm. o enter an authentication command (used to enable operation of the l by the operator would include status of on-board systems. epends upon the type of transit vehicle. In the case of fixed route e Operator would receive operator instructions that might include deviations. In the case of flexible fixed routes and demand response include dynamic routing or passenger pickup information.

vehicle and provides the sensory, processing, storage, and ry to support safe and efficient movement of passengers. The types of system include buses, paratransit vehicles, light rail vehicles, other ers, and supervisory vehicles. The subsystem collects accurate onic fare collection. The subsystem supports a traffic signal nicates with the roadside subsystem to improve on-schedule ocation functions enhance the information available to the Transit more efficient operations. On-board sensors support transit vehicle orts on-board security and safety monitoring. This monitoring rator activated alarms (silent or audible), as well as surveillance and nce equipment includes video (e.g. CCTV cameras), audio systems sensor equipment includes threat sensors (e.g. chemical agent, toxic plosives, and radiological sensors) and object detection sensors (e.g. ubsystem supports vehicle operator authentication prior to operation lisabling. The subsystem also furnishes travelers travellers with realn, continuously updated schedules, transfer options, routes, and fares.

vidual who uses transportation services. The interfaces to the re-trip and en-route information supporting trip planning, personal ce in an emergency that are relevant to all transportation system users. a public transportation system and addresses interfaces these users ransit facilities such as roadside stops and transit <u>eenterscentres</u>. This I in the architecture by the specific "Driver" terminator that supports rs.

y that enables the actual transfer of electronic information from the <u>eller</u>) to the provider of the service. This may include the transfer of nic payment instrument. The device, like a smart card, may also hold information such as personal profiles or trip histories.

US_V6 Name	US_V6 Description	C_V2 Name	
Vehicle	This subsystem provides the sensory, processing, storage, and communications functions necessary to support efficient, safe, and convenient travel. These functions reside in general vehicles including personal automobiles, commercial vehicles, emergency vehicles, transit vehicles, or other vehicle types. Information services provide the driver with current travel conditions and the availability of services along the route and at the destination. Both one-way and two-way communications options support a spectrum of information services from low-cost broadcast services to advanced, pay for use personalized information services. Route guidance capabilities assist in formulation of an optimal route and step by step guidance along the travel route. Advanced sensors, processors, enhanced driver interfaces, and actuators complement the driver information services so that, in addition to making informed mode and route selections, the driver travels these routes in a safer and more consistent manner. Initial collision avoidance functions provide "vigilant co-pilot" driver warning capabilities. More advanced functions assume limited control of the vehicle to maintain safe headway. Ultimately, this subsystem supports completely automated vehicle operation through advanced communications with other vehicles in the vicinity and in coordination with supporting infrastructure subsystems. Pre-crash safety systems are deployed and emergency notification messages are issued when unavoidable collisions do occur.	Vehicle	This subsystem This subsystem reside covered by particular vehicle subsyst communications functions necessary reside in general vehicles including p transit vehicles, <u>maintenance vehicles</u> with current travel <u>and weather</u> condi- destination Both one-way and two-v services from low-cost broadcast serv Route guidance capabilities assist in a travel route. Advanced sensors, proc driver information services so that, in travels these routes in a safer and mo "vigilant co-pilot" driver warning cap vehicle to maintain safe headway. UI operation through advanced commun supporting infrastructure subsystems, notification messages are issued whe <u>systems described above apply to aut</u> such as motorcycles and even bicycle
Vehicle Characteristics	<ul> <li>This terminator represents the external view of an individual vehicle. It includes vehicle characteristics such as height, width, length, weight, and other properties (e.g., magnetic properties, number of axles) that allow an individual vehicle to be detected and measured or classified. This external view of an individual vehicle is also used as a source of visible data that supports individual vehicle imaging requirements in the architecture.</li> <li>ITS subsystems at the roadside sense these characteristics and generate ITS data flows. These individual vehicle characteristics are important for toll collection, parking management, and other applications that identify and measure individual vehicles. See also the related "Traffic" terminator which represents physical characteristics of many vehicles in the aggregate that is measured for general traffic applications.</li> </ul>	Vehicle Characteristics	This terminator represents the extern such as height, width, length, weight, that allow an individual vehicle to be individual vehicle is also used as a so requirements in the architecture. ITS subsystems at the roadside sens individual vehicle characteristics are applications that identify and measur which represents physical characteris traffic applications. The vehicles rep motorcycles, bicycles, and any other
Wayside Equipment	This terminator represents train interface equipment (usually) maintained and operated by the railroad and (usually) physically located at or near a grade crossing. This terminator is the source and destination for HRI information for, or about, approaching trains and their crews (e.g. the time at which the train will arrive and the time it will take to clear a crossing, crossing status or warnings, etc.). Generally one wayside equipment interface would be associated with one highway rail intersection. However, multiple crossings may be controlled using information based on data from one wayside equipment interface.	Wayside Equipment	This terminator represents train interf and (usually) physically located at or for HRI information for, or about, ap will arrive and the time it will take to wayside equipment interface would b crossings may be controlled using inf
Weather Service	This terminator provides weather, hydrologic, and climate information and warnings of hazardous weather including thunderstorms, flooding, hurricanes, tornadoes, winter weather, tsunamis, and climate events. It provides atmospheric weather observations and forecasts that are collected and derived by the National Weather Service, private sector providers, and various research organizations. This terminator represents the Clarus system, which collects environmental data from ITS systems, assesses the quality of the data, and disseminates the qualified data upon request (including dissemination to ITS systems). The interface provides formatted weather data products suitable for on-line processing and integration with other ITS data products as well as Doppler radar images, satellite images, severe storm warnings, and other products that are formatted for presentation to various ITS users.	Weather <u>National</u> <u>Meteorological</u> Service	This terminator provides weather, hyd weather including thunderstorms, flod eventsIt provides atmospheric weat National WeatherMeteorological Serv organizations. This terminator repress collects environmental data from ITS qualified data upon request (including weather data and forecasts products s products as well as Doppler radar imates that are formatted for presentation to
Yellow Pages Service Providers	This terminator represents the individual organizations that provide any service oriented towards the Traveler. Example services that could be included are gas, food, lodging, vehicle repair, points of interest, and recreation areas. Also included are services specifically directed toward bicyclists and pedestrians such as bicycle shops and parking locations and bicycle and pedestrian rest areas. The Service Providers may pay a fee to have their services advertised to travelers. The interface with the Service Provider is necessary so that accurate, up-to-date service information can be provided to the traveler and to support electronic reservation capabilities included in the ITS User Services.	Yellow PagesBusiness Directory Service Providers	This terminator represents the individ <u>TravelerTraveller</u> . Example services to of interest, and recreation areas. Also pedestrians such as bicycle shops and Service Providers may pay a fee to ha with the Service Provider is necessary the <u>travelertraveller</u> and to support ele

# C\_V2 Description

des in a vehicle (usually in an automobile, but any vehicle not (stem) and provides the sensory, processing, storage, and ry to support efficient, safe, and convenient travel. These functions personal automobiles, commercial vehicles, emergency vehicles, les or other vehicle types. Information services provide the driver nditions and the availability of services along the route and at the p-way communications options support a spectrum of information ervices to advanced, pay for use personalized information services. n formulation of an optimal route and step by step guidance along the ocessors, enhanced driver interfaces, and actuators complement the in addition to making informed mode and route selections, the driver nore consistent manner. Initial collision avoidance functions provide capabilities. -More advanced functions assume limited control of the Ultimately, this subsystem supports completely automated vehicle unications with other vehicles in the vicinity and in coordination with ns. -Pre-<u>crash</u><u>collision</u> safety systems are deployed and emergency hen unavoidable collisions do occur. While the majority of the utomobiles, some of the systems can apply to other forms of vehicles eles.

rnal view of an individual vehicle. It includes vehicle characteristics ht, and other properties (e.g., magnetic properties, number of axles) be detected and measured or classified. This external view of an source of visible data that supports individual vehicle imaging

nse these characteristics and generate ITS data flows. These re important for toll collection, parking management, and other ure individual vehicles. See also the related "Traffic" terminator ristics of many vehicles in the aggregate that is measured for general epresented by this Terminator include automobiles, trucks, buses, er form of motorised vehicle (e.g., electric cart).

erface equipment (usually) maintained and operated by the railroad or near a grade crossing. This terminator is the source and destination approaching trains and their crews (e.g. the time at which the train to clear a crossing, crossing status or warnings, etc.). Generally one d be associated with one highway rail intersection. However, multiple information based on data from one wayside equipment interface.

hydrologic, and climate information and warnings of hazardous flooding, hurricanes, tornadoes, winter weather, tsunamis, and climate eather observations and forecasts that are collected and derived by the bervice of Canada, private sector providers, and various research resents the Clarus systemnational ESS data exchange network, which TS systems, assesses the quality of the data, and disseminates the ing dissemination to ITS systems). The interface provides formatted s suitable for on-line processing and integration with other ITS data mages, satellite images, severe storm warnings, and other products to various ITS users.

vidual organizations that provide any service oriented towards the es that could be included are gas, food, lodging, vehicle repair, points iso included are services specifically directed toward bicyclists and and parking locations and bicycle and pedestrian rest areas. The have their services advertised to <u>travelerstravellers</u>. The interface ary so that accurate, up-to-date service information can be provided to electronic reservation capabilities included in the ITS User Services.



# **C-3** INFORMATION FLOW TEXT COMPARISON

US_V6 Name	US_V6 Description	C_V2 Name	
access permission	Information returned indicating whether permission for access is granted and instructions for proceeding.	access permission	Information returned indicating whet
access request	Request for access to an access-controlled transportation facility.	access request	Request for access to an access-contr
accident report	Report of commercial vehicle safety accident. The information may be provided as a response to a real- time query or proactively by the source. The query flow is not explicitly shown.	accident report	Report of commercial vehicle safety time query or proactively by the sour
air quality information	Aggregated region-wide measured air quality data and possible pollution incident information.	air quality information	Aggregated region-wide measured ai
alarm	Information about a Commercial Vehicle or Freight Equipment breach, non-permitted security sensitive hazmat detected at the roadside, route deviation, or Commercial Vehicle Driver / Commercial Vehicle / Freight Equipment assignment mismatches which includes the location of the Commercial Vehicle and appropriate identities.	alarm	Information about a Commercial Veh hazmat detected at the roadside, route Freight Equipment assignment misma appropriate identities.
alarm acknowledge	Confirmation that alarm was received, instructions and additional information for the alarm initiator, and requests for additional information.	alarm acknowledge	Confirmation that alarm was received requests for additional information.
alarm notification	Notification of activation of an audible or silent alarm by a traveler in a public area or by a transit vehicle operator using an on-board device.	alarm notification	Notification of activation of an audib transit vehicle operator using an on-b
alert notification	Notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The flow identifies the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This flow may also identify specific information that should not be released to the public.	alert notification	Notification of a major emergency su abduction for distribution to the public emergency, the geographic area affect and instructions necessary for the public information that should not be released
alert notification coordination	Coordination of emergency alerts to be distributed to the public. This includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public and status of the public notification.	alert notification coordination	Coordination of emergency alerts to emergency such as a natural or man- the public and status of the public not
alert response	This flow represents the tactile or auditory interface with ITS equipment containing the response by a Commercial Vehicle Driver or Fleet-Freight Manager that confirms or cancels an alert.	alert response	This flow represents the tactile or au Commercial Vehicle Driver or Fleet-
alert status	Information indicating the current status of the emergency alert including identification of the traveler and driver information systems that are being used to provide the alert.	alert status	Information indicating the current sta travelertraveller and driver information
alerts	This flow represents the visual or auditory interface with ITS equipment containing specific alerts and messages related to commercial vehicles (e.g. trucks not advised, trucks over 10 tons not allowed on bridge, route details). This also includes detected route deviations and warning indications detected by on-board sensors (e.g., safety) and freight equipment sensors (e.g., breach, cargo).	alerts	This flow represents the visual or aud messages related to commercial vehic bridge, route details). This also includ on-board sensors (e.g., safety) and free
alerts and advisories	Assessments (general incident and vulnerability awareness information), advisories (identification of threats or recommendations to increase preparedness levels), and alerts (information on imminent or in- progress emergencies). This flow also provides supporting descriptive detail on incidents, threats, and vulnerabilities to increase preparedness and support effective response to threats against the surface transportation system.	alerts and advisories	Assessments (general incident and vu threats or recommendations to increa progress emergencies). This flow als vulnerabilities to increase preparedne transportation system.
archive analysis requests	A user request that initiates data mining, analytical processing, aggregation or summarization, report formulation, or other advanced processing and analysis of archived data. The request also includes information that is used to identify and authenticate the user and support electronic payment requirements, if any.	archive analysis requests	A user request that initiates data mini formulation, or other advanced proce information that is used to identify ar requirements, if any.
archive analysis results	Processed information products, supporting meta data, and any associated transaction information resulting from data mining, analytical processing, aggregation or summarization, report formulation, or other on-line processing and analysis of archived data.	archive analysis results	Processed information products, suppresulting from data mining, analytica other on-line processing and analysis
archive coordination	Catalog data, meta data, published data, and other information exchanged between archives to support data synchronization and satisfy user data requests.	archive coordination	Catalog data, meta data, published da data synchronization and satisfy user
archive management data	Presentation of information to the administrator to support the management of an ITS archive including database reports on the condition and quality of the archived data, status of the import and collection process, reports that monitor archive usage, and any special requests that require direct action by the administrator (e.g., requests for access to new data sources).	archive management data	Presentation of information to the add database reports on the condition and process, reports that monitor archive administrator (e.g., requests for access
archive management requests	User input from the administrator including commands, requests, and queries that support data collection, administration, and management of an ITS data archive.	archive management requests	User input from the administrator inc collection, administration, and manag
archive request confirmation	Confirmation that an archive request has been received and processed with information on the disposition of the request.	archive request confirmation	Confirmation that an archive request disposition of the request.

# C\_V2 Description

ether permission for access is granted and instructions for proceeding. ntrolled transportation facility.

ty accident. The information may be provided as a response to a realurce. The query flow is not explicitly shown.

air quality data and possible pollution incident information.

Vehicle or Freight Equipment breach, non-permitted security sensitive ute deviation, or Commercial Vehicle Driver / Commercial Vehicle / matches which includes the location of the Commercial Vehicle and

ved, instructions and additional information for the alarm initiator, and

lible or silent alarm by a traveler<u>traveller</u> in a public area or by a n-board device.

such as a natural or man-made disaster, civil emergency, or child blic. The flow identifies the alert originator, the nature of the fected by the emergency, the effective time period, and information bublic to respond to the alert. This flow may also identify specific ased to the public.

o be distributed to the public. This includes notification of a major n-made disaster, civil emergency, or child abduction for distribution to notification.

auditory interface with ITS equipment containing the response by a et-Freight Manager that confirms or cancels an alert.

status of the emergency alert including identification of the ation systems that are being used to provide the alert.

uditory interface with ITS equipment containing specific alerts and hicles (e.g. trucks not advised, trucks over 10 tons not allowed on ludes detected route deviations and warning indications detected by freight equipment sensors (e.g., breach, cargo).

vulnerability awareness information), advisories (identification of ease preparedness levels), and alerts (information on imminent or inalso provides supporting descriptive detail on incidents, threats, and lness and support effective response to threats against the surface

ining, analytical processing, aggregation or summarization, report cessing and analysis of archived data. The request also includes and authenticate the user and support electronic payment

poporting meta data, and any associated transaction information cal processing, aggregation or summarization, report formulation, or sis of archived data.

data, and other information exchanged between archives to support er data requests.

administrator to support the management of an ITS archive including nd quality of the archived data, status of the import and collection we usage, and any special requests that require direct action by the cess to new data sources).

ncluding commands, requests, and queries that support data nagement of an ITS data archive.

st has been received and processed with information on the

US_V6 Name	US_V6 Description	C_V2 Name	
archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.	archive requests	A request to a data source for inform data to be archived. The request can data stream or a specific request inter
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.	archive status	Notification that data provided to an verification that the data provided ap nature of the potential problem are id
archived data product requests	A user-specified request for archived data products (i.e. data, meta data, or data catalogs). The request also includes information that is used to identify and authenticate the user and support electronic payment requirements, if any.	archived data product requests	A user-specified request for archived also includes information that is used payment requirements, if any.
archived data products	Raw or processed data, meta data, data catalogs and other data products provided to a user system upon request. The response may also include any associated transaction information.	archived data products	Raw or processed data, meta data, da request. The response may also inclu
area pollution data	Measured air quality data, including measured levels of atmospheric pollutants including ozone, particulate matter, carbon monoxide, and nitrogen oxides, and operational status of the sensors.	area pollution data	Measured air quality data, including particulate matter, carbon monoxide,
arrival notification	Notification of arrival (and departure) of a motor vehicle at the inspection station.	arrival notification	Notification of arrival (and departure
arriving train information	Information for a train approaching a highway-rail intersection that may include direction and allow calculation of approximate arrival time and closure duration.	arriving train information	Information for a train approaching a calculation of approximate arrival tin
asset archive data	Information describing transportation assets including pavements, bridges, and all other infrastructure included in the transportation network. In addition, information can cover support assets (support equipment and systems, software, etc.). Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	asset archive data	Information describing transportation included in the transportation networ equipment and systems, software, etc actual information to be archived, and
asset damage assessment	Information indicating the damage sustained by transportation assets, derived from aerial surveillance, field reports, inspections, tests, and analyses.	asset damage assessment	Information indicating the damage su field reports, inspections, tests, and a
asset inventory	Information on pavement, bridges, signs and other assets. This includes asset location, installation information, materials information, vendor/contractor information, current maintenance status, and a variety of other information (e.g., video logs) that define the transportation infrastructure.	asset inventory	Information on pavement, bridges, si information, materials information, v variety of other information (e.g., vid
asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard height, width, and weight restrictions by facility as well as special restrictions such as spring weight restrictions and temporary bridge weight restrictions.	asset restrictions	Restrictions levied on transportation analyses. This includes standard heig restrictions such as spring weight res
asset status update	Changes to status of pavement, bridges, signs and other assets resulting from maintenance or construction activities or infrastructure monitoring. The updates may include changes in installation information, materials information, vendor/contractor information, condition, and current maintenance status. In addition to infrastructure asset updates, the information provided may also include status of the maintenance and construction support assets, including vehicle and equipment utilization and repair records.	asset status update	Changes to status of pavement, bridg construction activities or infrastructur information, materials information, v status. In addition to infrastructure a the maintenance and construction sup records.
audit data	Information to support a tax audit.	audit data	Information to support a tax audit.
automated roadway control data	Control commands and operating parameters provided to field equipment that controls and monitors automated vehicle operations.	automated roadway control data	Control commands and operating par automated vehicle operations.
automated roadway status	Current operational status of an automated vehicle operations facility, including the status of the field equipment and vehicles using the facility.	automated roadway status	Current operational status of an autor equipment and vehicles using the fac
automated vehicle control data	Instructions and control parameters for automated vehicle operation including current system conditions and advisories, control parameters (e.g., speed and performance profiles, headways), maneuver coordination, and check in/checkout instructions.	automated vehicle control data	Instructions and control parameters fe and advisories, control parameters (e coordination, and check in/checkout
automated vehicle status	Data provided by an automated vehicle identifying it's current mode and operational status, current position and motion, preferred route, and information provided to support checking/checkout and coordinated maneuvers while on the automated facility.	automated vehicle status	Data provided by an automated vehic position and motion, preferred route, coordinated maneuvers while on the
bad tag list	List of invalid transit user tags which may have previously failed a fare payment transaction.	bad tag list	List of invalid transit user tags which
barrier system control	Information used to configure and control barrier systems that are represented by gates, barriers and other automated or remotely controlled systems used to manage entry to roadways.	barrier system control	Information used to configure and co other automated or remotely controlle
barrier system status	Current operating status of barrier systems. Barrier systems represent gates, barriers and other automated or remotely controlled systems used to manage entry to roadways. Status of the systems includes operating condition and current operational state.	barrier system status	Current operating status of barrier sy automated or remotely controlled sys includes operating condition and curr

# C\_V2 Description

mation on available data (i.e. "catalog") or a request that defines the n be a general subscription intended to initiate a continuous or regular tended to initiate a one-time response from the recipient.

In archive contains erroneous, missing, or suspicious data or appears valid. If an error has been detected, the offending data and the identified.

ed data products (i.e. data, meta data, or data catalogs). The request ed to identify and authenticate the user and support electronic

data catalogs and other data products provided to a user system upon clude any associated transaction information.

g measured levels of atmospheric pollutants including ozone, le, and nitrogen oxides, and operational status of the sensors.

re) of a motor vehicle at the inspection station.

g a highway-rail intersection that may include direction and allow time and closure duration.

on assets including pavements, bridges, and all other infrastructure ork. In addition, information can cover support assets (support etc.). Content may include a catalog of available information, the and associated meta data that describes the archived information.

sustained by transportation assets, derived from aerial surveillance, l analyses.

signs and other assets. This includes asset location, installation , vendor/contractor information, current maintenance status, and a video logs) that define the transportation infrastructure.

on asset usage based on infrastructure design, surveys, tests, or eight, width, and weight restrictions by facility as well as special estrictions and temporary bridge weight restrictions.

dges, signs and other assets resulting from maintenance or ture monitoring. The updates may include changes in installation , vendor/contractor information, condition, and current maintenance e asset updates, the information provided may also include status of support assets, including vehicle and equipment utilization and repair

parameters provided to field equipment that controls and monitors

tomated vehicle operations facility, including the status of the field acility.

s for automated vehicle operation including current system conditions (e.g., speed and performance profiles, headways), maneuver at instructions.

nicle identifying it's current mode and operational status, current te, and information provided to support checking/checkout and the automated facility.

ch may have previously failed a fare payment transaction.

control barrier systems that are represented by gates, barriers and olled systems used to manage entry to roadways.

systems. Barrier systems represent gates, barriers and other systems used to manage entry to roadways. Status of the systems urrent operational state.

US_V6 Name	US_V6 Description	C_V2 Name	
basic transit vehicle controls	Control signal disabling or enabling transit vehicle sent as a result of a transit vehicle operator authentication action or a remote disable command.	basic transit vehicle controls	Control signal disabling or enabling t authentication action or a remote disa
basic vehicle measures	Information provided to on-board ITS equipment from the vehicle platform indicating current vehicle status.	basic vehicle measures	Information provided to on-board IT: status.
boarding and alighting	Detection of transit passenger boarding and alighting. This flow represents the travelers' physical presence as they board a transit vehicle that can be detected or monitored by on-board sensors.	boarding and alighting	Detection of transit passenger boardi physical presence as they board a tra
booking status	Status of the freight transport booking that includes the identities of the Commercial Vehicle and driver who will pick-up the freight or a request for more information from the originator.	booking status	Status of the freight transport bookin who will pick-up the freight or a requ
border agency clearance results	Notification regarding the granting of permission for commercial freight shipment to enter the U.S.	border agency clearance results	Notification regarding the granting of
border clearance data	Trip specific data regarding the movement of goods across international borders. Includes trip identification number. May also include results from recent border crossing screening events.	border clearance data	Trip specific data regarding the move identification number. May also inclu
border clearance data request	Request for trip specific data regarding the movement of goods across international borders. Includes trip identification number. May also include results from recent border crossing screening events.	border clearance data request	Request for trip specific data regardin identification number. May also inclu
border clearance event	Reports clearance event data regarding action taken at border, including acceptance or override of system decision, and date/time stamp	border clearance event	Reports clearance event data regardin system decision, and date/time stamp
border clearance status	Notification regarding the crossing status of commercial freight shipment scheduled to enter the U.S. Includes portions of border agency and transportation agency clearance results, as they become available. Recipients may include trade regulatory agencies that do not receive status information directly from U.S. Customs (e.g., other transportation agencies with trade related responsibilities, such as NHTSA, MARAD, etc.)	border clearance status	Notification regarding the crossing st Includes portions of border agency ar available. Recipients may include tra directly from U.S. Customs (e.g., oth NHTSA, MARAD, etc.)
border crossing status information	Port of entry status including current wait-times.	border crossing status information	Port of entry status including current
border incident information	Notification of existence of incident in the vicinity of the border. Information would include expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided.	border incident information	Notification of existence of incident is severity, location, time and nature of evolves, updated incident information
border incident response status	Status of the current incident response at a border crossing, including a summary of incident status and its impact on the transportation system, traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides), and current and planned response activities.	border incident response status	Status of the current incident respons its impact on the transportation system closures, diversions, traffic signal com-
border information archive data	Border inspection activities data. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	border information archive data	Border inspection activities data. Co information to be archived, and associ
border pass/pull-in	Command to commercial vehicle to pull into or bypass border inspection station	border pass/pull-in	Command to commercial vehicle to p
breach response	This is an Intermodal Freight Shipper's response to a breach or tamper event of their freight equipment. There maybe instructions for handling of the shipment, possible re-routing or pickup.	breach response	This is an Intermodal Freight Shipper There maybe instructions for handlin
broadcast advisories	General broadcast advisories that are provided over wide-area wireless communications direct to the vehicle radio. These analog advisory messages may provide similar content to ITS broadcast information flows, but include no digital data component. Existing Highway-Advisory Radio (HAR) advisory messages are a prime example of this flow.	broadcast advisories	General broadcast advisories that are vehicle radio. These analog advisory information flows, but include no dig advisory messages are a prime examp
broadcast traveler information	General traveler information that contains traffic and road conditions, link travel times, incidents, advisories, restrictions, transit service information, weather information, parking information, and other related traveler information.	broadcast <del>traveler<u>traveller</u> information</del>	General travelertraveller information incidents, advisories, restrictions, tran and other related travelertraveller info
care facility status	Information regarding facility type and capabilities, facility status, and its ability to admit new patients.	care facility status	Information regarding facility type an
care facility status request	Request for information regarding care facility availability and status.	care facility status request	Request for information regarding ca
citation	Report of commercial vehicle citation. The citation includes references to the statute(s) that was (were) violated. It includes information on the violator and the officer issuing the citation. A citation differs from a violation because it is adjudicated by the courts. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.	citation	Report of commercial vehicle citation violated. It includes information on the from a violation because it is adjudic to a real-time query or proactively by
clearance notification	Notification that cargo has been cleared through customs.	clearance notification	Notification that cargo has been clean
client id	A common identification number that can be used by all BIFA agencies and organizations to reference the carrier.	client id	A common identification number that the carrier.
client verification information	Information about carriers who have made border credential applications such as commercial drivers license information and carrier safety status.	client verification information	Information about carriers who have license information and carrier safety

# C\_V2 Description

g transit vehicle sent as a result of a transit vehicle operator isable command.

TS equipment from the vehicle platform indicating current vehicle

ding and alighting. This flow represents the <u>travelers'travellers'</u> ransit vehicle that can be detected or monitored by on-board sensors.

ing that includes the identities of the Commercial Vehicle and driver equest for more information from the originator.

of permission for commercial freight shipment to enter the U.S.

ovement of goods across international borders. Includes trip clude results from recent border crossing screening events.

ding the movement of goods across international borders. Includes trip clude results from recent border crossing screening events.

ding action taken at border, including acceptance or override of np

status of commercial freight shipment scheduled to enter the U.S. and transportation agency clearance results, as they become rade regulatory agencies that do not receive status information ther transportation agencies with trade related responsibilities, such as

#### nt wait-times.

at in the vicinity of the border. Information would include expected of incident. As additional information is gathered and the incident ion is provided.

nse at a border crossing, including a summary of incident status and tem, traffic management strategies implemented at the site (e.g., control overrides), and current and planned response activities.

Content may include a catalog of available information, the actual sociated meta data that describes the archived information.

o pull into or bypass border inspection station

per's response to a breach or tamper event of their freight equipment. ling of the shipment, possible re-routing or pickup.

re provided over wide-area wireless communications direct to the ory messages may provide similar content to ITS broadcast digital data component. Existing Highway-Advisory Radio (HAR) mple of this flow.

on that contains traffic and road conditions, link travel times, ransit service information, weather information, parking information, nformation.

and capabilities, facility status, and its ability to admit new patients.

care facility availability and status.

ion. The citation includes references to the statute(s) that was (were) n the violator and the officer issuing the citation. A citation differs licated by the courts. The information may be provided as a response by the source. The query flow is not explicitly shown.

#### eared through customs.

hat can be used by all BIFA agencies and organizations to reference

ve made border credential applications such as commercial drivers ety status.

US_V6 Name	US_V6 Description	C_V2 Name	
client verification request	Request for information such as commercial drivers license information and carrier safety status.	client verification request	Request for information such as com
commercial vehicle archive data	Information describing commercial vehicle travel and commodity flow characteristics. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	commercial vehicle archive data	Information describing commercial v include a catalog of available informa data that describes the archived information
commercial vehicle breach	Information about a breach or tamper event on a Commercial Vehicle or its attached freight equipment which includes identity, type of breach, location, and time.	commercial vehicle breach	Information about a breach or tamper which includes identity, type of breac
commercial vehicle data	Information about the commercial vehicles cargo, credentials, and payments.	commercial vehicle data	Information about the commercial ve
commercial vehicle data request	Requests from the vehicle for information about the commercial vehicle's cargo, credentials, and payments.	commercial vehicle data request	Requests from the vehicle for information payments.
commercial vehicle disable	This flow safely disables a specific commercial vehicle.	commercial vehicle disable	This flow safely disables a specific co
commercial vehicle disable status	This flow provides the status of the disable flag in the commercial vehicle.	commercial vehicle disable status	This flow provides the status of the d
commercial vehicle measures	Commercial vehicle and driver status measured by on-board ITS equipment.	commercial vehicle measures	Commercial vehicle and driver status
compliance review report	Report containing results of carrier compliance review, including concomitant out-of-service notifications, carrier warnings/notifications. The information may be provided as a response to a real-time query of proactively by the source. The query flow is not explicitly shown.	compliance review report	Report containing results of carrier containing results of carrier control of the
credential application	Application for commercial vehicle credentials. Authorization for payment is included.	credential application	Application for commercial vehicle c
credential fee coordination	Jurisdiction's rates for various credentials (IRP, IFTA, etc.) that are exchanged between agencies.	credential fee coordination	Jurisdiction's rates for various creden
credentials information	Response containing full vehicle fuel tax and registration credentials information. "Response" may be provided in reaction to a real-time query or a standing request for updated information. The query flow is not explicitly shown.	credentials information	Response containing full vehicle fuel provided in reaction to a real-time qu is not explicitly shown.
credentials status information	Credentials information such as registration, licensing, insurance, check flags, and electronic screening enrollment data. A unique identifier is included. Corresponds to the credentials portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.	credentials status information	Credentials information such as regis enrollment data. A unique identifier "snapshots." The status information a standing request for updated inform U.S. fleets for use by U.S. authorities and Canadian authorities. The query
crew movements	Visual or sensed presence of field crew location within a work zone that is monitored to enhance work zone safety.	crew movements	Visual or sensed presence of field cre zone safety.
crossing call	Pedestrian request to cross the roadway. This may be an overt (e.g., push button) request from a pedestrian or the physical presence of a pedestrian that can be detected by sensors or surveillance systems.	crossing call	Pedestrian request to cross the roadway pedestrian or the physical presence of systems.
crossing permission	Signal to pedestrians indicating permission to cross roadway.	crossing permission	Signal to pedestrians indicating perm
current asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.	current asset restrictions	Restrictions levied on transportation analyses. This includes standard faci restrictions such as spring weight rest maintenance and construction.
cv driver credential	Driver information (e.g., identity, biometrics, address, date of birth, endorsements, restrictions) stored on a driver's license or other official identification card used to identify a driver of commercial vehicles.	cv driver credential	Driver information (e.g., identity, bio a driver's license or other official ide
cv driver record	Information typically maintained by a state driver licensing agency about a driver of a commercial vehicle including driver identification data, license data, permit data, and driving history details.	cv driver record	Information typically maintained by vehicle including driver identification
cv driver record request	A request for information about a commercial vehicle driver.	cv driver record request	A request for information about a cor
cv repair status	Information about the completion of a repair to a commercial vehicle.	cv repair status	Information about the completion of
CVC override mode	This flow represents the tactile or auditory interface with ITS equipment containing the manual override of automated pass/pull-in decisions generated by the Commercial Vehicle Check station.	CVCCommercial Vehicle Check override mode	This flow represents the tactile or aud of automated pass/pull-in decisions g
CVO driver initialization	This flow represents the tactile or auditory interface with ITS equipment containing the commercial vehicle driver and vehicle information. This flow contains inquiries to the commercial vehicle managing system.	CVO driver initialization	This flow represents the tactile or aud vehicle driver and vehicle information system.
CVO inspector information	This flow represents the visual or auditory interface with ITS equipment containing credential, safety, and preclearance information and instructions to the commercial vehicle inspector.	CVO inspector information	This flow represents the visual or aud and preclearance information and inst

# C\_V2 Description

nmercial drivers license information and carrier safety status.

vehicle travel and commodity flow characteristics. Content may nation, the actual information to be archived, and associated meta prmation.

er event on a Commercial Vehicle or its attached freight equipment ach, location, and time.

vehicles cargo, credentials, and payments.

mation about the commercial vehicle's cargo, credentials, and

commercial vehicle.

disable flag in the commercial vehicle.

tus measured by on-board ITS equipment.

compliance review, including concomitant out-of-service fications. The information may be provided as a response to a realurce. The query flow is not explicitly shown.

credentials. Authorization for payment is included.

entials (IRP, IFTA, etc.) that are exchanged between agencies.

el tax and registration credentials information. "Response" may be query or a standing request for updated information. The query flow

gistration, licensing, insurance, check flags, and electronic screening er is included. Corresponds to the credentials portion of CVISN n may be provided as a response to a real-time query or as a result of rmation (subscription). This may also include information about nonies, and information regarding U.S. fleets made available to Mexican y flow is not explicitly shown.

crew location within a work zone that is monitored to enhance work

lway. This may be an overt (e.g., push button) request from a of a pedestrian that can be detected by sensors or surveillance

mission to cross roadway.

n asset usage based on infrastructure design, surveys, tests, or cility design height, width, and weight restrictions, special estrictions, and temporary facility restrictions that are imposed during

iometrics, address, date of birth, endorsements, restrictions) stored on lentification card used to identify a driver of commercial vehicles.

y a state driver licensing agency about a driver of a commercial on data, license data, permit data, and driving history details.

commercial vehicle driver.

of a repair to a commercial vehicle.

uditory interface with ITS equipment containing the manual override s generated by the Commercial Vehicle Check station.

uditory interface with ITS equipment containing the commercial ion. This flow contains inquiries to the commercial vehicle managing

uditory interface with ITS equipment containing credential, safety, nstructions to the commercial vehicle inspector.

US_V6 Name	US_V6 Description	C_V2 Name	
CVO inspector input	This flow represents the tactile or auditory interface with ITS equipment containing requests from the commercial vehicle inspector to operate the commercial vehicle inspection station.	CVO inspector input	This flow represents the tactile or aud commercial vehicle inspector to operative
CVO pass/pull-in message	This flow represents the visual or auditory interface with ITS equipment containing a message sent to commercial vehicle driver indicating whether to bypass or requesting pull in to inspection/verification stop along with inspection results (e. g., LED indicator on transponder or variable message sign).	CVO pass/pull-in message	This flow represents the visual or aud commercial vehicle driver indicating stop along with inspection results (e.
CVO weight and presence	Physical attribute of commercial vehicle that can be measured (for example, weight, number of axels, axel spacing, etc.).	CVO weight and presence	Physical attribute of commercial vehi axel spacing, etc.).
daily site activity data	Record of daily activities at commercial vehicle check stations including summaries of screening events and inspections.	daily site activity data	Record of daily activities at commerc and inspections.
data collection and monitoring control	Information used to configure and control data collection and monitoring systems.	data collection and monitoring control	Information used to configure and con
decision support information	Information provided to support effective and safe incident response, including local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	decision support information	Information provided to support effect weather conditions, hazardous materiallocated to an incident.
demand response passenger and use data	Data collected on board a demand response vehicle relating to the picking up and discharging of passengers.	demand response passenger and use data	Data collected on board a demand respassengers.
demand responsive transit plan	Plan regarding overall demand responsive transit schedules and deployment.	demand responsive transit plan	Plan regarding overall demand respon
demand responsive transit request	Request for paratransit support.	demand responsive transit request	Request for paratransit support.
disable commercial vehicle	A request that a specific commercial vehicle should be safely disabled.	disable commercial vehicle	A request that a specific commercial
driver alert response	Commercial Vehicle Driver response to a breach alert for a Freight Equipment breach or tamper event.	driver alert response	Commercial Vehicle Driver response
driver identity characteristics	The physical or visible characteristics of a commercial vehicle driver that can be measured to uniquely identify a driver. Could be an Identification Card with a Personal Identification Number, biometrics, or visual verification by an operator.	driver identity characteristics	The physical or visible characteristics identify a driver. Could be an Identif visual verification by an operator.
driver information	General advisory and traffic control information provided to the driver while en route.	driver information	General advisory and traffic control i
driver inputs	Driver input to the vehicle including configuration data, settings and preferences, interactive requests, and control commands.	driver inputs	Driver input to the vehicle including of and control commands.
driver log	A daily log showing hours in service for the current driver.	driver log	A daily log showing hours in service
driver log request	Request for driver log data.	driver log request	Request for driver log data.
driver parking information	Presentation of general parking information to drivers including lot status, parking availability, and directions to available spaces, entrances, and exits.	driver parking information	Presentation of general parking inform directions to available spaces, entrance
driver to fleet request	Requests from the driver and vehicle for routing, payment, and enrollment information.	driver to fleet request	Requests from the driver and vehicle
driver updates	Information displayed or otherwise conveyed by the vehicle to the driver.	driver updates	Information displayed or otherwise co
electronic lock data	Notification to roadside (via transponder) of the presence and status of electronic cargo locks.	electronic lock data	Notification to roadside (via transpon
electronic lock data request	Request from roadside for data regarding presence and status of electronic cargo locks.	electronic lock data request	Request from roadside for data regard
electronic screening request	Request for identification data to support electronic screening.	electronic screening request	Request for identification data to supp
emergency acknowledge	Acknowledge request for emergency assistance and provide additional details regarding actions and verification requirements.	emergency acknowledge	Acknowledge request for emergency verification requirements.
emergency archive data	Logged emergency information including information that characterizes identified incidents (routine highway incidents through disasters), corresponding incident response information, evacuation information, surveillance data, threat data, and resource information. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	emergency archive data	Logged emergency information inclu- highway incidents through disasters), information, surveillance data, threat available information, the actual infor archived information.
emergency data request	A request for additional information or a control command issued by the emergency response agency in response to an emergency request for assistance from a traveler.	emergency data request	A request for additional information or response to an emergency request for
emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.	emergency dispatch requests	Emergency vehicle dispatch instruction concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information and provision of en route status.	emergency dispatch response	Request for additional emergency dis
emergency notification	An emergency request for assistance automatically initiated by a vehicle or originated by a traveler using an in-vehicle or personal device.	emergency notification	An emergency request for assistance travelertraveller using an in-vehicle o

# C\_V2 Description

uditory interface with ITS equipment containing requests from the erate the commercial vehicle inspection station.

uditory interface with ITS equipment containing a message sent to ng whether to bypass or requesting pull in to inspection/verification e. g., LED indicator on transponder or variable message sign).

hicle that can be measured (for example, weight, number of axels,

ercial vehicle check stations including summaries of screening events

control data collection and monitoring systems.

fective and safe incident response, including local traffic, road, and erial information, and the current status of resources that have been

esponse vehicle relating to the picking up and discharging of

consive transit schedules and deployment.

al vehicle should be safely disabled.

se to a breach alert for a Freight Equipment breach or tamper event.

ics of a commercial vehicle driver that can be measured to uniquely tification Card with a Personal Identification Number, biometrics, or

information provided to the driver while en route.

g configuration data, settings and preferences, interactive requests,

e for the current driver.

ormation to drivers including lot status, parking availability, and nces, and exits.

le for routing, payment, and enrollment information.

conveyed by the vehicle to the driver.

onder) of the presence and status of electronic cargo locks.

arding presence and status of electronic cargo locks.

apport electronic screening.

y assistance and provide additional details regarding actions and

cluding information that characterizes identified incidents (routine s), corresponding incident response information, evacuation eat data, and resource information. Content may include a catalog of formation to be archived, and associated meta data that describes the

n or a control command issued by the emergency response agency in For assistance from a travelertraveller.

ctions including incident location and available information

lispatch information and provision of en route status.

ce automatically initiated by a vehicle or originated by a e or personal device.

