

Supporting the Second Convergence

Making Big Data Work for Transportation



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**Emerging Technology
Enabled Trends in Transportation**

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DRIVERS OF CHANGE

Population explosion

World population is growing and transportation providers will need to expand capacity to keep up.

Urbanization

As the number and size of cities grows, pressure on transportation systems to move people and materials between and within those cities grows.

Globalization

The growing interconnectedness of the world is driving inter-city and international growth in demand, with an expectation of improved service.

Technology

Technology now enables the capture and analysis of real-time information about the status, location and condition of everything.

CHALLENGES

Capacity and congestion

Meet the growing, changing demand efficiently, consistently and profitably

Empowered customers

Deliver transportation choices and information in the manner that customers value.

Efficient, green operations

Reduce cost and dependency on scarce resources while reducing environmental impact.

Safety and security

Unobtrusively reduce exposure to security risks and increase the safety of operations, with less cost and impact on customers.

STRATEGIC IMPERATIVES

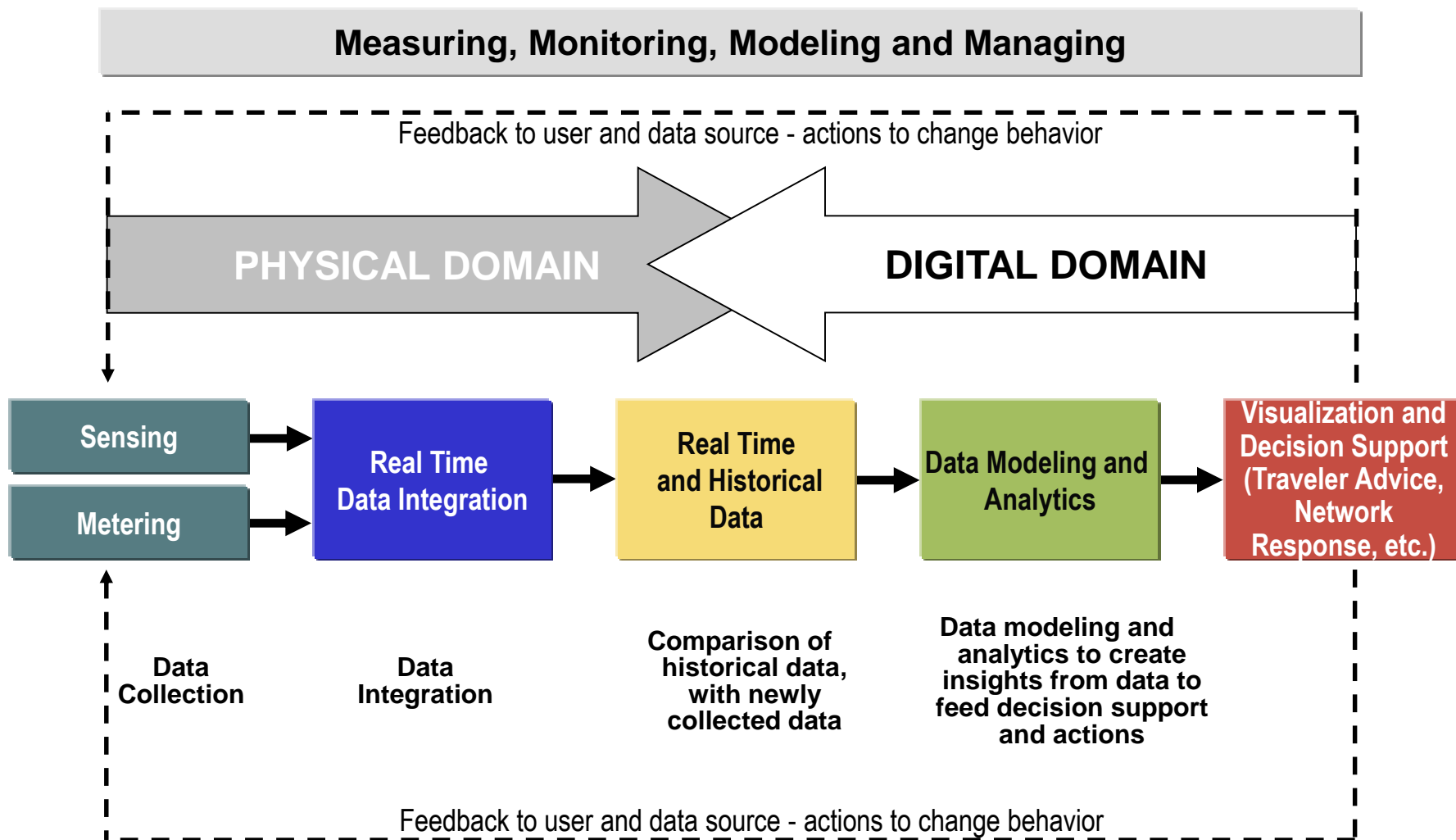
Enhance services to increase revenue and manage capacity

