

APPENDIX

A UNIQUE CANADIAN ELEMENTS

APPENDIX

A-1 *UNIQUE PHYSICAL OBJECTS*

Appendix A1 – Unique Canadian Physical Objects

Physical Object Name	Description
Distribution and Logistics Management Provider	A system that provides intermodal logistics support and support for the efficient distribution of freight across transport systems and modes. This can include consolidation arrangements, warehousing, and consignor-to-consignee intermodal shipping arrangements. These capabilities may be provided as part of intermodal fleet management activities or can be provided by an independent logistics specialist.
Freight Consolidation Station	An intermediate point (usually an intermodal terminal located at a port) prior to (or after) container-based shipping, where less-than-container load or less-than-truckload cargoes are consolidated into full container loads (or full containers are disbursed), for cost-effective intermodal shipping.
Intermodal Terminal Operator	The personnel that operate the intermodal terminal subsystem.
Other Border Inspection Administration	Represents another instance of back office administration functions of the Border Inspection process. Used to describe the interface between peer Border Inspection Administration entities.
Other Border Inspection Systems	This terminator represents other border inspection systems and is used to create an interface from one type of border inspection system to another.
Other Intermodal Fleet and Freight Management System	The Other Intermodal Fleet and Freight Management System terminator represents the management systems for individual fleets of intermodal transport companies. These fleets may be trucks, rail, airplanes, container vessels, barges, etc. However, the terminator is broader than this and is primarily intended to show the interface between intermodal roadway trucking operators (drayage companies) and other mode shipping companies.

APPENDIX

A-2 *UNIQUE INFORMATION FLOWS*

Appendix A2 – Unique Canadian Information Flows

Information Flow Name	Description
border card data	Personal identification data from ID cards used by travellers at border crossings.
border credentials application	Application for shipment of goods through the international border.
border credentials application information	Application information that is shared between agencies.
border credentials information	Includes carrier ID, importer ID, broker ID, conveyance ID, driver ID, service options, and associated information that is used to support border clearance.
border credentials status	Status of border credentials application.
border field equipment control	Control signals sent to various field equipment operated by border agencies.
border field equipment data	Data such as camera images and radiation sensor data.
border security input	Information regarding security related events occurring at the border.
border traveller information	Traveller information relevant to border crossings such as queue times, transit times, wait times, and weather. This flow may include forecasts of border delays as well as current conditions.
cargo data	Measures associated with the cargo inside a container, like temperature.
chassis data	Measures from chassis systems like brakes, tires, and fasteners.
commercial vehicle permit	Permit for oversize, overweight, or hazmat shipments
commercial vehicle permit coordination	Information for the coordination of commercial vehicle permits for oversize, overweight, or for dangerous goods.
consignment contract	Contract to pickup and deliver freight.
consolidated agency response	Electronic manifest data as well as commercial vehicle screening results.
container arrival information	Information on the time, location, identification and point-of-origin of a container arriving at an intermodal facility, which is provided to Customs.
container availability request	Request for information on the availability of a container at an Intermodal Terminal.
container availability status	Information regarding the availability of a container at an Intermodal Terminal.
container delivery confirmation	Notice confirming the arrival and transfer of control of a container at a container handling facility, for example an intermodal terminal.
container delivery request	Request for permission to deliver a container to an intermodal facility.
container identification	A unique identification of a container that can be used to associate the container with a manifest and other important data.
container identification request	Request to a container to provide its identification information; may require the requestor to authenticate their identity.
container location	The location of a container, to sufficient accuracy to allow efficient container management.
container manifest	Official statement of the cargo held in a container.
container pickup confirmation	Notice confirming that a container has been picked up at an intermodal facility and that control has been transferred to a shipping or drayage agency.
container pickup request	Request for permission to pickup a container at an intermodal transfer facility.
container release status	Information regarding whether a container has been released (by Customs or by the Other Intermodal FMS)
container seal interrogation	Customs inspection of the electronic seal on a container to verify the container has not been opened or tampered with; requires proper authentication.
container seal status	The status of an electronic seal on a container, indicating sealing time, location, and authority, and any openings or tampering.
container status	Measures from systems on-board the container, possibly including refrigeration, shock measurement, controlled atmosphere sensing and any other systems that support special needs of the cargo.
container transfer location	Location within an intermodal facility that a container is to be received at or delivered to; may include guidance as well as location.
container transfer location request	Request for the location within an intermodal facility for the transfer of a container.