US_V6 Name	US_V6 Description	C_V2 Name	
emergency operations inputs	Emergency operator inputs supporting call taking, dispatch, emergency operations, security monitoring, and other operations and communications center operator functions.	emergency operations inputs	Emergency operator inputs supporting and other operations and communicat
emergency operations status	Presentation of information to the operator including emergency operations data, supporting a range of emergency operating positions including call taker, dispatch, emergency operations, security monitoring, and various other operations and communications center operator positions.	emergency operations status	Presentation of information to the ope emergency operating positions includ and various other operations and com
emergency personnel information presentation	Presentation of information to emergency personnel in the field including dispatch information, incident information, current road network conditions, device status, and other supporting information.	emergency personnel information presentation	Presentation of information to emerge information, current road network con
emergency personnel inputs	User input from emergency personnel in the field including dispatch coordination, incident status information, and remote device control requests.	emergency personnel inputs	User input from emergency personne information, and remote device contr
emergency plan coordination	Information that supports coordination of emergency management plans, continuity of operations plans, emergency response and recovery plans, evacuation plans, and other emergency plans between agencies. This includes general plans that are coordinated prior to an incident and shorter duration tactical plans that are prepared during an incident.	emergency plan coordination	Information that supports coordinatio emergency response and recovery pla This includes general plans that are co that are prepared during an incident.
emergency route request	Request for access routes for emergency response vehicles and equipment. This may be a request for ingress or egress routes or other emergency routes.	emergency route request	Request for access routes for emerger ingress or egress routes or other emer
emergency routes	Suggested ingress and egress routes for access to and between the scene and staging areas or other specialized emergency access routes.	emergency routes	Suggested ingress and egress routes f specialized emergency access routes.
emergency traffic control information	Status of a special traffic control strategy or system activation implemented in response to an emergency traffic control request, a request for emergency access routes, a request for evacuation, a request to activate closure systems, a request to employ driver information systems to support public safety objectives, or other special requests. Identifies the selected traffic control strategy and system control status.	emergency traffic control information	Status of a special traffic control strat traffic control request, a request for e activate closure systems, a request to objectives, or other special requests. status.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments, activate traffic control and closure systems such as gates and barriers, activate safeguard systems, or use driver information systems. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, request a specific evacuation traffic control plan, request activation of a road closure barrier system, or place a public safety or emergency-related message on a dynamic message sign.	emergency traffic control request	Special request to preempt the curren intersections or highway segments, ac barriers, activate safeguard systems, or request all signals to red-flash, request vehicle route, request a specific evacu- barrier system, or place a public safet
emergency transit schedule information	Information on transit schedule and service changes that adapt the service to better meet needs of responders and the general public in an emergency situation, including special service schedules supporting evacuation.	emergency transit schedule information	Information on transit schedule and s responders and the general public in a supporting evacuation.
emergency transit service request	Request to modify transit service and fare schedules to address emergencies, including requests for transit services to evacuate people from and/or deploy response agency personnel to an emergency scene. The request may poll for resource availability or request pre-staging, staging, or immediate dispatch of transit resources.	emergency transit service request	Request to modify transit service and transit services to evacuate people fro scene. The request may poll for resor- dispatch of transit resources.
emergency transit service response	Response indicating changes to transit service, fares, and/or restrictions that will be made and status of transit resources to be deployed to support emergency response and/or evacuation.	emergency transit service response	Response indicating changes to transi transit resources to be deployed to su
emergency traveler information	Public notification of an emergency such as a natural or man-made disaster, civil emergency, or child abduction. This flow also includes evacuation information including evacuation instructions, evacuation zones, recommended evacuation times, tailored evacuation routes and destinations, traffic and road conditions along the evacuation routes, traveler services and shelter information, and reentry times and instructions.	emergency <del>traveler<u>traveller</u> information</del>	Public notification of an emergency s abduction. This flow also includes ex- zones, recommended evacuation time conditions along the evacuation route times and instructions.
emergency traveler information request	Request for alerts, evacuation information, and other emergency information provided to the traveling public.	emergency traveler <u>traveller</u> information request	Request for alerts, evacuation information public.
emergency vehicle alert	Notification to vehicles in the area that an emergency vehicle is in the vicinity. The number of responding vehicles, their status, location, speed, and direction are provided.	emergency vehicle alert	Notification to vehicles in the area th responding vehicles, their status, loca
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.	emergency vehicle tracking data	The current location and operating sta
emissions archive data	Air quality and vehicle emissions information that is collected by sensors or derived from models. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	emissions archive data	Air quality and vehicle emissions info Content may include a catalog of ava associated meta data that describes the
emissions sensor control	Data used to configure and control vehicle emissions sensors.	emissions sensor control	Data used to configure and control ve
emissions violation notification	Notification to enforcement agency of a detected vehicle emissions violation.	emissions violation notification	Notification to enforcement agency o

# C\_V2 Description

ing call taking, dispatch, emergency operations, security monitoring, eations <u>centercentre</u> operator functions.

operator including emergency operations data, supporting a range of luding call taker, dispatch, emergency operations, security monitoring, communications <u>centercentre</u> operator positions.

rgency personnel in the field including dispatch information, incident conditions, device status, and other supporting information.

nel in the field including dispatch coordination, incident status ntrol requests.

ion of emergency management plans, continuity of operations plans, plans, evacuation plans, and other emergency plans between agencies. coordinated prior to an incident and shorter duration tactical plans

gency response vehicles and equipment. This may be a request for hergency routes.

s for access to and between the scene and staging areas or other s.

rategy or system activation implemented in response to an emergency r emergency access routes, a request for evacuation, a request to to employ driver information systems to support public safety s. Identifies the selected traffic control strategy and system control

ent traffic control strategy in effect at one or more signalized activate traffic control and closure systems such as gates and s, or use driver information systems. For example, this flow can uest a progression of traffic control preemptions along an emergency acuation traffic control plan, request activation of a road closure fety or emergency-related message on a dynamic message sign.

d service changes that adapt the service to better meet needs of n an emergency situation, including special service schedules

nd fare schedules to address emergencies, including requests for from and/or deploy response agency personnel to an emergency source availability or request pre-staging, staging, or immediate

nsit service, fares, and/or restrictions that will be made and status of support emergency response and/or evacuation.

v such as a natural or man-made disaster, civil emergency, or child evacuation information including evacuation instructions, evacuation nes, tailored evacuation routes and destinations, traffic and road ites, travelertraveller services and shelter information, and reentry

mation, and other emergency information provided to the traveling

that an emergency vehicle is in the vicinity. The number of ocation, speed, and direction are provided.

status of the emergency vehicle.

nformation that is collected by sensors or derived from models. vailable information, the actual information to be archived, and the archived information.

vehicle emissions sensors.

of a detected vehicle emissions violation.

US_V6 Name	US_V6 Description	C_V2 Name	
environmental conditions	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) that are measured by environmental sensors.	environmental conditions	Current road conditions (e.g., surface status) and surface weather condition measured by environmental sensors.
environmental conditions data	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by fixed and/or mobile environmental sensors and aggregated by the data collector. Attributes relating to the data collection (and aggregation) are also included.	environmental conditions data	Current road conditions (e.g., surface status) and surface weather condition measured and reported by fixed and/o collector. Attributes relating to the d
environmental conditions data status	Status of the data quality of environmental conditions data provided by a data contributor. Includes not only status by sensor, but statistical data regarding the quality checking of data provided.	environmental conditions data status	Status of the data quality of environm only status by sensor, but statistical c
environmental probe data	Data from vehicle safety and convenience systems that can be used to estimate environmental conditions, including measured air temperature, exterior light status, wiper status, sun sensor status, rain sensor status, traction control status, anti-lock brake status, and other collected vehicle system status and sensor information. The collected data is reported along with the location, heading, and time that the data was collected. Both current data and snapshots of recent events (e.g., traction control or anti-lock brake system activations) may be reported.	environmental probe data	Data from vehicle safety and conven- conditions, including measured air te sensor status, traction control status, sensor information. The collected da data was collected. Both current data brake system activations) may be rep
environmental sensor data	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by fixed and/or mobile environmental sensors. Operational status of the sensors is also included.	environmental sensor data	Current road conditions (e.g., surface status) and surface weather condition measured and reported by fixed and/o is also included.
environmental sensors control	Data used to configure and control environmental sensors.	environmental sensors control	Data used to configure and control er
equipment availability	An inventory of the maintenance and construction equipment available at the storage facility. This flow includes the type of equipment, enough descriptive information to indicate its suitability for use, and its current status. This flow may contain information for a specific type of equipment or include all equipment available at the facility.	equipment availability	An inventory of the maintenance and includes the type of equipment, enou current status. This flow may contain equipment available at the facility.
equipment maintenance status	Current status of field equipment maintenance actions.	equipment maintenance status	Current status of field equipment ma
evacuation coordination	Coordination of information regarding a pending or in-process evacuation. Includes evacuation zones, evacuation times, evacuation routes, forecast network conditions, and reentry times.	evacuation coordination	Coordination of information regardine vacuation times, evacuation routes,
evacuation information	Evacuation instructions and information including evacuation zones, evacuation times, and reentry times.	evacuation information	Evacuation instructions and informat times.
event confirmation	Confirmation that special event details have been received and processed.	event confirmation	Confirmation that special event detai
event information	Special event information for travelers. This would include a broader array of information than the similar "event plans" that conveys only information necessary to support traffic management for the event.	event information	Special event information for travele the similar "event plans" that convey event.
event information request	Request for special event information.	event information request	Request for special event information
event plans	Plans for major events possibly impacting traffic.	event plans	Plans for major events possibly impa
expected driver identity characteristics	Driver identification information e.g. encrypted PIN codes issued to drivers, encrypted driver biometric parameters.	expected driver identity characteristics	Driver identification information e.g. parameters.
expedited clearance information	Includes carrier ID, importer ID, broker ID, conveyance ID, driver ID, service options, and associated information that is used to support expedited border clearance.	expedited clearance information	Includes carrier ID, importer ID, brok information that is used to support ex
expedited clearance registration	Registration of the importer, carrier, conveyance, and driver, as applicable, for border clearance programs such as FAST, Customs Self Assessment (Canada), C-TPAT (US), PIP (Canada), ACI (Canada), and ACE (US). Includes electronic filing of forms and associated payment.	expedited clearance registration	Registration of the importer, carrier, programs such as FAST, Customs Se (Canada), and ACE (US). Includes e
expedited clearance status	Status of expedited clearance registration.	expedited clearance status	Status of expedited clearance registra
external reports	Traffic and incident information that is collected by the media through a variety of mechanisms (e.g., radio station call-in programs, air surveillance).	external reports	Traffic and incident information that radio station call-in programs, air sur
fare and price information	Current transit, parking, and toll fee schedule information.	fare and price information	Current transit, parking, and toll fee
fare collection data	Fare collection information including the summary of on-board fare system data and financial payment transaction data.	fare collection data	Fare collection information including transaction data.
fare management information	Transit fare information and transaction data used to manage transit fare processing on the transit vehicle.	fare management information	Transit fare information and transactively vehicle.

# C\_V2 Description

ce temperature, subsurface temperature, moisture, icing, treatment ons (e.g., air temperature, wind speed, precipitation, visibility) that are s.

the temperature, subsurface temperature, moisture, icing, treatment ons (e.g., air temperature, wind speed, precipitation, visibility) as d/or mobile environmental sensors and aggregated by the data e data collection (and aggregation) are also included.

nmental conditions data provided by a data contributor. Includes not l data regarding the quality checking of data provided.

enience systems that can be used to estimate environmental temperature, exterior light status, wiper status, sun sensor status, rain s, anti-lock brake status, and other collected vehicle system status and data is reported along with the location, heading, and time that the ata and snapshots of recent events (e.g., traction control or anti-lock eported.

ce temperature, subsurface temperature, moisture, icing, treatment ons (e.g., air temperature, wind speed, precipitation, visibility) as d/or mobile environmental sensors. Operational status of the sensors

#### environmental sensors.

nd construction equipment available at the storage facility. This flow ough descriptive information to indicate its suitability for use, and its ain information for a specific type of equipment or include all

#### naintenance actions.

ling a pending or in-process evacuation. Includes evacuation zones, s, forecast network conditions, and reentry times.

nation including evacuation zones, evacuation times, and reentry

## tails have been received and processed.

lerstravellers. This would include a broader array of information than eys only information necessary to support traffic management for the

ion.

pacting traffic.

.g. encrypted PIN codes issued to drivers, encrypted driver biometric

roker ID, conveyance ID, driver ID, service options, and associated expedited border clearance.

r, conveyance, and driver, as applicable, for border clearance Self Assessment (Canada), C-TPAT (US), PIP (Canada), ACI s electronic filing of forms and associated payment.

tration.

at is collected by the media through a variety of mechanisms (e.g., urveillance).

e schedule information.

ng the summary of on-board fare system data and financial payment

ction data used to manage transit fare processing on the transit

US_V6 Name	US_V6 Description	C_V2 Name	
field device status	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.	field device status	Reports from field equipment (sensor operational status.
field device status presentation	Presentation of operational status of field equipment (sensors, signals, signs, controllers, etc.) to field personnel.	field device status presentation	Presentation of operational status of f personnel.
field device status request	User input from field personnel requesting operational status of field equipment (sensors, signals, signs, controllers, etc.).	field device status request	User input from field personnel reque controllers, etc.).
field equipment status	Identification of field equipment requiring repair and known information about the associated faults.	field equipment status	Identification of field equipment requ
fleet and freight alerts	This flow represents the visual or auditory interface with ITS equipment containing security alert status information regarding commercial vehicle fleets and freight equipment.	fleet and freight alerts	This flow represents the visual or aud information regarding commercial ve
fleet and freight threat information	Information about threats detected by commercial vehicle fleet and freight operators. The threats include incidents involving commercial vehicles (i.e. hijacking), unusual activities observed by commercial vehicle operators (i.e. truck parked under a bridge), and incidents involving freight equipment (i.e. freight equipment tampering).	fleet and freight threat information	Information about threats detected by incidents involving commercial vehic vehicle operators (i.e. truck parked ur freight equipment tampering).
fleet manager inquiry	This flow represents the tactile or auditory interface with ITS equipment containing an inquiry from fleet manager requesting data from commercial vehicle management system.	fleet manager inquiry	This flow represents the tactile or aud manager requesting data from comme
fleet status	This flow represents the visual or auditory interface with ITS equipment containing fleet status information including enrollment status, routing information, current vehicle information, and emergency information.	fleet status	This flow represents the visual or aud information including enrollment stat emergency information.
fleet to driver update	Updated instructions to the driver including dispatch, routing, and special instructions.	fleet to driver update	Updated instructions to the driver inc
freeway control data	Control commands and operating parameters for ramp meters, mainline metering/lane controls and other systems associated with freeway operations.	freeway control data	Control commands and operating para systems associated with freeway oper
freeway control status	Current operational status and operating parameters for ramp meters, mainline metering/lane controls and other control equipment associated with freeway operations.	freeway control status	Current operational status and operational other control equipment associated
freight breach	Information about a breach or tamper event on Freight Equipment which includes identity, type of breach, location, and time.	freight breach	Information about a breach or tamper breach, location, and time.
freight equipment information	Container, trailer, or chassis information regarding identity, type, location, brake wear data, mileage, seal #, seal type, door open/close status, chassis bare/covered status, tethered / untethered status, Bill of Lading, and sensor status.	freight equipment information	Container, trailer, or chassis informat #, seal type, door open/close status, cl Lading, and sensor status.
freight monitoring parameters	Parameters to configure the Freight Equipment for event reporting and keep alive functions.	freight monitoring parameters	Parameters to configure the Freight E
freight transport booking	Booking information for the transport of freight that includes company, contact information, point of origin, pick-up location, drop-off location, and freight equipment identifier.	freight transport booking	Booking information for the transport origin, pick-up location, drop-off loca
freight transportation status	A time-stamped status of a freight shipment as it passes through the supply chain from manufacturer through arrival at its final destination; including cargo movement logs, routing information, and cargo ID's.	freight transportation status	A time-stamped status of a freight shi through arrival at its final destination ID's.
government reporting data receipt	The acknowledgement of satisfactory receipt of information used as input to government data systems or a report identifying problems or issues with the data submittal.	government reporting data receipt	The acknowledgement of satisfactory a report identifying problems or issue
government reporting system data	Information provided by an ITS archive, formatted as appropriate, that can be used as input to government data reporting systems.	government reporting system data	Information provided by an ITS archi government data reporting systems.
hazmat environmental factors	Sensed characteristics of a vehicle that are analyzed to indicate if the vehicle is carrying a security sensitive substance, e.g. detection of radiation or ammonia compounds.	hazmat environmental factors	Sensed characteristics of a vehicle that sensitive substance, e.g. detection of a
hazmat information	Information about a particular hazmat load including nature of the load and unloading instructions. May also include hazmat vehicle route and route update information.	hazmatHAZMAT information	Information about a particular hazmat also include hazmat vehicle route and
hazmat information request	Request for information about a particular hazmat load.	hazmatHAZMAT information request	Request for information about a partic
hazmat spill notification	Information provided to emergency response organizations when cargo sensors detect a release of hazardous material. This information will include sensor information, vehicle location and identification, and carrier identification.	hazmat spill notification	Information provided to emergency re hazardous material. This information and carrier identification.
highway control status	Current traffic control equipment status that indicates operational status and right-of-way availability to the non-highway transportation mode at a multimodal crossing.	highway control status	Current traffic control equipment stat the non-highway transportation mode
hov data	Current HOV lane information including both standard traffic flow measures and information regarding vehicle occupancy in HOV lanes, and operational status of the HOV monitoring equipment.	hov <u>HOV</u> data	Current HOV lane information includ vehicle occupancy in HOV lanes, and

## C\_V2 Description

sors, signals, signs, controllers, etc.) which indicate current

f field equipment (sensors, signals, signs, controllers, etc.) to field

uesting operational status of field equipment (sensors, signals, signs,

quiring repair and known information about the associated faults.

uditory interface with ITS equipment containing security alert status vehicle fleets and freight equipment.

by commercial vehicle fleet and freight operators. The threats include icles (i.e. hijacking), unusual activities observed by commercial under a bridge), and incidents involving freight equipment (i.e.

uditory interface with ITS equipment containing an inquiry from fleet mercial vehicle management system.

uditory interface with ITS equipment containing fleet status atus, routing information, current vehicle information, and

ncluding dispatch, routing, and special instructions.

parameters for ramp meters, mainline metering/lane controls and other perations.

rating parameters for ramp meters, mainline metering/lane controls ated with freeway operations.

er event on Freight Equipment which includes identity, type of

ation regarding identity, type, location, brake wear data, mileage, seal chassis bare/covered status, tethered / untethered status, Bill of

Equipment for event reporting and keep alive functions.

ort of freight that includes company, contact information, point of ocation, and freight equipment identifier.

shipment as it passes through the supply chain from manufacturer on; including cargo movement logs, routing information, and cargo

bry receipt of information used as input to government data systems or sues with the data submittal.

chive, formatted as appropriate, that can be used as input to

that are analyzed to indicate if the vehicle is carrying a security of radiation or ammonia compounds.

hat load including nature of the load and unloading instructions. May nd route update information.

rticular hazmat load.

response organizations when cargo sensors detect a release of on will include sensor information, vehicle location and identification,

tatus that indicates operational status and right-of-way availability to de at a multimodal crossing.

uding both standard traffic flow measures and information regarding nd operational status of the HOV monitoring equipment.

US_V6 Name	US_V6 Description	C_V2 Name	
hri advisories	Notification of Highway-Rail Intersection equipment failure, intersection blockage, or other condition requiring attention, and maintenance activities at or near highway rail intersections.	hri <u>HRI</u> advisories	Notification of Highway-Rail Intersective requiring attention, and maintenance
hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations.	hriHRI control data	Data required for HRI information tra
hri operational status	Status of the highway-rail grade crossing equipment including both the current state or mode of operation and the current equipment condition.	hri <u>HRI</u> operational status	Status of the highway-rail grade cross operation and the current equipment of
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation.	hri <u>HRI</u> request	A request for highway-rail intersection operation.
hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.	hri <u>HRI</u> status	Status of the highway-rail intersection and the current equipment condition.
identification information	The physical characteristics of a commercial vehicle that can be used to determine a vehicle's identity, such as a license plate number, USDOT number, ICC number, bar code, etc.	identification information	The physical characteristics of a com such as a license plate number, USDC
identities	Identification information for the Commercial Vehicle (e.g., license plate number or USDOT number), Freight Equipment (e.g., container, chassis, or trailer identification), and Driver.	identities	Identification information for the Con Freight Equipment (e.g., container, cl
incident command information coordination	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response.	incident command information coordination	Information that supports local manage hazardous material information, traffic information that enables emergency of incident response.
incident command information presentation	Presentation of information to emergency personnel in the field that supports local tactical decision- making within an incident command system structure.	incident command information presentation	Presentation of information to emerge making within an incident command
incident command inputs	User input from emergency personnel including incident command status, incident information and resource coordination.	incident command inputs	User input from emergency personne resource coordination.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.	incident information	Notification of existence of incident a additional information is gathered and Incidents include any event that impa (e.g., disabled vehicle at the side of th involve loss of life, injuries, extensive includes special events, closures, and
incident information for media	Report of current desensitized incident information prepared for public dissemination through the media.	incident information for media	Report of current desensitized incider
incident information for public	Report of current desensitized incident information prepared for public dissemination through the telecommunications system.	incident information for public	Report of current desensitized incident telecommunications system.
incident notification	The notification of an incident including its nature, severity, and location.	incident notification	The notification of an incident includ
incident notification response	Interactive acknowledgement and verification of the incident information received, requests for additional information, and general information on incident response status.	incident notification response	Interactive acknowledgement and ver additional information, and general ir
incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.	incident report	Report of an identified incident incluencessary to initiate an appropriate in
incident response coordination	Incident response procedures and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow provides current situation information, including a summary of incident status and its impact on the transportation system and other infrastructure, and current and planned response activities. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.	incident response coordination	Incident response procedures and cur agencies to support a coordinated resp information, including a summary of other infrastructure, and current and p hand off of responsibility for all or pa
incident response status	Status of the current incident response including a summary of incident status and its impact on the transportation system, traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides), and current and planned response activities.	incident response status	Status of the current incident response transportation system, traffic manage traffic signal control overrides), and c
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.	incident status	Information gathered at the incident s current incident response status.
information on violators	Information on violators provided by a law enforcement agency. May include information about commercial vehicle violations or other kinds of violations associated with the particular entity. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.	information on violators	Information on violators provided by commercial vehicle violations or othe information may be provided as a res flow is not explicitly shown.
infrastructure conditions data	Current condition of pavement, bridges, culverts, signs, and other roadway infrastructure as measured by on-board sensors or read from infrastructure-based sensors. The data may include raw data or images (e.g., photo logs) that indicate the current status of the infrastructure.	infrastructure conditions data	Current condition of pavement, bridg on-board sensors or read from infrast (e.g., photo logs) that indicate the cur

# C\_V2 Description

section equipment failure, intersection blockage, or other condition ce activities at or near highway rail intersections.

transmitted at railroad grade crossings and within railroad operations.

ossing equipment including both the current state or mode of at condition.

tion status or a specific control request intended to modify HRI

ion equipment including both the current state or mode of operation n.

mmercial vehicle that can be used to determine a vehicle's identity, DOT number, ICC number, bar code, etc.

Commercial Vehicle (e.g., license plate number or USDOT number), chassis, or trailer identification), and Driver.

nagement of an incident. It includes resource deployment status, iffic, road, and weather conditions, evacuation advice, and other y or maintenance personnel in the field to implement an effective, safe

rgency personnel in the field that supports local tactical decisionad system structure.

hel including incident command status, incident information and

At and expected severity, location, time and nature of incident. As and the incident evolves, updated incident information is provided. upacts transportation system operation ranging from routine incidents of the road) through large-scale natural or human-caused disasters that sive property damage, and multi-jurisdictional response. This also nd other planned events that may impact the transportation system.

lent information prepared for public dissemination through the media. lent information prepared for public dissemination through the

iding its nature, severity, and location.

verification of the incident information received, requests for information on incident response status.

luding incident location, type, severity and other information incident response.

current incident response status that are shared between allied response response to incidents. This flow provides current situation of incident status and its impact on the transportation system and d planned response activities. This flow also coordinates a positive part of an incident response between agencies.

here including a summary of incident status and its impact on the gement strategies implemented at the site (e.g., closures, diversions, a current and planned response activities.

site that more completely characterizes the incident and provides

by a law enforcement agency. May include information about ther kinds of violations associated with the particular entity. The response to a real-time query or proactively by the source. The query

dges, culverts, signs, and other roadway infrastructure as measured by astructure-based sensors. The data may include raw data or images current status of the infrastructure.

US_V6 Name	US_V6 Description	C_V2 Name	
infrastructure monitoring sensor control	Data used to configure and control infrastructure monitoring sensors.	infrastructure monitoring sensor control	Data used to configure and control in
infrastructure monitoring sensor data	Data read from infrastructure-based sensors that monitor the condition or integrity of transportation infrastructure including bridges, tunnels, interchanges, pavement, culverts, signs, transit rail or guideway, and other roadway infrastructure. Includes sensor data and the operational status of the sensors.	infrastructure monitoring sensor data	Data read from infrastructure-based s infrastructure including bridges, tunn guideway, and other roadway infrastr sensors.
inspection results	Report of results of border inspection on a particular load.	inspection results	Report of results of border inspection
interactive traveler information	Traveler information provided in response to a traveler request. The provided information includes traffic and road conditions, advisories, incidents, payment information, transit services, parking information, weather information, and other travel-related data updates and confirmations.	interactive traveler <u>traveller</u> information	Traveler <u>Traveller</u> information provide information includes traffic and road services, parking information, weather confirmations.
intermodal freight archive data	Information describing demand at intermodal freight terminals including loading/unloading activities of trailers and containers. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	intermodal freight archive data	Information describing demand at inter trailers and containers. Content may be archived, and associated meta data
intermodal freight event information	Plans for movement of intermodal freight from the depot area possibly impacting traffic. May also include requests for special treatment at traffic signals.	intermodal freight event information	Plans for movement of intermodal free include requests for special treatment
intermodal freight traffic confirmation	Confirmation that details concerning the movement of intermodal freight on the roadway network have been received and processed. May also include information on traffic conditions affecting the depot.	intermodal freight traffic confirmation	Confirmation that details concerning been received and processed. May also
intersection blockage notification	Notification that a highway-rail intersection is obstructed and supporting information.	intersection blockage notification	Notification that a highway-rail inters
intersection status	Intersection status including current operational status, signal phase and timing information, intersection geometry, surface conditions, warnings of potential violations or hazardous conditions, and approaching vehicle information. This may include information about the position, velocity, acceleration, and turning status of approaching vehicles.	intersection status	Intersection status including current of geometry, surface conditions, warning vehicle information. This may include status of approaching vehicles.
in-vehicle transaction status	The status of an electronic payment transaction presented to the driver by in-vehicle equipment.	in-vehicle transaction status	The status of an electronic payment the
ISP coordination	Coordination and exchange of transportation information between centers. This flow allows a broad range of transportation information collected by one ISP to be redistributed to many other ISPs and their clients.	ISP coordination	Coordination and exchange of transpo broad range of transportation informa and their clients.
ISP operations information presentation	Presentation of information to the ISP Operator including current operational status, parameters for broadcast information settings, route selection controls, and travel optimization algorithms.	ISP operations information presentation	Presentation of information to the ISI broadcast information settings, route
ISP operator inputs	User input from the ISP system operator including requests to monitor current system operation and inputs to affect system operation including tuning and performance enhancement parameters to ISP algorithms.	ISP operator inputs	User input from the ISP system operation inclusion algorithms.
lane management inputs	This flow provides inputs to traffic operations dynamic message signs on the types of vehicles to allow in each lane as well as other lane management messages that might be used by traffic operations.	lane management inputs	This flow provides inputs to traffic op in each lane as well as other lane man
license request	Request supporting registration data based on license plate read during violation.	license request	Request supporting registration data b
lighting system control data	Information used to configure and control roadside lighting systems.	lighting system control data	Information used to configure and con
lighting system status	Status of roadside lighting controls including operating condition and current operational state.	lighting system status	Status of roadside lighting controls in
local signal preemption request	Direct control signal or message to a signalized intersection that results in preemption of the current control plan and grants right-of-way to the requesting vehicle.	local signal preemption request	Direct control signal or message to a control plan and grants right-of-way t
local signal priority request	Request from a vehicle to a signalized intersection for priority at that intersection.	local signal priority request	Request from a vehicle to a signalized
logged vehicle routes	Anticipated route information for guided vehicles, special vehicles (e.g., oversize vehicles) or groups of vehicles (e.g., governor's motorcade) that may require changes in traffic control strategy.	logged vehicle routes	Anticipated route information for guivehicles (e.g., governor's motorcade)
maint and constr administrative information	Administrative information that is provided to support maintenance and construction operations. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	maint and constr administrative information	Administrative information that is pro- information includes: equipment and qualifications including training and s impact maintenance activities, and re-
maint and constr administrative request	Requests for maintenance and construction administrative information or services. Requests include: requests to purchasing for equipment and consumables resupply and requests to human resources that manage training and special certification for field crews and other personnel.	maint and constr administrative request	Requests for maintenance and constru- requests to purchasing for equipment manage training and special certificat

# C\_V2 Description

infrastructure monitoring sensors.

d sensors that monitor the condition or integrity of transportation nnels, interchanges, pavement, culverts, signs, transit rail or structure. Includes sensor data and the operational status of the

on on a particular load.

vided in response to a travelertraveller request. The provided ad conditions, advisories, incidents, payment information, transit ther information, and other travel-related data updates and

intermodal freight terminals including loading/unloading activities of ay include a catalog of available information, the actual information to ata that describes the archived information.

freight from the depot area possibly impacting traffic. May also ent at traffic signals.

ng the movement of intermodal freight on the roadway network have also include information on traffic conditions affecting the depot.

ersection is obstructed and supporting information.

at operational status, signal phase and timing information, intersection nings of potential violations or hazardous conditions, and approaching lude information about the position, velocity, acceleration, and turning

transaction presented to the driver by in-vehicle equipment.

sportation information between <u>centerscentres</u>. This flow allows a mation collected by one ISP to be redistributed to many other ISPs

SP Operator including current operational status, parameters for te selection controls, and travel optimization algorithms.

erator including requests to monitor current system operation and accluding tuning and performance enhancement parameters to ISP

operations dynamic message signs on the types of vehicles to allow nanagement messages that might be used by traffic operations.

a based on license plate read during violation.

control roadside lighting systems.

including operating condition and current operational state.

a signalized intersection that results in preemption of the current by to the requesting vehicle.

zed intersection for priority at that intersection.

guided vehicles, special vehicles (e.g., oversize vehicles) or groups of le) that may require changes in traffic control strategy.

provided to support maintenance and construction operations. This nd consumables resupply purchase request status, personnel

d special certifications, environmental regulations and rules that may requests and project requirements from contract administration.

struction administrative information or services. Requests include: ent and consumables resupply and requests to human resources that cation for field crews and other personnel.

US_V6 Name	US_V6 Description	C_V2 Name	
maint and constr archive data	Information describing road construction and maintenance activities identifying the type of activity, the work performed, and work zone information including work zone configuration and safety (e.g., a record of intrusions and vehicle speeds) information. For construction activities, this information also includes a description of the completed infrastructure, including as-built plans as applicable. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	maint and constr archive data	Information describing road construct work performed, and work zone info of intrusions and vehicle speeds) info a description of the completed infras include a catalog of available inform data that describes the archived infor
maint and constr center personnel inputs	User input from maintenance and construction center personnel including routing information, scheduling data, dispatch instructions, device configuration and control, resource allocations, alerts, incident and emergency response plan coordination.	maint and constr <u>centercentre</u> personnel inputs	User input from maintenance and co scheduling data, dispatch instruction incident and emergency response pla
maint and constr dispatch information	Information used to dispatch maintenance and construction vehicles, equipment, and crews and information used to keep work zone crews informed. This information includes routing information, traffic information, road restrictions, incident information, environmental information, decision support information, maintenance schedule data, dispatch instructions, personnel assignments, alert notifications, and corrective actions.	maint and constr dispatch information	Information used to dispatch mainter information used to keep work zone traffic information, road restrictions, information, maintenance schedule of and corrective actions.
maint and constr dispatch status	Current maintenance and construction status including work data, operator status, crew status, and equipment status.	maint and constr dispatch status	Current maintenance and construction equipment status.
maint and constr equipment repair status	Current maintenance and repair status of the maintenance and construction vehicle fleet and other support equipment. This information includes a record of all maintenance and repair activities performed.	maint and constr equipment repair status	Current maintenance and repair statu support equipment. This information performed.
maint and constr field personnel information presentation	Information presented to maintenance and construction field personnel including vehicle routing and traffic information, road restrictions, environmental information, decision support information, maintenance schedules, dispatch instructions, maintenance personnel assignments, vehicle maintenance information, work zone status information, and corrective actions.	maint and constr field personnel information presentation	Information presented to maintenance traffic information, road restrictions, maintenance schedules, dispatch inst information, work zone status inform
maint and constr field personnel inputs	User input from field personnel including current maintenance and construction status information as well as on-board device control.	maint and constr field personnel inputs	User input from field personnel inclu- well as on-board device control.
maint and constr fleet information	Information supporting maintenance of the maintenance and construction vehicle fleet and other support equipment. This information includes vehicle status and diagnostic information, vehicle utilization, and coordination of when vehicles will be available for preventative and corrective maintenance.	maint and constr fleet information	Information supporting maintenance equipment. This information include coordination of when vehicles will b
maint and constr material information	Information on materials stored on the vehicle including quantity and current application rate.	maint and constr material information	Information on materials stored on the
maint and constr operations information presentation	Presentation of maintenance and construction operations information to center personnel. This information includes maintenance resource status (vehicles, equipment, and personnel), work schedule information, work status, road and weather conditions, traffic information, incident information and associated resource requests, security alerts, emergency response plans and a range of other information that supports efficient maintenance and construction operations and planning.	maint and constr operations information presentation	Presentation of maintenance and com information includes maintenance re information, work status, road and w associated resource requests, security that supports efficient maintenance a
maint and constr resource coordination	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response.	maint and constr resource coordination	Request for road maintenance and co (cones, portable signs), clearance of response.
maint and constr resource request	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response. The request may poll for resource availability or request pre-staging, staging, or immediate dispatch of resources.	maint and constr resource request	Request for road maintenance and co (cones, portable signs), clearance of response. The request may poll for r dispatch of resources.
maint and constr resource response	Current status of maintenance and construction resources including availability and deployment status. General resource inventory information covering vehicles, equipment, materials, and people and specific resource deployment status may be included.	maint and constr resource response	Current status of maintenance and co General resource inventory informat resource deployment status may be i
maint and constr vehicle condition presentation	Presentation of vehicle diagnostics and operating status information to maintenance and construction field personnel including speed, engine temperature, mileage, tire wear, brake wear, belt wear, maintenance and construction system status, environmental sensor information, and other measures associated with the operation of a maintenance vehicle.	maint and constr vehicle condition presentation	Presentation of vehicle diagnostics a field personnel including speed, engi maintenance and construction system associated with the operation of a ma
maint and constr vehicle conditions	Vehicle diagnostics information that is collected, filtered, and selectively reported by a maintenance and construction vehicle. The information includes engine temperature, mileage, tire wear, brake wear, belt wear, and any warnings or alarms concerning the operational condition of the vehicle and ancillary equipment.	maint and constr vehicle conditions	Vehicle diagnostics information that construction vehicle. The information wear, and any warnings or alarms con equipment.