Dramatically improve the end-to-end customer experience.

Maximize the availability of assets and infrastructure.

Improve operational efficiency and reduce environmental impact.

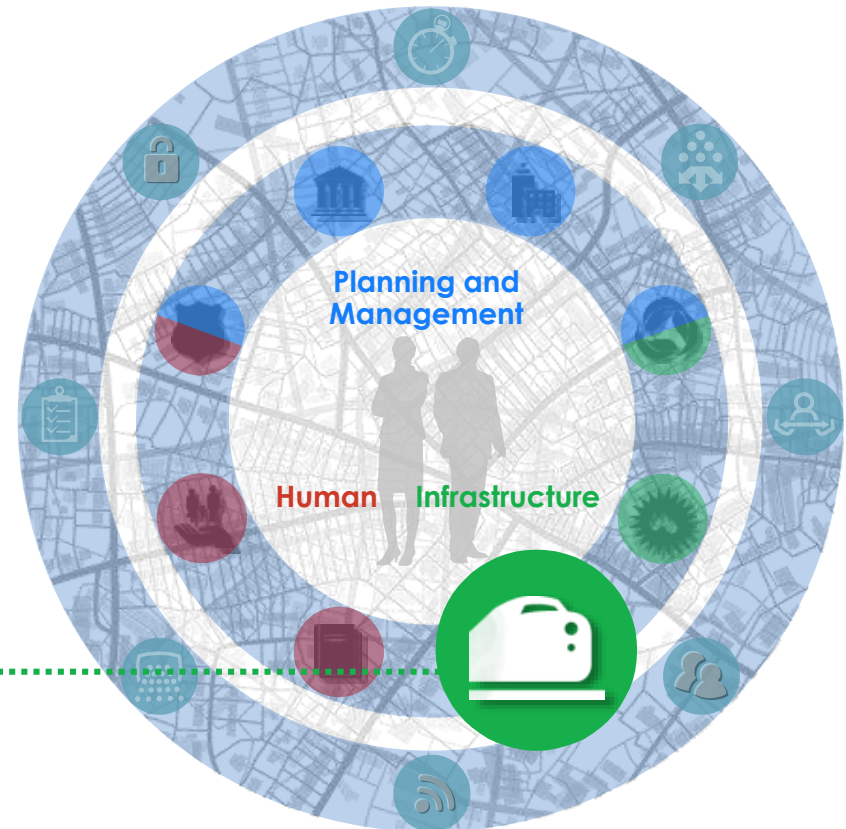
Assure safety and security.



Leverage information to create visibility across transportation networks and improve operations