Appendix A2 – Unique Canadian Information Flows

Information Flow Name	Description
container transport assignment	Instructions to a commercial vehicle for the transportation of a container.
driver registration	Driver registration for border clearance.
driver roadway warning	Warning information provided to the driver based on dynamic sensing of localized factors affecting safe roadway usage.
entry permission	Permission for a commercial vehicle to enter an intermodal transfer facility.
entry request	Request by a commercial vehicle for permission to enter an intermodal transfer facility.
environmental hazards	Detection of specific localized hazards affecting the roadway, like mud slides, avalanches, high winds and flooding.
exit permission	Permission for a commercial vehicle to leave an intermodal transfer facility.
exit request	Request by a commercial vehicle for permission to leave an intermodal transfer facility.
freight consignment request	Request from a shipper (consignor) for services to handle shipping of a container or freight load.
freight data request	Request for location of a freight shipment or for data from the sensing systems on-board the container. The request may require the requestor to authenticate their identity.
intermodal dispatch	Directions for dispatch for pickup or delivery of an intermodal load.
intermodal status	Information from a commercial vehicle on the status of container and chassis systems that the vehicle is transporting.
intermodal status request	Request from a fleet manager for the status of an intermodal load.
intermodal terminal operator data	Information provided to the operator of an intermodal terminal.
intermodal terminal operator inputs	Inputs and control actions by an intermodal terminal operator.
non-vehicular presence	Sensed presence of pedestrians and other non-motor vehicle travellers at roadway crossing or control points.
pre-arrival information	Information regarding vehicle or driver that is approaching a border crossing.
refusal of entry information	Information on loads, vehicles, or drivers who have been refused entry to the country.
registration status	Status of registration application.
request for permit	Request by fleet management for oversize, overweight, or hazmat permit.
road closure notification	Notification that agency personnel have closed a road due to adverse weather, major incident, or other reason.
road user protection data	Current data as well as operational status
road user protection device control	Current data as well as operational status and operating parameters for mixed roadway and right-of-way systems.
roadway micro forecast	Forecast of weather and roadway conditions at a fine level of resolution (e.g. for individual links in the road network).
roadway warning data	Information provided to roadway systems that support the dissemination of roadway warnings to vehicles and drivers, based on local road hazard conditions.
roadway warning device control	Information used to configure and control roadway warning devices
service request	Request to multimodal (possibly non-roadway) transit provider for general services information and specific trip information or reservation.
service response	Multimodal (possibly non-roadway) transit provider services information and trip reservation confirmations.
shipment status request	Request from intermodal customer for the current location and transit status of a freight shipment.
signal violation device control	Information used to configure and control signal violation detection devices.
speed limit setting	Information used to configure and control variable speed limit devices.
transit trip plan	An origin-destination transit trip that may involve multiple modes and connections.
transit trip request	Request for a transit trip plan that is responsive to traveller requirements such as schedule, cost, or duration.

Appendix A2 – Unique Canadian Information Flows

Information Flow Name	Description
transit user information	Information about individual transit users boarding a transit vehicle, used to track a user's progress on a scheduled transit trip.
traveller personal information	This flow includes biometric and other data to allow recognition of travellers.
traveller registration	Application for traveller programs such as NEXUS, Includes electronic filing of forms and associated payment.
variable speed limit	Legally enforceable speed limit information presented to a driver that can be varied as appropriate for roadway and weather conditions.
vehicle identification	Identification of a commercial vehicle to an intermodal terminal for the purpose of entrance and exit control, guidance, and safety monitoring.
violation detection	Roadside detection of a vehicle violating a speed limit, traffic signal, or control signage.