# C\_V2 Description

uction and maintenance activities identifying the type of activity, the formation including work zone configuration and safety (e.g., a record aformation. For construction activities, this information also includes astructure, including as-built plans as applicable. Content may mation, the actual information to be archived, and associated meta formation.

construction <u>centercentre</u> personnel including routing information, ons, device configuration and control, resource allocations, alerts, olan coordination.

enance and construction vehicles, equipment, and crews and e crews informed. This information includes routing information, s, incident information, environmental information, decision support e data, dispatch instructions, personnel assignments, alert notifications,

ion status including work data, operator status, crew status, and

tus of the maintenance and construction vehicle fleet and other on includes a record of all maintenance and repair activities

nce and construction field personnel including vehicle routing and as, environmental information, decision support information, astructions, maintenance personnel assignments, vehicle maintenance rmation, and corrective actions.

cluding current maintenance and construction status information as

ce of the maintenance and construction vehicle fleet and other support des vehicle status and diagnostic information, vehicle utilization, and be available for preventative and corrective maintenance.

the vehicle including quantity and current application rate.

onstruction operations information to <u>centercentre</u> personnel. This resource status (vehicles, equipment, and personnel), work schedule weather conditions, traffic information, incident information and ity alerts, emergency response plans and a range of other information e and construction operations and planning.

construction resources that can be used in the diversion of traffic of a road hazard, repair of ancillary damage, or any other incident

construction resources that can be used in the diversion of traffic of a road hazard, repair of ancillary damage, or any other incident r resource availability or request pre-staging, staging, or immediate

construction resources including availability and deployment status. ation covering vehicles, equipment, materials, and people and specific e included.

and operating status information to maintenance and construction gine temperature, mileage, tire wear, brake wear, belt wear, em status, environmental sensor information, and other measures naintenance vehicle.

at is collected, filtered, and selectively reported by a maintenance and tion includes engine temperature, mileage, tire wear, brake wear, belt concerning the operational condition of the vehicle and ancillary

US_V6 Name	US_V6 Description	C_V2 Name	
maint and constr vehicle control	Control data sent from on-board ITS systems to control maintenance and construction vehicle equipment, including control of materials dispersion rate and other control functions that will vary with vehicle type and application.	maint and constr vehicle control	Control data sent from on-board ITS equipment, including control of mate vehicle type and application.
maint and constr vehicle location data	The current location and related status (e.g., direction and speed) of the maintenance/construction vehicle.	maint and constr vehicle location data	The current location and related statu vehicle.
maint and constr vehicle measures	Raw vehicle diagnostics and operating status data reported by the maintenance vehicle platform including engine temperature, mileage, tire wear, brake wear, belt wear, and other operational status measures. In addition to this general vehicle status, this flow also includes the status of maintenance and construction-specific systems on the vehicle.	maint and constr vehicle measures	Raw vehicle diagnostics and operating including engine temperature, mileage measures. In addition to this general construction-specific systems on the
maint and constr vehicle operational data	Data that describes the maintenance and construction activity performed by the vehicle. Operational data includes materials usage (amount stored and current application rate), operational state of the maintenance equipment (e.g., blade up/down, spreader pattern), vehicle safety status, and other measures associated with the operation of a maintenance, construction, or other special purpose vehicle. Operational data may include basic operational status of the vehicle equipment or a more precise record of the work performed (e.g., application of crack sealant with precise locations and application characteristics).	maint and constr vehicle operational data	Data that describes the maintenance data includes materials usage (amoun maintenance equipment (e.g., blade of associated with the operation of a ma Operational data may include basic of of the work performed (e.g., applicat characteristics).
maint and constr vehicle status coordination	Maintenance and construction vehicle status information that is shared between vehicles. This includes environmental conditions and the operational status of the vehicles.	maint and constr vehicle status coordination	Maintenance and construction vehicle environmental conditions and the op
maint and constr vehicle system control	Configure and control data that supports remote control of on-board maintenance and construction vehicle systems and field equipment that is remotely controlled by the vehicle. For example, the data can be used to adjust material application rates and spread patterns.	maint and constr vehicle system control	Configure and control data that supp vehicle systems and field equipment can be used to adjust material application
maint and constr work performance	Overall project status and work performance information provided to support contract administration.	maint and constr work performance	Overall project status and work perfo
maint and constr work plans	Future construction and maintenance work schedules and activities including anticipated closures with anticipated impact to the roadway, alternate routes, anticipated delays, closure times, and durations.	maint and constr work plans	Future construction and maintenance anticipated impact to the roadway, al
maintenance and repair needs	Recommended strategies and schedules for maintenance of the transportation infrastructure.	maintenance and repair needs	Recommended strategies and schedu
maintenance materials storage status	The amount and availability of maintenance materials in storage facilities.	maintenance materials storage status	The amount and availability of main
manifest data	Identifies Port of Entry, date, and information on carrier and goods, origin, etc.	manifest data	Identifies Port of Entry, date, and inf
manifest receipt confirmation	Confirmation that a shippers manifest has been received.	manifest receipt confirmation	Confirmation that a shippers manifest
map update request	Request for a map update which could include a new underlying map or map layer updates.	map update request	Request for a map update which cou
map updates	Map update which could include a new underlying static or real-time map or map layer(s) update.	map updates	Map update which could include a new
multimodal archive data	Operational information from alternate passenger transportation modes including air, rail transit, taxis, and ferries. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	multimodal archive data	Operational information from alterna and ferries. Content may include a c archived, and associated meta data th
multimodal crossing status	Indication of operational status and pending requests for right-of-way from equipment supporting the non-highway mode at multimodal crossings.	multimodal crossing status	Indication of operational status and p non-highway mode at multimodal cr
multimodal information	Schedule information for alternate mode transportation providers such as train, ferry, air and bus.	multimodal information	Schedule information for alternate m
multimodal information request	Information request for alternate mode transportation providers such as train, ferry, air and bus.	multimodal information request	Information request for alternate mod
multimodal service data	Multimodal transportation schedules and other service information.	multimodal service data	Multimodal transportation schedules
on-board safety data	Safety data measured by on-board sensors. Includes information about the vehicle, vehicle components, cargo, and driver.	on-board safety data	Safety data measured by on-board se cargo, and driver.
on-board safety request	Request for on-board vehicle safety data by the roadside equipment.	on-board safety request	Request for on-board vehicle safety
on-board vehicle data	Information about the commercial vehicle stored on-board (for maintenance purposes, gate access, cargo status, lock status, etc.).	on-board vehicle data	Information about the commercial ve status, lock status, etc.).
on-board vehicle request	Request for on-board vehicle data.	on-board vehicle request	Request for on-board vehicle data.
other data source archive data	Data extracted from other data sources. A wide range of ITS and non-ITS data and associated meta data may be provided.	other data source archive data	Data extracted from other data source may be provided.
parking archive data	Data used to analyze and monitor trends in parking demand, pricing, and operational actions. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	parking archive data	Data used to analyze and monitor tre may include a catalog of available in meta data that describes the archived

# C\_V2 Description

S systems to control maintenance and construction vehicle aterials dispersion rate and other control functions that will vary with

atus (e.g., direction and speed) of the maintenance/construction

ting status data reported by the maintenance vehicle platform eage, tire wear, brake wear, belt wear, and other operational status ral vehicle status, this flow also includes the status of maintenance and ne vehicle.

e and construction activity performed by the vehicle. Operational ount stored and current application rate), operational state of the e up/down, spreader pattern), vehicle safety status, and other measures maintenance, construction, or other special purpose vehicle. c operational status of the vehicle equipment or a more precise record ration of crack sealant with precise locations and application

cle status information that is shared between vehicles. This includes operational status of the vehicles.

poprts remote control of on-board maintenance and construction nt that is remotely controlled by the vehicle. For example, the data ication rates and spread patterns.

formance information provided to support contract administration.

ce work schedules and activities including anticipated closures with alternate routes, anticipated delays, closure times, and durations.

dules for maintenance of the transportation infrastructure.

intenance materials in storage facilities.

nformation on carrier and goods, origin, etc.

est has been received.

ould include a new underlying map or map layer updates.

new underlying static or real-time map or map layer(s) update.

nate passenger transportation modes including air, rail transit, taxis, a catalog of available information, the actual information to be that describes the archived information.

l pending requests for right-of-way from equipment supporting the crossings.

mode transportation providers such as train, ferry, air and bus.

ode transportation providers such as train, ferry, air and bus.

es and other service information.

sensors. Includes information about the vehicle, vehicle components,

y data by the roadside equipment.

vehicle stored on-board (for maintenance purposes, gate access, cargo

rces. A wide range of ITS and non-ITS data and associated meta data

rends in parking demand, pricing, and operational actions. Content information, the actual information to be archived, and associated ed information.

US_V6 Name	US_V6 Description	C_V2 Name	
parking coordination	Information that enables parking management activities to be coordinated between different parking operators or systems in a region.	parking coordination	Information that enables parking man operators or systems in a region.
parking demand management request	Request to change the demand for parking facility use through pricing or other mechanisms.	parking demand management request	Request to change the demand for par
parking demand management response	Response to parking demand management change requests indicating level of compliance with request.	parking demand management response	Response to parking demand manage
parking information	General parking information and status, including current parking availability.	parking information	General parking information and statu
parking lot data request	Request for parking lot occupancy, fares, and availability. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.	parking lot data request	Request for parking lot occupancy, fa initiates as-needed information update
parking lot inputs	Instructions for operation of local parking facilities to support regional traffic management objectives (e.g. which parking lot exits to use). Also, includes inputs from traffic sensors to support calculation of parking lot occupancy and support more effective management of parking entrances and exits.	parking lot inputs	Instructions for operation of local par (e.g. which parking lot exits to use). parking lot occupancy and support me
parking lot reservation confirmation	Confirmation for parking lot reservation.	parking lot reservation confirmation	Confirmation for parking lot reservation
parking operator inputs	User input from the parking operator to query current status and control the operation of the parking management system.	parking operator inputs	User input from the parking operator management system.
parking reservations request	Reservation request for parking lot.	parking reservations request	Reservation request for parking lot.
parking status	Presentation of information to the parking operator including operational status and transaction reports.	parking status	Presentation of information to the par
pass/pull-in	Command to commercial vehicle to pull into or bypass inspection station.	pass/pull-in	Command to commercial vehicle to p
patient status	Information that supports assessment of the patient's condition. Information could include general categorization of patient status, patient vital signs, pertinent medical history, and emergency care information.	patient status	Information that supports assessment categorization of patient status, patier information.
payment	Payment of some kind (e.g., toll, parking, fare) by traveler which, in most cases, can be related to a credit account.	payment	Payment of some kind (e.g., toll, park to a credit account.
payment request	Request for payment from financial institution.	payment request	Request for payment from financial in
payment violation notification	Notification to enforcement agency of a toll, parking, or transit fare payment violation.	payment violation notification	Notification to enforcement agency o
personal transit information	General and personalized transit information for a particular fixed route, flexible route, or paratransit system.	personal transit information	General and personalized transit infor system.
physical presence	Detection of an obstacle by a vehicle. Obstacle could include animals, other vehicles, pedestrians, rocks in roadway etc.	physical presence	Detection of an obstacle by a vehicle. in roadway etc.
pollutant levels	Atmospheric pollutant levels as monitored by air quality sensors.	pollutant levels	Atmospheric pollutant levels as moni
pollution data display	Presentation of information to the operator supporting both area-wide air quality monitoring and vehicle emissions monitoring. Includes both reference and current pollution status details for a given geographic area.	pollution data display	Presentation of information to the ope emissions monitoring. Includes both area.
pollution data parameters	User input from the system operator including nominal pollution data compliance (reference) levels for each sector of an urban area.	pollution data parameters	User input from the system operator i each sector of an urban area.
pollution sensor control	Data used to configure and control area pollution and air quality sensors.	pollution sensor control	Data used to configure and control ar
pollution state data request	Aggregated emissions data information request.	pollution state data request	Aggregated emissions data information
position fix	Information which provides a traveler's or vehicle's geographical position.	position fix	Information which provides a traveler
pre-arrival notification	Identification of a vehicle or driver that is approaching a border crossing.	pre-arrival notification	Identification of a vehicle or driver th
probe archive data	Probe data that allows calculation of travel times, volumes, and other measures that support transportation planning. Optionally, this flow also includes origin and destination information for vehicles that opt to provide this information.	probe archive data	Probe data that allows calculation of transportation planning. Optionally, to vehicles that opt to provide this information of the second seco
public health request	Request for specific information or recommended response concerning an emergency involving biological or other medically related emergency.	public health request	Request for specific information or re biological or other medically related of
public health response	Specific information or recommendation on how to treat or respond to an emergency involving biological or other medically related emergency.	public health response	Specific information or recommendat biological or other medically related e

# C\_V2 Description

nanagement activities to be coordinated between different parking

parking facility use through pricing or other mechanisms.

gement change requests indicating level of compliance with request.

## tatus, including current parking availability.

fares, and availability. The request can be a subscription that lates as well as a one-time request for information.

parking facilities to support regional traffic management objectives ). Also, includes inputs from traffic sensors to support calculation of more effective management of parking entrances and exits.

vation.

or to query current status and control the operation of the parking

parking operator including operational status and transaction reports. o pull into or bypass inspection station.

ent of the patient's condition. Information could include general tient vital signs, pertinent medical history, and emergency care

arking, fare) by traveler traveller which, in most cases, can be related

institution.

of a toll, parking, or transit fare payment violation.

formation for a particular fixed route, flexible route, or paratransit

ele. Obstacle could include animals, other vehicles, pedestrians, rocks

onitored by air quality sensors.

operator supporting both area-wide air quality monitoring and vehicle th reference and current pollution status details for a given geographic

or including nominal pollution data compliance (reference) levels for

area pollution and air quality sensors.

ation request.

eler'straveller's or vehicle's geographical position.

that is approaching a border crossing.

of travel times, volumes, and other measures that support y, this flow also includes origin and destination information for formation.

recommended response concerning an emergency involving ed emergency.

dation on how to treat or respond to an emergency involving ed emergency.

US_V6 Name	US_V6 Description	C_V2 Name	
qualified environmental conditions data	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) that has had quality checks performed on it and has been formatted and consolidated by the Clarus system. Attributes relating to the data collection (and aggregation) are also included.	qualified environmental conditions data	Current road conditions (e.g., surface status) and surface weather condition has had quality checks performed on Attributes relating to the data collect
rail incident response status	Status of the rail system's response to current incidents.	rail incident response status	Status of the rail system's response to
rail system status assessment	Assessment of damage sustained by rail lines and associated railroad infrastructure including location and extent of the damage, impact on current operations and necessary restrictions, and time frame for repair and recovery.	rail system status assessment	Assessment of damage sustained by and extent of the damage, impact on repair and recovery.
railroad advisories	Real-time notification of railway-related incident or advisory.	railroad advisories	Real-time notification of railway-rela
railroad schedules	Train schedules, maintenance schedules, and other information from the railroad that supports forecast of HRI closures.	railroad schedules	Train schedules, maintenance schedu HRI closures.
registration	Registered owner of vehicle and associated vehicle information.	registration	Registered owner of vehicle and asso
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.	remote surveillance control	The control commands used to remo equipment so that roadside surveillar
remote vehicle disable	Signal used to remotely disable a transit vehicle.	remote vehicle disable	Signal used to remotely disable a tran
request for bad tag list	Request for list of bad vehicle tag IDs.	request for bad tag list	Request for list of bad vehicle tag ID
request for enforcement	Request for traffic enforcement to address safety issues in a work zone or other special situations.	request for enforcement	Request for traffic enforcement to ad
request for payment	Request to deduct cost of service from user's payment account.	request for payment	Request to deduct cost of service from
request for performance data	User input from the parking operator to request current parking service performance data.	request for performance data	User input from the parking operator
request for right-of-way	Forwarded request from signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.	request for right-of-way	Forwarded request from signal priori activation, or other source for right-o
request for service	Driver inputs that summon an emergency response, request a financial transaction, or initiate other services.	request for service	Driver inputs that summon an emerg services.
request for vehicle measures	Request for vehicle performance and maintenance data collected by onboard sensors.	request for vehicle measures	Request for vehicle performance and
request tag data	Request for tag information including credit identity, stored value card cash, etc.	request tag data	Request for tag information including
request transit information	Request for transit service information and current transit status.	request transit information	Request for transit service information
resource coordination	Coordination of resource inventory information, specific resource status information, resource prioritization and reallocation between jurisdictions, and specific requests for resources and responses that service those requests.	resource coordination	Coordination of resource inventory in prioritization and reallocation between that service those requests.
resource deployment status	Status of resource deployment identifying the resources (vehicles, equipment, materials, and personnel) available and their current status. General resource inventory information and specific status of deployed resources may be included.	resource deployment status	Status of resource deployment identi available and their current status. Ge deployed resources may be included.
resource request	A request for resources to implement special traffic control measures, assist in clean up, verify an incident, etc. The request may poll for resource availability or request pre-staging, staging, or immediate deployment of resources. Resources may be explicitly requested or a service may be requested and the specific resource deployment may be determined by the responding agency.	resource request	A request for resources to implement incident, etc. The request may poll f deployment of resources. Resources specific resource deployment may be
reversible lane control	Control of automated reversible lane configuration and driver information systems.	reversible lane control	Control of automated reversible lane
reversible lane status	Current reversible lane status including traffic sensor and surveillance data and the operational status and mode of the reversible lane control equipment.	reversible lane status	Current reversible lane status includi mode of the reversible lane control e
road data	Basic road facility and treatment information that supports road conditions forecasts.	road data	Basic road facility and treatment info
road network conditions	Current and forecasted traffic information, road and weather conditions, and other road network status. Either raw data, processed data, or some combination of both may be provided by this architecture flow. Information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) in effect is included along with a definition of the links, nodes, and routes that make up the road network.	road network conditions	Current and forecasted traffic inform Either raw data, processed data, or so Information on diversions and altern use, weight restrictions, width restrict definition of the links, nodes, and rou
road network environmental probe data	Aggregated vehicle probe information that can be used to estimate current environmental conditions. Collected information would include measured air temperature, exterior light status, wiper status, sun sensor status, rain sensor status, traction control status, ALB status, and other collected vehicle system status and sensor information.	road network environmental probe data	Aggregated vehicle probe information Collected information would include sensor status, rain sensor status, tract status and sensor information.

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the temperature, subsurface temperature, moisture, icing, treatment ons (e.g., air temperature, wind speed, precipitation, visibility) that on it and has been formatted and consolidated by the Clarus system. ction (and aggregation) are also included.

#### e to current incidents.

y rail lines and associated railroad infrastructure including location on current operations and necessary restrictions, and time frame for

elated incident or advisory.

dules, and other information from the railroad that supports forecast of

sociated vehicle information.

notely operate another <u>center'scentre's</u> sensors or surveillance ance assets can be shared by more than one agency.

ransit vehicle.

IDs.

address safety issues in a work zone or other special situations.

rom user's payment account.

or to request current parking service performance data.

pritization, signal preemption, pedestrian call, multi-modal crossing -of-way.

rgency response, request a financial transaction, or initiate other

nd maintenance data collected by onboard sensors.

ing credit identity, stored value card cash, etc.

tion and current transit status.

v information, specific resource status information, resource veen jurisdictions, and specific requests for resources and responses

tifying the resources (vehicles, equipment, materials, and personnel) General resource inventory information and specific status of ed.

ent special traffic control measures, assist in clean up, verify an l for resource availability or request pre-staging, staging, or immediate es may be explicitly requested or a service may be requested and the be determined by the responding agency.

ne configuration and driver information systems.

ding traffic sensor and surveillance data and the operational status and equipment.

formation that supports road conditions forecasts.

mation, road and weather conditions, and other road network status. some combination of both may be provided by this architecture flow. mate routes, closures, and special traffic restrictions (lane/shoulder cictions, HOV requirements) in effect is included along with a routes that make up the road network.

tion that can be used to estimate current environmental conditions. de measured air temperature, exterior light status, wiper status, sun action control status, ALB status, and other collected vehicle system

US_V6 Name	US_V6 Description	C_V2 Name	
road network status assessment	Assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.	road network status assessment	Assessment of damage sustained by t estimate of remaining capacity, requi for repair and recovery.
road network traffic probe data	Aggregated route usage, travel times, and other aggregated data collected from probe vehicles that can be used to estimate current traffic conditions.	road network traffic probe data	Aggregated route usage, travel times, be used to estimate current traffic cor
road weather information	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.	road weather information	Road conditions and weather information other transportation system operators
roadside archive data	A broad set of data derived from roadside sensors that includes current traffic conditions, environmental conditions, and any other data that can be directly collected by roadside sensors. This data also indicates the status of the sensors and reports of any identified sensor faults.	roadside archive data	A broad set of data derived from road conditions, and any other data that ca the status of the sensors and reports of
roadside transaction status	The status of an electronic payment transaction provided directly to the driver via sign or other roadside infrastructure.	roadside transaction status	The status of an electronic payment the infrastructure.
roadway characteristics	Detectable or measurable road characteristics such as friction coefficient and general surface conditions, road geometry and markings, etc. These characteristics are monitored or measured by ITS sensors and used to support advanced vehicle safety and control and road maintenance capabilities.	roadway characteristics	Detectable or measurable road charac road geometry and markings, etc. Th used to support advanced vehicle safe
roadway equipment coordination	The direct flow of information between field equipment. This includes transfer of information between sensors and driver information systems (e.g., DMS, HAR) or control devices (e.g., traffic signals, ramp meters), direct coordination between adjacent control devices, interfaces between detection and warning or alarm systems, and any other direct communications between field equipment. This includes information exchanged between a Signal System Master (SSM) and the Signal System Local (SSL) equipment.	roadway equipment coordination	The direct flow of information betwe sensors and driver information system meters), direct coordination between or alarm systems, and any other direc information exchanged between a Sig equipment.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.	roadway information system data	Information used to initialize, configu (e.g., dynamic message signs, highwa content and delivery attributes, local status queries, and all other command these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.	roadway information system status	Current operating status of dynamic r configurable field equipment that pro
roadway maintenance status	Summary of maintenance fleet operations affecting the road network. This includes the status of winter maintenance (snow plow schedule and current status).	roadway maintenance status	Summary of maintenance fleet operation maintenance (snow plow schedule and
roadway safety data	Information about potential safety hazards in the vehicle path such as stalled vehicles, wrong way drivers, debris, or standing water.	roadway safety data	Information about potential safety ha drivers, debris, or standing water.
roadway treatment system control	Control data for remotely located, automated devices, that affect the roadway surface (e.g. de-icing applications).	roadway treatment system control	Control data for remotely located, au applications).
roadway treatment system status	Current operational status of automated roadway treatment devices (e.g., anti-icing systems).	roadway treatment system status	Current operational status of automat
route assignment	Route assignment information for transit vehicle operator.	route assignment	Route assignment information for tra
route deviation alert	An alert that indicates a deviation from a planned route has been detected. The alert will contain the current Commercial Vehicle location and identity.	route deviation alert	An alert that indicates a deviation fro current Commercial Vehicle location
route plan	Tailored route provided by ISP in response to a specific request.	route plan	Tailored route provided by ISP in res
route request	Request for a tailored route based on given constraints.	route request	Request for a tailored route based on
route restrictions	Information about routes, road segments, and areas that do not allow the transport of security sensitive hazmat cargoes or include other restrictions (such as height or weight limits).	route restrictions	Information about routes, road segme hazmat cargoes or include other restr
safe vehicle disable	Control signal disabling or enabling commercial vehicle.	safe vehicle disable	Control signal disabling or enabling or
safeguard system control	Data that controls safeguard systems (remotely controlled equipment used to mitigate the impact of incidents on transportation infrastructure, such as blast shields, exhaust systems, etc.).	safeguard system control	Data that controls safeguard systems incidents on transportation infrastruct
safeguard system status	Current operating status of safeguard systems (remotely controlled equipment used to mitigate the impact of incidents on transportation infrastructure, such as blast shields, exhaust systems, etc.). Status of the systems includes operating condition and current operational state.	safeguard system status	Current operating status of safeguard impact of incidents on transportation of the systems includes operating corr
safety inspection record	Record containing results of commercial vehicle safety inspection.	safety inspection record	Record containing results of commer-
safety inspection report	Report containing results of commercial vehicle safety inspection. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.	safety inspection report	Report containing results of commerce a response to a real-time query or pro-

# C\_V2 Description

y the road network including location and extent of the damage, uired closures, alternate routes, necessary restrictions, and time frame

es, and other aggregated data collected from probe vehicles that can conditions.

mation that are made available by road maintenance operations to ors.

badside sensors that includes current traffic conditions, environmental can be directly collected by roadside sensors. This data also indicates s of any identified sensor faults.

transaction provided directly to the driver via sign or other roadside

racteristics such as friction coefficient and general surface conditions, These characteristics are monitored or measured by ITS sensors and afety and control and road maintenance capabilities.

ween field equipment. This includes transfer of information between tems (e.g., DMS, HAR) or control devices (e.g., traffic signals, ramp en adjacent control devices, interfaces between detection and warning rect communications between field equipment. This includes Signal System Master (SSM) and the Signal System Local (SSL)

igure, and control roadside systems that provide driver information way advisory radio, beacon systems). This flow can provide message al message store maintenance requests, control mode commands, ands and associated parameters that support remote management of

c message signs, highway advisory radios, beacon systems, or other rovides dynamic information to the driver.

rations affecting the road network. This includes the status of winter and current status).

hazards in the vehicle path such as stalled vehicles, wrong way

automated devices, that affect the roadway surface (e.g. de-icing

nated roadway treatment devices (e.g., anti-icing systems).

transit vehicle operator.

from a planned route has been detected. The alert will contain the on and identity.

response to a specific request.

on given constraints.

ments, and areas that do not allow the transport of security sensitive strictions (such as height or weight limits).

g commercial vehicle.

ns (remotely controlled equipment used to mitigate the impact of ucture, such as blast shields, exhaust systems, etc.).

rd systems (remotely controlled equipment used to mitigate the on infrastructure, such as blast shields, exhaust systems, etc.). Status condition and current operational state.

ercial vehicle safety inspection.

ercial vehicle safety inspection. The information may be provided as proactively by the source. The query flow is not explicitly shown.

US_V6 Name	US_V6 Description	C_V2 Name	
safety inspection request	Request for safety inspection record.	safety inspection request	Request for safety inspection record.
safety status information	Safety information such as safety ratings, security ratings or flags, inspection summaries, and violation summaries. A unique identifier is included. Corresponds to the safety and security portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.	safety status information	Safety information such as safety rat summaries. A unique identifier is in "snapshots." The status information a standing request for updated inform U.S. fleets for use by U.S. authorities and Canadian authorities. The query
safety system status	Current vehicle safety system status indicating the operating condition of these systems and the safety status of the vehicle and driver.	safety system status	Current vehicle safety system status status of the vehicle and driver.
screening event record	Results of CVO electronic screening activity.	screening event record	Results of CVO electronic screening
screening results	Results of commercial vehicle screening event at a border crossing - reports clearance event data regarding action taken at border, including acceptance or override of system decision, and date/time stamp.	screening results	Results of commercial vehicle screen regarding action taken at border, inclustamp.
secure area characteristics	The range of physical and environmental characteristics (visual, audible, presence, motion, chemical, biological, radiological, other) that are monitored by surveillance and sensor systems.	secure area characteristics	The range of physical and environme biological, radiological, other) that a
secure area sensor control	Information used to configure and control threat sensors (e.g., thermal, acoustic, radiological, chemical), object, motion and intrusion detection sensors. The provided information controls sensor data collection, aggregation, filtering, and other local processing.	secure area sensor control	Information used to configure and co object, motion and intrusion detectio aggregation, filtering, and other local
secure area sensor data	Data provided by threat sensors (e.g., thermal, acoustic, radiological, chemical), and intrusion, motion, and object detection sensors in secure areas indicating the sensor's operational status, raw and processed sensor data, and alarm indicators when a threat has been detected.	secure area sensor data	Data provided by threat sensors (e.g. and object detection sensors in secur sensor data, and alarm indicators who
secure area surveillance control	Information used to configure and control audio and video surveillance systems used for transportation infrastructure security in secure areas. The provided information controls surveillance data collection, aggregation, filtering, and other local processing.	secure area surveillance control	Information used to configure and co infrastructure security in secure area aggregation, filtering, and other loca
secure area surveillance data	Data collected from surveillance systems used to monitor secure areas. Includes video, audio, processed surveillance data, equipment operational status, and alarm indicators when a threat has been detected.	secure area surveillance data	Data collected from surveillance syst surveillance data, equipment operation
security equipment maintenance status	Current status of security surveillance and sensor field equipment maintenance actions.	security equipment maintenance status	Current status of security surveillanc
security field equipment status	Identification of security sensors and surveillance equipment requiring repair and known information about the associated faults.	security field equipment status	Identification of security sensors and about the associated faults.
selected routes	Routes selected based on route request criteria.	selected routes	Routes selected based on route reque
shelter information	Evacuation shelter information including location, hours of operation, special accommodations, and current vacancy/availability information.	shelter information	Evacuation shelter information inclu current vacancy/availability information
short range communications status	Status of the short range communications equipment including the current state or mode of operation and the current equipment status.	short range communications status	Status of the short range communica the current equipment status.
signal control data	Information used to configure and control traffic signal systems.	signal control data	Information used to configure and co
signal control status	Status of surface street signal controls including operating condition and current operational state.	signal control status	Status of surface street signal control
speed monitoring control	Information used to configure and control automated speed monitoring, speed warning, and speed enforcement systems.	speed monitoringtraffic enforcement control	Information used to configure and co enforcement systems.
speed monitoring information	System status including current operational state and logged information including measured speeds, warning messages displayed, and violation records.	speed monitoringtraffic enforcement information	System status including current oper warning messages displayed, and vio
storage facility request	Request for information about the equipment and/or materials available at a maintenance storage facility.	storage facility request	Request for information about the eq
suggested route	Suggested route for a dispatched emergency or maintenance vehicle that may reflect current network conditions and the additional routing options available to en route emergency or maintenance vehicles that are not available to the general public.	suggested route	Suggested route for a dispatched emo- conditions and the additional routing that are not available to the general p
tag data	Unique tag ID and related vehicle information.	tag data	Unique tag ID and related vehicle in
tax filing	Commercial vehicle tax filing data. Authorization for payment is included.	tax filing	Commercial vehicle tax filing data.
threat data for analysis	Data from surveillance or sensor equipment in secure areas provided for further analysis.	threat data for analysis	Data from surveillance or sensor equ
threat information	Threats regarding transportation infrastructure, facilities, or systems detected by a variety of methods (sensors, surveillance, threat analysis of advisories from outside agencies, etc.	threat information	Threats regarding transportation infra (sensors, surveillance, threat analysis

# C\_V2 Description

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atings, security ratings or flags, inspection summaries, and violation included. Corresponds to the safety and security portion of CVISN on may be provided as a response to a real-time query or as a result of rmation (subscription). This may also include information about nonies, and information regarding U.S. fleets made available to Mexican ry flow is not explicitly shown.

s indicating the operating condition of these systems and the safety

ng activity.

ening event at a border crossing - reports clearance event data accuding acceptance or override of system decision, and date/time

nental characteristics (visual, audible, presence, motion, chemical, are monitored by surveillance and sensor systems.

control threat sensors (e.g., thermal, acoustic, radiological, chemical), ion sensors. The provided information controls sensor data collection, cal processing.

g., thermal, acoustic, radiological, chemical), and intrusion, motion, ure areas indicating the sensor's operational status, raw and processed /hen a threat has been detected.

control audio and video surveillance systems used for transportation eas. The provided information controls surveillance data collection, cal processing.

vstems used to monitor secure areas. Includes video, audio, processed tional status, and alarm indicators when a threat has been detected.

nce and sensor field equipment maintenance actions.

nd surveillance equipment requiring repair and known information

uest criteria.

luding location, hours of operation, special accommodations, and nation.

cations equipment including the current state or mode of operation and

control traffic signal systems.

ols including operating condition and current operational state.

control automated speed monitoring, speed warning, and speed

erational state and logged information including measured speeds, violation records.

equipment and/or materials available at a maintenance storage facility.

mergency or maintenance vehicle that may reflect current network ng options available to en route emergency or maintenance vehicles l public.

information.

Authorization for payment is included.

quipment in secure areas provided for further analysis.

frastructure, facilities, or systems detected by a variety of methods sis of advisories from outside agencies, etc.

US_V6 Name	US_V6 Description	C_V2 Name	
threat information coordination	Sensor, surveillance, and threat data including raw and processed data that is collected by sensor and surveillance equipment located in secure areas.	threat information coordination	Sensor, surveillance, and threat data is surveillance equipment located in sec
threat support data	Information provided to help receiving agency identify possible threats, including biometric image processing support data.	threat support data	Information provided to help receivir processing support data.
toll administration requests	Personnel inputs that control system operations, including requests to change toll fees, confirmation that alerts should be provided to toll operators, etc.	toll administration requests	Personnel inputs that control system a alerts should be provided to toll operation
toll advisories	Alerts and advisories provided to toll plazas to keep toll operators informed of identified threats that may impact toll operations or public safety on a toll facility.	toll advisories	Alerts and advisories provided to toll impact toll operations or public safet
toll archive data	Data indicating toll facility usage and pricing schedules. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	toll archive data	Data indicating toll facility usage and information, the actual information to information.
toll coordination	This flow supports reciprocity between toll agencies/service centers by exchanging information that supports reconciliation of toll charges by customers that are enrolled with other toll service centers. In addition to toll charge reconciliation, exchanged information may include toll schedule information, customer information and other toll service information that is coordinated between toll agencies or centers.	toll coordination	This flow supports reciprocity betwe that supports reconciliation of toll ch <u>centerscentres</u> . In addition to toll cha information, customer information an agencies or <u>centerscentres</u> .
toll data	Current toll schedules for different types of vehicles as well as advanced toll payment information.	toll data	Current toll schedules for different ty
toll data request	Request made to obtain toll schedule information or pay a toll in advance. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.	toll data request	Request made to obtain toll schedule subscription that initiates as-needed i
toll information presentation	Presentation of information to toll center personnel including toll revenues, toll-related reports, operational status information, and alert information.	toll information presentation	Presentation of information to toll ee operational status information, and al
toll instructions	Information provided to configure and support toll plaza operations including toll pricing information.	toll instructions	Information provided to configure an
toll operator information presentation	Information presented to the toll collection point operator, including toll transaction information, alerts, and advisories.	toll operator information presentation	Information presented to the toll colle and advisories.
toll operator requests	User input from the toll operator to request information at the toll collection site.	toll operator requests	User input from the toll operator to re-
toll probe data	Aggregate probe data derived from electronic toll collection operations. Data collected could include vehicle speeds and travel times for a given link or collection of links.	toll probe data	Aggregate probe data derived from envelopment of the speeds and travel times for a
toll service change request	Request to change pricing, modify restrictions, or modify operations of a toll road facility	toll service change request	Request to change pricing, modify re
toll service change response	Response to toll service change requests indicating level of compliance with request.	toll service change response	Response to toll service change requi
toll transactions	Detailed list of transactions from a toll station.	toll transactions	Detailed list of transactions from a to
track status	Current status of the wayside equipment and notification of an arriving train.	track status	Current status of the wayside equipm
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	traffic archive data	Information describing the use and ve strategies employed. Content may in be archived, and associated meta data
traffic characteristics	Physical traffic characteristics which are monitored and translated into macroscopic measures like occupancy, volume, density, and average speed. Point measures support presence detection and individual vehicle measures like speed.	traffic characteristics	Physical traffic characteristics which occupancy, volume, density, and aver individual vehicle measures like spee
traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.	traffic control coordination	Information transfers that enable rem flow is intended to allow cooperative special events and during day-to-day monitor and control assets of other ee over capabilities to be established, an
traffic control priority request	Request for signal priority at one or more intersections along a particular route.	traffic control priority request	Request for signal priority at one or r
traffic control priority status	Status of signal priority request functions at the roadside (e.g. enabled or disabled).	traffic control priority status	Status of signal priority request funct
traffic flow	Raw and/or processed traffic detector data which allows derivation of traffic flow variables (e.g., speed, volume, and density measures) and associated information (e.g., congestion, potential incidents). This flow includes the traffic data and the operational status of the traffic detectors.	traffic flow	Raw and/or processed traffic detector volume, and density measures) and a flow includes the traffic data and the
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications. This flow includes the images and the operational status of the surveillance system.	traffic images	High fidelity, real-time traffic images machine vision applications. This flo system.

# C\_V2 Description

a including raw and processed data that is collected by sensor and ecure areas.

ving agency identify possible threats, including biometric image

n operations, including requests to change toll fees, confirmation that erators, etc.

oll plazas to keep toll operators informed of identified threats that may ety on a toll facility.

nd pricing schedules. Content may include a catalog of available to be archived, and associated meta data that describes the archived

ween toll agencies/service <u>centerscentres</u> by exchanging information charges by customers that are enrolled with other toll service harge reconciliation, exchanged information may include toll schedule and other toll service information that is coordinated between toll

types of vehicles as well as advanced toll payment information.

le information or pay a toll in advance. The request can be a d information updates as well as a one-time request for information.