Anticipate commuter demand to optimize capacity and minimize congestion

Coordinate resources to assure safety and improve the traveler's experience

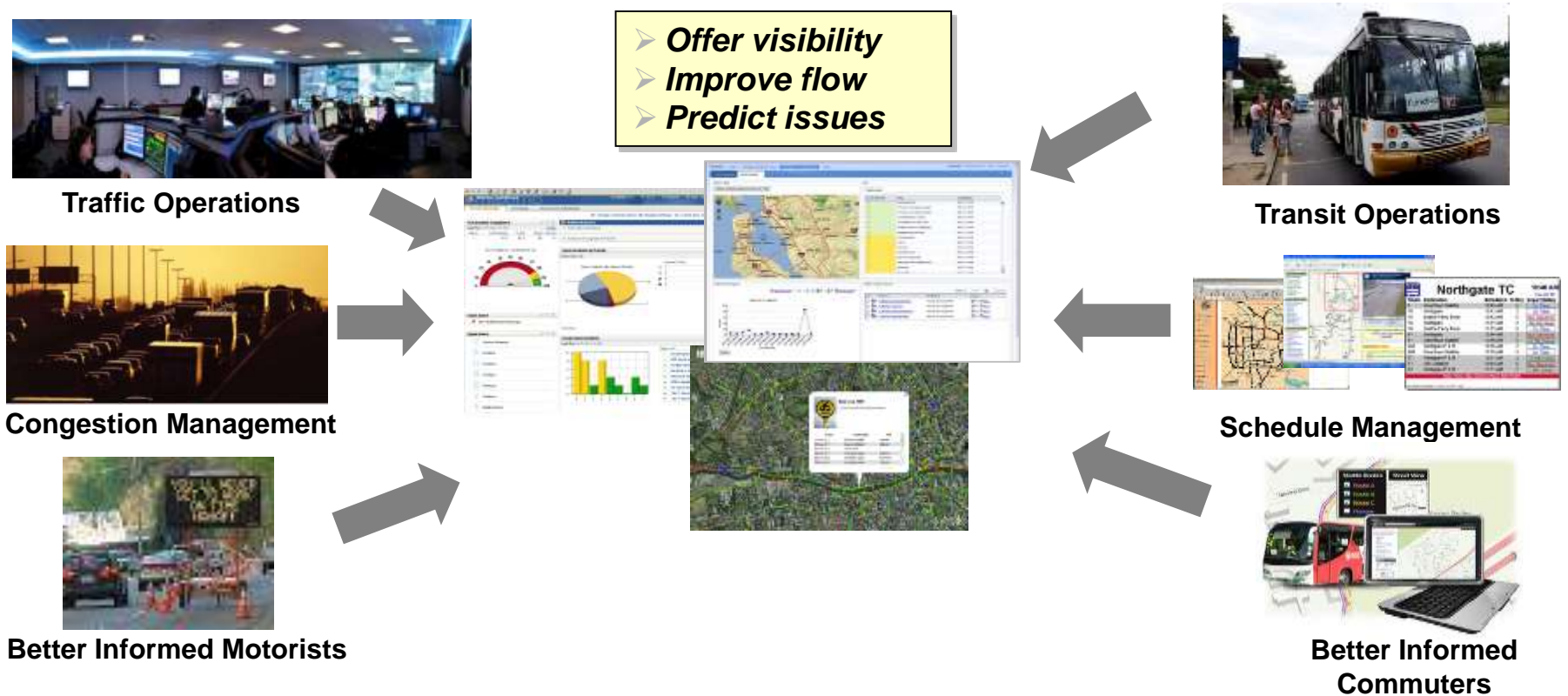


Used intelligent video analytics to provide real-time traffic information to drivers, conduct traffic surveillance and improve city roads



*"What used to be a time-consuming process is now accomplished **automatically and in real time**, allowing us to make **smarter and more timely decisions** that keep our city's traffic flowing smoothly."*

Bucheon City Official, Korea



- ✓ *Real-Time and system-wide visibility of traffic & transit networks*
- ✓ *Improvement and optimization of the traffic flow by controlling traffic management system*
- ✓ *Historical performance insights of traffic & transit operations*
- ✓ *Proactive management of traffic congestions and transit schedule deviation issues through predictive insights*

Traditional approach

Decentralized management

Disconnected systems, siloed stakeholders

Citizens as users only

Reactive to disruptions and events

Custom solutions, hard to scale

*Traditional approach focuses more on **knowing** the transportation network status so clients can **react** to the situation.*

Smarter approach

Integrated, centralized management

Common operating picture

Citizens actively engaged

Proactive intervention, real-time awareness

Flexible industry platform, delivery models

*New ITS capabilities focus on **anticipating** what is likely to happen so they can **predict and avoid** the likely congestion situations.*

Offers tremendous opportunity



Increase revenues from transportation systems



Help make city or broader region more competitive

Delivers essential services with flexibility and efficiency



Improve reputation of city or region's services



Improve safety and satisfaction of citizens

Traffic data is captured using technology options including **loop detectors**, **radars**, **cell phone data**, **video analytics** & data providing partners, and is **transformed** and **fused** as needed, before it is sent to the smarter transportation management solution.