APPENDIX

A-3 *UNIQUE TRIPLETS*

Appendix A3 – Unique Canadian Triplets

Source Physical Object	Information Flows	Destination Physical Object
Border Inspection Administration	consolidated agency response	Border Inspection Systems
Border Inspection Administration	traveller personal information	Border Inspection Systems
Border Inspection Administration	border credentials information	Distribution and Logistics Management Provider
Border Inspection Administration	border credentials status	Distribution and Logistics Management Provider
Border Inspection Administration	clearance notification	Distribution and Logistics Management Provider
Border Inspection Administration	manifest receipt confirmation	Distribution and Logistics Management Provider
Border Inspection Administration	border traveller information	Information Service Provider
Border Inspection Administration	border credentials information	Intermodal Customer
Border Inspection Administration	border credentials status	Intermodal Customer
Border Inspection Administration	clearance notification	Intermodal Customer
Border Inspection Administration	manifest receipt confirmation	Intermodal Customer
Border Inspection Administration	container release status	Intermodal Terminal
Border Inspection Administration	border credentials application information	Other Border Inspection Administration
Border Inspection Administration	inspection results	Other Border Inspection Administration
Border Inspection Administration	registration status	Personal Information Access
Border Inspection Systems	border security input	Border Inspection Administration
Border Inspection Systems	inspection results	Border Inspection Administration
Border Inspection Systems	container seal interrogation	Intermodal Freight Equipment
Border Inspection Systems	border field equipment data	Other Border Inspection Systems
Border Inspection Systems	refusal of entry information	Other Border Inspection Systems
Border Inspection Systems	border field equipment control	Security Monitoring Subsystem
Commercial Vehicle Administration	screening results	Border Inspection Systems
Commercial Vehicle Administration	pre-arrival information	Commercial Vehicle Check
Commercial Vehicle Administration	license request	Department of Motor Vehicles
Commercial Vehicle Administration	commercial vehicle permit	Fleet and Freight Management
Commercial Vehicle Administration	commercial vehicle permit coordination	Other CVAS
Commercial Vehicle Check	violation notification	Enforcement Agency
Commercial Vehicle Subsystem	intermodal dispatch	Commercial Vehicle Driver
Commercial Vehicle Subsystem	intermodal status	Fleet and Freight Management
Commercial Vehicle Subsystem	container transfer location request	Freight Consolidation Station
Commercial Vehicle Subsystem	entry request	Freight Consolidation Station
Commercial Vehicle Subsystem	exit request	Freight Consolidation Station
Commercial Vehicle Subsystem	vehicle identification	Freight Consolidation Station
Commercial Vehicle Subsystem	container transfer location request	Intermodal Terminal
Commercial Vehicle Subsystem	entry request	Intermodal Terminal
Commercial Vehicle Subsystem	exit request	Intermodal Terminal
Commercial Vehicle Subsystem	vehicle identification	Intermodal Terminal
Department of Motor Vehicles	registration	Commercial Vehicle Administration
Distribution and Logistics Management Provider	border credentials application	Border Inspection Administration
Distribution and Logistics Management Provider	manifest data	Border Inspection Administration

Appendix A3 – Unique Canadian Triplets

Source Physical Object	Information Flows	Destination Physical Object
Distribution and Logistics Management Provider	container pickup request	Fleet and Freight Management
Distribution and Logistics Management Provider	freight data request	Fleet and Freight Management
Distribution and Logistics Management Provider	freight data request	Intermodal Freight Equipment
Distribution and Logistics Management Provider	container availability request	Intermodal Terminal
Emergency Management	shelter information	Information Service Provider
Emergency Management	road closure notification	Traffic Management
Emergency Management	shelter information	Transit Management
Fleet and Freight Management	request for permit	Commercial Vehicle Administration
Fleet and Freight Management	container transport assignment	Commercial Vehicle Subsystem
Fleet and Freight Management	intermodal status request	Commercial Vehicle Subsystem
Fleet and Freight Management	container delivery confirmation	Distribution and Logistics Management Provider
Fleet and Freight Management	container location	Distribution and Logistics Management Provider
Fleet and Freight Management	container pickup confirmation	Distribution and Logistics Management Provider
Fleet and Freight Management	container status	Distribution and Logistics Management Provider
Fleet and Freight Management	container delivery request	Freight Consolidation Station
Fleet and Freight Management	container pickup confirmation	Freight Consolidation Station
Fleet and Freight Management	consignment contract	Intermodal Customer
Fleet and Freight Management	container delivery request	Intermodal Terminal
Fleet and Freight Management	container pickup confirmation	Intermodal Terminal
Fleet and Freight Management	freight transportation status	Other Intermodal Fleet and Freight Management System
Freight Consolidation Station	container transfer location	Commercial Vehicle Subsystem
Freight Consolidation Station	entry permission	Commercial Vehicle Subsystem
Freight Consolidation Station	exit permission	Commercial Vehicle Subsystem
Freight Consolidation Station	container delivery confirmation	Fleet and Freight Management
Freight Consolidation Station	container pickup request	Fleet and Freight Management
Information Service Provider	transit trip request	Transit Management
Intermodal Customer	border credentials application	Border Inspection Administration
Intermodal Customer	manifest data	Border Inspection Administration
Intermodal Customer	container delivery confirmation	Fleet and Freight Management
Intermodal Customer	freight consignment request	Fleet and Freight Management
Intermodal Customer	shipment status request	Fleet and Freight Management
Intermodal Freight Equipment	container manifest	Border Inspection Systems
Intermodal Freight Equipment	container seal status	Border Inspection Systems
Intermodal Freight Equipment	cargo data	Commercial Vehicle Subsystem
Intermodal Freight Equipment	chassis data	Commercial Vehicle Subsystem
Intermodal Freight Equipment	container status	Commercial Vehicle Subsystem
Intermodal Freight Equipment	cargo data	Distribution and Logistics Management Provider