<u>centercentre</u> personnel including toll revenues, toll-related reports, alert information.

and support toll plaza operations including toll pricing information.

llection point operator, including toll transaction information, alerts,

request information at the toll collection site.

electronic toll collection operations. Data collected could include a given link or collection of links.

restrictions, or modify operations of a toll road facility

uests indicating level of compliance with request.

toll station.

ment and notification of an arriving train.

vehicle composition on transportation facilities and the traffic control include a catalog of available information, the actual information to ata that describes the archived information.

ch are monitored and translated into macroscopic measures like verage speed. Point measures support presence detection and eed.

emote monitoring and control of traffic management devices. This ve access to, and control of, field equipment during incidents and ay operations. This flow also allows 24-hour <u>centerscentres</u> to <u>centerscentres</u> during off-hours, allows system redundancies and failand otherwise enables integrated traffic control strategies in a region.

more intersections along a particular route.

ctions at the roadside (e.g. enabled or disabled).

tor data which allows derivation of traffic flow variables (e.g., speed, associated information (e.g., congestion, potential incidents). This ne operational status of the traffic detectors.

ges suitable for surveillance monitoring by the operator or for use in flow includes the images and the operational status of the surveillance

US_V6 Name	US_V6 Description	C_V2 Name	
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.	traffic information coordination	Traffic information exchanged betwe traffic data, signal timing plans, and r
traffic operator data	Presentation of traffic operations data to the operator including traffic conditions, current operating status of field equipment, maintenance activity status, incident status, video images, security alerts, emergency response plan updates and other information. This data keeps the operator appraised of current road network status, provides feedback to the operator as traffic control actions are implemented, provides transportation security inputs, and supports review of historical data and preparation for future traffic operations activities.	traffic operator data	Presentation of traffic operations data status of field equipment, maintenance emergency response plan updates and current road network status, provides provides transportation security input traffic operations activities.
traffic operator inputs	User input from traffic operations personnel including requests for information, configuration changes, commands to adjust current traffic control strategies (e.g., adjust signal timing plans, change DMS messages), and other traffic operations data entry.	traffic operator inputs	User input from traffic operations per commands to adjust current traffic co messages), and other traffic operation
traffic probe data	Vehicle data that is used to determine traffic conditions. In a basic implementation, the data could be limited to time stamped unique identifiers that can be used to measure a vehicle's progress through the network. In more advanced implementations, the vehicle may report current position, speed, and heading and snapshots of recent events including route information, starts and stops, speed changes, and other information that can be used to estimate traffic conditions.	traffic probe data	Vehicle data that is used to determine limited to time stamped unique identi network. In more advanced impleme heading and snapshots of recent even other information that can be used to
traffic sensor control	Information used to configure and control traffic sensor systems.	traffic sensor control	Information used to configure and con
traffic violation notification	Notification to enforcement agency of a detected traffic violation including speed violations and HOV violations.	traffic violation notification	Notification to enforcement agency o violations.
transaction status	Response to transaction request. Normally dealing with a request for payment.	transaction status	Response to transaction request. Nor
transit and fare schedules	Transit service information including routes, schedules, and fare information.	transit and fare schedules	Transit service information including
transit archive data	Data used to describe and monitor transit demand, fares, operations, and system performance. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	transit archive data	Data used to describe and monitor tra may include a catalog of available inf meta data that describes the archived
transit demand management request	Request to change the demand for transit facility use through pricing or other mechanisms.	transit demand management request	Request to change the demand for tra
transit demand management response	Response to transit demand management change requests indicating level of compliance with request.	transit demand management response	Response to transit demand managem
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.	transit emergency data	Initial notification of transit emergence additional details become available an
transit fare and passenger status	Information provided from the traveler location that supports fare payments, passenger data, and associated record-keeping.	transit fare and passenger status	Information provided from the travele associated record-keeping.
transit fare coordination	Fare and pricing information shared between local/regional transit organizations.	transit fare coordination	Fare and pricing information shared b
transit fare information	Information provided by transit management that supports fare payment transactions and passenger data collection.	transit fare information	Information provided by transit mana collection.
transit incident information	Information on transit incidents that impact transit services for public dissemination.	transit incident information	Information on transit incidents that i
transit incidents for media	Report of an incident impacting transit operations for public dissemination through the media.	transit incidents for media	Report of an incident impacting trans
transit information for media	Report of transit schedule deviations for public dissemination through the media.	transit information for media	Report of transit schedule deviations
transit information request	Request for transit operations information including schedule and fare information. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.	transit information request	Request for transit operations informa subscription that initiates as-needed i
transit information user request	Request for special transit routing, real-time schedule information, and availability information.	transit information user request	Request for special transit routing, rea
transit multimodal information	Transit schedule information for coordination at modal interchange points.	transit multimodal information	Transit schedule information for coor
transit operations personnel inputs	User input from transit operations personnel including instructions governing service availability, schedules, emergency response plans, transit personnel assignments, transit maintenance requirements, and other inputs that establish general system operating requirements and procedures.	transit operations personnel inputs	User input from transit operations per schedules, emergency response plans and other inputs that establish genera
transit operations status	Presentation of information to transit operations personnel including accumulated schedule and fare information, ridership and on-time performance information, emergency response plans, transit personnel information, maintenance records, and other information intended to support overall planning and management of a transit property.	transit operations status	Presentation of information to transit information, ridership and on-time per personnel information, maintenance r and management of a transit property
transit probe data	Aggregate probe data derived from tracking transit vehicles. Data collected could include transit vehicle speeds and travel times for a given link or collection of links.	transit probe data	Aggregate probe data derived from tr speeds and travel times for a given lin

# C\_V2 Description

ween TMC's. Normally would include incidents, congestion data, d real-time signal control information.

ata to the operator including traffic conditions, current operating ince activity status, incident status, video images, security alerts, and other information. This data keeps the operator appraised of les feedback to the operator as traffic control actions are implemented, puts, and supports review of historical data and preparation for future

personnel including requests for information, configuration changes, control strategies (e.g., adjust signal timing plans, change DMS ions data entry.

ine traffic conditions. In a basic implementation, the data could be ntifiers that can be used to measure a vehicle's progress through the mentations, the vehicle may report current position, speed, and ents including route information, starts and stops, speed changes, and to estimate traffic conditions.

control traffic sensor systems.

of a detected traffic violation including speed violations and HOV

ormally dealing with a request for payment.

ng routes, schedules, and fare information.

transit demand, fares, operations, and system performance. Content information, the actual information to be archived, and associated ed information.

transit facility use through pricing or other mechanisms.

ement change requests indicating level of compliance with request.

ency at a transit stop or on transit vehicles and further coordination as and the response is coordinated.

elertraveller location that supports fare payments, passenger data, and

d between local/regional transit organizations.

nagement that supports fare payment transactions and passenger data

t impact transit services for public dissemination.

nsit operations for public dissemination through the media.

ns for public dissemination through the media.

mation including schedule and fare information. The request can be a d information updates as well as a one-time request for information.

real-time schedule information, and availability information.

oordination at modal interchange points.

personnel including instructions governing service availability, ins, transit personnel assignments, transit maintenance requirements, eral system operating requirements and procedures.

sit operations personnel including accumulated schedule and fare performance information, emergency response plans, transit e records, and other information intended to support overall planning rty.

tracking transit vehicles. Data collected could include transit vehicle link or collection of links.

US_V6 Name	US_V6 Description	C_V2 Name	
transit request confirmation	Confirmation of a request for transit information or service.	transit request confirmation	Confirmation of a request for transit i
transit schedule adherence information	Dynamic transit schedule adherence and transit vehicle location information.	transit schedule adherence information	Dynamic transit schedule adherence a
transit schedule information	Current and projected transit schedule information used to initialize the transit vehicle with a vehicle assignment, monitor schedule performance, and develop corrective actions on-board.	transit schedule information	Current and projected transit schedule assignment, monitor schedule perform
transit service coordination	Schedule coordination information shared between local/regional transit organizations.	transit service coordination	Schedule coordination information sh
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.	transit system data	Current transit system operations info each route, and the progress of indivi- estimating current transportation networks
transit system status assessment	Assessment of damage sustained by the public transportation system including location and extent of the damage, current operational status including an estimate of remaining capacity and necessary restrictions, and time frame for repair and recovery.	transit system status assessment	Assessment of damage sustained by t damage, current operational status inc restrictions, and time frame for repair
transit traveler information	Transit information prepared to support transit users and other travelers. It contains transit schedules, real-time arrival information, fare schedules, alerts and advisories, and general transit service information.	transit traveler <u>traveller</u> information	Transit information prepared to support schedules, real-time arrival information information.
transit traveler information	Transit schedules, real-time arrival information, fare schedules, and general transit service information	transit <del>traveler</del> traveller	Transit schedules, real-time arrival in
coordination	shared between transit organizations to support transit traveler information systems.	information coordination	shared between transit organizations
transit traveler request	Request by a Transit traveler to summon assistance, request transit information, or request any other transit services.	transit <del>traveler<u>traveller</u> request</del>	Request by a Transit travelertraveller other transit services.
transit vehicle conditions	Operating conditions of transit vehicle (e.g., engine running, oil pressure, fuel level and usage).	transit vehicle conditions	Operating conditions of transit vehicl
transit vehicle loading data	Data collected on board the transit vehicle relating to passenger boarding and alighting.	transit vehicle loading data	Data collected on board the transit ve
transit vehicle location data	Current transit vehicle location and related operational conditions data provided by a transit vehicle.	transit vehicle location data	Current transit vehicle location and re
transit vehicle measures	Transit vehicle status measured by on-board ITS equipment.	transit vehicle measures	Transit vehicle status measured by on
transit vehicle operator authentication information	Information regarding on-board transit operator authentication	transit vehicle operator authentication information	Information regarding on-board trans
transit vehicle operator authentication update	Results of authentication process or update of on-board authentication database.	transit vehicle operator authentication update	Results of authentication process or u
transit vehicle operator availability	Transit vehicle operator availability data that can be used to develop vehicle operator assignments and detailed operations schedules.	transit vehicle operator availability	Transit vehicle operator availability d detailed operations schedules.
transit vehicle operator display	Visual and audible outputs to the transit vehicle operator including vehicle surveillance information, alarm information, vehicle system status, information from the operations center, and information indicating the status of all other on-board ITS services.	transit vehicle operator display	Visual and audible outputs to the tran alarm information, vehicle system sta indicating the status of all other on-be
transit vehicle operator information	Transit service instructions, wide area alerts, traffic information, road conditions, and other information for both transit and paratransit operators.	transit vehicle operator information	Transit service instructions, wide area for both transit and paratransit operate
transit vehicle operator inputs	Transit vehicle operator inputs to on-board ITS equipment, including tactile and verbal inputs. Includes authentication information, on-board system control, emergency requests, and fare transaction data.	transit vehicle operator inputs	Transit vehicle operator inputs to on- authentication information, on-board
transit vehicle schedule performance	Estimated times of arrival and anticipated schedule deviations reported by a transit vehicle.	transit vehicle schedule performance	Estimated times of arrival and anticip
transportation border clearance assessment	Notification regarding the granting of permission for commercial freight shipment to enter the U.S. Includes directions for commercial driver to proceed to nearest vehicle weigh and inspection station for further review if required.	transportation border clearance assessment	Notification regarding the granting of Includes directions for commercial dr further review if required.
transportation information for operations	Information on the state of transportation system operations including traffic and road conditions, advisories, incidents, transit service information, weather information, parking information, and other related data.	transportation information for operations	Information on the state of transporta advisories, incidents, transit service in related data.
transportation system status	Current status and condition of transportation infrastructure (e.g., tunnels, bridges, interchanges, TMC offices, maintenance facilities). In case of disaster or major incident, this flow provides an assessment of damage sustained by the surface transportation system including location and extent of the damage, estimate of remaining capacity and necessary restrictions, and time frame for repair and recovery.	transportation system status	Current status and condition of transp offices, maintenance facilities). In ca damage sustained by the surface trans estimate of remaining capacity and ne
transportation weather information	Current and forecast road conditions and weather information (e.g., surface condition, flooding, wind advisories, visibility, etc.) associated with the transportation network. This information is of a resolution, timeliness, and accuracy to be useful in transportation decision making.	transportation weather information	Current and forecast road conditions a advisories, visibility, etc.) associated resolution, timeliness, and accuracy to

# C\_V2 Description

t information or service.

e and transit vehicle location information.

ule information used to initialize the transit vehicle with a vehicle prmance, and develop corrective actions on-board.

shared between local/regional transit organizations.

nformation indicating current transit routes, the level of service on vidual vehicles along their routes for use in forecasting demand and etwork performance.

y the public transportation system including location and extent of the including an estimate of remaining capacity and necessary air and recovery.

poprt transit users and other travelerstravellers. It contains transit ation, fare schedules, alerts and advisories, and general transit service

information, fare schedules, and general transit service information as to support transit travelertraveller information systems.

er to summon assistance, request transit information, or request any

icle (e.g., engine running, oil pressure, fuel level and usage).

vehicle relating to passenger boarding and alighting.

related operational conditions data provided by a transit vehicle.

on-board ITS equipment.

nsit operator authentication

update of on-board authentication database.

data that can be used to develop vehicle operator assignments and

ansit vehicle operator including vehicle surveillance information, status, information from the operations <u>centercentre</u>, and information -board ITS services.

rea alerts, traffic information, road conditions, and other information rators.

n-board ITS equipment, including tactile and verbal inputs. Includes rd system control, emergency requests, and fare transaction data.

ipated schedule deviations reported by a transit vehicle.

of permission for commercial freight shipment to enter the U.S. driver to proceed to nearest vehicle weigh and inspection station for

tation system operations including traffic and road conditions, information, weather information, parking information, and other

sportation infrastructure (e.g., tunnels, bridges, interchanges, TMC case of disaster or major incident, this flow provides an assessment of insportation system including location and extent of the damage, necessary restrictions, and time frame for repair and recovery.

ns and weather information (e.g., surface condition, flooding, wind ed with the transportation network. This information is of a y to be useful in transportation decision making.

US_V6 Name	US_V6 Description	C_V2 Name	
transportation weather information request	A request for transportation weather information that may specify the area of interest (a geographic region, particular routes within a region, specific road segments), the type of information that is required, the desired spatial resolution of the information, and time horizon.	transportation weather information request	A request for transportation weather region, particular routes within a regi the desired spatial resolution of the in
travel service information	Information supplied by a service provider (e.g., a hotel or restaurant) that identifies the service provider and provides details of the service offering. This flow covers initial registration of a service provider and subsequent submittal of new information and status updates so that data currency is maintained.	travel service information	Information supplied by a service pro and provides details of the service of and subsequent submittal of new info
travel service information request	Requests for travel service information. This flow supports initial registration of service providers and requests for additional traveler service information from registered providers.	travel service information request	Requests for travel service informatic requests for additional travelertravell
travel service reservation request	Reservation request for traveler services (e.g. for a hotel or restaurant) including billing information when applicable.	travel service reservation request	Reservation request for travelertravel information when applicable.
travel service reservations	Traveler service (e.g., for a hotel or restaurant) reservation information and status, including information on associated billing transactions, when applicable.	travel service reservations	Traveler <u>Traveller</u> service (e.g., for a information on associated billing tran
traveler alerts	Traveler information alerts reporting congestion, incidents, adverse road or weather conditions, parking availability, transit service delays or interruptions, and other information that may impact the traveler. Relevant alerts are provided based on traveler-supplied profile information including trip characteristics and preferences.	traveler <u>traveller</u> alerts	Traveler <u>Traveller</u> information alerts a parking availability, transit service de traveler <u>traveller</u> . Relevant alerts are including trip characteristics and pret
traveler archive data	Data associated with traveler information services including service requests, facility usage, rideshare, routing, and traveler payment transaction data. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	traveler <u>traveller</u> archive data	Data associated with travelertraveller rideshare, routing, and travelertravell available information, the actual info archived information.
traveler card information	The traveler personal information such as name, address, license number, and trip records and profile data.	traveler <u>traveller</u> card information	The travelertraveller personal inform profile data.
traveler card update	Information updated concerning traveler's personal data including items such as address, trip records, and profile data.	traveler <u>traveller</u> card update	Information updated concerning traverse records, and profile data.
traveler information for media	General traveler information regarding incidents, unusual traffic conditions, transit issues, or other advisory information that has been desensitized and provided to the media.	traveler <u>traveller</u> information for media	General travelertraveller information other advisory information that has b
traveler inputs	User input from a traveler to summon assistance, request travel information, make a reservation, or request any other traveler service.	traveler <u>traveller</u> inputs	User input from a travelertraveller to or request any other travelertraveller
traveler interface updates	Visual or audio information (e.g., routes, messages, guidance, emergency information) that is provided to the traveler.	traveler <u>traveller</u> interface updates	Visual or audio information (e.g., rou to the travelortraveller.
traveler profile	Information about a traveler including equipment capabilities, personal preferences, and traveler alert subscriptions.	traveler <u>traveller</u> profile	Information about a travelertraveller travelertraveller alert subscriptions.
traveler request	A request for traveler information including traffic, transit, toll, parking, road weather conditions, event, and passenger rail information. The request identifies the type of information, the area of interest, parameters that are used to prioritize or filter the returned information, and sorting preferences.	traveler <u>traveller</u> request	A request for travelertraveller inform conditions, event, and passenger rail of interest, parameters that are used t preferences.
trip confirmation	Acknowledgement by the driver/traveler of acceptance of a trip plan with associated personal and payment information required to confirm reservations.	trip confirmation	Acknowledgement by the driver/trav and payment information required to
trip declaration identifiers	Specific identifiers extracted from notification containing information regarding pending commercial freight shipment into the U.S. Includes carrier, vehicle, and driver identification data.	trip declaration identifiers	Specific identifiers extracted from no freight shipment into the U.S. Include
trip identification number	The unique trip load number for a specific cross-border shipment.	trip identification number	The unique trip load number for a sp
trip identification number input	Commercial vehicle driver input containing the unique trip load number for a specific cross-border shipment.	trip identification number input	Commercial vehicle driver input con shipment.
trip log	Driver's daily log, vehicle location, mileage, and trip activity (includes screening, inspection and border clearance event data as well as fare payments).	trip log	Driver's daily log, vehicle location, n clearance event data as well as fare p
trip log information	This flow represents the tactile or auditory interface with ITS equipment containing the information entered into the trip log, or request for update.	trip log information	This flow represents the tactile or au entered into the trip log, or request for
trip log request	Request for trip log.	trip log request	Request for trip log.
trip plan	A travel itinerary identifying a route and associated traveler information and instructions identifying recommended modes and transfer information, ride sharing options, and transit and parking reservation information.	trip plan	A travel itinerary identifying a route identifying recommended modes and reservation information.

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er information that may specify the area of interest (a geographic egion, specific road segments), the type of information that is required, information, and time horizon.

provider (e.g., a hotel or restaurant) that identifies the service provider offering. This flow covers initial registration of a service provider nformation and status updates so that data currency is maintained.

tion. This flow supports initial registration of service providers and <u>eller</u> service information from registered providers.

<u>veller</u> services (e.g. for a hotel or restaurant) including billing

a hotel or restaurant) reservation information and status, including ransactions, when applicable.

ts reporting congestion, incidents, adverse road or weather conditions, delays or interruptions, and other information that may impact the re provided based on travelertraveller-supplied profile information references.

ler information services including service requests, facility usage, eller payment transaction data. Content may include a catalog of formation to be archived, and associated meta data that describes the

mation such as name, address, license number, and trip records and

weler'straveller's personal data including items such as address, trip

on regarding incidents, unusual traffic conditions, transit issues, or s been desensitized and provided to the media.

to summon assistance, request travel information, make a reservation, er service.

outes, messages, guidance, emergency information) that is provided

er including equipment capabilities, personal preferences, and

rmation including traffic, transit, toll, parking, road weather ill information. The request identifies the type of information, the area d to prioritize or filter the returned information, and sorting

aveler<u>traveller</u> of acceptance of a trip plan with associated personal to confirm reservations.

notification containing information regarding pending commercial udes carrier, vehicle, and driver identification data.

specific cross-border shipment.

ontaining the unique trip load number for a specific cross-border

, mileage, and trip activity (includes screening, inspection and border e payments).

auditory interface with ITS equipment containing the information for update.

te and associated traveler traveller information and instructions nd transfer information, ride sharing options, and transit and parking

US_V6 Name	US_V6 Description	C_V2 Name	
trip request	Request for trip planning services that identifies the trip origin, destination(s), timing, preferences, and constraints. The request may also include a request for transit and parking reservations and ridesharing options associated with the trip.	trip request	Request for trip planning services that constraints. The request may also incorptions associated with the trip.
vehicle characteristics	The physical or visible characteristics of an individual vehicle that can be measured to classify a vehicle and imaged to uniquely identify a vehicle.	vehicle characteristics	The physical or visible characteristics and imaged to uniquely identify a veh
vehicle control	Vehicular control commands	vehicle control	Vehicular control commands
vehicle control coordination	Coordination of control commands between leader and follower vehicles allowing vehicles to join and separate from groups of cooperative vehicles, sharing performance capabilities, and coordinating maneuvers between lead and following vehicles.	vehicle control coordination	Coordination of control commands be separate from groups of cooperative v maneuvers between lead and following
vehicle diagnostics data	Information about the vehicle and its current operational status that supports vehicle performance monitoring, service, and repair. The flow identifies the vehicle and vehicle type and provides information about the vehicle's current operational status, the current performance of engine-related components, and notification of any identified malfunctions.	vehicle diagnostics data	Information about the vehicle and its monitoring, service, and repair. The information about the vehicle's curren components, and notification of any i
vehicle emissions data	Measured emissions of specific vehicles comprised of exhaust pollutants including hydrocarbons, carbon monoxide, and nitrogen oxides.	vehicle emissions data	Measured emissions of specific vehic monoxide, and nitrogen oxides.
vehicle intersection safety data	Vehicle path and acceleration data provided by vehicles approaching or occupying an intersection. It identifies the intersection, vehicle position and motion, the anticipated lane and movement that will be used in the intersection, and notification of potential violations or other detected safety hazards.	vehicle intersection safety data	Vehicle path and acceleration data pr identifies the intersection, vehicle pos- used in the intersection, and notification
vehicle occupancy	The number of occupants detected by the vehicle.	vehicle occupancy	The number of occupants detected by
vehicle parking information	Parking information for in-vehicle display that is provided to vehicles approaching or in parking facilities. The information provided would include static sign information (e.g., guide signs, service signs, height, width, and weight restrictions, and directional signs) and dynamic information (e.g., current parking availability and locations).	vehicle parking information	Parking information for in-vehicle dis facilities. The information provided signs, height, width, and weight restri- current parking availability and location
vehicle payment information	Information provided for payment of tolls and parking fees including identification that can be used to identify the payment account or source and related vehicle and service information that are used to determine the type and price of service requested.	vehicle payment information	Information provided for payment of identify the payment account or source determine the type and price of service
vehicle payment request	Request for information supporting toll and parking payments.	vehicle payment request	Request for information supporting to
vehicle payment update	Data written to vehicle equipment to support electronic toll collection or parking payment.	vehicle payment update	Data written to vehicle equipment to
vehicle safety data	Vehicle safety data indicating vehicle location, vehicle motion (speed, heading, acceleration), vehicle control (brakes, steering, throttle, exterior lights), basic vehicle characteristics (length, width). May also include additional vehicle status (e.g., anti-lock brake activation, stability control system activation).	vehicle safety data	Vehicle safety data indicating vehicle control (brakes, steering, throttle, exter include additional vehicle status (e.g.
vehicle signage data	In-vehicle signing data that augments regulatory, warning, and informational road signs and signals. The information provided would include static sign information (e.g., stop, curve warning, guide signs, service signs, and directional signs) and dynamic information (e.g., current signal states, grade crossing information, local traffic and road conditions, advisories, and detours).	vehicle signage data	In-vehicle signing data that augments information provided would include s service signs, and directional signs) a information, local traffic and road con
video surveillance control	Information used to configure and control video surveillance systems.	video surveillance control	Information used to configure and co
violation notification	Notification to enforcement agency of a violation. The violation notification flow describes the statute or regulation that was violated and how it was violated (e. g., overweight on specific axle by xxx pounds or which brake was out of adjustment and how far out of adjustment it was). A violation differs from a citation because it is not adjudicated by the courts.	violation notification	Notification to enforcement agency o or regulation that was violated and he or which brake was out of adjustment citation because it is not adjudicated b
voice-based alert notification	Information to be distributed to the traveling public via voice regarding a major emergency such as a natural or man-made disaster, civil emergency, severe weather or child abduction. The flow may identify the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. The content of this architecture flow may be specially formatted for voice-based traveler information.	voice-based alert notification	Information to be distributed to the tr natural or man-made disaster, civil er the alert originator, the nature of the e effective time period, and information The content of this architecture flow information.
voice-based traveler information	Traveler information sent to the telecommunications systems for traveler information terminator. This flow may represent the bulk transfer of traveler information, including traffic conditions, incident information, transit information and weather and road condition information. It may be specially formatted for voice-based traveler information.	voice-based <del>traveler<u>traveller</u> information</del>	Traveler <u>Traveller</u> information sent to terminator. This flow may represent conditions, incident information, tran be specially formatted for voice-base

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that identifies the trip origin, destination(s), timing, preferences, and include a request for transit and parking reservations and ridesharing

ics of an individual vehicle that can be measured to classify a vehicle vehicle.

between leader and follower vehicles allowing vehicles to join and re vehicles, sharing performance capabilities, and coordinating wing vehicles.

its current operational status that supports vehicle performance he flow identifies the vehicle and vehicle type and provides rent operational status, the current performance of engine-related y identified malfunctions.

hicles comprised of exhaust pollutants including hydrocarbons, carbon

provided by vehicles approaching or occupying an intersection. It position and motion, the anticipated lane and movement that will be ration of potential violations or other detected safety hazards.

by the vehicle.

display that is provided to vehicles approaching or in parking ed would include static sign information (e.g., guide signs, service strictions, and directional signs) and dynamic information (e.g., eations).

of tolls and parking fees including identification that can be used to urce and related vehicle and service information that are used to vice requested.

toll and parking payments.

to support electronic toll collection or parking payment.

cle location, vehicle motion (speed, heading, acceleration), vehicle exterior lights), basic vehicle characteristics (length, width). May also .g., anti-lock brake activation, stability control system activation).

nts regulatory, warning, and informational road signs and signals. The le static sign information (e.g., stop, curve warning, guide signs, ) and dynamic information (e.g., current signal states, grade crossing conditions, advisories, and detours).

control video surveillance systems.

y of a violation. The violation notification flow describes the statute how it was violated (e. g., overweight on specific axle by xxx pounds ent and how far out of adjustment it was). A violation differs from a ed by the courts.

e traveling public via voice regarding a major emergency such as a emergency, severe weather or child abduction. The flow may identify he emergency, the geographic area affected by the emergency, the ion and instructions necessary for the public to respond to the alert. w may be specially formatted for voice-based travelertraveller

to the telecommunications systems for <u>travelertraveller</u> information nt the bulk transfer of <u>travelertraveller</u> information, including traffic ransit information and weather and road condition information. It may used <u>travelertraveller</u> information.

US_V6 Name	US_V6 Description	C_V2 Name	
voice-based traveler request	The electronic traveler information request from the telecommunications systems for traveler information terminator. It may be specifically formatted for voice-based traveler requests. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.	voice-based <del>traveler<u>traveller</u> request</del>	The electronic traveler <u>traveller</u> inform traveler <u>traveller</u> information terminat traveler <u>traveller</u> requests. The request regular data stream or a specific reque
weather archive data	Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.) as well as qualified environmental sensor data. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.	weather archive data	Accumulated forecasted and current v direction, humidity, precipitation, visi sensor data. Content may include a c archived, and associated meta data the
weather information	Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.).	volume weather information	Accumulated forecasted and current v direction, humidity, precipitation, visi
widearea statistical pollution information	Aggregated region-wide measured emissions data and possible pollution incident information.	widearea statistical pollution information	Aggregated region-wide measured en
work plan coordination	Coordination of work plan schedules and activities between maintenance and construction organizations or systems. This information includes the work plan schedules and comments and suggested changes that are exchanged as work plans are coordinated and finalized.	work plan coordination	Coordination of work plan schedules or systems. This information include that are exchanged as work plans are
work plan feedback	Comments and suggested changes to proposed construction and maintenance work schedules and activities. This information influences work plan schedules so that they minimize impact to other system operations and the overall transportation system.	work plan feedback	Comments and suggested changes to activities. This information influence operations and the overall transportation
work zone information	Summary of maintenance and construction work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	work zone information	Summary of maintenance and construct nature of the maintenance or construct duration of impact, anticipated delays may be augmented with images that pr impacts.
work zone status	Current work zone status including current location (and future locations for moving work zones), impact to the roadway, required lane shifts, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits.	work zone status	Current work zone status including cu impact to the roadway, required lane alternate routes, and suggested speed
work zone warning	Warnings provided to maintenance and construction field personnel, indicating a work zone emergency or safety issue such as the intrusion of a vehicle into the work zone area or movement of field crew into the travel lanes.	work zone warning	Warnings provided to maintenance ar or safety issue such as the intrusion of the travel lanes.
work zone warning device control	Data used to configure and control work zone safety monitoring and warning devices.	work zone warning device control	Data used to configure and control we
work zone warning notification	Notification of a work zone emergency or safety issue. This flow identifies that a work zone emergency or safety issue has occurred so that warnings may be generated by more than one system in the work zone.	work zone warning notification	Notification of a work zone emergence or safety issue has occurred so that we zone.
work zone warning status	Status of a work zone safety monitoring and warning devices. This flow documents system activations and includes additional supporting information (e.g., an image) that allows verification of the alarm.	work zone warning status	Status of a work zone safety monitori and includes additional supporting int
yellow pages information	Travel service information and reservations for tourist attractions, lodging, dining, service stations, emergency services, and other services and businesses of interest to the traveler.	yellow pagesbusiness directory information	Travel service information and reserv emergency services, and other service
yellow pages request	Request for travel service information including tourist attractions, lodging, restaurants, service stations, and emergency services. The request identifies the type of service, the area of interest, optional reservation request information, parameters that are used to prioritize or filter the returned information, and sorting preferences.	<del>yellow pages<u>business directory</u> request</del>	Request for travel service information and emergency services. The request reservation request information, paran and sorting preferences.

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ormation request from the telecommunications systems for hator. It may be specifically formatted for voice-based uest can be a general subscription intended to initiate a continuous or quest intended to initiate a one-time response from the recipient.

nt weather data (e.g., temperature, pressure, wind speed, wind visibility, light conditions, etc.) as well as qualified environmental a catalog of available information, the actual information to be that describes the archived information.

nt weather data (e.g., temperature, pressure, wind speed, wind visibility, light conditions, etc.).

emissions data and possible pollution incident information.

es and activities between maintenance and construction organizations des the work plan schedules and comments and suggested changes re coordinated and finalized.

to proposed construction and maintenance work schedules and nees work plan schedules so that they minimize impact to other system tation system.

struction work zone activities affecting the road network including the ruction activity, location, impact to the roadway, expected time(s) and ays, alternate routes, and suggested speed limits. This information at provide a visual indication of current work zone status and traffic

current location (and future locations for moving work zones), ne shifts, expected time(s) and duration of impact, anticipated delays, ed limits.

and construction field personnel, indicating a work zone emergency of a vehicle into the work zone area or movement of field crew into

work zone safety monitoring and warning devices.

ency or safety issue. This flow identifies that a work zone emergency warnings may be generated by more than one system in the work

oring and warning devices. This flow documents system activations information (e.g., an image) that allows verification of the alarm.

ervations for tourist attractions, lodging, dining, service stations, ices and businesses of interest to the traveler traveler.

ion including tourist attractions, lodging, restaurants, service stations, est identifies the type of service, the area of interest, optional rameters that are used to prioritize or filter the returned information,



# **C-4** FUNCTIONAL OBJECT TEXT COMPARISON

US_V6 Name	US_V6 Description	C_V2 Name	
Advanced Rail Crossing	This equipment package manages highway traffic at highway-rail intersections (HRIs) where operational requirements demand advanced features (e.g., where rail operational speeds are greater than 80 miles per hour). It includes all capabilities from the Standard Rail Crossing equipment package and augments these with additional safety features. The active warning systems supported by this equipment package include positive barrier systems which preclude entrance into the intersection when the barriers are activated. Like the Standard package, the HRI equipment is activated on notification by wayside interface equipment which detects, or communicates with the approaching train. In this equipment package, additional information about the arriving train is also provided by the wayside interface equipment so that the train's direction of travel, its estimated time of arrival, and the estimated duration of closure may be derived. This enhanced information may be conveyed to the driver prior to, or in context with, warning system activation. This equipment package also includes detection capabilities which enable it to detect an entrapped or otherwise immobilized vehicle within the HRI and provide an immediate notification to the wayside interface equipment and traffic management.	Advanced Rail Crossing	This equipment package manages hig requirements demand advanced featu- hour). It includes all capabilities from these with additional safety features. include positive barrier systems whice activated. Like the Standard package interface equipment which detects, o package, additional information abou- equipment so that the train's direction of closure may be derived. This enha context with, warning system activat which enable it to detect an entrappe immediate notification to the waysid
Barrier System Management	This equipment package remotely monitors and controls barrier systems for transportation facilities and infrastructure under control of center personnel. Barrier systems include automatic or remotely controlled gates, barriers and other access control systems. The equipment package also provides an interface to other centers to allow monitoring and control of the barriers from other centers (e.g., public safety or emergency operations centers).	Barrier System Management	This equipment package remotely m infrastructure under control of center controlled gates, barriers and other a interface to other <u>centerscentres</u> to a (e.g., public safety or emergency ope
Basic Information Broadcast	This equipment package disseminates traveler information including traffic and road conditions, incident information, maintenance and construction information, event information, transit information, parking information, and weather information. The same information is broadcast to all equipped traveler interface systems and vehicles.	Basic Information Broadcast	This equipment package disseminate incident information, maintenance an parking information, and weather inf travelertraveller interface systems an
Basic Vehicle Reception	This equipment package provides the capability for drivers to receive basic transportation information including traffic and road conditions, incident information, maintenance and construction information, event information, transit information, parking information, weather information, and broadcast alerts.	Basic Vehicle Reception	This equipment package provides the including traffic and road conditions event information, transit informatio
Center Secure Area Alarm Support	This equipment package receives traveler or transit vehicle operator alarm messages, notifies the system operator, and provides acknowledgement of alarm receipt back to the originator of the alarm. The alarms received can be generated by silent or audible alarm systems and may originate from public areas (e.g. transit stops, park and ride lots, transit stations, rest areas) or transit vehicles. The nature of the emergency may be determined based on the information in the alarm message as well as other inputs.	CenterCentre Secure Area Alarm Support	This equipment package receives tra- system operator, and provides ackno alarms received can be generated by (e.g. transit stops, park and ride lots, emergency may be determined based
Center Secure Area Sensor Management	This equipment package manages sensors that monitor secure areas in the transportation system, processes the collected data, performs threat analysis in which data is correlated with other sensor, surveillance, and advisory inputs, and then disseminates resultant threat information to emergency personnel and other agencies. In response to identified threats, the operator may request activation of barrier and safeguard systems to preclude an incident, control access during and after an incident or mitigate impact of an incident. The sensors may be in secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. The types of sensors include acoustic, threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity, motion and object sensors.	CenterCentre Secure Area Sensor Management	This equipment package manages set processes the collected data, perform surveillance, and advisory inputs, and personnel and other agencies. In resp barrier and safeguard systems to pred mitigate impact of an incident. The s transit stops, transit stations, rest area vehicle, etc.) or around transportation guideways. The types of sensors incl biological, explosives, and radiologic object sensors.
Center Secure Area Surveillance	This equipment package monitors surveillance inputs from secure areas in the transportation system. The surveillance may be of secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. It provides both video and audio surveillance information to emergency personnel and automatically alerts emergency personnel of potential incidents.	CenterCentre Secure Area Surveillance	This equipment package monitors su surveillance may be of secure areas f rest areas, park and ride lots, modal i transportation infrastructure such as video and audio surveillance informa personnel of potential incidents.
Citation and Accident Electronic Recording	The equipment package documents accidents, citations, and violations identified during roadside safety inspections and forwards the information to the Commercial Vehicle Administration Subsystem for processing. It collects data from the vehicle to help characterize the circumstances surrounding the accident.	Citation and Accident Electronic Recording	The equipment package documents a inspections and forwards the informa processing. It collects data from the accident.
Collect Traffic Surveillance	This equipment package remotely monitors and controls traffic sensors and surveillance (e.g., CCTV) equipment, and collects, processes and stores the collected traffic data. Current traffic information and other real-time transportation information is also collected from other centers. The collected information is provided to traffic operations personnel and made available to other centers.	Collect Traffic Surveillance	This equipment package remotely me equipment, and collects, processes ar other real-time transportation inform information is provided to traffic ope

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highway traffic at highway-rail intersections (HRIs) where operational atures (e.g., where rail operational speeds are greater than 80 miles per om the Standard Rail Crossing equipment package and augments es. The active warning systems supported by this equipment package nich preclude entrance into the intersection when the barriers are ge, the HRI equipment is activated on notification by wayside or communicates with the approaching train. In this equipment out the arriving train is also provided by the wayside interface ion of travel, its estimated time of arrival, and the estimated duration hanced information may be conveyed to the driver prior to, or in ation. This equipment package also includes detection capabilities ped or otherwise immobilized vehicle within the HRI and provide an ide interface equipment and traffic management.

monitors and controls barrier systems for transportation facilities and cercentre personnel. Barrier systems include automatic or remotely access control systems. The equipment package also provides an allow monitoring and control of the barriers from other <u>centerscentres</u> perations <u>centerscentres</u>).

ttes travelertraveller information including traffic and road conditions, and construction information, event information, transit information, nformation. The same information is broadcast to all equipped and vehicles.

the capability for drivers to receive basic transportation information is, incident information, maintenance and construction information, ion, parking information, weather information, and broadcast alerts.

raveler<u>traveller</u> or transit vehicle operator alarm messages, notifies the nowledgement of alarm receipt back to the originator of the alarm. The by silent or audible alarm systems and may originate from public areas s, transit stations, rest areas) or transit vehicles. The nature of the ed on the information in the alarm message as well as other inputs.

sensors that monitor secure areas in the transportation system, rms threat analysis in which data is correlated with other sensor, and then disseminates resultant threat information to emergency sponse to identified threats, the operator may request activation of reclude an incident, control access during and after an incident or e sensors may be in secure areas frequented by travelerstravellers (i.e., reas, park and ride lots, modal interchange facilities, on-board a transit ion infrastructure such as bridges, tunnels and transit railways or icclude acoustic, threat (e.g. chemical agent, toxic industrial chemical, gical sensors), infrastructure condition and integrity, motion and

surveillance inputs from secure areas in the transportation system. The s frequented by travelerstravellers (i.e., transit stops, transit stations, l interchange facilities, on-board a transit vehicle, etc.) or around s bridges, tunnels and transit railways or guideways. It provides both nation to emergency personnel and automatically alerts emergency

s accidents, citations, and violations identified during roadside safety nation to the Commercial Vehicle Administration Subsystem for e vehicle to help characterize the circumstances surrounding the

monitors and controls traffic sensors and surveillance (e.g., CCTV) and stores the collected traffic data. Current traffic information and mation is also collected from other <u>centerscentres</u>. The collected perations personnel and made available to other <u>centerscentres</u>.