The IBM software **stores**, **analyzes** and **presents** **real-time visibility**, **historical patterns**, **predictive inferences**, **automatic detection & optimization recommendations** on its dashboard

Sense

Detect

Action

Active Traffic Management & Incident Management

Standard operating procedures & integration with **system devices** are implemented within the IBM software turning decision support into active traffic management



Intelligent Transportation Management Center Dashboard



Integrated operations

System-wide visibility with near-real-time, high volume data integration, fusion

Improve situational awareness



Congestion management

Gain insights into patterns of traffic behavior, predict traffic congestion, execute optimization

Improve traffic flow, increase capacity of infrastructure



Incident management

Automatically detect incidents, engage citizens, initiate emergency operations

Faster incident response, improve citizen safety



Smarter device control

Support multi-device commands that combine current context and insights using business rules

Improve operator efficiency & meet operational objectives



Manage Real-Time Traffic Events



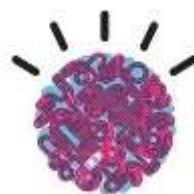
Click to Action:
Map & List Adapt Instantly to Selections



Roles & Permissions



Automatic Clustering
Based on Map Zoom Level



IBM Smarter Transportation Management

 A screenshot of the 'EVENTS AND INCIDENTS - DETAILS' interface. It shows a table with columns: 'Group', 'Name', 'Status', and 'Last Updated'. The table lists several incidents, including 'Minor Auto Accident', 'Map-Report', 'Gateway Closure', and 'Road works'.

Group	Name	Status	Last Updated
Minor Auto Accident	Minor Auto Accident	Confirmed	10:11:43 AM
Map-Report	Map-Report	Confirmed	10:11:43 AM
Gateway Closure	Gateway Closure	Confirmed	10:11:43 AM
Road works	Road works	Confirmed	10:11:43 AM

View Service Level, Event,
and Device Details

Define Custom Map
Layers / Views



Real-Time and
Historical Reporting



Predicted Traffic
Conditions 60 Minutes Out



Historical Analysis
& Planning

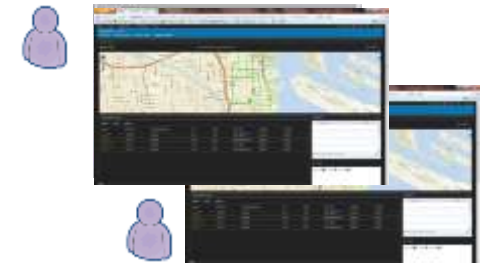




Situational Awareness: Real-Time Visualization of Vehicles, Events & Performance



Executive Dashboard for Transit Leadership



Roles & Permissions



Drop Down Selection of Content on Screen, By Routes, Lines, and Performance

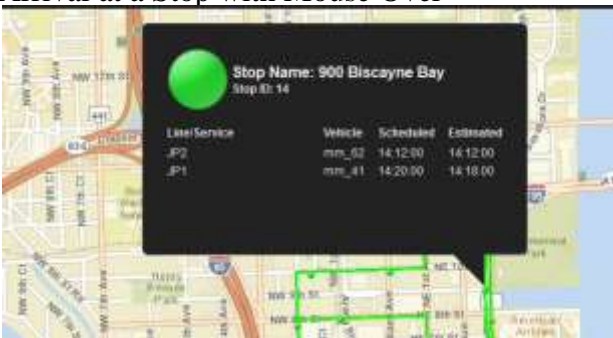
Intelligent Transportation

Transit Operations—Details

On Schedule?	Vehicle ID	Vehicle Name	Line Number	Service Number	Service Type	Next Arrival	Scheduled	Estimated
UNKNOWN	900a54	Bus 12	102	102e	Express	H Reeve Pl	09:55 AM	10:01 AM
LATE	907b42	Bus 28	101	101e	Commuter	Esplanade Blvd	10:07 AM	10:12 AM
LATE	9083e1				Express	Esplanade Blvd	10:08 AM	10:15 AM
LATE	D06a00	Bus 24	101	101e	Commuter	Esplanade Blvd	10:11 AM	10:17 AM
LATE	907b02	Bus 19	102	102e	Express	Esplanade Blvd	10:19 AM	10:22 AM
LATE	900a02	Bus 31	102	102e	Express	4th Street 21c	10:27 AM	10:31 AM

Predicted Vehicle Arrival Time Details in Tabular Representation

Stop Perspective: View Details of Vehicle Arrival at a Stop with Mouse Over



Vehicle Perspective: View Details of Individual Vehicle with Mouse Over Interaction



Historical Performance Reports





Thank You

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