Appendix A3 – Unique Canadian Triplets

Source Physical Object	Information Flows	Destination Physical Object
Intermodal Freight Equipment	container location	Distribution and Logistics Management Provider
Intermodal Freight Equipment	container status	Distribution and Logistics Management Provider
Intermodal Freight Equipment	cargo data	Fleet and Freight Management
Intermodal Freight Equipment	chassis data	Fleet and Freight Management
Intermodal Freight Equipment	container identification	Intermodal Terminal
Intermodal Freight Equipment	container location	Intermodal Terminal
Intermodal Terminal	container arrival information	Border Inspection Administration
Intermodal Terminal	container transfer location	Commercial Vehicle Subsystem
Intermodal Terminal	entry permission	Commercial Vehicle Subsystem
Intermodal Terminal	exit permission	Commercial Vehicle Subsystem
Intermodal Terminal	container availability status	Distribution and Logistics Management Provider
Intermodal Terminal	container delivery confirmation	Fleet and Freight Management
Intermodal Terminal	container pickup request	Fleet and Freight Management
Intermodal Terminal	container identification request	Intermodal Freight Equipment
Intermodal Terminal	intermodal terminal operator data	Intermodal Terminal Operator
Intermodal Terminal Operator	intermodal terminal operator inputs	Intermodal Terminal
Location Data Source	position fix	Intermodal Freight Equipment
Maintenance and Construction Management	environmental conditions data	Traffic Management
Meteorological Service Provider	roadway micro forecast	Maintenance and Construction Management
Meteorological Service Provider	roadway micro forecast	Traffic Management
Multimodal Transportation Service Provider	service response	Transit Management
Other Border Inspection Administration	border credentials application information	Border Inspection Administration
Other Border Inspection Administration	inspection results	Border Inspection Administration
Other Border Inspection Systems	border field equipment data	Border Inspection Systems
Other Border Inspection Systems	refusal of entry information	Border Inspection Systems
Other CVAS	commercial vehicle permit coordination	Commercial Vehicle Administration
Other Intermodal Fleet and Freight Management System	freight transportation status	Fleet and Freight Management
Pedestrians	non-vehicular presence	Roadway Subsystem
Personal Information Access	driver registration	Border Inspection Administration
Personal Information Access	traveller registration	Border Inspection Administration
Personal Information Access	trip confirmation	Transit Management
Potential Obstacles	physical presence	Roadway Subsystem
Remote Traveller Support	trip confirmation	Transit Management
Roadway Environment	environmental hazards	Roadway Subsystem
Roadway Environment	roadway characteristics	Roadway Subsystem
Roadway Subsystem	driver roadway warning	Driver
Roadway Subsystem	variable speed limit	Driver
Roadway Subsystem	violation detection	Maintenance and Construction Management
Roadway Subsystem	road user protection data	Traffic Management

Appendix A3 – Unique Canadian Triplets

Source Physical Object	Information Flows	Destination Physical Object
Roadway Subsystem	roadway warning data	Traffic Management
Roadway Subsystem	violation detection	Traffic Management
Security Monitoring Subsystem	border field equipment data	Border Inspection Systems
Traffic Management	environmental conditions data	Maintenance and Construction Management
Traffic Management	road user protection device control	Roadway Subsystem
Traffic Management	roadway warning device control	Roadway Subsystem
Traffic Management	signal violation device control	Roadway Subsystem
Traffic Management	speed limit setting	Roadway Subsystem
Transit Management	transit trip plan	Information Service Provider
Transit Management	service request	Multimodal Transportation Service Provider
Transit Management	trip plan	Personal Information Access
Transit Management	trip plan	Remote Traveller Support
Transit Vehicle Subsystem	transit user information	Transit Management
Traveller Card	border card data	Border Inspection Systems