US_V6 Name	US_V6 Description	C_V2 Name	
Commercial Vehicle and Freight Security	This equipment package provides for the security of the commercial vehicle and the freight that it carries by detecting breaches such as seals or locks being broken into by unauthorized personnel and/or any other unauthorized tampering. In addition, this equipment package monitors the commercial vehicle driver and compares it with the planned driver for the vehicle. In a similar manner, the driver and vehicle that have been assigned to move freight are monitored and compared with the planned assignment for that freight. In all cases, any deviations to the planned assignments and any breach or tamper events are reported to the Emergency Management Subsystem.	Commercial Vehicle and Freight Security	This equipment package provides for by detecting breaches such as seals of other unauthorized tampering. In add driver and compares it with the plant that have been assigned to move frei that freight. In all cases, any deviation reported to the Emergency Managem
Credentials and Taxes Administration	This equipment package issues credentials, collects fees and taxes, and supports enforcement of credential requirements. It manages driver licensing. It communicates with the Fleet and Freight Management Subsystems associated with the motor carriers to process credentials applications and collect fuel taxes, weight/distance taxes, and other taxes and fees associated with commercial vehicle operations. The subsystem also receives applications for, and issues special Oversize/Overweight and HAZMAT permits in coordination with other cognizant authorities. This equipment package communicates with similar packages in other jurisdictions to exchange credentials database information. This equipment package also exchanges hazmat route restrictions information, and provides a clearinghouse for this information that can be shared with Map Update Providers, Fleet and Freight Management subsystems and Information Service Providers.	Credentials and Taxes Administration	This equipment package issues crede credential requirements. It manages Management Subsystems associated collect fuel taxes, weight/distance ta operations. The subsystem also rece HAZMAT permits in coordination v communicates with similar packages This equipment package also exchar clearinghouse for this information th Management subsystems and Inform
CV Data Collection	This equipment package collects and stores commercial vehicle information that is collected in the course of Commercial Vehicle Administration Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	CV Data Collection	This equipment package collects and course of Commercial Vehicle Adm operations personnel or it can be ma
CV Information Exchange	This equipment package supports the exchange of safety and credentials data among jurisdiction. The package also supports the exchange of safety and credentials data between systems (for example, an administrative center and the roadside check facilities) within a single jurisdiction. Data are collected from multiple authoritative sources and packaged into snapshots (top-level summary and critical status information) and profiles (detailed and historical data). Data is made available to fleet operators and other information requestors.	CV Information Exchange	This equipment package supports the package also supports the exchange administrative <u>centercentre</u> and the r collected from multiple authoritative critical status information) and profit operators and other information requ
CV Safety and Security Administration	This equipment package provides commercial vehicle safety and security criteria to roadside check facilities, collects and reviews safety and security data from the field and distributes safety and security information to other centers, carriers, and enforcement agencies. It supports the collection and review of carrier and driver safety and security data and supports determination of the carrier and driver safety and security ratings. It clears the out-of-service status when the responsible carrier or driver reports that deficiencies flagged during inspections have been corrected.	CV Safety and Security Administration	This equipment package provides co facilities, collects and reviews safety information to other <u>centerscentres</u> , review of carrier and driver safety and safety and security ratings. It clears reports that deficiencies flagged duri
Driver Safety Monitoring System	This equipment package monitors the driver's condition and warns the driver of potential dangers. This equipment package includes driver sensors to assess the suitability of the driver (e.g., fitness and alertness) to assume manual control of the vehicle.	Driver Safety Monitoring System	This equipment package monitors the equipment package includes driver salertness) to assume manual control
Driver Visibility Improvement System	The equipment package augments the driver's ability to see objects in the vehicle path in conditions where visibility is poor (e.g., bad weather, night driving, etc.). These capabilities are provided using on- board sensors (e.g., an infrared sensor system) to create images that are displayed to the driver (e.g., using a heads up display).	Driver Visibility Improvement System	The equipment package augments th where visibility is poor (e.g., bad we board sensors (e.g., an infrared sensor using a heads up display).
Emergency Call-Taking	This equipment package supports the emergency call-taker, collecting available information about the caller and the reported emergency, and forwarding this information to other equipment packages that formulate and manage the emergency response. This equipment package receives 9-1-1, 7-digit local access, and motorist call-box calls and interfaces to other agencies to assist in the verification and assessment of the emergency and to forward the emergency information to the appropriate response agency.	Emergency Call-Taking	This equipment package supports the caller and the reported emergency, as formulate and manage the emergency access, and motorist call-box calls ar assessment of the emergency and to agency.
Emergency Commercial Vehicle Response	This equipment package identifies and initiates a response to commercial vehicle and freight equipment related emergencies. These emergencies may include incidents involving hazardous materials as well as the detection of non-permitted transport of security sensitive hazmat. The equipment package identifies the location of the vehicle, the nature of the incident, the route information, and information concerning the freight itself. The information supports the determination of the response and identifies the responding agencies to notify. As part of the response, this equipment package can request Fleet and Freight Management to disable a specific vehicle in their fleet.	Emergency Commercial Vehicle Response	This equipment package identifies an related emergencies. These emergencies the detection of non-permitted transp the location of the vehicle, the nature the freight itself. The information sup responding agencies to notify. As pa Freight Management to disable a spe
Emergency Data Collection	This equipment package collects and stores emergency information that is collected in the course of operations by the Emergency Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	Emergency Data Collection	This equipment package collects and operations by the Emergency Manag personnel or it can be made available

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for the security of the commercial vehicle and the freight that it carries is or locks being broken into by unauthorized personnel and/or any ddition, this equipment package monitors the commercial vehicle nned driver for the vehicle. In a similar manner, the driver and vehicle eight are monitored and compared with the planned assignment for ions to the planned assignments and any breach or tamper events are ement Subsystem.

dentials, collects fees and taxes, and supports enforcement of s driver licensing. It communicates with the Fleet and Freight ed with the motor carriers to process credentials applications and taxes, and other taxes and fees associated with commercial vehicle eives applications for, and issues special Oversize/Overweight and with other cognizant authorities. This equipment package es in other jurisdictions to exchange credentials database information. anges hazmat route restrictions information, and provides a that can be shared with Map Update Providers, Fleet and Freight mation Service Providers.

nd stores commercial vehicle information that is collected in the ministration Subsystem operations. This data can be used directly by ade available to other data users and archives in the region.

he exchange of safety and credentials data among jurisdiction. The e of safety and credentials data between systems (for example, an e roadside check facilities) within a single jurisdiction. Data are we sources and packaged into snapshots (top-level summary and files (detailed and historical data). Data is made available to fleet guestors.

commercial vehicle safety and security criteria to roadside check ty and security data from the field and distributes safety and security , carriers, and enforcement agencies. It supports the collection and and security data and supports determination of the carrier and driver s the out-of-service status when the responsible carrier or driver uring inspections have been corrected.

the driver's condition and warns the driver of potential dangers. This sensors to assess the suitability of the driver (e.g., fitness and ol of the vehicle.

the driver's ability to see objects in the vehicle path in conditions weather, night driving, etc.). These capabilities are provided using onsor system) to create images that are displayed to the driver (e.g.,

he emergency call-taker, collecting available information about the and forwarding this information to other equipment packages that acy response. This equipment package receives 9-1-1, 7-digit local and interfaces to other agencies to assist in the verification and o forward the emergency information to the appropriate response

and initiates a response to commercial vehicle and freight equipment encies may include incidents involving hazardous materials as well as sport of security sensitive hazmat. The equipment package identifies are of the incident, the route information, and information concerning supports the determination of the response and identifies the part of the response, this equipment package can request Fleet and pecific vehicle in their fleet.

nd stores emergency information that is collected in the course of agement Subsystem. This data can be used directly by operations ble to other data users and archives in the region.

US_V6 Name	US_V6 Description	C_V2 Name	
Emergency Dispatch	This equipment package tracks the location and status of emergency vehicles and dispatches these vehicles to incidents. Pertinent incident information is gathered from the public and other public safety agencies (see the Emergency Call-Taking equipment package) and relayed to the responding units. Incident status and the status of the responding units is tracked so that additional units can be dispatched and/or unit status can be returned to available when the incident is cleared and closed.	Emergency Dispatch	This equipment package tracks the lo vehicles to incidents. Pertinent incide agencies (see the Emergency Call-Ta Incident status and the status of the re and/or unit status can be returned to a
Emergency Early Warning System	This equipment package monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies and uses this information to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other equipment packages that provide the emergency response, including public notification using ITS traveler information systems, where appropriate.	Emergency Early Warning System	This equipment package monitors ale surveillance and sensors, and reports imminent, or in-progress major incide packages that provide the emergency information systems, where appropria
Emergency Environmental Monitoring	This equipment package collects current and forecast road conditions and surface weather information from a variety of sources. The collected environmental information is monitored and presented to the operator and used to more effectively manage incidents.	Emergency Environmental Monitoring	This equipment package collects curr from a variety of sources. The collect operator and used to more effectively
Emergency Evacuation Support	This equipment package coordinates evacuation plans among allied agencies and manages evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety. Where appropriate, the affected population is evacuated in shifts, using more than one evacuation route, and including several evacuation destinations to spread demand and thereby expedite the evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, and along the evacuation route are informed of the plan. The public is provided with real- time evacuation guidance including basic information to assist potential evacues in determining whether evacuation is necessary. Resource requirements are forecast based on the evacuation plans, and the necessary resources are located, shared between agencies if necessary, and deployed at the right locations at the appropriate times. The evacuation and reentry status are monitored and used to refine the plan and resource allocations during the evacuation and subsequent reentry. This equipment package communicates with public health systems to develop evacuation plans and recommended strategies for disasters and evacuation scenarios involving biological or other medical hazards.	Emergency Evacuation Support	This equipment package coordinates and reentry of a population in the vici safety. Where appropriate, the affecter route, and including several evacuation evacuation. All affected jurisdictions evacuation destination, and along the with real-time evacuation guidance in determining whether evacuation is ne evacuation plans, and the necessary ro deployed at the right locations at the a and used to refine the plan and resour equipment package communicates wir recommended strategies for disasters hazards.
Emergency Response Management	This equipment package provides the strategic emergency response capabilities and broad inter-agency interfaces that are implemented for extraordinary incidents and disasters that require response from outside the local community. It provides the functional capabilities and interfaces commonly associated with Emergency Operations Centers. This equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It monitors real-time information on the state of the regional transportation system including current traffic and road conditions, weather conditions, special event and incident information. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This equipment package provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident. It also coordinates with the public through the Emergency Telecommunication Systems (e.g., Reverse 911). This equipment package coordinates with public health systems to provide the most appropriate response for emergencies involving biological or other medical hazards.	Emergency Response Management	This equipment package provides the interfaces that are implemented for ex- outside the local community. It provi- with Emergency Operations <u>Centers(</u> response plans and manages overall c information on the state of the region conditions, weather conditions, specia resources and assists in the appropria This equipment package provides coor emergencies to implement emergency coordinates with the public through the This equipment package coordinates for emergencies involving biological
Emergency Routing	This equipment package supports routing of emergency vehicles and enlists support from the Traffic Management Subsystem to facilitate travel along these routes. Routes may be determined by this equipment package based on real-time traffic information and road conditions or routes may be provided by the Traffic Management Subsystem on request. Vehicles are tracked and routes are based on current vehicle location. This equipment package may coordinate with the Traffic Management Subsystem to provide preemption or otherwise adapt the traffic control strategy along the selected route.	Emergency Routing	This equipment package supports rou Management Subsystem to facilitate equipment package based on real-tim by the Traffic Management Subsyster vehicle location. This equipment pack provide preemption or otherwise adap
Emergency Transportation Operations Data Collection	This equipment package collects real-time information on the state of the regional transportation system for operational use by the center. It includes communication and data processing capabilities that provide real-time access to regional transportation information that is stored in a regional repository. This equipment package establishes communications with the repository, requests or subscribes to information relevant to the center, receives and processes the information, and then distributes the information to other equipment packages and the system operator for use. Although request and subscription flows are not explicitly included in the National ITS Architecture, interactive data services are supported by this equipment package.	Emergency Transportation Operations Data Collection	This equipment package collects real- for operational use by the <u>centercentr</u> provide real-time access to regional to This equipment package establishes of information relevant to the <u>centercent</u> information to other equipment packa subscription flows are not explicitly i data services are supported by this eq

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location and status of emergency vehicles and dispatches these dent information is gathered from the public and other public safety Taking equipment package) and relayed to the responding units. e responding units is tracked so that additional units can be dispatched o available when the incident is cleared and closed.

alerting and advisory systems, information collected by ITS ts from other agencies and uses this information to identify potential, idents or disasters. Notification is provided to other equipment cy response, including public notification using ITS travelertraveller priate.

urrent and forecast road conditions and surface weather information ected environmental information is monitored and presented to the ely manage incidents.

es evacuation plans among allied agencies and manages evacuation ricinity of a disaster or other emergency that poses a risk to public cted population is evacuated in shifts, using more than one evacuation ation destinations to spread demand and thereby expedite the ns (e.g., <u>statesprovinces</u> and counties) at the evacuation origin, he evacuation route are informed of the plan. The public is provided e including basic information to assist potential evacuees in necessary. Resource requirements are forecast based on the y resources are located, shared between agencies if necessary, and he appropriate times. The evacuation and reentry status are monitored pource allocations during the evacuation and subsequent reentry. This with public health systems to develop evacuation plans and ers and evacuation scenarios involving biological or other medical

the strategic emergency response capabilities and broad inter-agency extraordinary incidents and disasters that require response from wides the functional capabilities and interfaces commonly associated rs<u>Centres</u>. This equipment package develops and stores emergency Il coordinated response to emergencies. It monitors real-time onal transportation system including current traffic and road ecial event and incident information. It tracks the availability of riate allocation of these resources for a particular emergency response. coordination between multiple allied agencies before and during ney response plans and track progress through the incident. It also in the Emergency Telecommunication Systems (e.g., Reverse 911). es with public health systems to provide the most appropriate response ral or other medical hazards.

routing of emergency vehicles and enlists support from the Traffic te travel along these routes. Routes may be determined by this ime traffic information and road conditions or routes may be provided stem on request. Vehicles are tracked and routes are based on current ackage may coordinate with the Traffic Management Subsystem to dapt the traffic control strategy along the selected route.

eal-time information on the state of the regional transportation system <u>ntre</u>. It includes communication and data processing capabilities that l transportation information that is stored in a regional repository. s communications with the repository, requests or subscribes to <u>entre</u>, receives and processes the information, and then distributes the ckages and the system operator for use. Although request and y included in the <u>National</u>-ITS Architecture <u>for Canada</u>, interactive equipment package.

US_V6 Name	US_V6 Description	C_V2 Name	
Emissions Data Collection	This equipment package collects and stores air quality and emissions management information that is collected in the course of Emissions Management Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	Emissions Data Collection	This equipment package collects and collected in the course of Emissions is by operations personnel or it can be n
Emissions Data Management	This equipment package collects and stores air quality and vehicle emissions information by remotely monitoring and controlling area wide and point sensors. General air quality measures are distributed as general traveler information and also may be used for in demand management programs. Collected roadside emissions are analyzed and used to detect, identify, and notify concerned parties regarding vehicles that exceed emissions standards.	Emissions Data Management	This equipment package collects and monitoring and controlling area wide general traveler <u>traveller</u> information Collected roadside emissions are ana regarding vehicles that exceed emissi
Field Barrier System Control	This equipment package includes the field equipment that controls barrier systems used to control access to transportation facilities and infrastructure. Barrier systems include automatic or remotely controlled gates, barriers and other access control systems.	Field Barrier System Control	This equipment package includes the to transportation facilities and infrast gates, barriers and other access control other access cont
Field Safeguard System Control	This equipment package includes field equipment that controls safeguard systems for transportation facilities and infrastructure. Safeguard systems include blast shields, exhaust systems and other automatic or remotely controlled systems intended to mitigate the impact of an incident.	Field Safeguard System Control	This equipment package includes field facilities and infrastructure. Safeguar automatic or remotely controlled syst
Field Secure Area Sensor Monitoring	This equipment package includes sensors that monitor conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, and transit railways or guideways). A range of acoustic, environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity and motion and object sensors are included.	Field Secure Area Sensor Monitoring	This equipment package includes ser transit yards) and transportation infra guideways). A range of acoustic, env biological, explosives, and radiologic object sensors are included.
Field Secure Area Surveillance	This equipment package includes video and audio surveillance equipment that monitors conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. as bridges, tunnels, interchanges, and transit railways or guideways). It provides the surveillance information to the Emergency Management Subsystem for possible threat detection. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Traveler Secure Area Surveillance equipment package.	Field Secure Area Surveillance	This equipment package includes vid secure areas including facilities (e.g. tunnels, interchanges, and transit rail Emergency Management Subsystem local processing of the video or audio Emergency Management Subsystem. TravelerTraveller Secure Area Surve
Fleet Administration	This equipment package provides vehicle tracking, dispatch, and reporting capabilities to fleet management center personnel. It gathers current road conditions and traffic information, prepares vehicle routes, and provides a fleet interface for toll collection. It also provides route plan information for network performance evaluation. As part of the tracking function, this equipment package monitors commercial vehicle location, compares it against the known route and notifies the Emergency Management Subsystem and Fleet-Freight Manager of any deviations, including HAZMAT route restriction violations. This equipment package supports pre-hiring checks for potential drivers and monitors the performance of each driver who is hired. It also supports ongoing monitoring of the company's safety performance.	Fleet Administration	This equipment package provides ver management <u>centercentre</u> personnel. vehicle routes, and provides a fleet in for network performance evaluation. commercial vehicle location, compar Management Subsystem and Fleet-Fr restriction violations. This equipmen monitors the performance of each dri company's safety performance.
Fleet Credentials and Taxes Management and Reporting	This equipment package provides the capability to purchase credentials, file taxes and trip reports electronically, and perform electronic enrollment in expedited border crossing programs. It tracks and manages credentials and provides electronic interfaces to appropriate state and federal commercial vehicle administration centers.	Fleet Credentials and Taxes Management and Reporting	This equipment package provides the electronically, and perform electronic manages credentials and provides ele commercial vehicle administration ex
Fleet HAZMAT Management	This equipment package manages hazardous materials shipments. In the event of an incident, it notifies the Emergency Management Subsystem, providing information on the nature of the cargo and the vehicle equipment.	Fleet HAZMAT Management	This equipment package manages ha the Emergency Management Subsyst vehicle equipment.
Fleet Maintenance Management	This equipment package tracks and monitors diagnostic results, vehicle mileage, inspection records, and repair and service records collected from a commercial vehicle fleet equipped with on-board monitoring equipment. The data is used to develop preventative maintenance and repair schedules and repair and service records are maintained.	Fleet Maintenance Management	This equipment package tracks and n repair and service records collected f equipment. The data is used to develo service records are maintained.
Freight Administration and Management	This equipment package manages the movement of freight from source to destination via links to the freight equipment, intermodal freight shippers, and depots. It interfaces to intermodal freight shippers to setup and schedule transportation and coordinates with intermodal freight depots to coordinate the shipment. It coordinates with the appropriate government agencies to expedite the movement of trucks, their drivers, and their cargo across international borders. The equipment package monitors the status of the freight and freight equipment (container, trailer, or chassis) and monitors freight location and compares it against the planned route.	Freight Administration and Management	This equipment package manages the freight equipment, intermodal freight setup and schedule transportation and shipment. It coordinates with the app their drivers, and their cargo across in the freight and freight equipment (co compares it against the planned route
Government Reporting Systems Support	This equipment package selects and formats data residing in an ITS archive to facilitate local, state, and federal government data reporting requirements.	Government Reporting Systems Support	This equipment package selects and a stateprovincial, and federal government

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nd stores air quality and emissions management information that is is Management Subsystem operations. This data can be used directly e made available to other data users and archives in the region.

nd stores air quality and vehicle emissions information by remotely de and point sensors. General air quality measures are distributed as on and also may be used for in demand management programs. nalyzed and used to detect, identify, and notify concerned parties ssions standards.

he field equipment that controls barrier systems used to control access astructure. Barrier systems include automatic or remotely controlled atrol systems.

ield equipment that controls safeguard systems for transportation ard systems include blast shields, exhaust systems and other ystems intended to mitigate the impact of an incident.

ensors that monitor conditions of secure areas including facilities (e.g. frastructure (e.g. bridges, tunnels, interchanges, and transit railways or nvironmental threat (e.g. chemical agent, toxic industrial chemical, gical sensors), infrastructure condition and integrity and motion and

video and audio surveillance equipment that monitors conditions of g. transit yards) and transportation infrastructure (e.g. as bridges, ailways or guideways). It provides the surveillance information to the m for possible threat detection. The equipment package also provides dio information, providing processed or analyzed results to the m. This equipment package provides the same functions as the veillance equipment package.

wehicle tracking, dispatch, and reporting capabilities to fleet el. It gathers current road conditions and traffic information, prepares interface for toll collection. It also provides route plan information n. As part of the tracking function, this equipment package monitors pares it against the known route and notifies the Emergency -Freight Manager of any deviations, including HAZMAT route ent package supports pre-hiring checks for potential drivers and driver who is hired. It also supports ongoing monitoring of the

the capability to purchase credentials, file taxes and trip reports nic enrollment in expedited border crossing programs. It tracks and electronic interfaces to appropriate <u>stateprovincial</u> and federal <u>centerscentres</u>.

hazardous materials shipments. In the event of an incident, it notifies ystem, providing information on the nature of the cargo and the

I monitors diagnostic results, vehicle mileage, inspection records, and I from a commercial vehicle fleet equipped with on-board monitoring elop preventative maintenance and repair schedules and repair and

the movement of freight from source to destination via links to the ght shippers, and depots. It interfaces to intermodal freight shippers to and coordinates with intermodal freight depots to coordinate the ppropriate government agencies to expedite the movement of trucks, is international borders. The equipment package monitors the status of container, trailer, or chassis) and monitors freight location and ate.

d formats data residing in an ITS archive to facilitate local, ment data reporting requirements.

US_V6 Name	US_V6 Description	C_V2 Name	
HRI Traffic Management	This equipment package monitors and controls highway-rail intersection (HRI) equipment. Various levels of roadside equipment may be interfaced to this equipment package including standard speed active warning systems and high speed systems which provide additional information on approaching trains and detect and report obstructions in the HRI. This equipment package remotely monitors and reports the status of the HRI equipment and sends control plan updates to the HRI equipment.	HRI Traffic Management	This equipment package monitors an levels of roadside equipment may be active warning systems and high spec- trains and detect and report obstruction reports the status of the HRI equipment
Incident Command	The equipment package provides tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders at or near the incident scene to support local management of an incident. The equipment package supports communications with public safety, emergency management, transportation, and other allied response agency centers, tracks and maintains resource information, action plans, and the incident command organization itself. Information is shared with agency centers including resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response. This equipment package supports the functions and interfaces commonly supported by a mobile command center.	Incident Command	The equipment package provides tac integration for Incident Commands t to support local management of an ir public safety, emergency manageme tracks and maintains resource inform Information is shared with agency ee material information, traffic, road, ar enables emergency or maintenance p response. This equipment package su mobile command <u>centercentre</u> .
Infrastructure Provided Dynamic Ridesharing	This equipment package provides dynamic rideshare matches for eligible travelers, connecting riders and drivers for specific trips based on preferences. This ridesharing/ride matching capability also arranges connections to transit or other multimodal services for portions of a multi-segment trip that includes ridesharing. Reservations and advanced payment are also supported so that each segment of the trip may be confirmed.	Infrastructure Provided Dynamic Ridesharing	This equipment package provides dy riders and drivers for specific trips be arranges connections to transit or oth includes ridesharing. Reservations an trip may be confirmed.
Infrastructure Provided Trip Planning	This equipment package provides pre-trip and en-route trip planning services for travelers. It receives origin, destination, constraints, and preferences and returns trip plan(s) that meet the supplied criteria. Trip plans may be based on current traffic and road conditions, transit schedule information, and other real-time traveler information. Candidate trip plans are multimodal and may include vehicle, transit, and alternate mode segments (e.g., rail, ferry, bicycle routes, and walkways) based on traveler preferences. This equipment package also confirms the trip plan for the traveler and supports reservations and advanced payment for portions of the trip. The trip plan includes specific routing information and instructions for each segment of the trip and may also include information and reservations for additional services (e.g., parking) along the route.	Infrastructure Provided Trip Planning	This equipment package provides pro- receives origin, destination, constrain criteria. Trip plans may be based on a other real-time travelertraveller infor vehicle, transit, and alternate mode so travelertraveller preferences. This eq and supports reservations and advance routing information and instructions reservations for additional services (a
Infrastructure Provided Yellow Pages and Reservation	This equipment package disseminates information about traveler services such as lodging, restaurants, and service stations. Tailored traveler service information is provided on request that meets the constraints and preferences specified by the traveler. The equipment package also supports reservations and advanced payment for traveler services.	Infrastructure Provided <u>Yellow</u> <u>PagesBusiness Directory</u> <u>Service</u> and Reservation	This equipment package disseminate restaurants, and service stations. Tail meets the constraints and preferences supports reservations and advanced p
Interactive Infrastructure Information	This equipment package disseminates personalized traveler information including traffic and road conditions, transit information, maintenance and construction information, multimodal information, event information, and weather information. Tailored information is provided based on the traveler's request in this interactive equipment package. The interactive service offered by this equipment package is available to the Vehicle, Remote Traveler Support, and Personal Information Access subsystems.	Interactive Infrastructure Information	This equipment package disseminate road conditions, transit information, event information, and weather infor traveler'straveller's request in this int equipment package is available to the Information Access subsystems.
Interactive Vehicle Reception	This equipment package provides drivers with personalized traveler information including traffic and road conditions, transit information, maintenance and construction information, multimodal information, event information, and weather information. The provided information is tailored based on driver requests. Both one-time requests for information and on-going information streams based on a submitted traveler profile and preferences are supported.	Interactive Vehicle Reception	This equipment package provides dri traffic and road conditions, transit in information, event information, and driver requests. Both one-time reque submitted travelertraveller profile an
International Border Crossing	This equipment package checks compliance with import/export and immigration regulations to manage release of commercial vehicle, cargo, and driver across an international border. It includes interfaces to the equipment at international border crossings operated by government agencies such as Customs and Border Protection.	International Border Crossing	This equipment package checks com release of commercial vehicle, cargo the equipment at international border Border Protection.
International CV Administration	This equipment package generates and processes the entry documentation necessary to obtain release of vehicle, cargo, and driver across an international border, report the results of the crossing event, and handle duty fee processing. It interfaces with the systems used by customs and border protection, immigration, carriers, and service providers (e.g., brokers) to generate, process, and store entry documentation.	International CV Administration	This equipment package generates ar vehicle, cargo, and driver across an in handle duty fee processing. It interfa- immigration, carriers, and service pro- documentation.

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and controls highway-rail intersection (HRI) equipment. Various be interfaced to this equipment package including standard speed beed systems which provide additional information on approaching etions in the HRI. This equipment package remotely monitors and ment and sends control plan updates to the HRI equipment.

actical decision support, resource coordination, and communications is that are established by first responders at or near the incident scene incident. The equipment package supports communications with nent, transportation, and other allied response agency <u>centerscentres</u>, rmation, action plans, and the incident command organization itself. <u>centerscentres</u> including resource deployment status, hazardous and weather conditions, evacuation advice, and other information that e personnel in the field to implement an effective, safe incident supports the functions and interfaces commonly supported by a

dynamic rideshare matches for eligible <u>travelers</u> connecting based on preferences. This ridesharing/ride matching capability also ther multimodal services for portions of a multi-segment trip that and advanced payment are also supported so that each segment of the

pre-trip and en-route trip planning services for travelerstravellers. It aints, and preferences and returns trip plan(s) that meet the supplied in current traffic and road conditions, transit schedule information, and formation. Candidate trip plans are multimodal and may include e segments (e.g., rail, ferry, bicycle routes, and walkways) based on equipment package also confirms the trip plan for the travelertraveller inced payment for portions of the trip. The trip plan includes specific as for each segment of the trip and may also include information and (e.g., parking) along the route.

tes information about <u>travelertraveller</u> services such as lodging, ailored <u>travelertraveller</u> service information is provided on request that we specified by the <u>travelertraveller</u>. The equipment package also a payment for <u>travelertraveller</u> services.

tes personalized <u>travelertraveller</u> information including traffic and n, maintenance and construction information, multimodal information, ormation. Tailored information is provided based on the nteractive equipment package. The interactive service offered by this the Vehicle, Remote <u>TravelerTraveller</u> Support, and Personal

drivers with personalized travelertraveller information including information, maintenance and construction information, multimodal d weather information. The provided information is tailored based on uests for information and on-going information streams based on a and preferences are supported.

mpliance with import/export and immigration regulations to manage go, and driver across an international border. It includes interfaces to ler crossings operated by government agencies such as Customs and

and processes the entry documentation necessary to obtain release of a international border, report the results of the crossing event, and faces with the systems used by customs and border protection, providers (e.g., brokers) to generate, process, and store entry

US_V6 Name	US_V6 Description	C_V2 Name	
ISP Data Collection	This equipment package collects and stores traveler information that is collected in the course of operation of the ISP subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	ISP Data Collection	This equipment package collects and operation of the ISP subsystem. This available to other data users and archi
ISP Emergency Traveler Information	This equipment package provides emergency information to the public, including wide-area alerts and evacuation information. It provides emergency alerts, information on evacuation zones and evacuation requirements, evacuation destinations and shelter information, available transportation modes, and traffic and road conditions at the origin, destination, and along the evacuation routes. In addition to general evacuation information, personalized information including tailored evacuation routes, service information, and estimated travel times is also provided based on traveler specified origin, destination, and route parameters. Updated information is provided throughout the evacuation and subsequent reentry as status changes and plans are adapted.	ISP Emergency Traveler <u>Traveller</u> Information	This equipment package provides em- evacuation information. It provides en- requirements, evacuation destinations and road conditions at the origin, dest evacuation information, personalized information, and estimated travel time destination, and route parameters. Up subsequent reentry as status changes a
ISP Operational Data Repository	This equipment package processes, stores, and distributes real-time information on the state of the regional transportation system. This equipment package facilitates sharing of real-time transportation information among transportation system operators. It includes a central repository, data processing, and communication capabilities that provide real-time access to the collected information. Many different implementations are possible including: 1) a web application that provides a web-based interface to system operators, and 2) a networked enterprise database that provides a network interface to remote system applications. Although request and subscription flows are not explicitly included, interactive data services are supported by this equipment package. The data may be broadcast or customized based on the receiving center's specified requests or subscriptions.	ISP Operational Data Repository	This equipment package processes, st regional transportation system. This e information among transportation sys communication capabilities that provi implementations are possible includir system operators, and 2) a networked system applications. Although requess services are supported by this equipm the receiving <u>center'scentre's</u> specifie
ISP Probe Information Collection	This equipment package aggregates and processes traffic probe data collected from equipped vehicles, toll operators, and transit centers. It also collects, aggregates, and processes environmental probe data from equipped vehicles. Probe data may be collected through direct wide area wireless communications with vehicles or through short range communications equipment at the roadside. Aggregated probe data and derived route travel times and environmental conditions information are distributed to other centers and other equipment packages that use the information to support transportation operations and traveler information services.	ISP Probe Information Collection	This equipment package aggregates a toll operators, and transit <u>centerscentr</u> data from equipped vehicles. Probe data from equipped vehicles or through the second structure of the second structure
ISP Traveler Data Collection	This equipment package collects traveler-related data from other centers, performs data quality checks on the collected data and then consolidates, verifies, and refines the data and makes it available in a consistent format to applications that deliver traveler information. A broad range of traveler-related data is collected including traffic and road conditions, transit data, emergency information and advisories, weather data, special event information, traveler services, parking, multimodal data, and toll/pricing data. This equipment package also shares data with other information service providers.	ISP <del>Traveler<u>Traveller</u> Data</del> Collection	This equipment package collects trave quality checks on the collected data a available in a consistent format to app of travelertraveller-related data is coll information and advisories, weather of multimodal data, and toll/pricing data service providers.
ISP Traveler Information Alerts	This equipment package provides personalized traveler information alerts, notifying travelers of congestion, incidents, transit schedule delays or interruptions, parking availability, special events, air and ferry service issues, and road/weather conditions that may impact a current or upcoming trip. Relevant alerts are selected based on user-configurable parameters, thresholds, and preferences that are submitted by travelers. The travel alert service offered by this equipment package is available to the Vehicle and Personal Information Access subsystems.	ISP <u>TravelerTraveller</u> Information Alerts	This equipment package provides per travelerstravellers of congestion, inci- special events, air and ferry service is upcoming trip. Relevant alerts are sel preferences that are submitted by trav package is available to the Vehicle an
ISP VII Traveler Information Distribution	This equipment package collects, processes, stores, and disseminates traveler information including traffic and road conditions, incident information, maintenance and construction information, event information, transit information, parking information, and weather information. Location relevant traveler information is sent to short range communications transceivers at the roadside.	ISP VII <u>TravelerTraveller</u> Information Distribution	This equipment package collects, pro- including traffic and road conditions, event information, transit information traveler <u>traveller</u> information is sent to
ITS Data Repository	This equipment package collects data and data catalogs from one or more data sources and stores the data in a focused repository that is suited to a particular set of ITS data users. This equipment package includes capabilities for performing quality checks on the incoming data, error notification, and archive to archive coordination. This equipment package supports a broad range of implementations, ranging from simple data marts that collect a focused set of data and serve a particular user community to large-scale data warehouses that collect, integrate, and summarize transportation data from multiple sources and serve a broad array of users within a region.	ITS Data Repository	This equipment package collects data data in a focused repository that is sui includes capabilities for performing q to archive coordination. This equipme from simple data marts that collect a scale data warehouses that collect, int and serve a broad array of users withi

# C\_V2 Description

nd stores travelertraveller information that is collected in the course of is data can be used directly by operations personnel or it can be made chives in the region.

emergency information to the public, including wide-area alerts and s emergency alerts, information on evacuation zones and evacuation ons and shelter information, available transportation modes, and traffic estination, and along the evacuation routes. In addition to general ed information including tailored evacuation routes, service imes is also provided based on travelertraveller specified origin, Updated information is provided throughout the evacuation and es and plans are adapted.

, stores, and distributes real-time information on the state of the is equipment package facilitates sharing of real-time transportation system operators. It includes a central repository, data processing, and ovide real-time access to the collected information. Many different ding: 1) a web application that provides a web-based interface to ed enterprise database that provides a network interface to remote lest and subscription flows are not explicitly included, interactive data pment package. The data may be broadcast or customized based on ified requests or subscriptions.

s and processes traffic probe data collected from equipped vehicles, <u>entres</u>. It also collects, aggregates, and processes environmental probe e data may be collected through direct wide area wireless hrough short range communications equipment at the roadside. I route travel times and environmental conditions information are and other equipment packages that use the information to support <u>lertraveller</u> information services.

aveler<u>traveller</u>-related data from other <u>centerscentres</u>, performs data a and then consolidates, verifies, and refines the data and makes it applications that deliver <u>travelertraveller</u> information. A broad range collected including traffic and road conditions, transit data, emergency er data, special event information, <u>travelertraveller</u> services, parking, ata. This equipment package also shares data with other information

personalized travelertraveller information alerts, notifying neidents, transit schedule delays or interruptions, parking availability, e issues, and road/weather conditions that may impact a current or selected based on user-configurable parameters, thresholds, and ravelerstravellers. The travel alert service offered by this equipment and Personal Information Access subsystems.

processes, stores, and disseminates <u>travelertraveller</u> information ns, incident information, maintenance and construction information, ion, parking information, and weather information. Location relevant t to short range communications transceivers at the roadside.

ata and data catalogs from one or more data sources and stores the suited to a particular set of ITS data users. This equipment package g quality checks on the incoming data, error notification, and archive ment package supports a broad range of implementations, ranging a focused set of data and serve a particular user community to largeintegrate, and summarize transportation data from multiple sources thin a region.

US_V6 Name	US_V6 Description	C_V2 Name	
Manage CV Driver Identification	This equipment package collects and stores driver identification records including driver issued PINS and/or individual driver biometric measurements. The equipment package can also manage the storage of driver PINs, data from a driver identification card, and/or biometric measurements for authorized drivers on individual commercial vehicles. Based on information reported by the commercial vehicle, the equipment package will determine if the driver is authorized, and notify the Commercial Vehicle Manager when an unauthorized driver is detected. The Commercial Vehicle Manager may override the disable vehicle action. When an unauthorized driver is detected and the system is not overridden, then the equipment package will issue a message to the commercial vehicle to safely disable the vehicle. If an unauthorized driver is detected, then the equipment package will send to the Emergency Management Subsystem an alert that includes: incident location, current location of the CV, Vehicle ID, Carrier ID, Driver ID, CV Credentials	Manage CV Driver Identification	This equipment package collects and and/or individual driver biometric m of driver PINs, data from a driver ide drivers on individual commercial ver Based on information reported by th driver is authorized, and notify the C detected. The Commercial Vehicle M unauthorized driver is detected and t message to the commercial vehicle t then the equipment package will sen incident location, current location of
Mayday Support	information, and cargo manifest (if known). This equipment package receives Mayday messages from vehicles or personal handheld devices, determines an appropriate response, and either uses internal resources or contacts a local agency to provide that response. The nature of the emergency is determined based on the information in the mayday message as well as other inputs. This package effectively serves as an interface between automated mobile mayday systems and the local public safety answering point for messages which require a public safety response.	Mayday Support	information, and cargo manifest (if I This equipment package receives M determines an appropriate response, provide that response. The nature of mayday message as well as other in automated mobile mayday systems a require a public safety response.
MCM Automated Treatment System Control	This equipment package remotely monitors and controls automated road treatment systems that disperse anti-icing chemicals or otherwise treat a road segment. The automated treatment system may be remotely activated by this equipment package or it may include environmental sensors that activate the system automatically based on sensed environmental conditions. This equipment package monitors treatment system operation, sets operating parameters, and directly controls system activation if necessary.	MCM Automated Treatment System Control	This equipment package remotely m anti-icing chemicals or otherwise tre activated by this equipment package automatically based on sensed envir system operation, sets operating para
MCM Data Collection	This equipment package collects and stores maintenance and construction information that is collected in the course of operations by the Maintenance and Construction Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	MCM Data Collection	This equipment package collects and the course of operations by the Main used directly by operations personne region.
MCM Environmental Information Collection	This equipment package collects current road and weather conditions using data collected from environmental sensors deployed on and about the roadway. In addition to fixed sensor stations at the roadside, this equipment package also collects environmental information from sensor systems located on Maintenance and Construction Vehicles as well as the broader population of vehicle probes. It also collects current and forecast environmental conditions information that is made available by other systems. The equipment package aggregates the sensor system data and provides it, along with data attributes to meteorological systems.	MCM Environmental Information Collection	This equipment package collects cur environmental sensors deployed on a roadside, this equipment package als on Maintenance and Construction Vo collects current and forecast environ systems. The equipment package agg attributes to meteorological systems.
MCM Environmental Information Processing	This equipment package processes current and forecast weather data, road condition information, local environmental data, and uses internal models to develop specialized detailed forecasts of local weather and surface conditions. The processed environmental information products are presented to center personnel and disseminated to other centers.	MCM Environmental Information Processing	This equipment package processes c environmental data, and uses interna and surface conditions. The processe personnel and disseminated to other
MCM Incident Management	This equipment package supports maintenance and construction participation in coordinated incident response. Incident notifications are shared, incident response resources are managed, and the overall incident situation and incident response status is coordinated among allied response organizations.	MCM Incident Management	This equipment package supports mare sponse. Incident notifications are sincident situation and incident response.
MCM Infrastructure Monitoring	This equipment package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts). This center equipment package monitors the infrastructure using both fixed and vehicle-based sensors. In addition to specialized infrastructure monitoring sensors, this equipment package also monitors the broader population of vehicle probes for vertical acceleration data and other probe data that may be used to determine current pavement condition.	MCM Infrastructure Monitoring	This equipment package monitors the other transportation-related infrastruc- the infrastructure using both fixed ar monitoring sensors, this equipment p vertical acceleration data and other p condition.
MCM Maintenance Decision Support	This equipment package recommends maintenance courses of action based on current and forecast environmental and road conditions and additional application specific information. Decisions are supported through understandable presentation of filtered and fused environmental and road condition information for specific time horizons as well as specific maintenance recommendations that are generated by the system based on this integrated information. The recommended courses of action are supported by information on the anticipated consequences of action or inaction, when available.	MCM Maintenance Decision Support	This equipment package recommend environmental and road conditions a supported through understandable pr information for specific time horizor generated by the system based on thi supported by information on the anti

# C\_V2 Description

and stores driver identification records including driver issued PINS measurements. The equipment package can also manage the storage identification card, and/or biometric measurements for authorized vehicles.

the commercial vehicle, the equipment package will determine if the e Commercial Vehicle Manager when an unauthorized driver is e Manager may override the disable vehicle action. When an d the system is not overridden, then the equipment package will issue a e to safely disable the vehicle. If an unauthorized driver is detected, end to the Emergency Management Subsystem an alert that includes: of the CV, Vehicle ID, Carrier ID, Driver ID, CV Credentials f known).

Mayday messages from vehicles or personal handheld devices, e, and either uses internal resources or contacts a local agency to of the emergency is determined based on the information in the nputs. This package effectively serves as an interface between s and the local public safety answering point for messages which

monitors and controls automated road treatment systems that disperse treat a road segment. The automated treatment system may be remotely ge or it may include environmental sensors that activate the system *v*ironmental conditions. This equipment package monitors treatment arameters, and directly controls system activation if necessary.

nd stores maintenance and construction information that is collected in intenance and Construction Management Subsystem. This data can be nel or it can be made available to other data users and archives in the

current road and weather conditions using data collected from on and about the roadway. In addition to fixed sensor stations at the also collects environmental information from sensor systems located Vehicles as well as the broader population of vehicle probes. It also onmental conditions information that is made available by other aggregates the sensor system data and provides it, along with data ns.

current and forecast weather data, road condition information, local nal models to develop specialized detailed forecasts of local weather used environmental information products are presented to <u>centercentre</u> er <u>centerscentres</u>.

maintenance and construction participation in coordinated incident e shared, incident response resources are managed, and the overall ponse status is coordinated among allied response organizations.

the condition of pavement, bridges, tunnels, associated hardware, and ructure (e.g., culverts). This <u>centercentre</u> equipment package monitors and vehicle-based sensors. In addition to specialized infrastructure t package also monitors the broader population of vehicle probes for r probe data that may be used to determine current pavement

ends maintenance courses of action based on current and forecast s and additional application specific information. Decisions are presentation of filtered and fused environmental and road condition zons as well as specific maintenance recommendations that are this integrated information. The recommended courses of action are nticipated consequences of action or inaction, when available.

US_V6 Name	US_V6 Description	C_V2 Name	
MCM Roadway Maintenance and Construction	This equipment package provides overall management and support for routine maintenance on a roadway system or right-of-way. Services managed include landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, etc.). Environmental conditions information is also received from various weather sources to aid in scheduling routine maintenance activities.	MCM Roadway Maintenance and Construction	This equipment package provides ov roadway system or right-of-way. Ser (roadway debris, dead animals), rout repair and maintenance of both ITS a controllers, traffic detectors, dynamic information is also received from var activities.
MCM Speed Monitoring	This equipment package remotely monitors and controls devices that monitor vehicle speeds and optionally provide safe speed advisories to the motorist. If excessive speeds are detected, this equipment package also includes the capability to notify an enforcement agency and request traffic enforcement in work zones or other areas where excessive speeds are identified.	MCM Speed Monitoring	This equipment package remotely me optionally provide safe speed advisor package also includes the capability work zones or other areas where exce
MCM Transportation Operations Data Collection	This equipment package collects real-time information on the state of the regional transportation system for operational use by the center. It includes communication and data processing capabilities that provide real-time access to regional transportation information that is stored in a regional repository. This equipment package establishes communications with the repository, requests or subscribes to information relevant to the center, receives and processes the information, and then distributes the information to other equipment packages and the system operator for use. Although request and subscription flows are not explicitly included in the National ITS Architecture, interactive data services are supported by this equipment package.	MCM Transportation Operations Data Collection	This equipment package collects real for operational use by the <u>centercentr</u> provide real-time access to regional t This equipment package establishes of information relevant to the <u>centercent</u> information to other equipment packa subscription flows are not explicitly in data services are supported by this equipment
MCM Vehicle and Equipment Maintenance Management	This equipment package monitors vehicle and equipment condition, tracks maintenance history, and schedules routine and corrective maintenance based on vehicle utilization and availability schedules.	MCM Vehicle and Equipment Maintenance Management	This equipment package monitors ve schedules routine and corrective main
MCM Vehicle Tracking	This equipment package tracks the location of maintenance and construction vehicles and other equipment. Vehicle location and associated information is presented to the operator.	MCM Vehicle Tracking	This equipment package tracks the lo equipment. Vehicle location and asso
MCM Winter Maintenance Management	This equipment package manages winter road maintenance, tracking and controlling snow plow operations, roadway treatment (e.g., salt spraying and other material applications), and other snow and ice control operations. It monitors environmental conditions and weather forecasts and uses the information to schedule winter maintenance activities, determine the appropriate snow and ice control response, and track and manage response operations.	MCM Winter Maintenance Management	This equipment package manages wi operations, roadway treatment (e.g., s ice control operations. It monitors en information to schedule winter maint response, and track and manage respo
MCM Work Activity Coordination	This equipment package disseminates work activity schedules and current asset restrictions to other agencies. Work schedules are coordinated with operating agencies, factoring in the needs and activities of other agencies and adjacent jurisdictions. Work schedules are also distributed to Information Service Providers for dissemination to the traveling public.	MCM Work Activity Coordination	This equipment package disseminate agencies. Work schedules are coordin of other agencies and adjacent jurisdi Providers for dissemination to the tra
MCM Work Zone Management	This equipment package remotely monitors and supports work zone activities, controlling traffic through dynamic message signs (DMS), Highway Advisory Radio (HAR), gates and barriers, and informing other groups of activity (e.g., ISP, TM, other maintenance and construction centers) for better coordination management. Work zone speeds, and delays, and closures are provided to the motorist prior to the work zones. This equipment package provides control of field equipment in all maintenance areas, including fixed and portable field equipment supporting both stationary and mobile work zones.	MCM Work Zone Management	This equipment package remotely me dynamic message signs (DMS), High other groups of activity (e.g., ISP, TM coordination management. Work zon to the work zones. This equipment pa including fixed and portable field equ
MCM Work Zone Safety Management	This equipment package remotely monitors work zone safety systems that detect vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone.	MCM Work Zone Safety Management	This equipment package remotely me work zones and warns crew workers monitored so that the crew can be wa
MCV Barrier System Control	This on-board equipment package provides local control of automatic or remotely controlled gates and other barrier systems from a maintenance and construction vehicle. Using this equipment package, maintenance and construction field personnel (e.g., snow plow operators) can open and close gates and other barrier systems without leaving the vehicle, using Field-Vehicle Communications to control the barriers.	MCV Barrier System Control	This on-board equipment package pro- other barrier systems from a mainten- maintenance and construction field p other barrier systems without leaving barriers.
MCV Environmental Monitoring	This on-board equipment package collects current road and surface weather conditions from sensors on- board the maintenance and construction vehicle or by querying fixed sensors on or near the roadway. Environmental information including road surface temperature, air temperature, and wind speed is measured and spatially located and time stamped, and reported back to a center.	MCV Environmental Monitoring	This on-board equipment package co board the maintenance and construct Environmental information including measured and spatially located and ti
MCV Infrastructure Monitoring	This on-board equipment package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts). It includes vehicle-based sensors that directly monitor the infrastructure, communications that allow roadway-based infrastructure monitoring sensors to be controlled and read, and data communications that allows collected infrastructure condition information to be reported back to a center.	MCV Infrastructure Monitoring	This on-board equipment package me hardware, and other transportation-re that directly monitor the infrastructur monitoring sensors to be controlled a infrastructure condition information t

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overall management and support for routine maintenance on a ervices managed include landscape maintenance, hazard removal utine maintenance activities (roadway cleaning, grass cutting), and S and non-ITS equipment on the roadway (e.g., signs, traffic nic message signs, traffic signals, etc.). Environmental conditions various weather sources to aid in scheduling routine maintenance

monitors and controls devices that monitor vehicle speeds and sories to the motorist. If excessive speeds are detected, this equipment y to notify an enforcement agency and request traffic enforcement in accessive speeds are identified.

eal-time information on the state of the regional transportation system <u>ntre</u>. It includes communication and data processing capabilities that l transportation information that is stored in a regional repository. s communications with the repository, requests or subscribes to <u>entre</u>, receives and processes the information, and then distributes the ckages and the system operator for use. Although request and y included in the <u>National</u>-ITS Architecture<u>for Canada</u>, interactive equipment package.

vehicle and equipment condition, tracks maintenance history, and aintenance based on vehicle utilization and availability schedules.

location of maintenance and construction vehicles and other sociated information is presented to the operator.

winter road maintenance, tracking and controlling snow plow ., salt spraying and other material applications), and other snow and environmental conditions and weather forecasts and uses the intenance activities, determine the appropriate snow and ice control sponse operations.

ttes work activity schedules and current asset restrictions to other dinated with operating agencies, factoring in the needs and activities sdictions. Work schedules are also distributed to Information Service traveling public.

monitors and supports work zone activities, controlling traffic through ghway Advisory Radio (HAR), gates and barriers, and informing TM, other maintenance and construction <u>centerscentres</u>) for better one speeds, and delays, and closures are provided to the motorist prior package provides control of field equipment in all maintenance areas, equipment supporting both stationary and mobile work zones.

monitors work zone safety systems that detect vehicle intrusions in rs and drivers of imminent encroachment. Crew movements are also warned of movement beyond the designated safe zone.

provides local control of automatic or remotely controlled gates and enance and construction vehicle. Using this equipment package, l personnel (e.g., snow plow operators) can open and close gates and ng the vehicle, using Field-Vehicle Communications to control the

collects current road and surface weather conditions from sensors onction vehicle or by querying fixed sensors on or near the roadway. ng road surface temperature, air temperature, and wind speed is time stamped, and reported back to a <u>centercentre</u>.

monitors the condition of pavement, bridges, tunnels, associated -related infrastructure (e.g., culverts). It includes vehicle-based sensors ture, communications that allow roadway-based infrastructure 1 and read, and data communications that allows collected n to be reported back to a <u>centercentre</u>.

US_V6 Name	US_V6 Description	C_V2 Name	
MCV Roadway Maintenance and Construction	This equipment package includes the on-board systems that support routine non-winter maintenance on a roadway system or right-of-way. Routine maintenance includes landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, etc.).	MCV Roadway Maintenance and Construction	This equipment package includes the roadway system or right-of-way. Rou (roadway debris, dead animals), rout repair and maintenance of both ITS a controllers, traffic detectors, dynamic
MCV Vehicle Location Tracking	This on-board equipment package tracks vehicle location and reports the position and timestamp information to a dispatch center.	MCV Vehicle Location Tracking	This on-board equipment package tra information to a dispatch <u>centercentr</u>
MCV Vehicle Safety Monitoring	This equipment package detects vehicle intrusions in the vicinity of the vehicle and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone. This equipment package can be used for stationary work zones or in mobile applications where a safe zone is maintained around the moving vehicle.	MCV Vehicle Safety Monitoring	This equipment package detects vehi and drivers of imminent encroachme warned of movement beyond the des stationary work zones or in mobile a vehicle.
MCV Vehicle System Monitoring and Diagnostics	This equipment package includes on-board sensors capable of monitoring the condition of each of the vehicle systems and diagnostics that can be used to support vehicle maintenance. The status of the vehicle and ancillary equipment and diagnostic information is provided to the vehicle operator, repair facility, and dispatch center.	MCV Vehicle System Monitoring and Diagnostics	This equipment package includes on- vehicle systems and diagnostics that vehicle and ancillary equipment and facility, and dispatch <u>centercentre</u> .
MCV Winter Maintenance	This on-board equipment package supports snow plow operations and other roadway treatments (e.g., salt spraying and other material applications). It supports communications with the center to receive information and instructions that are provided to the vehicle operator and also supports remote control of on-board systems. The equipment package tracks operational status of snow and ice control operations and provides this information back to the center.	MCV Winter Maintenance	This on-board equipment package su salt spraying and other material appli- receive information and instructions control of on-board systems. The equ operations and provides this informa
MCV Work Zone Support	This on-board equipment package provides communications and support for local management of a work zone. It supports communications between field personnel and the managing center to keep the center appraised of current work zone status. It controls vehicle-mounted driver information systems (e.g., dynamic message signs) and uses short range communications to monitor and control other fixed or portable driver information systems in the work zone.	MCV Work Zone Support	This on-board equipment package pr work zone. It supports communication the <u>centercentre</u> appraised of current systems (e.g., dynamic message sign other fixed or portable driver information
Multimodal Crossing Control	This equipment package monitors multimodal crossings and monitors and controls traffic control equipment in the vicinity of the crossing. Equipment controlled includes warning lights, gates, dynamic message signs, and other systems associated with multimodal crossings. This equipment package manages draw bridges and miscellaneous other crossings between highway traffic and other modes. Railroad grade crossings are covered by the Standard Rail Crossing equipment package.	Multimodal Crossing Control	This equipment package monitors me equipment in the vicinity of the cross message signs, and other systems ass manages draw bridges and miscellan Railroad grade crossings are covered
On-board Cargo Monitoring	This on-board equipment package monitors the location and status of the commercial vehicle and its cargo. It sends the collected data to appropriate centers and roadside facilities, including emergency management in the case of HAZMAT incidents. Depending on the nature of the cargo, this equipment package may include sensors that measure temperature, pressure, load leveling, acceleration, and other attributes of the cargo.	On-board Cargo Monitoring	This on-board equipment package me cargo. It sends the collected data to a emergency management in the case of equipment package may include sense and other attributes of the cargo.
On-board CV Electronic Data	This on-board equipment package exchanges information with roadside facilities, providing information such as driver, vehicle, and carrier identification to roadside facilities that can be used to support electronic screening. Pass/pull-in messages are received and presented to the commercial vehicle driver and screening events are recorded. Additional information, including trip records (e.g., border clearance information), safety inspection records, cargo information, and driver status information may also be collected, stored, and made available to the roadside facility by this equipment package.	On-board CV Electronic Data	This on-board equipment package ex such as driver, vehicle, and carrier id electronic screening. Pass/pull-in me and screening events are recorded. A information), safety inspection recorr collected, stored, and made available
On-board CV Safety and Security	This on-board equipment package collects and processes vehicle and driver safety and security information and provides safety and security information to the Fleet and Freight Management Subsystem. This equipment package also supplies this information to the roadside facilities both at mainline speeds and while stopped for inspections. The capability to alert the commercial vehicle driver whenever there is a critical safety or security problem or potential emergency is also provided. The package also supports on-board driver safety log maintenance and checking.	On-board CV Safety and Security	This on-board equipment package co information and provides safety and Subsystem. This equipment package mainline speeds and while stopped for whenever there is a critical safety or package also supports on-board drive
On-board Driver Authentication	This on-board equipment package monitors the identity of the commercial vehicle driver and compares it with the planned drivers for the commercial vehicle. Any change in driver is sent to the Fleet and Freight Management Subsystem. Notification of any unexpected drivers will also be sent to the Fleet and Freight Management Subsystem which, in turn, may send a disable vehicle command back to this equipment package to cause the vehicle to stop. On receipt of a disable vehicle message from the Fleet and Freight Management Subsystem or on detection of an unauthorized driver, the equipment package will safety disable the CV.	On-board Driver Authentication	This on-board equipment package m with the planned drivers for the comm Management Subsystem. Notification Management Subsystem which, in tu package to cause the vehicle to stop. Management Subsystem or on detect disable the CV.

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he on-board systems that support routine non-winter maintenance on a coutine maintenance includes landscape maintenance, hazard removal utine maintenance activities (roadway cleaning, grass cutting), and S and non-ITS equipment on the roadway (e.g., signs, traffic nic message signs, traffic signals, etc.).

tracks vehicle location and reports the position and timestamp <u>atre</u>.

hicle intrusions in the vicinity of the vehicle and warns crew workers nent. Crew movements are also monitored so that the crew can be esignated safe zone. This equipment package can be used for applications where a safe zone is maintained around the moving

on-board sensors capable of monitoring the condition of each of the at can be used to support vehicle maintenance. The status of the ad diagnostic information is provided to the vehicle operator, repair

supports snow plow operations and other roadway treatments (e.g., plications). It supports communications with the <u>centercentre</u> to as that are provided to the vehicle operator and also supports remote quipment package tracks operational status of snow and ice control nation back to the <u>centercentre</u>.

provides communications and support for local management of a tions between field personnel and the managing <u>centercentre</u> to keep nt work zone status. It controls vehicle-mounted driver information gns) and uses short range communications to monitor and control mation systems in the work zone.

multimodal crossings and monitors and controls traffic control ossing. Equipment controlled includes warning lights, gates, dynamic associated with multimodal crossings. This equipment package aneous other crossings between highway traffic and other modes. ed by the Standard Rail Crossing equipment package.

monitors the location and status of the commercial vehicle and its o appropriate <u>centerscentres</u> and roadside facilities, including e of HAZMAT incidents. Depending on the nature of the cargo, this ensors that measure temperature, pressure, load leveling, acceleration,

exchanges information with roadside facilities, providing information identification to roadside facilities that can be used to support nessages are received and presented to the commercial vehicle driver Additional information, including trip records (e.g., border clearance ords, cargo information, and driver status information may also be ble to the roadside facility by this equipment package.

collects and processes vehicle and driver safety and security d security information to the Fleet and Freight Management ge also supplies this information to the roadside facilities both at l for inspections. The capability to alert the commercial vehicle driver or security problem or potential emergency is also provided. The iver safety log maintenance and checking.

monitors the identity of the commercial vehicle driver and compares it mmercial vehicle. Any change in driver is sent to the Fleet and Freight ion of any unexpected drivers will also be sent to the Fleet and Freight turn, may send a disable vehicle command back to this equipment p. On receipt of a disable vehicle message from the Fleet and Freight ection of an unauthorized driver, the equipment package will safety

US_V6 Name	US_V6 Description	C_V2 Name	
On-Board EV Barrier System Control	This on-board equipment package provides local control of automatic or remotely controlled gates and other barrier systems from an emergency vehicle. Using this equipment package, emergency personnel can open and close barriers without leaving the vehicle, using Field-Vehicle Communications to control the barriers.	On- <del>Board<u>board</u> EV Barrier System Control</del>	This on-board equipment package pro other barrier systems from an emerge can open and close barriers without le the barriers.
On-board EV En Route Support	This on-board equipment package supports dispatch, routing, and tracking of an emergency vehicle. Dispatch and routing information are received and presented to the driver and vehicle location and status are tracked and provided back to the dispatcher. This equipment package supports traffic signal preemption via short range communication directly with signal control equipment and sends alert messages to surrounding vehicles. It also supports communications with care facilities, sharing patient status and care facility status between the en route emergency vehicle and the care facility.	On-board EV En Route Support	This on-board equipment package sup Dispatch and routing information are are tracked and provided back to the preemption via short range communic messages to surrounding vehicles. It a status and care facility status between
On-board EV Incident Management Communication	This on-board equipment package provides communications support to first responders. Information about the incident, information on dispatched resources, and ancillary information such as road and weather conditions are provided to emergency personnel. Emergency personnel transmit information about the incident such as identification of vehicles and people involved, the extent of injuries, hazardous material, resources on site, site management strategies in effect, and current clearance status. Emergency personnel may also send in-vehicle signing messages to approaching traffic using short range communications.	On-board EV Incident Management Communication	This on-board equipment package pro about the incident, information on dis weather conditions are provided to er about the incident such as identificati hazardous material, resources on site, Emergency personnel may also send communications.
On-board Maintenance	This on-board equipment package collects and processes transit vehicle maintenance data including mileage and vehicle operating conditions. This maintenance information is provided to the management center and used to schedule future vehicle maintenance and repair.	On-board Maintenance	This on-board equipment package comileage and vehicle operating conditions contended to schedule future.
On-board Paratransit Operations	This on-board equipment package forwards paratransit and flexible-route dispatch requests to the operator and forwards acknowledgements to the center. It coordinates with, and assists the operator in managing multi-stop runs associated with demand responsive transit services including paratransit. The equipment package collects transit vehicle passenger data and makes it available to the center.	On-board Paratransit Operations	This on-board equipment package for operator and forwards acknowledgen operator in managing multi-stop runs paratransit. The equipment package c centercentre.
On-board Passenger Counting	This on-board equipment package collects transit vehicle loading data and makes it available to the center. It provides two-way communication between the transit vehicle and center.	On-board Passenger Counting	This on-board equipment package co centercentre. It provides two-way con
On-board Schedule Management	This on-board equipment package monitors schedule performance and identifies corrective actions when a deviation is detected. It provides two-way communication between the transit vehicle and center, enabling the center to communicate with the vehicle operator and monitor on-board systems.	On-board Schedule Management	This on-board equipment package me a deviation is detected. It provides tw enabling the <u>centercentre</u> to commun
On-board Transit Fare Management	This on-board equipment package supports fare collection using a standard fare card or other non- monetary fare medium and detects payment violations. Collected fare data are made available to the center.	On-board Transit Fare Management	This on-board equipment package sup monetary fare medium and detects pa <u>centercentre</u> .
On-board Transit In Vehicle Signing Communications	This equipment package provides the capability for the transit vehicle to distribute information to vehicles in the vicinity for in-vehicle display. The information provided supplements external signs and signals on the transit vehicle and may include notification that the vehicle (e.g., a school bus) is making a passenger stop or notice that the transit vehicle is attempting to merge and is requesting gap assistance. This equipment package includes an interface to the transit operator and the short range communications equipment that provides information to passing vehicles.	On-board Transit In Vehicle Signing Communications	This equipment package provides the vehicles in the vicinity for in-vehicle signals on the transit vehicle and may passenger stop or notice that the trans This equipment package includes an equipment that provides information
On-board Transit Information Services	This equipment package furnishes en-route transit users with real-time travel-related information on- board a transit vehicle. Current information that can be provided to transit users includes transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, non-motorized transportation services, and special events are provided. In addition to tailored information for individual transit users, this equipment package also supports general annunciation and/or display of general schedule information, imminent arrival information, and other information of general interest to transit users.	On-board Transit Information Services	This equipment package furnishes en board a transit vehicle. Current inforr schedules, transfer options, fares, rea non-motorized transportation services information for individual transit user and/or display of general schedule int general interest to transit users.
On-board Transit Security	This equipment package provides security and safety functions on-board the transit vehicle. It includes surveillance and sensor systems that monitor the on-board environment, silent alarms that can be activated by transit user or vehicle operator, operator authentication, and a remote vehicle disable function. The surveillance equipment includes video (e.g. CCTV cameras), audio systems and/or event recorder systems. The sensor equipment includes threat sensors (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors (e.g. metal detectors).	On-board Transit Security	This equipment package provides sec surveillance and sensor systems that a activated by transit user or vehicle op function. The surveillance equipment recorder systems. The sensor equipment chemical, biological, explosives, and detectors).

# C\_V2 Description

provides local control of automatic or remotely controlled gates and gency vehicle. Using this equipment package, emergency personnel t leaving the vehicle, using Field-Vehicle Communications to control

supports dispatch, routing, and tracking of an emergency vehicle. The received and presented to the driver and vehicle location and status the dispatcher. This equipment package supports traffic signal nication directly with signal control equipment and sends alert It also supports communications with care facilities, sharing patient even the en route emergency vehicle and the care facility.

provides communications support to first responders. Information dispatched resources, and ancillary information such as road and emergency personnel. Emergency personnel transmit information ation of vehicles and people involved, the extent of injuries, ite, site management strategies in effect, and current clearance status. and in-vehicle signing messages to approaching traffic using short range

collects and processes transit vehicle maintenance data including ditions. This maintenance information is provided to the management future vehicle maintenance and repair.

forwards paratransit and flexible-route dispatch requests to the ements to the <u>centercentre</u>. It coordinates with, and assists the ins associated with demand responsive transit services including e collects transit vehicle passenger data and makes it available to the

collects transit vehicle loading data and makes it available to the communication between the transit vehicle and <u>centercentre</u>.

monitors schedule performance and identifies corrective actions when two-way communication between the transit vehicle and <u>centercentre</u>, unicate with the vehicle operator and monitor on-board systems.

supports fare collection using a standard fare card or other nonpayment violations. Collected fare data are made available to the

the capability for the transit vehicle to distribute information to the display. The information provided supplements external signs and hay include notification that the vehicle (e.g., a school bus) is making a ansit vehicle is attempting to merge and is requesting gap assistance. In interface to the transit operator and the short range communications on to passing vehicles.

en-route transit users with real-time travel-related information onormation that can be provided to transit users includes transit routes, eal-time schedule adherence, current incidents, weather conditions, ces, and special events are provided. In addition to tailored sers, this equipment package also supports general annunciation information, imminent arrival information, and other information of

security and safety functions on-board the transit vehicle. It includes at monitor the on-board environment, silent alarms that can be operator, operator authentication, and a remote vehicle disable ent includes video (e.g. CCTV cameras), audio systems and/or event oment includes threat sensors (e.g. chemical agent, toxic industrial nd radiological sensors) and object detection sensors (e.g. metal

US_V6 Name	US_V6 Description	C_V2 Name	
On-board Transit Signal Priority	This on-board equipment package provides the capability for transit vehicles to request signal priority at signalized intersections, ramps, and interchanges through short range communication directly with traffic control equipment at the roadside.	On-board Transit Signal Priority	This on-board equipment package pr signalized intersections, ramps, and i control equipment at the roadside.
On-board Transit Trip Monitoring	This on-board equipment package tracks vehicle location, monitors fuel usage, collects operational status (doors opened/closed, running times, etc.) and sends the collected, time stamped data to the Transit Management Subsystem.	On-board Transit Trip Monitoring	This on-board equipment package tra (doors opened/closed, running times, Management Subsystem.
On-board Trip Monitoring	This equipment package provides the capabilities to support fleet management with automatic vehicle location and automated mileage and fuel reporting and auditing. In addition, this equipment is used to monitor the planned route and notify the Fleet and Freight Management Subsystem of any deviations.	On-board Trip Monitoring	This equipment package provides the location and automated mileage and monitor the planned route and notify
On-Line Analysis and Mining	This equipment package provides advanced data analysis, summarization, and mining features that facilitate discovery of information, patterns, and correlations in large data sets. Multidimensional analysis, selective summarization and expansion of data details, and many other advanced analysis services may be offered by various implementations of this equipment package.	On-Line Analysis and Mining	This equipment package provides ad facilitate discovery of information, p analysis, selective summarization an services may be offered by various in
Parking Coordination	This equipment package supports communication and coordination between equipped parking facilities and also supports regional coordination between parking facilities and traffic and transit management systems. This equipment package also shares information with transit management systems and information service providers to support multimodal travel planning, including parking reservations capabilities. Information including current parking availability, system status, and operating strategies are shared through this equipment package to enable local parking facility management that supports regional transportation strategies.	Parking Coordination	This equipment package supports co and also supports regional coordinati systems. This equipment package also information service providers to supp capabilities. Information including co are shared through this equipment pa- regional transportation strategies.
Parking Data Collection	This equipment package collects and stores parking information that is collected in the course of parking system operations performed by the Parking Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	Parking Data Collection	This equipment package collects and system operations performed by the operations personnel or it can be made
Parking Electronic Payment	This equipment package supports electronic payment of parking fees using in-vehicle equipment (e.g., tags) or contact or proximity cards. It includes the field elements that provide the interface to the invehicle or card payment device and the back-office functionality that performs the transaction.	Parking Electronic Payment	This equipment package supports ele tags) or contact or proximity cards. I vehicle or card payment device and t
Parking Management	This equipment package detects and classifies vehicles at parking facility entrances, exits, and other designated locations within the facility. Current parking availability is monitored and used to inform drivers through dynamic message signs/displays so that vehicles are efficiently routed to available spaces. Parking facility information, including current parking rates and directions to entrances and available exits, is also provided to drivers. Coordination with traffic management supports local traffic control coordination in and around the parking facility.	Parking Management	This equipment package detects and designated locations within the facili drivers through dynamic message sig spaces. Parking facility information, available exits, is also provided to dr control coordination in and around th
Parking Short Range Traveler Information Communications	This equipment package includes field elements that distribute parking information to vehicles for in- vehicle display. This equipment package controls the information distribution and includes the short range communications equipment that provides information to passing vehicles.	Parking Short Range <u>Traveler Traveller</u> Information Communications	This equipment package includes fie vehicle display. This equipment pack range communications equipment that
Personal Autonomous Route Guidance	This equipment package provides multi-modal route planning and transition by transition route guidance. It provides autonomous route guidance in the absence of real-time information or factors information provided by the infrastructure into its route selection and guidance algorithms if available. The equipment package also includes those truly autonomous systems that are not configured to receive or process any external data. The route guidance capabilities of this equipment package are hosted on personal devices including personal computers and personal portable devices such as PDAs and pagers.	Personal Autonomous Route Guidance	This equipment package provides mu It provides autonomous route guidan provided by the infrastructure into its equipment package also includes tho process any external data. The route personal devices including personal devices personal devices including personal devices personal
Personal Basic Information Reception	This equipment package receives formatted traffic advisories, road conditions, transit information, broadcast alerts, and other general traveler information broadcasts and presents the information to the traveler. The traveler information broadcasts are received by personal devices including personal computers and personal portable devices such as personal digital assistants (PDAs) and pagers.	Personal Basic Information Reception	This equipment package receives for broadcast alerts, and other general tra- to the travelertraveller. The travelertra including personal computers and per and pagers.
Personal Interactive Information Reception	This equipment package provides traffic information, road conditions, transit information, yellow pages (traveler services) information, special event information, and other traveler information that is specifically tailored based on the traveler's request and/or previously submitted traveler profile information. The interactive traveler information capability is provided by personal devices including personal computers and personal portable devices such as personal digital assistants (PDAs).	Personal Interactive Information Reception	This equipment package provides tra (travelerbusiness directory service (travelertraveller information that is s previously submitted travelertravelle capability is provided by personal de such as personal digital assistants (PI

### C\_V2 Description

provides the capability for transit vehicles to request signal priority at d interchanges through short range communication directly with traffic

tracks vehicle location, monitors fuel usage, collects operational status es, etc.) and sends the collected, time stamped data to the Transit

the capabilities to support fleet management with automatic vehicle d fuel reporting and auditing. In addition, this equipment is used to fy the Fleet and Freight Management Subsystem of any deviations.

advanced data analysis, summarization, and mining features that patterns, and correlations in large data sets. Multidimensional and expansion of data details, and many other advanced analysis implementations of this equipment package.

communication and coordination between equipped parking facilities ation between parking facilities and traffic and transit management also shares information with transit management systems and pport multimodal travel planning, including parking reservations current parking availability, system status, and operating strategies package to enable local parking facility management that supports

nd stores parking information that is collected in the course of parking e Parking Management Subsystem. This data can be used directly by nade available to other data users and archives in the region.

electronic payment of parking fees using in-vehicle equipment (e.g., . It includes the field elements that provide the interface to the inl the back-office functionality that performs the transaction.

d classifies vehicles at parking facility entrances, exits, and other ility. Current parking availability is monitored and used to inform signs/displays so that vehicles are efficiently routed to available n, including current parking rates and directions to entrances and drivers. Coordination with traffic management supports local traffic the parking facility.

ield elements that distribute parking information to vehicles for inckage controls the information distribution and includes the short that provides information to passing vehicles.

multi-modal route planning and transition by transition route guidance. ance in the absence of real-time information or factors information its route selection and guidance algorithms if available. The nose truly autonomous systems that are not configured to receive or re guidance capabilities of this equipment package are hosted on al computers and personal portable devices such as PDAs and pagers.

ormatted traffic advisories, road conditions, transit information, travelertraveller information broadcasts and presents the information <u>traveller</u> information broadcasts are received by personal devices personal portable devices such as personal digital assistants (PDAs)

raffic information, road conditions, transit information, <u>yellow pages</u> (traveller services) information, special event information, and other a specifically tailored based on the <u>traveler'straveller's</u> request and/or <u>ler</u> profile information. The interactive <u>travelertraveller</u> information devices including personal computers and personal portable devices PDAs).

US_V6 Name	US_V6 Description	C_V2 Name	
Personal Location Determination	This equipment package receives current location information and provides this information to other equipment packages that use the location information to provide guidance and emergency notification services. The equipment package interfaces with and encapsulates positioning technology such as a GPS receiver that is embedded in the user's personal computer or other portable device.	Personal Location Determination	This equipment package receives currequipment packages that use the local services. The equipment package interference that is embedded in the user's
Personal Mayday I/F	This equipment package provides the capability for travelers to report an emergency or activate a panic button to summon assistance. The personal mayday capability is provided by a portable device such as a personal digital assistant (PDA).	Personal Mayday I/F	This equipment package provides the a panic button to summon assistance. such as a personal digital assistant (P
Personal Trip Planning and Route Guidance	This equipment package provides a personalized trip plan to the traveler. The trip plan is calculated by the Information Service Provider based on preferences and constraints supplied by the traveler and provided to the traveler for confirmation. Reservations and advanced payment may also be processed by this equipment package to confirm the trip plan. Coordination with the Information Service Provider may continue during the trip so that the route plan can be modified to account for new information. Many equipment configurations are possible including systems that provide a basic trip plan to the traveler as well as more sophisticated systems that can provide transition by transition guidance to the traveler along a multi-modal route. Devices represented by this equipment package include desktop computers at home, work, or at major trip generation sites, plus personal portable devices such as PDAs and pagers.	Personal Trip Planning and Route Guidance	This equipment package provides a p calculated by the Information Service traveler <u>traveller</u> and provided to the t payment may also be processed by th the Information Service Provider may account for new information. Many e provide a basic trip plan to the travele transition by transition guidance to th by this equipment package include de plus personal portable devices such a
Rail Operations Coordination	This equipment package provides coordination between rail operations and traffic management centers. It receives train schedules, maintenance schedules, incidents, priority messages, and any other forecast events that will impact highway-rail intersection (HRI) closures from Rail Operations. The provided information is used to develop forecast HRI closure times and durations which may be applied in advanced traffic control strategies or delivered as enhanced traveler information. This equipment package includes the processing and algorithms necessary to derive HRI closure times and the communications capabilities necessary to communicate with rail operations and interface to the traffic control and information distribution capabilities included in other Traffic Management Subsystem equipment packages.	Rail Operations Coordination	This equipment package provides coor centerscentres. It receives train sched other forecast events that will impact provided information is used to devel in advanced traffic control strategies equipment package includes the proce the communications capabilities nece traffic control and information distrib equipment packages.
Remote Basic Information Reception	This equipment package receives formatted traffic advisories, road conditions, transit information, broadcast alerts, and other general traveler information broadcasts and presents the information to the traveler with a public traveler interface. This equipment package includes the receiver and public display device such as a kiosk, large-scale display monitor or other public display.	Remote Basic Information Reception	This equipment package receives form broadcast alerts, and other general tra- to the traveler traveller with a public to receiver and public display device suc
Remote Interactive Information Reception	This equipment package provides traffic information, road conditions, transit information, yellow pages (traveler services) information, special event information, and other traveler information that is specifically tailored based on the traveler's request and/or previously submitted traveler profile information. The interactive traveler information capability is provided by a public traveler interface, such as a kiosk.	Remote Interactive Information Reception	This equipment package provides trat (travelerbusiness directory service (tr travelertraveller information that is sp previously submitted travelertraveller capability is provided by a public trav
Remote Transit Fare Management	This equipment package provides the capability for the traveler to use a common fare medium for transit fares, tolls, and/or parking lot charges. It accepts a service request and means of payment, verifies eligibility, calculates the amount due, collects payment, and identifies payment problems. This equipment package may be implemented using a traveler card reader in a kiosk that includes a communications interface to the financial infrastructure to support payment collection and reconciliation.	Remote Transit Fare Management	This equipment package provides the for transit fares, tolls, and/or parking verifies eligibility, calculates the amo equipment package may be implement communications interface to the finan
Remote Transit Information Services	This equipment package furnishes transit users with real-time travel-related information at transit stops, multi-modal transfer points, and other public transportation areas. It provides transit users with information on transit routes, schedules, transfer options, available services, fares, and real-time schedule adherence. In addition to tailored information for individual transit users, this equipment package supports general annunciation and/or display of imminent arrival information and other information of general interest to transit users.	Remote Transit Information Services	This equipment package furnishes tra multi-modal transfer points, and other information on transit routes, schedul adherence. In addition to tailored infor supports general annunciation and/or general interest to transit users.
Remote Traveler Security	This equipment package provides the capability to report an emergency or summon assistance from secure areas such as transit stops, transit stations, modal transfer facilities, rest stops and picnic areas, park-and-ride areas, tourism and travel information areas, and emergency pull off areas. This package includes interfaces that support initiation of an alarm and presentation of the returned alarm acknowledgement as well as a broadcast message to advise or warn the traveler.	Remote <u>Traveler</u> Security	This equipment package provides the secure areas such as transit stops, tran park-and-ride areas, tourism and trave includes interfaces that support initiat acknowledgement as well as a broad

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surrent location information and provides this information to other cation information to provide guidance and emergency notification interfaces with and encapsulates positioning technology such as a GPS er's personal computer or other portable device.

the capability for <u>travelers</u> to report an emergency or activate ce. The personal mayday capability is provided by a portable device (PDA).

a personalized trip plan to the travelertraveller. The trip plan is ice Provider based on preferences and constraints supplied by the e travelertraveller for confirmation. Reservations and advanced this equipment package to confirm the trip plan. Coordination with hay continue during the trip so that the route plan can be modified to y equipment configurations are possible including systems that elertraveller as well as more sophisticated systems that can provide the travelertraveller along a multi-modal route. Devices represented desktop computers at home, work, or at major trip generation sites, n as PDAs and pagers.

coordination between rail operations and traffic management edules, maintenance schedules, incidents, priority messages, and any act highway-rail intersection (HRI) closures from Rail Operations. The velop forecast HRI closure times and durations which may be applied es or delivered as enhanced <u>travelertraveller</u> information. This occessing and algorithms necessary to derive HRI closure times and eccessary to communicate with rail operations and interface to the ribution capabilities included in other Traffic Management Subsystem

ormatted traffic advisories, road conditions, transit information, travelertraveller information broadcasts and presents the information c travelertraveller interface. This equipment package includes the such as a kiosk, large-scale display monitor or other public display.

raffic information, road conditions, transit information, <u>yellow pages</u> (<u>traveller</u> services) information, special event information, and other a specifically tailored based on the <u>traveler'straveller's</u> request and/or <u>ler</u> profile information. The interactive <u>travelertraveller</u> information <u>ravelertraveller</u> interface, such as a kiosk.

the capability for the travelertraveller to use a common fare medium ng lot charges. It accepts a service request and means of payment, mount due, collects payment, and identifies payment problems. This nented using a travelertraveller card reader in a kiosk that includes a nancial infrastructure to support payment collection and reconciliation.

transit users with real-time travel-related information at transit stops, her public transportation areas. It provides transit users with dules, transfer options, available services, fares, and real-time schedule nformation for individual transit users, this equipment package 'or display of imminent arrival information and other information of

the capability to report an emergency or summon assistance from ransit stations, modal transfer facilities, rest stops and picnic areas, avel information areas, and emergency pull off areas. This package tiation of an alarm and presentation of the returned alarm adcast message to advise or warn the travelertraveller.