A-4 *UNIQUE FUNCTION
OBJECTS*

Appendix A4 – Unique Canadian Functional Objects

Functional Object (Equipment Package)	Description	In Physical Object
Advanced Roadway Mixed Use Sensing	This equipment package supports advanced imaging sensors to provide improved sensing and recognition capabilities, which would allow automated warning or active protection systems for pedestrians, bicyclists, and other vehicles that operate on the main vehicle roadways, or on pathways which intersect the main vehicle roadways.	Roadway Subsystem
Border Inspection	This equipment package manages and supports primary and secondary inspections at the border crossing.	Border Inspection Systems
Border Inspection Administration	This equipment package performs administrative functions relating to the inspection of goods and vehicles at the border.	Border Inspection Administration
Border Pre-Processing	This equipment package processes manifest data relating to shipments that are enroute and provides pre-arrival notifications.	Border Inspection Administration
Border Registration	This equipment package administers the process of electronic registration for credentials relating to border crossing.	Border Inspection Administration
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 centre 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.	Commercial Vehicle Administration
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 Centres. 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 Management
Intermodal Freight Equipment Monitoring	This equipment package provides the on-board devices used to monitor intermodal freight equipment. These devices provide freight equipment location and status of the freight, container, or chassis equipment.	Intermodal Freight Equipment

Appendix A4 – Unique Canadian Functional Objects

Functional Object (Equipment Package)	Description	In Physical Object
On-board Connection Protection	This on-board equipment package monitors vehicle schedule performance and provides it to the transit centre for connection protection processing. This equipment package receives operator instructions relating to managing connection protection. This equipment package also recognizes individual travellers who have arranged for connection protection and provides information regarding them to the transit centre.	Transit Vehicle Subsystem
On-board Intermodal Terminal Interface	This equipment package provides the on-board devices used to interface with an intermodal terminal. These devices include RFID tags used for entry and exit of the facility, location devices to assist in locating the vehicle within the facility. The equipment package also provides information about the freight or container to the Intermodal Terminal facility.	Commercial Vehicle Subsystem
Roadway Micro Prediction for Maintenance	This equipment package uses road weather data along with roadway maintenance information and advanced algorithms, to create micro-predictions of roadway conditions which can support improved maintenance planning and dispatch.	Maintenance and Construction Management
Roadway Mixed Use Sensing	This equipment package provides the field devices that provide sensing and warning systems used to interact with pedestrians, bicyclists, and other vehicles that operate on the main vehicle roadways, or on pathways which intersect the main vehicle roadways.	Roadway Subsystem
Roadway Signal Enforcement	This equipment package provides the field equipment that performs detection of vehicles illegally entering an intersection.	Roadway Subsystem
Roadway Variable Speed Limit	This equipment package provides the field equipment to dynamically vary speed limits in response to roadway conditions. This could include lowering speed limits due to weather or traffic conditions, to reduce the risk of accidents.	Roadway Subsystem
Roadway Warning	This equipment package provides the field equipment to support the dynamic presentation of warning information to drivers. Warnings may be generated in response to roadway weather conditions, road surface conditions, traffic conditions, obstacles or animals in the roadway, and any other transient events that can be sensed. Warnings may also be generated that recognise the limitations of a given vehicle for the geometry of the roadway, e.g. rollover risk for tall vehicles.	Roadway Subsystem
Terminal Management	This equipment package supports the operation of the roadway aspects of an intermodal terminal. The key capabilities include the ability to identify and control vehicle traffic entering and departing the facility, guide vehicles to loading and unloading points, maintain site security and monitor container integrity, provide an interface to Customs as appropriate, and acknowledge container pickup and drop-off. Other capabilities include the ability to track container locations within the facility and to manage any other required assets, like truck chassis.	Intermodal Terminal

Appendix A4 – Unique Canadian Functional Objects

Functional Object (Equipment Package)	Description	In Physical Object
TMC Roadway Warning	This equipment package manages the field devices that provide dynamic presentation of warning information to drivers. Warnings may be generated in response to roadway weather conditions, road surface conditions, traffic conditions, obstacles or animals in the roadway, and any other transient events that can be sensed. Warnings may also be generated that recognise the limitations of a given vehicle for the geometry of the roadway, e.g. rollover risk for tall vehicles.	Traffic Management
TMC Signal Enforcement	This equipment package manages the field equipment that is used for signal enforcement and provides evidence of vehicles illegally entering an intersection to law enforcement.	Traffic Management
TMC Variable Speed Limit	This equipment package provides the capability for traffic managers to remotely set the speed limit that is displayed to drivers. This capability is provided through the use of variable speed limit signs.	Traffic Management
Transit Centre Connection Protection	This equipment package manages the coordination of transit transfers between routes within a single transit agency, between routes of different transit agencies, or between different modes (e.g. a bus transit route and a ferry route). This equipment package also supports the capability for an individual traveller to obtain connection protection throughout a specific transit trip.	Transit Management
Traveller Border Registration	This equipment package provides the capability for Travellers to register for expedited border clearance. This registration can be accomplished by using personal devices including personal computers and personal portable devices such as personal digital assistants (PDAs).	Personal Information Access