US_V6 Name	US_V6 Description	C_V2 Name	
Roadside Electronic Screening	This equipment package provides two-way communication with approaching properly equipped commercial vehicles at mainline speeds, reading tags for automated vehicle identification and credential checking. This equipment package processes the data from the commercial vehicles along with accessed database information to determine whether a pull-in message is needed or to generate random pull-in messages with provisions for facility operators and enforcement officials to have manual override capabilities.	Roadside Electronic Screening	This equipment package provides tw commercial vehicles at mainline spee checking. This equipment package pr database information to determine w messages with provisions for facility capabilities.
Roadside HAZMAT Detection	This equipment package detects and identifies commercial vehicles carrying security sensitive hazardous materials. It assesses the likelihood of the presence of security sensitive HAZMAT materials based on remote sensed data as well as other physical information acquired about the commercial vehicle. It then determines if any detected HAZMAT is authorized. If unauthorized HAZMAT material is detected, a pull-in message is generated. The equipment package may also issue a message to the Emergency Management (Police Dispatch) function that includes: location of the incident, current location of the commercial vehicle, timestamp, Vehicle ID, Carrier ID, Driver ID, CV Credentials information, HAZMAT material or category detected, and cargo manifest (if known).	Roadside HAZMAT Detection	This equipment package detects and materials. It assesses the likelihood of remote sensed data as well as other p determines if any detected HAZMAT pull-in message is generated. The equi Management (Police Dispatch) funct commercial vehicle, timestamp, Vehi HAZMAT material or category detect
Roadside Lighting System Control	This equipment package includes field equipment that controls lighting systems for transportation facilities and infrastructure. It includes the sensors, lighting controllers, and supporting field equipment that monitors and controls lighting systems. The equipment supports control based on sensed local conditions, stored timing plans, and remote commands from a center. It monitors lighting system status and reports status to the controlling center.	Roadside Lighting System Control	This equipment package includes fiel facilities and infrastructure. It include that monitors and controls lighting sy conditions, stored timing plans, and r status and reports status to the contro
Roadside Safety and Security Inspection	This equipment package supports the roadside safety inspection process. It reads on-board safety data at mainline speeds to rapidly check the vehicle and driver and accesses historical safety data after identifying vehicles at mainline speeds or while stopped at the roadside. The capabilities to process safety data and issue pull-in messages or provide warnings to the driver, carrier, and enforcement agencies are also provided. It includes hand held or automatic devices to rapidly inspect the vehicle and driver. Results of screening and summary safety inspection data are stored and maintained. Since a vehicle may cross jurisdictional boundaries during a trip, this equipment package supports the concept of a last clearance event record carried on the vehicle tag. The last clearance event record reflects the results of the roadside verification action. For example, if the vehicle is pulled over in State A and undergoes credential, weight, and safety checks, the results of the clearance process are written to the vehicle s tag. If the vehicle continues the trip and passes a roadside station in State B, the State B station has access to the results of the previous pull-in because it can read the last clearance event record written by the State A roadside station. This equipment package associates high-risk cargo with the container/chassis, manifest, carrier, vehicle and driver transporting it.	Roadside Safety and Security Inspection	This equipment package supports the mainline speeds to rapidly check the identifying vehicles at mainline speed safety data and issue pull-in message agencies are also provided. It include driver. Results of screening and summer Since a vehicle may cross jurisdiction concept of a last clearance event recorreflects the results of the roadside verses the results of the roadside verses the results of the roadside verses are written to the vehicle stag. If the StateProvince B, the StateProvince B can read the last clearance event recorrect package associates high-risk cargo w transporting it.
Roadside WIM	This equipment package measures commercial vehicle weight at high speeds. It includes both portable and permanent installations and can be used to augment electronic credentials checking or it can be a stand alone package with display.	Roadside WIM	This equipment package measures co and permanent installations and can be stand alone package with display.
Roadway Automated Treatment	This equipment package automatically treats a roadway section based on environmental or atmospheric conditions or under center control. Treatments include fog dispersion, anti-icing chemicals, etc	Roadway Automated Treatment	This equipment package automatical conditions or under <u>centercentre</u> cont
Roadway Automated Vehicle Operations	This equipment package includes the field elements that control access to and egress from an automated highway and monitor and coordinate automated vehicle operations on the facility. It includes the equipment that monitors and controls the automated facility.	Roadway Automated Vehicle Operations	This equipment package includes the highway and monitor and coordinate equipment that monitors and controls
Roadway Basic Surveillance	This equipment package monitors traffic conditions using fixed equipment such as loop detectors and CCTV cameras.	Roadway Basic Surveillance	This equipment package monitors tra CCTV cameras.
Roadway Data Collection	This equipment package collects traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications where data quality and completeness take precedence over real-time performance. This equipment package includes the sensors, supporting roadside infrastructure, and communications equipment that collects and transfers information to a center for archival.	Roadway Data Collection	This equipment package collects traft transportation planning, research, and take precedence over real-time perfor roadside infrastructure, and communi- centercentre for archival.
Roadway Emissions Monitoring	This equipment package monitors emissions and general air quality and communicates the collected information back to the emissions management subsystem where it can be monitored, analyzed, and used. This equipment package supports point monitoring of individual vehicle emissions as well as general monitoring of standard air quality measures.	Roadway Emissions Monitoring	This equipment package monitors en information back to the emissions ma used. This equipment package suppo general monitoring of standard air qu

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two-way communication with approaching properly equipped beeds, reading tags for automated vehicle identification and credential processes the data from the commercial vehicles along with accessed whether a pull-in message is needed or to generate random pull-in ty operators and enforcement officials to have manual override

d identifies commercial vehicles carrying security sensitive hazardous of the presence of security sensitive HAZMAT materials based on physical information acquired about the commercial vehicle. It then AT is authorized. If unauthorized HAZMAT material is detected, a equipment package may also issue a message to the Emergency action that includes: location of the incident, current location of the ehicle ID, Carrier ID, Driver ID, CV Credentials information, tected, and cargo manifest (if known).

Tield equipment that controls lighting systems for transportation ades the sensors, lighting controllers, and supporting field equipment systems. The equipment supports control based on sensed local d remote commands from a <u>centercentre</u>. It monitors lighting system trolling <u>centercentre</u>.

he roadside safety inspection process. It reads on-board safety data at ne vehicle and driver and accesses historical safety data after eeds or while stopped at the roadside. The capabilities to process ges or provide warnings to the driver, carrier, and enforcement des hand held or automatic devices to rapidly inspect the vehicle and mmary safety inspection data are stored and maintained.

ional boundaries during a trip, this equipment package supports the cord carried on the vehicle tag. The last clearance event record verification action. For example, if the vehicle is pulled over in edential, weight, and safety checks, the results of the clearance process he vehicle continues the trip and passes a roadside station in B station has access to the results of the previous pull-in because it cord written by the <u>StateProvince</u> A roadside station. This equipment with the container/chassis, manifest, carrier, vehicle and driver

commercial vehicle weight at high speeds. It includes both portable n be used to augment electronic credentials checking or it can be a

ally treats a roadway section based on environmental or atmospheric ontrol. Treatments include fog dispersion, anti-icing chemicals, etc

he field elements that control access to and egress from an automated te automated vehicle operations on the facility. It includes the ols the automated facility.

traffic conditions using fixed equipment such as loop detectors and

affic, road, and environmental conditions information for use in and other off-line applications where data quality and completeness formance. This equipment package includes the sensors, supporting unications equipment that collects and transfers information to a

emissions and general air quality and communicates the collected management subsystem where it can be monitored, analyzed, and ports point monitoring of individual vehicle emissions as well as quality measures.

US_V6 Name	US_V6 Description	C_V2 Name	
Roadway Environmental Monitoring	This equipment package measures environmental conditions and communicates the collected information back to a center where it can be monitored and analyzed. A broad array of general weather and road surface information may be collected. Weather conditions that may be measured include temperature, wind, humidity, precipitation, and visibility. Surface and sub-surface sensors can measure road surface temperature, moisture, icing, salinity, and other measures.	Roadway Environmental Monitoring	This equipment package measures er information back to a <u>centercentre</u> we weather and road surface information include temperature, wind, humidity, measure road surface temperature, m
Roadway Equipment Coordination	This equipment package supports direct communications between field equipment. It includes field elements that control and send data to other field elements. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., direct coordination between traffic controllers that are controlling adjacent intersections.).	Roadway Equipment Coordination	This equipment package supports dir elements that control and send data to sensors and field devices (e.g., Dynas themselves (e.g., direct coordination intersections.).
Roadway Field Device Monitoring	This equipment package monitors the operational status of field devices and detects and reports fault conditions. Consolidated operational status (device status, configuration, and fault information) are reported to the Maintenance and Construction Management Subsystem for resolution and repair. A local interface is provided to field personnel for local monitoring and diagnostics, supporting field maintenance, repair, and replacement of field devices.	Roadway Field Device Monitoring	This equipment package monitors the conditions. Consolidated operational reported to the Maintenance and Con interface is provided to field personn maintenance, repair, and replacement
Roadway Freeway Control	This equipment package includes the field equipment used to control traffic on freeways including ramp meters, interchange connector meters, mainline meters, and lane control signals.	Roadway Freeway Control	This equipment package includes the meters, interchange connector meters
Roadway HOV Control	This equipment package monitors and controls high occupancy vehicle (HOV) and high occupancy toll (HOT) lanes. It includes traffic sensors that monitor HOV lane usage and display equipment such as lane control signals that provide lane status to drivers.	Roadway HOV Control	This equipment package monitors an (HOT) lanes. It includes traffic senso control signals that provide lane statu
Roadway Incident Detection	This equipment package provides incident detection using traffic detectors and surveillance equipment. It monitors for unusual traffic conditions that may indicate an incident or processes surveillance images, watching for potential incidents. This equipment package provides potential incident information as well as traffic flow and images to the center for processing and presentation to traffic operations personnel.	Roadway Incident Detection	This equipment package provides inc It monitors for unusual traffic conditive watching for potential incidents. This as traffic flow and images to the cent personnel.
Roadway Infrastructure Monitoring	This equipment package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts). It includes sensors that monitor the infrastructure and the communications necessary to report this data to a center or vehicle-based maintenance system.	Roadway Infrastructure Monitoring	This equipment package monitors the other transportation-related infrastruct infrastructure and the communication maintenance system.
Roadway Intersection Safety Warning	This equipment package includes field elements that monitor vehicles approaching and occupying an intersection and warns drivers when hazardous conditions are detected. It detects impending red-light or stop sign violations and potential conflicts between vehicles occupying and approaching an intersection. When a potentially hazardous condition is detected, a warning is communicated to the approaching vehicles using short range communications or signs/signals in the intersection. For signalized intersections, an interface to the signal controller allows this equipment package to monitor signal status and possibly change or extend the signal phase to reduce the risk of a collision. This equipment package is defined to support a range of implementation options including initial implementations that rely on sensors and intelligence embedded in the intersection to increase safety of a general vehicle population through implementations that communicate with and supplement a vehicle population that is equipped with vehicle-based sensors and short range communications that enable the vehicles to detect and warn their own drivers of hazardous situations.	Roadway Intersection Safety Warning	This equipment package includes field intersection and warns drivers when a stop sign violations and potential com When a potentially hazardous conditive vehicles using short range communication intersections, an interface to the sign and possibly change or extend the sign is defined to support a range of implete sensors and intelligence embedded in through implementations that commu- with vehicle-based sensors and short their own drivers of hazardous situation
Roadway Probe Data Communications	This equipment package collects probe data from passing vehicles that are equipped with a short range communications device. The probe data collected by this equipment package may include link travel times, average speeds, road conditions, and any other data that can be measured and communicated by passing vehicles. This equipment package consists of field equipment that communicates with passing vehicles using short range communications, collects the provided information, and sends the collected information back to a center for processing and distribution.	Roadway Probe Data Communications	This equipment package collects pro- communications device. The probe d times, average speeds, road condition passing vehicles. This equipment pac- vehicles using short range communic information back to a <u>centercentre</u> for
Roadway Reversible Lanes	This equipment package includes field elements that monitor and control reversible lane facilities. It includes the traffic sensors, surveillance equipment, lane control signals, physical lane access controls, and other field elements that manage traffic on these facilities. It provides current reversible lane facility status information and accepts requests and control commands from the controlling center.	Roadway Reversible Lanes	This equipment package includes field includes the traffic sensors, surveillar and other field elements that manage status information and accepts request

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environmental conditions and communicates the collected where it can be monitored and analyzed. A broad array of general on may be collected. Weather conditions that may be measured ty, precipitation, and visibility. Surface and sub-surface sensors can moisture, icing, salinity, and other measures.

direct communications between field equipment. It includes field a to other field elements. This includes coordination between remote namic Message Signs) and coordination between the field devices on between traffic controllers that are controlling adjacent

the operational status of field devices and detects and reports fault al status (device status, configuration, and fault information) are onstruction Management Subsystem for resolution and repair. A local nnel for local monitoring and diagnostics, supporting field ent of field devices.

he field equipment used to control traffic on freeways including ramp ers, mainline meters, and lane control signals.

and controls high occupancy vehicle (HOV) and high occupancy toll sors that monitor HOV lane usage and display equipment such as lane atus to drivers.

ncident detection using traffic detectors and surveillance equipment. litions that may indicate an incident or processes surveillance images, his equipment package provides potential incident information as well <u>entercentre</u> for processing and presentation to traffic operations

the condition of pavement, bridges, tunnels, associated hardware, and ructure (e.g., culverts). It includes sensors that monitor the ions necessary to report this data to a <u>centercentre</u> or vehicle-based

Tield elements that monitor vehicles approaching and occupying an n hazardous conditions are detected. It detects impending red-light or onflicts between vehicles occupying and approaching an intersection. lition is detected, a warning is communicated to the approaching nications or signs/signals in the intersection. For signalized gnal controller allows this equipment package to monitor signal status signal phase to reduce the risk of a collision. This equipment package plementation options including initial implementations that rely on in the intersection to increase safety of a general vehicle population municate with and supplement a vehicle population that is equipped ort range communications that enable the vehicles to detect and warn ations.

robe data from passing vehicles that are equipped with a short range e data collected by this equipment package may include link travel ons, and any other data that can be measured and communicated by package consists of field equipment that communicates with passing nications, collects the provided information, and sends the collected for processing and distribution.

ield elements that monitor and control reversible lane facilities. It lance equipment, lane control signals, physical lane access controls, ge traffic on these facilities. It provides current reversible lane facility lests and control commands from the controlling <u>centercentre</u>.

US_V6 Name	US_V6 Description	C_V2 Name	
Roadway Safety Warning System	This equipment package monitors for potential safety hazards including wrong way drivers, debris on the road, and adverse road conditions (e.g., standing water, icy conditions) and warns approaching vehicles of potential hazards. This equipment package collects information from passing vehicles and roadside sensors and surveillance equipment, processes this information to identify potential hazards, and provides warnings to passing vehicles using field-vehicle communications.	Roadway Safety Warning System	This equipment package monitors for road, and adverse road conditions (e., of potential hazards. This equipment sensors and surveillance equipment, p provides warnings to passing vehicles
Roadway Short Range Traveler Information Communications	This equipment package includes field elements that distribute information to vehicles for in-vehicle display. The information may be provided by a center (e.g., variable information on traffic and road conditions in the vicinity of the field equipment) or it may be determined and output locally (e.g., static sign information and current indicator state information). This equipment package includes the interface to the center or field equipment that controls the information distribution and the short range communications equipment that provides information to passing vehicles.	Roadway Short Range <u>TravelerTraveller</u> Information Communications	This equipment package includes fiel display. The information may be prov road conditions in the vicinity of the static sign information and current in interface to the <u>centercentre</u> or field e range communications equipment that
Roadway Signal Controls	This equipment package includes the field elements that monitor and control signalized intersections. It includes the traffic signal controllers, signal heads, detectors, and other ancillary equipment that supports traffic signal control. It also includes field masters, and equipment that supports communications with a central monitoring and/or control system, as applicable. The communications link supports upload and download of signal timings and other parameters and reporting of current intersection status. This equipment package represents the field equipment used in all levels of traffic signal control from basic actuated systems that operate on fixed timing plans through adaptive systems. It also supports all signalized intersection configurations, including those that accommodate pedestrians.	Roadway Signal Controls	This equipment package includes the includes the traffic signal controllers, traffic signal control. It also includes central monitoring and/or control sys download of signal timings and other equipment package represents the fie actuated systems that operate on fixed signalized intersection configurations
Roadway Signal Priority	This equipment package includes the field elements that receive signal priority and/or signal preemption requests from vehicles approaching a signalized intersection and controls traffic signals accordingly. Depending on the type of request and implementation, this equipment package may override (preempt) current signal timing or delay phase transition. In signal priority systems, the request for priority may or may not be granted, based on the overall traffic situation at the intersection.	Roadway Signal Priority	This equipment package includes the requests from vehicles approaching a Depending on the type of request and current signal timing or delay phase t may not be granted, based on the ove
Roadway Speed Monitoring	This equipment package includes the field elements that monitor vehicle speeds. If the speed is determined to be excessive, then roadside equipment can suggest a safe driving speed. Environmental conditions may be monitored and factored into the safe speed advisories that are provided to the motorist. The operational status (state of the device, configuration, and fault data) is provided to the center. This equipment package can also provide an enforcement function, reporting speed violations to an enforcement agency.	Roadway Speed Monitoring	This equipment package includes the determined to be excessive, then road conditions may be monitored and fac motorist. The operational status (state centercentre. This equipment package violations to an enforcement agency.
Roadway Traffic Information Dissemination	This equipment package includes field elements that provides information to drivers, including dynamic message signs and highway advisory radio.	Roadway Traffic Information Dissemination	This equipment package includes fiel message signs and highway advisory
Roadway Work Zone Safety	This equipment package includes field elements that detect vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone.	Roadway Work Zone Safety	This equipment package includes fiel crew workers and drivers of imminen- crew can be warned of movement be
Roadway Work Zone Traffic Control	This equipment package controls traffic in areas of the roadway where maintenance and construction activities are underway, monitoring and controlling traffic using field equipment such as CCTV cameras, dynamic messages signs, and gates/barriers. Work zone speeds and delays are provided to the motorist prior to the work zones.	Roadway Work Zone Traffic Control	This equipment package controls traf activities are underway, monitoring a dynamic messages signs, and gates/b prior to the work zones.
Safeguard System Management	This equipment package remotely monitors and controls safeguard systems for transportation facilities and infrastructure. Safeguard systems include blast shielding, exhaust systems and other automatic or remotely controlled systems intended to mitigate the impact of an incident. When access to a transportation facility is impacted by the activation of a safeguard system, travelers and appropriate subsystems are notified.	Safeguard System Management	This equipment package remotely mo and infrastructure. Safeguard systems remotely controlled systems intended transportation facility is impacted by appropriate subsystems are notified.
Service Patrol Management	This equipment package supports dispatch and communication with roadway service patrol vehicles that monitor roads to aid motorists, offering rapid response to minor incidents.	Service Patrol Management	This equipment package supports dis monitor roads to aid motorists, offerin

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for potential safety hazards including wrong way drivers, debris on the (e.g., standing water, icy conditions) and warns approaching vehicles nt package collects information from passing vehicles and roadside t, processes this information to identify potential hazards, and eles using field-vehicle communications.

ield elements that distribute information to vehicles for in-vehicle rovided by a <u>centercentre</u> (e.g., variable information on traffic and ne field equipment) or it may be determined and output locally (e.g., indicator state information). This equipment package includes the d equipment that controls the information distribution and the short that provides information to passing vehicles.

he field elements that monitor and control signalized intersections. It rs, signal heads, detectors, and other ancillary equipment that supports es field masters, and equipment that supports communications with a ystem, as applicable. The communications link supports upload and her parameters and reporting of current intersection status. This field equipment used in all levels of traffic signal control from basic xed timing plans through adaptive systems. It also supports all ons, including those that accommodate pedestrians.

he field elements that receive signal priority and/or signal preemption g a signalized intersection and controls traffic signals accordingly. and implementation, this equipment package may override (preempt) e transition. In signal priority systems, the request for priority may or verall traffic situation at the intersection.

he field elements that monitor vehicle speeds. If the speed is badside equipment can suggest a safe driving speed. Environmental factored into the safe speed advisories that are provided to the ate of the device, configuration, and fault data) is provided to the age can also provide an enforcement function, reporting speed by.

ield elements that provides information to drivers, including dynamic ry radio.

ield elements that detect vehicle intrusions in work zones and warns nent encroachment. Crew movements are also monitored so that the beyond the designated safe zone.

raffic in areas of the roadway where maintenance and construction g and controlling traffic using field equipment such as CCTV cameras, /barriers. Work zone speeds and delays are provided to the motorist

monitors and controls safeguard systems for transportation facilities ms include blast shielding, exhaust systems and other automatic or led to mitigate the impact of an incident. When access to a by the activation of a safeguard system, travelerstravellers and

lispatch and communication with roadway service patrol vehicles that ering rapid response to minor incidents.

US_V6 Name	US_V6 Description	C_V2 Name	
Standard Rail Crossing	This equipment package manages highway traffic at highway-rail intersections (HRIs) where operational requirements do not dictate advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Either passive (e.g., the crossbuck sign) or active warning systems (e.g., flashing lights and gates) are supported depending on the specific requirements for each intersection. These traditional HRI warning systems may also be augmented with other standard traffic management devices. The warning systems are activated on notification of an approaching train by interfaced wayside equipment. The equipment at the HRI may also be interconnected with adjacent signalized intersections so that local control can be adapted to highway-rail intersection activities. Health monitoring of the HRI equipment and interfaces is performed; detected abnormalities are reported through interfaces to the wayside interface equipment and the traffic management subsystem.	Standard Rail Crossing	This equipment package manages hig requirements do not dictate advanced per hour). Either passive (e.g., the cro gates) are supported depending on the warning systems may also be augmen systems are activated on notification equipment at the HRI may also be int control can be adapted to highway-ra and interfaces is performed; detected interface equipment and the traffic m
TMC Automated Vehicle Operations	This equipment package remotely monitors and controls an automated highway facility. It monitors automated highway system operation and provides use and control parameters that control system operation. It could be used to monitor and control any automated facility with properly equipped vehicles, including applications that automate vehicle control in work zones.	TMC Automated Vehicle Operations	This equipment package remotely me automated highway system operation operation. It could be used to monitor vehicles, including applications that a
TMC Demand Management Coordination	This equipment package provides the capability to gather information on regional toll, parking, and transit usage and request changes to pricing and other mechanisms to manage overall transportation demand.	TMC Demand Management Coordination	This equipment package provides the transit usage and request changes to p demand.
TMC Environmental Monitoring	This equipment package assimilates current and forecast road conditions and surface weather information using a combination of weather service provider information, information collected by other centers such as the Maintenance and Construction Management Subsystem, and data collected from environmental sensors deployed on and about the roadway. The collected environmental information is monitored and presented to the operator. This information can be used to issue general traveler advisories and support location specific warnings to drivers. Other equipment packages process the collected information and provide decision support.	TMC Environmental Monitoring	This equipment package assimilates of information using a combination of w centerscentres such as the Maintenan- from environmental sensors deployed information is monitored and present travelertraveller advisories and suppor process the collected information and
TMC Evacuation Support	This equipment package supports development, coordination, and execution of special traffic management strategies during evacuation and subsequent reentry of a population in the vicinity of a disaster or major emergency. A traffic management strategy is developed based on anticipated demand, the capacity of the road network including access to and from the evacuation routes, and existing and forecast conditions. The strategy supports efficient evacuation and also protects and optimizes movement of response vehicles and other resources that are responding to the emergency. This equipment package coordinates the evacuation with the Traffic Management Subsystem (representing centers in other affected jurisdictions) and the Emergency Management Subsystem.	TMC Evacuation Support	This equipment package supports dev management strategies during evacua disaster or major emergency. A traffic the capacity of the road network inclu forecast conditions. The strategy supp of response vehicles and other resour coordinates the evacuation with the T affected jurisdictions) and the Emerge
TMC Freeway Management	This equipment package provides center monitoring and control of freeway traffic control systems including ramp control, interchange control, and mainline lane control systems. Approaches covered include ramp metering, interchange connector metering, overhead lane control signals, freeway mainline metering, and variable speed control systems.	TMC Freeway Management	This equipment package provides cer including ramp control, interchange c include ramp metering, interchange c metering, and variable speed control
TMC HOV Lane Management	This equipment package provides center monitoring and control of HOV lanes. It coordinates freeway ramp meters and connector signals with HOV lane usage signals to provide preferential treatment to HOV lanes. In advanced implementations, it automatically detects HOV violators.	TMC HOV Lane Management	This equipment package provides eer freeway ramp meters and connector s treatment to HOV lanes. In advanced
TMC Incident Detection	This equipment package identifies and reports incidents to Traffic Operations Personnel. It remotely monitors and controls traffic sensor and surveillance systems that support incident detection and verification. It analyzes and reduces the collected sensor and surveillance data, external alerting and advisory and incident reporting systems, anticipated demand information from intermodal freight depots, border crossings, special event information, and identifies and reports incidents and hazardous conditions	TMC Incident Detection	This equipment package identifies an monitors and controls traffic sensor a verification. It analyzes and reduces t advisory and incident reporting system border crossings, special event inform conditions
TMC Incident Dispatch Coordination/Communication	This equipment package formulates and manages an incident response that takes into account the incident potential, incident impacts, and resources required for incident management. It supports dispatch of emergency response and service vehicles as well as coordination with other cooperating agencies. It provides access to traffic management resources that provide surveillance of the incident, traffic control in the surrounding area, and support for the incident response. It monitors the incident response and collects performance measures such as incident response and clearance times.	TMC Incident Dispatch Coordination/Communication	This equipment package formulates a incident potential, incident impacts, a dispatch of emergency response and s agencies. It provides access to traffic traffic control in the surrounding area response and collects performance ma

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highway traffic at highway-rail intersections (HRIs) where operational ed features (e.g., where rail operational speeds are less than 80 miles crossbuck sign) or active warning systems (e.g., flashing lights and the specific requirements for each intersection. These traditional HRI nented with other standard traffic management devices. The warning on of an approaching train by interfaced wayside equipment. The interconnected with adjacent signalized intersections so that local -rail intersection activities. Health monitoring of the HRI equipment ed abnormalities are reported through interfaces to the wayside management subsystem.

monitors and controls an automated highway facility. It monitors on and provides use and control parameters that control system tor and control any automated facility with properly equipped at automate vehicle control in work zones.

he capability to gather information on regional toll, parking, and o pricing and other mechanisms to manage overall transportation

es current and forecast road conditions and surface weather f weather service provider information, information collected by other ance and Construction Management Subsystem, and data collected yed on and about the roadway. The collected environmental ented to the operator. This information can be used to issue general oport location specific warnings to drivers. Other equipment packages and provide decision support.

development, coordination, and execution of special traffic suation and subsequent reentry of a population in the vicinity of a ffic management strategy is developed based on anticipated demand, cluding access to and from the evacuation routes, and existing and apports efficient evacuation and also protects and optimizes movement burces that are responding to the emergency. This equipment package e Traffic Management Subsystem (representing <u>centerscentres</u> in other regency Management Subsystem.

centercentre monitoring and control of freeway traffic control systems e control, and mainline lane control systems. Approaches covered e connector metering, overhead lane control signals, freeway mainline ol systems.

center<u>centre</u> monitoring and control of HOV lanes. It coordinates r signals with HOV lane usage signals to provide preferential ed implementations, it automatically detects HOV violators.

and reports incidents to Traffic Operations Personnel. It remotely r and surveillance systems that support incident detection and es the collected sensor and surveillance data, external alerting and stems, anticipated demand information from intermodal freight depots, prmation, and identifies and reports incidents and hazardous

s and manages an incident response that takes into account the s, and resources required for incident management. It supports d service vehicles as well as coordination with other cooperating fic management resources that provide surveillance of the incident, rea, and support for the incident response. It monitors the incident measures such as incident response and clearance times.

US_V6 Name	US_V6 Description	C_V2 Name	
TMC In-Vehicle Signing Management	This equipment package controls and monitors field equipment that supports in-vehicle signing. Sign information that may include static regulatory, service, and directional sign information as well as variable information such as traffic and road conditions can be provided to the field equipment, which uses short range communications to send the information to in-vehicle equipment. Information that is currently being communicated to passing vehicles and the operational status of the field equipment is monitored by this equipment package. The operational status of the field equipment is reported to operations personnel.	TMC In-Vehicle Signing Management	This equipment package controls and information that may include static re- variable information such as traffic a uses short range communications to s currently being communicated to pas monitored by this equipment package operations personnel.
TMC Lighting System Control	This equipment package provides the capability for traffic managers to monitor and manage the electrical lighting systems along the roadside. This capability includes implementing control plans for lighting systems that may be activated by time-of-day plans or by activating changes to the lighting based on traffic or incidents.	TMC Lighting System Control	This equipment package provides the electrical lighting systems along the lighting systems that may be activate based on traffic or incidents.
TMC Multimodal Coordination	This equipment package supports center-to-center coordination between the Traffic Management and Transit Management Subsystems. It monitors transit operations and provides traffic signal priority for transit vehicles on request from the Transit Management Subsystem.	TMC Multimodal Coordination	This equipment package supports cer Management and Transit Management signal priority for transit vehicles on
TMC Multimodal Crossing Management	This equipment package remotely monitors and manages multimodal crossings, including draw bridges and other crossings between highway traffic and other modes. Equipment controlled includes warning lights, gates, dynamic message signs, and other systems that provide driver information and control traffic at multimodal crossings. Railroad grade crossings are covered by the HRI Traffic Management equipment package.	TMC Multimodal Crossing Management	This equipment package remotely mo and other crossings between highway lights, gates, dynamic message signs, traffic at multimodal crossings. Railre equipment package.
TMC Probe Information Collection	This equipment package collects, assimilates, and disseminates vehicle probe data collected from roadside short range communications equipment and centers controlling transit vehicles, toll collection points, and route-guided vehicles. It estimates traffic and road conditions based on the aggregated probe data and disseminates this information to other centers.	TMC Probe Information Collection	This equipment package collects, ass roadside short range communications collection points, and route-guided ve aggregated probe data and disseminat
TMC Regional Traffic Management	This equipment package supports coordination between traffic management centers in order to share traffic information between centers as well as control of traffic management field equipment. This coordination supports wide area optimization and regional coordination that spans jurisdictional boundaries; for example, coordinated signal control in a metropolitan area or coordination between freeway operations and arterial signal control within a corridor.	TMC Regional Traffic Management	This equipment package supports coor share traffic information between cer- equipment. This coordination suppor jurisdictional boundaries; for exampl between freeway operations and arter
TMC Reversible Lane Management	This equipment package remotely monitors and controls reversible lanes. It provides an interface to reversible lane field equipment (traffic sensors, surveillance equipment, lane control signals, physical lane access controls, etc.) and to traffic operations personnel to support central monitoring and control of these facilities.	TMC Reversible Lane Management	This equipment package remotely more reversible lane field equipment (traffillane access controls, etc.) and to traffit these facilities.
TMC Signal Control	This equipment package provides the capability for traffic managers to monitor and manage the traffic flow at signalized intersections. This capability includes analyzing and reducing the collected data from traffic surveillance equipment and developing and implementing control plans for signalized intersections. Control plans may be developed and implemented that coordinate signals at many intersections under the domain of a single traffic management subsystem and are responsive to traffic conditions and adapt to support incidents, preemption and priority requests, pedestrian crossing calls, etc.	TMC Signal Control	This equipment package provides the flow at signalized intersections. This traffic surveillance equipment and de intersections. Control plans may be d intersections under the domain of a si conditions and adapt to support incid
TMC Speed Monitoring	This equipment package remotely monitors and controls speed monitoring and speed warning systems. It remotely monitors vehicle speeds and presents this information to traffic operations personnel. It configures and controls the speed monitoring and warning equipment that provides safe speed advisories to the motorist. This equipment package can also notify an enforcement agency if excessive speeds are identified.	TMC Speed Monitoring	This equipment package remotely more remotely monitors vehicle speeds and configures and controls the speed mo to the motorist. This equipment packa- identified.
TMC Traffic Information Dissemination	This equipment package disseminates traffic and road conditions, closure and detour information, incident information, driver advisories, and other traffic-related data to other centers, the media, and driver information systems. It monitors and controls driver information system field equipment including dynamic message signs and highway advisory radio, managing dissemination of driver information through these systems.	TMC Traffic Information Dissemination	This equipment package disseminates incident information, driver advisories and driver information systems. It mo including dynamic message signs and information through these systems.

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nd monitors field equipment that supports in-vehicle signing. Sign regulatory, service, and directional sign information as well as and road conditions can be provided to the field equipment, which o send the information to in-vehicle equipment. Information that is assing vehicles and the operational status of the field equipment is age. The operational status of the field equipment is

the capability for traffic managers to monitor and manage the e roadside. This capability includes implementing control plans for the by time-of-day plans or by activating changes to the lighting

center<u>centre</u>-to-<u>centercentre</u> coordination between the Traffic ment Subsystems. It monitors transit operations and provides traffic on request from the Transit Management Subsystem.

monitors and manages multimodal crossings, including draw bridges vay traffic and other modes. Equipment controlled includes warning ns, and other systems that provide driver information and control ilroad grade crossings are covered by the HRI Traffic Management

assimilates, and disseminates vehicle probe data collected from ons equipment and <u>centerscentres</u> controlling transit vehicles, toll vehicles. It estimates traffic and road conditions based on the nates this information to other <u>centerscentres</u>.

coordination between traffic management <u>centerscentres</u> in order to <u>centerscentres</u> as well as control of traffic management field orts wide area optimization and regional coordination that spans ple, coordinated signal control in a metropolitan area or coordination terial signal control within a corridor.

monitors and controls reversible lanes. It provides an interface to iffic sensors, surveillance equipment, lane control signals, physical affic operations personnel to support central monitoring and control of

the capability for traffic managers to monitor and manage the traffic is capability includes analyzing and reducing the collected data from developing and implementing control plans for signalized e developed and implemented that coordinate signals at many a single traffic management subsystem and are responsive to traffic cidents, preemption and priority requests, pedestrian crossing calls, etc.

monitors and controls speed monitoring and speed warning systems. It and presents this information to traffic operations personnel. It nonitoring and warning equipment that provides safe speed advisories ckage can also notify an enforcement agency if excessive speeds are

tes traffic and road conditions, closure and detour information, ries, and other traffic-related data to other <u>centerscentres</u>, the media, monitors and controls driver information system field equipment and highway advisory radio, managing dissemination of driver

US_V6 Name	US_V6 Description	C_V2 Name	
TMC Traffic Management Decision Support	This equipment package recommends courses of action to the traffic operator based on current and forecast road and traffic conditions. Traffic incidents, special events, maintenance activities and other events or conditions that impact capacity or demand are monitored. Historical data and models are used to compare the impact of potential courses of action and make recommendations to the operator. Decisions are supported through presentation of filtered and fused network-wide road and traffic conditions that identify network imbalances and recommended courses of action. The recommended actions may include predefined incident response plans, signal timing plan changes, DMS/HAR messages, and freeway control strategies including ramp metering, interchange control, and lane controls. Multimodal strategies may also be recommended that include suggested transit strategies and suggested route and mode choices for travelers. Once a course of action is selected, other equipment packages implement these actions within the traffic management center and coordinate the response with other centers in the region.	TMC Traffic Management Decision Support	This equipment package recommend forecast road and traffic conditions. T events or conditions that impact capa to compare the impact of potential co Decisions are supported through press conditions that identify network imba actions may include predefined incid messages, and freeway control strate controls. Multimodal strategies may suggested route and mode choices fo equipment packages implement these the response with other <u>centerscentre</u>
TMC Traffic Network Performance Evaluation	This equipment package measures traffic network performance and predicts travel demand patterns to support traffic flow optimization, demand management, and incident management. This equipment package collects traffic data from sensors and surveillance equipment as well as input from other traffic management centers, emissions management, transit operations, and event promoters and uses this information to measure traffic network performance. It collects route planning information from information service providers and integrates and uses this information to predict future traffic conditions. The planned control strategies can be passed back to the Information Service Provider so that the intended strategies can be reflected in future route planning.	TMC Traffic Network Performance Evaluation	This equipment package measures tra- support traffic flow optimization, der package collects traffic data from ser management <u>centerscentres</u> , emission this information to measure traffic ne information service providers and int The planned control strategies can be intended strategies can be reflected in
TMC Transportation Operations Data Collection	This equipment package collects real-time information on the state of the regional transportation system for operational use by the center. It includes communication and data processing capabilities that provide real-time access to regional transportation information that is stored in a regional repository. This equipment package establishes communications with the repository, requests or subscribes to information relevant to the center, receives and processes the information, and then distributes the information to other equipment packages and the system operator for use. Although request and subscription flows are not explicitly included in the National ITS Architecture, interactive data services are supported by this equipment package.	TMC Transportation Operations Data Collection	This equipment package collects real for operational use by the <u>centercentr</u> provide real-time access to regional t This equipment package establishes of information relevant to the <u>centercent</u> information to other equipment packa subscription flows are not explicitly in data services are supported by this equipment
TMC Work Zone Traffic Management	This equipment package coordinates work plans with maintenance systems so that work zones are established that have minimum traffic impact. Traffic control strategies are implemented to further mitigate traffic impacts associated with work zones that are established, providing work zone information on driver information systems such as dynamic message signs.	TMC Work Zone Traffic Management	This equipment package coordinates established that have minimum traffi mitigate traffic impacts associated w information on driver information sy
Toll Administration	This equipment package provides administration and management of an electronic toll collection system. It provides the back office functions that support enrollment, pricing, payment reconciliation with financial institutions, and violation notification to enforcement agencies. It also supports dynamic pricing to support demand management. Secure communications with the financial infrastructure and distributed toll plazas support electronic payments and other ancillary requirements such as lost/stolen tag identification and management.	Toll Administration	This equipment package provides and It provides the back office functions of financial institutions, and violation ne pricing to support demand management distributed toll plazas support electro tag identification and management.
Toll Data Collection	This equipment package collects and stores toll information that is collected in the course of toll operations performed by the Toll Administration Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	Toll Data Collection	This equipment package collects and operations performed by the Toll Ad operations personnel or it can be mad
Toll Operator Alert	This equipment package provides wide-area alerts (safety/security broadcasts, child abductions, etc.) to toll operators. It provides the capability to monitor for active alerts and presents these alerts to administrative staff (the "Toll Administrator") and forwards these alerts to toll operators at the toll plazas/toll collection facilities. The Toll Administrator determines which alerts should be forwarded to toll operators and can inject alerts that are identified through other means.	Toll Operator Alert	This equipment package provides with toll operators. It provides the capability administrative staff (the "Toll Admini- plazas/toll collection facilities. The T toll operators and can inject alerts that
Toll Plaza Toll Collection	This equipment package provides toll plazas the capability to identify properly equipped vehicles, collect electronic tolls, and provide a positive indication to the driver that a toll was collected. Violators are identified and images are collected. Toll transactions are stored and reported to the Toll Administration Subsystem.	Toll Plaza Toll Collection	This equipment package provides tol electronic tolls, and provide a positiv identified and images are collected. T Subsystem.
Traffic and Roadside Data Archival	This equipment package collects and archives traffic, roadway, and environmental information for use in off-line planning, research, and analysis. The equipment package controls and collects information directly from equipment at the roadside, reflecting the deployment of traffic detectors that are used primarily for traffic monitoring and planning purposes rather than for traffic management.	Traffic and Roadside Data Archival	This equipment package collects and off-line planning, research, and analy directly from equipment at the roadsi primarily for traffic monitoring and p

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nds courses of action to the traffic operator based on current and . Traffic incidents, special events, maintenance activities and other pacity or demand are monitored. Historical data and models are used courses of action and make recommendations to the operator. resentation of filtered and fused network-wide road and traffic abalances and recommended courses of action. The recommended ident response plans, signal timing plan changes, DMS/HAR tegies including ramp metering, interchange control, and lane y also be recommended that include suggested transit strategies and for travelerstravellers. Once a course of action is selected, other ese actions within the traffic management <u>centercentre</u> and coordinate tress in the region.

traffic network performance and predicts travel demand patterns to lemand management, and incident management. This equipment sensors and surveillance equipment as well as input from other traffic ions management, transit operations, and event promoters and uses network performance. It collects route planning information from integrates and uses this information to predict future traffic conditions. be passed back to the Information Service Provider so that the l in future route planning.

eal-time information on the state of the regional transportation system <u>ntre</u>. It includes communication and data processing capabilities that l transportation information that is stored in a regional repository. s communications with the repository, requests or subscribes to <u>entre</u>, receives and processes the information, and then distributes the ckages and the system operator for use. Although request and y included in the <u>National</u>-ITS Architecture<u>for Canada</u>, interactive equipment package.

es work plans with maintenance systems so that work zones are ffic impact. Traffic control strategies are implemented to further with work zones that are established, providing work zone systems such as dynamic message signs.

administration and management of an electronic toll collection system. It is that support enrollment, pricing, payment reconciliation with notification to enforcement agencies. It also supports dynamic ment. Secure communications with the financial infrastructure and ronic payments and other ancillary requirements such as lost/stolen

nd stores toll information that is collected in the course of toll administration Subsystem. This data can be used directly by hade available to other data users and archives in the region.

wide-area alerts (safety/security broadcasts, child abductions, etc.) to bility to monitor for active alerts and presents these alerts to ninistrator") and forwards these alerts to toll operators at the toll e Toll Administrator determines which alerts should be forwarded to that are identified through other means.

coll plazas the capability to identify properly equipped vehicles, collect tive indication to the driver that a toll was collected. Violators are . Toll transactions are stored and reported to the Toll Administration

nd archives traffic, roadway, and environmental information for use in alysis. The equipment package controls and collects information lside, reflecting the deployment of traffic detectors that are used l planning purposes rather than for traffic management.

US_V6 Name	US_V6 Description	C_V2 Name	
Traffic Data Collection	This equipment package collects and stores traffic information that is collected in the course of traffic operations performed by the Traffic Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	Traffic Data Collection	This equipment package collects and operations performed by the Traffic M operations personnel or it can be mad
Traffic Maintenance	This equipment package monitors the operational status of field equipment and detects failures. It presents field equipment status to Traffic Operations Personnel and reports failures to the Maintenance and Construction Management Subsystem. The equipment package tracks the repair or replacement of the failed equipment. The entire range of ITS field equipment may be monitored by this equipment package including sensors (traffic, infrastructure, environmental, security, speed, etc.) and devices (highway advisory radio, dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, beacons, security surveillance equipment, etc.).	Traffic Maintenance	This equipment package monitors the presents field equipment status to Tra and Construction Management Subsy the failed equipment. The entire rang package including sensors (traffic, int (highway advisory radio, dynamic me safeguard systems, cameras, traffic si surveillance equipment, etc.).
Transit Center Fare Management	This equipment package manages fare collection and passenger load management at the transit center. It provides the back office functions that support transit fare collection, supporting payment reconciliation with links to financial institutions and enforcement agencies for fare violations. It collects data required to determine accurate ridership levels, establish fares, and distribute fare information. This equipment package loads fare data into the vehicle prior to the beginning of normal operations and unloads fare collection data from the vehicle at the close out of normal operations.	Transit <u>CenterCentre</u> Fare Management	This equipment package manages far <u>centercentre</u> . It provides the back offi reconciliation with links to financial i data required to determine accurate ri equipment package loads fare data in unloads fare collection data from the
Transit Center Fixed-Route Operations	This equipment package manages fixed route transit operations. It supports creation of schedules, blocks and runs for fixed and flexible route transit services. The package allows fixed-route and flexible-route transit services to disseminate schedules and automatically updates customer service operator systems with the most current schedule information. This equipment package also supports automated dispatch of transit vehicles. Current vehicle schedule adherence and optimum scenarios for schedule adjustment are also provided. This equipment package also receives and processes transit vehicle loading data.	Transit <u>CenterCentre</u> Fixed- Route Operations	This equipment package manages fix and runs for fixed and flexible route t transit services to disseminate schedu with the most current schedule inform transit vehicles. Current vehicle sched also provided. This equipment package
Transit Center Information Services	This equipment package collects the latest available information for a transit service and makes it available to transit customers and to Information Service Providers for further distribution. Customers are provided information at transit stops and other public transportation areas before they embark and on-board the transit vehicle once they are enroute. Information provided can include the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, yellow pages, and special events. In addition to general service information, tailored information (e.g., itineraries) are provided to individual transit users.	Transit <u>CenterCentre</u> Information Services	This equipment package collects the available to transit customers and to I are provided information at transit sto on-board the transit vehicle once they information on transit routes, schedul incidents, weather conditions, <del>yellow</del> general service information, tailored users.
Transit Center Multi-Modal Coordination	The equipment package supports transit service coordination between transit properties and coordinates with other surface and air transportation modes. As part of service coordination, this equipment package shares schedule and trip information, as well as transit transfer cluster (a collection of stop points, stations, or terminals where transfers can be made conveniently) and transfer point information between Multimodal Transportation Service Providers, Transit Agencies, and ISPs. An interface to Traffic Management also supports demand management strategies.	Transit <u>CenterCentre</u> Multi- Modal Coordination	The equipment package supports tran- with other surface and air transportat shares schedule and trip information, stations, or terminals where transfers Multimodal Transportation Service P Management also supports demand n
Transit Center Paratransit Operations	This equipment package manages demand responsive transit services, including paratransit services. It supports planning and scheduling of these services, allowing paratransit and other demand response transit services to plan efficient routes and better estimate arrival times. This equipment package also supports automated dispatch of paratransit vehicles and tracks passenger pick-ups and drop-offs. Customer service operator systems are updated with the most current schedule information.	Transit <u>CenterCentre</u> Paratransit Operations	This equipment package manages der supports planning and scheduling of t transit services to plan efficient route supports automated dispatch of paratu Customer service operator systems an
Transit Center Passenger Counting	This equipment package receives and processes transit vehicle loading data using two-way communications from equipped transit vehicles.	Transit <u>CenterCentre</u> Passenger Counting	This equipment package receives and communications from equipped trans
Transit Center Security	This equipment package monitors transit vehicle operator or traveler activated alarms received from on- board a transit vehicle. It supports transit vehicle operator authentication and provides the capability to remotely disable a transit vehicle. This equipment package also includes the capability to alert operators and police to potential incidents identified by these security features.	Transit CenterCentre Security	This equipment package monitors tra from on-board a transit vehicle. It sup capability to remotely disable a transi alert operators and police to potential
Transit Center Signal Priority	The equipment package monitors transit schedule performance and generates requests for transit priority on routes and at certain intersections. This equipment package may coordinate with the Traffic Management Subsystem to provide transit priority along the selected route. It also coordinates with the Transit Vehicle Subsystem to monitor and manage local transit signal priority requests at individual intersections.	Transit <u>CenterCentre</u> Signal Priority	The equipment package monitors tran on routes and at certain intersections. Management Subsystem to provide tr Transit Vehicle Subsystem to monito intersections.

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nd stores traffic information that is collected in the course of traffic c Management Subsystem. This data can be used directly by hade available to other data users and archives in the region.

the operational status of field equipment and detects failures. It Traffic Operations Personnel and reports failures to the Maintenance osystem. The equipment package tracks the repair or replacement of nge of ITS field equipment may be monitored by this equipment infrastructure, environmental, security, speed, etc.) and devices message signs, automated roadway treatment systems, barrier and signals and override equipment, ramp meters, beacons, security

fare collection and passenger load management at the transit office functions that support transit fare collection, supporting payment al institutions and enforcement agencies for fare violations. It collects e ridership levels, establish fares, and distribute fare information. This into the vehicle prior to the beginning of normal operations and he vehicle at the close out of normal operations.

fixed route transit operations. It supports creation of schedules, blocks te transit services. The package allows fixed-route and flexible-route dules and automatically updates customer service operator systems ormation. This equipment package also supports automated dispatch of hedule adherence and optimum scenarios for schedule adjustment are kage also receives and processes transit vehicle loading data.

he latest available information for a transit service and makes it o Information Service Providers for further distribution. Customers stops and other public transportation areas before they embark and hey are enroute. Information provided can include the latest available dules, transfer options, fares, real-time schedule adherence, current <u>ow pagesbusiness directory service</u>, and special events. In addition to ed information (e.g., itineraries) are provided to individual transit

ransit service coordination between transit properties and coordinates tation modes. As part of service coordination, this equipment package on, as well as transit transfer cluster (a collection of stop points, ers can be made conveniently) and transfer point information between e Providers, Transit Agencies, and ISPs. An interface to Traffic I management strategies.

demand responsive transit services, including paratransit services. It of these services, allowing paratransit and other demand response ates and better estimate arrival times. This equipment package also ratransit vehicles and tracks passenger pick-ups and drop-offs. are updated with the most current schedule information.

nd processes transit vehicle loading data using two-way unsit vehicles.

transit vehicle operator or travelertraveller activated alarms received supports transit vehicle operator authentication and provides the nsit vehicle. This equipment package also includes the capability to ial incidents identified by these security features.

ransit schedule performance and generates requests for transit priority ns. This equipment package may coordinate with the Traffic e transit priority along the selected route. It also coordinates with the itor and manage local transit signal priority requests at individual

US_V6 Name	US_V6 Description	C_V2 Name	
Transit Center Vehicle Tracking	This equipment package monitors transit vehicle location. The location information is collected via a data communication link between the transit vehicles and the transit center. The location information is presented to the transit operator on a digitized map of the transit service area. The location data may be used to determine real time schedule adherence and update the transit system's schedule in real-time. The real-time schedule information is provided to Information Service Providers and the Transit Center Information Services equipment package, which furnish the information to travelers.	Transit <del>Center<u>Centre</u> Vehicle</del> Tracking	This equipment package monitors trad data communication link between the information is presented to the transit data may be used to determine real ti real-time. The real-time schedule information Sec travelerstravellers.
Transit Data Collection	This equipment package collects and stores transit information that is collected in the course of transit operations performed by the Transit Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	Transit Data Collection	This equipment package collects and operations performed by the Transit operations personnel or it can be made
Transit Environmental Monitoring	This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and forwarded to other agencies to more effectively manage transit operations.	Transit Environmental Monitoring	This equipment package assimilates of information from a variety of sources collected environmental information manage transit operations.
Transit Evacuation Support	This equipment package manages transit resources to support evacuation and subsequent reentry of a population in the vicinity of a disaster or other emergency. It supports coordination of regional evacuation plans, identifying the transit role in a regional evacuation and identifying transit resources that would be used. During an evacuation, this equipment package coordinates the use of transit and school bus fleets, supporting evacuation of those with special needs and the general population. Transit service and fare schedules are adjusted and updated service and fare information is made available through traveler information systems. This equipment package coordinates the functions in other Transit equipment packages to support these requirements.	Transit Evacuation Support	This equipment package manages trapopulation in the vicinity of a disasterevacuation plans, identifying the transit that would be used. During an evacuat school bus fleets, supporting evacuat service and fare schedules are adjuster through travelertraveller information Transit equipment packages to support
Transit Garage Maintenance	This equipment package provides advanced maintenance functions for the transit property. It collects operational and maintenance data from transit vehicles, manages vehicle service histories, and monitors operators and vehicles. It collects vehicle mileage data and uses it to automatically generate preventative maintenance schedules for each vehicle by utilizing vehicle tracking data from a prerequisite vehicle tracking equipment package. In addition, it provides information to proper service personnel to support maintenance activities and records and verifies that maintenance work was performed.	Transit Garage Maintenance	This equipment package provides ad- operational and maintenance data fro operators and vehicles. It collects vel maintenance schedules for each vehic tracking equipment package. In addit maintenance activities and records ar
Transit Transportation Operations Data Collection	This equipment package collects real-time information on the state of the regional transportation system for operational use by the center. It includes communication and data processing capabilities that provide real-time access to regional transportation information that is stored in a regional repository. This equipment package establishes communications with the repository, requests or subscribes to information relevant to the center, receives and processes the information, and then distributes the information to other equipment packages and the system operator for use. Although request and subscription flows are not explicitly included in the National ITS Architecture, interactive data services are supported by this equipment package.	Transit Transportation Operations Data Collection	This equipment package collects real for operational use by the <u>centercentr</u> provide real-time access to regional t This equipment package establishes of information relevant to the <u>centercent</u> information to other equipment packa subscription flows are not explicitly data services are supported by this equipment
Transit Vehicle Assignment	This equipment package assigns individual transit vehicles to vehicle blocks and downloads this information to the transit vehicle. It also provides an exception handling process for the vehicle assignment function to generate new, supplemental vehicle assignments when required by changes during the operating day. It provides an inventory management function for the transit facility which stores functional attributes about each of the vehicles owned by the transit operator. These attributes permit the planning and assignment functions to match vehicles with routes based on suitability for the types of service required by the particular routes.	Transit Vehicle Assignment	This equipment package assigns indi information to the transit vehicle. It a assignment function to generate new during the operating day. It provides stores functional attributes about each permit the planning and assignment f types of service required by the partic
Transit Vehicle Operator Assignment	This equipment package automates and supports the assignment of transit vehicle operators to runs. It assigns operators to runs in a fair manner while minimizing labor and overtime services, considering operator preferences and qualifications, and automatically tracking and validating the number of work hours performed by each individual operator. It also provides an exception handling process for the operator assignment function to generate supplemental operator assignments when required by changes during the operating day.	Transit Vehicle Operator Assignment	This equipment package automates a assigns operators to runs in a fair ma operator preferences and qualification hours performed by each individual of operator assignment function to gene during the operating day.
Traveler Secure Area Sensor Monitoring	This equipment package includes sensors that monitor conditions of secure areas that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). The equipment package monitors areas for environmental threats (e.g., chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), intrusion and motion, and object detection.	Traveler <u>Traveller</u> Secure Area Sensor Monitoring	This equipment package includes ser travelerstravellers (i.e., transit stops, facilities, etc). The equipment packag toxic industrial chemical, biological, object detection.

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transit vehicle location. The location information is collected via a the transit vehicles and the transit <u>centercentre</u>. The location isit operator on a digitized map of the transit service area. The location time schedule adherence and update the transit system's schedule in information is provided to Information Service Providers and the Services equipment package, which furnish the information to

nd stores transit information that is collected in the course of transit it Management Subsystem. This data can be used directly by hade available to other data users and archives in the region.

es current and forecast road conditions and surface weather ces, including both weather service providers and vehicle probes. The on is monitored and forwarded to other agencies to more effectively

transit resources to support evacuation and subsequent reentry of a ster or other emergency. It supports coordination of regional ansit role in a regional evacuation and identifying transit resources cuation, this equipment package coordinates the use of transit and ation of those with special needs and the general population. Transit sted and updated service and fare information is made available on systems. This equipment package coordinates the functions in other port these requirements.

advanced maintenance functions for the transit property. It collects from transit vehicles, manages vehicle service histories, and monitors vehicle mileage data and uses it to automatically generate preventative hicle by utilizing vehicle tracking data from a prerequisite vehicle dition, it provides information to proper service personnel to support and verifies that maintenance work was performed.

eal-time information on the state of the regional transportation system <u>ntre</u>. It includes communication and data processing capabilities that a transportation information that is stored in a regional repository. s communications with the repository, requests or subscribes to <u>entre</u>, receives and processes the information, and then distributes the ckages and the system operator for use. Although request and y included in the <u>National</u> ITS Architecture <u>for Canada</u>, interactive equipment package.

dividual transit vehicles to vehicle blocks and downloads this t also provides an exception handling process for the vehicle w, supplemental vehicle assignments when required by changes es an inventory management function for the transit facility which ach of the vehicles owned by the transit operator. These attributes t functions to match vehicles with routes based on suitability for the rticular routes.

s and supports the assignment of transit vehicle operators to runs. It nanner while minimizing labor and overtime services, considering ions, and automatically tracking and validating the number of work il operator. It also provides an exception handling process for the nerate supplemental operator assignments when required by changes

ensors that monitor conditions of secure areas that are frequented by s, transit stations, rest areas, park and ride lots, modal interchange cage monitors areas for environmental threats (e.g., chemical agent, al, explosives, and radiological sensors), intrusion and motion, and

US_V6 Name	US_V6 Description	C_V2 Name	
Traveler Secure Area Surveillance	This equipment package manages surveillance equipment that monitors secure areas in the transportation system that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). This package collects the images and audio inputs at the secure area and provides the surveillance information to the Emergency Management Subsystem. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Field Secure Area Surveillance equipment package.	Traveler <u>Traveller</u> Secure Area Surveillance	This equipment package manages sur system that are frequented by travele ride lots, modal interchange facilities secure area and provides the surveilla equipment package also provides loc processed or analyzed results to the E provides the same functions as the Fi
Traveler Telephone Information	This equipment package services voice-based traveler requests for information that supports traveler telephone information systems like 511. The equipment package takes requests for traveler information, which could be voice-formatted traveler requests, dual-tone multifrequency (DTMF)-based requests, or a simple traveler information request, and returns the requested traveler information in the proper format. In addition to servicing requests for traveler information, this equipment package also collects and forwards alerts and advisories to traveler telephone information systems.	TravelerTraveller Telephone Information	This equipment package services voi travelertraveller telephone information travelertraveller information, which of multifrequency (DTMF)-based reque requested travelertraveller information travelertraveller information, this equ travelertraveller telephone information
Vehicle Automated Operations	This equipment package provides the capability for "hands-off" and "feet off" operation of an equipped vehicle on the automated portion of the highway system including the longitudinal control, lateral control for lane change/merge and roadway departure, regulating the vehicle speed and steering control, and sensing impending hazards and responding appropriately. These capabilities are provided by systems on board the vehicle to regulate longitudinal and lateral control maneuvers, including acceleration, braking, and steering functions. The capability to control access to the automated highway system is provided through an automated check-in procedure in which the vehicle and driver are checked for their fitness.	Vehicle Automated Operations	This equipment package provides the vehicle on the automated portion of the control for lane change/merge and ro and sensing impending hazards and r on board the vehicle to regulate long braking, and steering functions. The of provided through an automated check fitness.
Vehicle Autonomous Route Guidance	This equipment package provides route planning and turn by turn route guidance to a driver using an on- board digital map. The equipment package includes autonomous systems that are not configured to receive or process real-time information. In advanced implementations, this equipment package receives real-time traffic and road conditions information from the infrastructure and factors this real-time information into its route selection and guidance algorithms.	Vehicle Autonomous Route Guidance	This equipment package provides rou board digital map. The equipment pa receive or process real-time informat real-time traffic and road conditions information into its route selection ar
Vehicle Environmental Probe Support	This equipment package includes the vehicle sensors and communications systems that sense and send road conditions and surface weather information as the vehicle travels. The same vehicle equipment that improves stability and provides driver information in adverse conditions is a potential source for this information.	Vehicle Environmental Probe Support	This equipment package includes the road conditions and surface weather improves stability and provides drive information.
Vehicle Intersection Control	This equipment package detects potentially hazardous situations in an intersection and takes control of the vehicle to avoid a potential collision. This equipment package includes the on-board sensors that detect potential hazards, the actuator systems that provide automated control of the vehicle, and equipment that communicates with the infrastructure to identify intersection safety issues identified by field equipment at the intersection.	Vehicle Intersection Control	This equipment package detects poter the vehicle to avoid a potential collisi detect potential hazards, the actuator equipment that communicates with the field equipment at the intersection.
Vehicle Intersection Safety Warning	This equipment package detects and notifies the driver of potentially hazardous situations in an intersection. The equipment package monitors intersection status and vehicle speed on the approach to the intersection and warns the driver if necessary. It shares vehicle status with field equipment at the intersection and uses intersection status provided by this field equipment to warn the driver of impending violations or potential conflicts with other vehicles approaching the intersection. This equipment package includes the on-board sensors that detect potential hazards, equipment that communicates with the infrastructure to identify safety issues identified by field equipment at the intersection, and equipment that provides visual and/or audible warnings to the driver.	Vehicle Intersection Safety Warning	This equipment package detects and a intersection. The equipment package the intersection and warns the driver intersection and uses intersection stat violations or potential conflicts with o package includes the on-board sensor the infrastructure to identify safety is equipment that provides visual and/or
Vehicle Lateral Control	This equipment package provides lateral control of a vehicle to allow "hands off" driving, automating the steering control function. It includes on-board systems that detect lanes and obstacles or vehicles to the sides of the vehicle. This sensor information is processed on board the vehicle, and appropriate steering control actions are maintained using steering actuators.	Vehicle Lateral Control	This equipment package provides late steering control function. It includes sides of the vehicle. This sensor infor control actions are maintained using
Vehicle Lateral Warning System	This equipment package monitors areas to the sides of a vehicle and provides warnings to a driver so the driver can take action to recover and maintain safe control of the vehicle. It includes on-board sensors that detect lanes and obstacles or vehicles to the sides of the vehicle and the driver information system that provides the warning.	Vehicle Lateral Warning System	This equipment package monitors are driver can take action to recover and that detect lanes and obstacles or veh that provides the warning.
Vehicle Location Determination	This equipment package receives current location of the vehicle from the Location Data Source terminator and provides this information to other equipment packages that use the location information to provide various ITS services.	Vehicle Location Determination	This equipment package receives cur terminator and provides this informat to provide various ITS services.

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surveillance equipment that monitors secure areas in the transportation derstravellers (i.e., transit stops, transit stations, rest areas, park and les, etc). This package collects the images and audio inputs at the illance information to the Emergency Management Subsystem. The ocal processing of the video or audio information, providing e Emergency Management Subsystem. This equipment package Field Secure Area Surveillance equipment package.

voice-based <u>traveler\_traveller</u> requests for information that supports tion systems like 511. The equipment package takes requests for h could be voice-formatted <u>traveler\_traveller</u> requests, dual-tone uests, or a simple <u>traveler\_traveller</u> information request, and returns the tion in the proper format. In addition to servicing requests for quipment package also collects and forwards alerts and advisories to tion systems.

the capability for "hands-off" and "feet off" operation of an equipped f the highway system including the longitudinal control, lateral roadway departure, regulating the vehicle speed and steering control, d responding appropriately. These capabilities are provided by systems ngitudinal and lateral control maneuvers, including acceleration, the capability to control access to the automated highway system is eck-in procedure in which the vehicle and driver are checked for their

coute planning and turn by turn route guidance to a driver using an onpackage includes autonomous systems that are not configured to nation. In advanced implementations, this equipment package receives is information from the infrastructure and factors this real-time and guidance algorithms.

he vehicle sensors and communications systems that sense and send er information as the vehicle travels. The same vehicle equipment that ver information in adverse conditions is a potential source for this

tentially hazardous situations in an intersection and takes control of lision. This equipment package includes the on-board sensors that or systems that provide automated control of the vehicle, and the infrastructure to identify intersection safety issues identified by

d notifies the driver of potentially hazardous situations in an ge monitors intersection status and vehicle speed on the approach to er if necessary. It shares vehicle status with field equipment at the tatus provided by this field equipment to warn the driver of impending th other vehicles approaching the intersection. This equipment sors that detect potential hazards, equipment that communicates with issues identified by field equipment at the intersection, and //or audible warnings to the driver.

ateral control of a vehicle to allow "hands off" driving, automating the es on-board systems that detect lanes and obstacles or vehicles to the formation is processed on board the vehicle, and appropriate steering g steering actuators.

areas to the sides of a vehicle and provides warnings to a driver so the ad maintain safe control of the vehicle. It includes on-board sensors ehicles to the sides of the vehicle and the driver information system

urrent location of the vehicle from the Location Data Source nation to other equipment packages that use the location information

US_V6 Name	US_V6 Description	C_V2 Name	
Vehicle Longitudinal Control	This equipment package provides longitudinal control of a vehicle to allow "feet off" driving, automating the function of speed control, acceleration, and braking to maintain safe following distances. It includes on-board systems that detect obstacles or vehicles in the longitudinal path of the vehicle. This sensor information is processed on board the vehicle, and appropriate control actions (acceleration, braking, or maintaining speed) are initiated using accelerator and/or brake actuators.	Vehicle Longitudinal Control	This equipment package provides lor automating the function of speed com It includes on-board systems that det sensor information is processed on bo braking, or maintaining speed) are in
Vehicle Longitudinal Warning System	This equipment package monitors areas in front of and behind the vehicle and provides warnings to the driver so the driver can take action to recover and maintain safe control of the vehicle. It includes on-board sensors that detect objects in front of or behind the vehicle and the driver information system that provides the warning.	Vehicle Longitudinal Warning System	This equipment package monitors are driver so the driver can take action to board sensors that detect objects in fr provides the warning.
Vehicle Mayday I/F	This equipment package provides the capability for drivers or collision detection sensors to report an emergency and summon assistance. This equipment package includes the on-board collision detection sensors, a mechanism for the driver to summon assistance, and two-way communications with a service provider.	Vehicle Mayday I/F	This equipment package provides the emergency and summon assistance. The sensors, a mechanism for the driver the provider.
Vehicle On-board Diagnostics System	This equipment package monitors engine-related components, including the emissions control system, to make sure they are operating properly. Detected problems are reported to the driver and additional diagnostics data is stored for the service technician. Vehicle diagnostics data is made available via short range communications to support vehicle performance monitoring, service, and repair.	Vehicle On-board Diagnostics System	This equipment package monitors en make sure they are operating proper- diagnostics data is stored for the serv range communications to support vel
Vehicle Pre-Crash Safety Systems	This equipment package monitors the vehicle's local environment, determines collision probability, and deploys a pre-crash safety system when a crash is imminent. It includes on-board communications equipment and sensors to determine the proximity and closing rates of neighboring vehicles or other roadway obstacles. These detection systems are supplemented by additional sensors that monitor existing weather and roadway conditions and roadway geometry. The equipment package assimilates this information and determines the probability of a collision with the other vehicle or obstacle. If the collision probability is high, it deploys a pre-crash safety system either to avoid the accident or to reduce the accident severity.	Vehicle Pre-Crash Safety Systems	This equipment package monitors the deploys a pre-crash safety system wh equipment and sensors to determine to roadway obstacles. These detection s weather and roadway conditions and information and determines the proba- collision probability is high, it deploy the accident severity.
Vehicle Safety Monitoring System	This equipment package monitors critical components of the vehicle and warns the driver of potential dangers. These capabilities are provided by on-board sensors to monitor the vehicle condition and performance, including steering, braking, acceleration, emissions, fuel economy, engine performance, etc. Problems with any of these systems are identified and reported to the driver. Warnings are provided in the event of a serious condition (e.g., likely failure or damage).	Vehicle Safety Monitoring System	This equipment package monitors crid dangers. These capabilities are provid performance, including steering, braket. Problems with any of these systee in the event of a serious condition (e.
Vehicle Secure Area Access System	This equipment package provides access to secure areas such as shipping yards, warehouses, airports, transit-only ramps, parking gates and other areas. It accepts inputs from the vehicle driver that include the necessary identity information and uses this information to generate the request to activate a barrier to gain access to the area.	Vehicle Secure Area Access System	This equipment package provides acc transit-only ramps, parking gates and the necessary identity information an to gain access to the area.
Vehicle Short Range Traveler Information Reception	This equipment package receives advisories, vehicle signage data, and other driver information via short range communications and presents this information to the driver using in-vehicle equipment. Information presented may include fixed sign information, traffic control device states (e.g., traffic signal states), advisory and detour information, warnings of adverse road and weather conditions, travel times, and other driver information.	Vehicle Short Range <u>TravelerTraveller</u> Information Reception	This equipment package receives adv range communications and presents t Information presented may include fi signal states), advisory and detour in times, and other driver information.
Vehicle Toll/Parking Interface	This equipment package includes the on-board systems that pay for tolls and parking electronically. It includes in-vehicle equipment that communicates with the toll/parking plaza (e.g., a tag) and an optional interface to a traveler card to allow use of a common payment medium for all transportation services.	Vehicle Toll/Parking Interface	This equipment package includes the includes in-vehicle equipment that co interface to a traveler <u>traveller</u> card to services.
Vehicle Traffic Probe Support	This equipment package includes capabilities for the probe vehicle to identify its location, measure traffic conditions such as link travel time and speed, and transmit these data to a center or roadside equipment.	Vehicle Traffic Probe Support	This equipment package includes cap traffic conditions such as link travel t equipment.
Vehicle Trip Planning and Route Guidance	This equipment package includes the in-vehicle system that coordinates with a traveler information center to provide a personalized trip plan to the driver. The trip plan is calculated by the Information Service Provider based on preferences and constraints supplied by the driver and provided to the driver for confirmation. Reservations and advanced payment may also be processed by this equipment package to confirm the trip plan. Coordination with the Information Service Provider may continue during the trip so that the route plan can be modified to account for new information. Many equipment configurations are possible including in-vehicle systems that provide a basic trip plan to the driver as well as more sophisticated systems that can provide turn by turn guidance to the driver along the route.	Vehicle Trip Planning and Route Guidance	This equipment package includes the information <u>centercentre</u> to provide a the Information Service Provider bas provided to the driver for confirmation this equipment package to confirm the may continue during the trip so that the Many equipment configurations are p to the driver as well as more sophistic along the route.

# C\_V2 Description

ongitudinal control of a vehicle to allow "feet off" driving, ontrol, acceleration, and braking to maintain safe following distances. etect obstacles or vehicles in the longitudinal path of the vehicle. This board the vehicle, and appropriate control actions (acceleration, initiated using accelerator and/or brake actuators.

areas in front of and behind the vehicle and provides warnings to the to recover and maintain safe control of the vehicle. It includes onfront of or behind the vehicle and the driver information system that

he capability for drivers or collision detection sensors to report an . This equipment package includes the on-board collision detection r to summon assistance, and two-way communications with a service

engine-related components, including the emissions control system, to erly. Detected problems are reported to the driver and additional ervice technician. Vehicle diagnostics data is made available via short rehicle performance monitoring, service, and repair.

the vehicle's local environment, determines collision probability, and when a crash is imminent. It includes on-board communications e the proximity and closing rates of neighboring vehicles or other a systems are supplemented by additional sensors that monitor existing nd roadway geometry. The equipment package assimilates this obability of a collision with the other vehicle or obstacle. If the loys a pre-crash safety system either to avoid the accident or to reduce

critical components of the vehicle and warns the driver of potential vided by on-board sensors to monitor the vehicle condition and raking, acceleration, emissions, fuel economy, engine performance, stems are identified and reported to the driver. Warnings are provided (e.g., likely failure or damage).

access to secure areas such as shipping yards, warehouses, airports, nd other areas. It accepts inputs from the vehicle driver that include and uses this information to generate the request to activate a barrier

dvisories, vehicle signage data, and other driver information via short s this information to the driver using in-vehicle equipment. fixed sign information, traffic control device states (e.g., traffic information, warnings of adverse road and weather conditions, travel

he on-board systems that pay for tolls and parking electronically. It communicates with the toll/parking plaza (e.g., a tag) and an optional to allow use of a common payment medium for all transportation

capabilities for the probe vehicle to identify its location, measure el time and speed, and transmit these data to a <u>centercentre</u> or roadside

he in-vehicle system that coordinates with a travelertraveller e a personalized trip plan to the driver. The trip plan is calculated by ased on preferences and constraints supplied by the driver and tion. Reservations and advanced payment may also be processed by the trip plan. Coordination with the Information Service Provider at the route plan can be modified to account for new information. e possible including in-vehicle systems that provide a basic trip plan sticated systems that can provide turn by turn guidance to the driver

US_V6 Name	US_V6 Description	C_V2 Name	
Vehicle Warning System	This equipment package receives location information from nearby vehicles and uses the received information to determine if there is a possibility of collision and warn the driver. This equipment package also provides information to surrounding vehicles about its own location, speed, and other information to allow other similarly equipped vehicles to warn their drivers if necessary. The same equipment also receives alerts from responding emergency vehicles in the vicinity so the driver can be warned of the approaching emergency vehicle, increasing the safety of the driver and the emergency responder. It includes on-board equipment (OBE) that sends and receives the messages and determines if there is a need to warn the driver, and the driver information system that provides the warnings.	Vehicle Warning System	This equipment package receives loca information to determine if there is a package also provides information to information to allow other similarly e equipment also receives alerts from re warned of the approaching emergency responder. It includes on-board equip there is a need to warn the driver, and
Virtual Data Warehouse Services	This equipment package provides capabilities to access "in-place" data from geographically dispersed archives and coordinate information exchange with a local data warehouse. While many of the functions performed by this equipment package are similar to the functions inherent in other archived data management subsystem equipment packages (e.g. data management, fusion, analysis) this equipment package also provides the specialized publishing, directory services, and transaction management functions associated with coordinating remote archives. In addition, this equipment package performs functions on an as-needed basis, thereby negating the need to maintain the comprehensive set of data from the remote archives in the local data warehouse.	Virtual Data Warehouse Services	This equipment package provides cap archives and coordinate information of performed by this equipment package management subsystem equipment pa package also provides the specialized functions associated with coordinatin functions on an as-needed basis, there from the remote archives in the local

# C\_V2 Description

ocation information from nearby vehicles and uses the received s a possibility of collision and warn the driver. This equipment to surrounding vehicles about its own location, speed, and other y equipped vehicles to warn their drivers if necessary. The same n responding emergency vehicles in the vicinity so the driver can be ncy vehicle, increasing the safety of the driver and the emergency uipment (OBE) that sends and receives the messages and determines if and the driver information system that provides the warnings.

capabilities to access "in-place" data from geographically dispersed in exchange with a local data warehouse. While many of the functions age are similar to the functions inherent in other archived data packages (e.g. data management, fusion, analysis) this equipment and publishing, directory services, and transaction management ting remote archives. In addition, this equipment package performs ereby negating the need to maintain the comprehensive set of data and data warehouse.