



Smart Information for a Sustainable World

## Tennessee 511 Program and the Future of ATIS and ATMS

Presentation to ITS Tennessee  
2011 Annual Meeting

## Points of Discussion

- Short overview of the problems facing Agencies and Travelers
- How to Integrate ATIS and ATMS features
  - Something for everyone
  - System requirements
  - The user experience
- Analytics and Decision Support
- Next Steps for TN
- Questions and Answers



Turning **Vision** into **Action**

# TELVENT

Smart Information for a Sustainable World



Agency and Traveler Problems

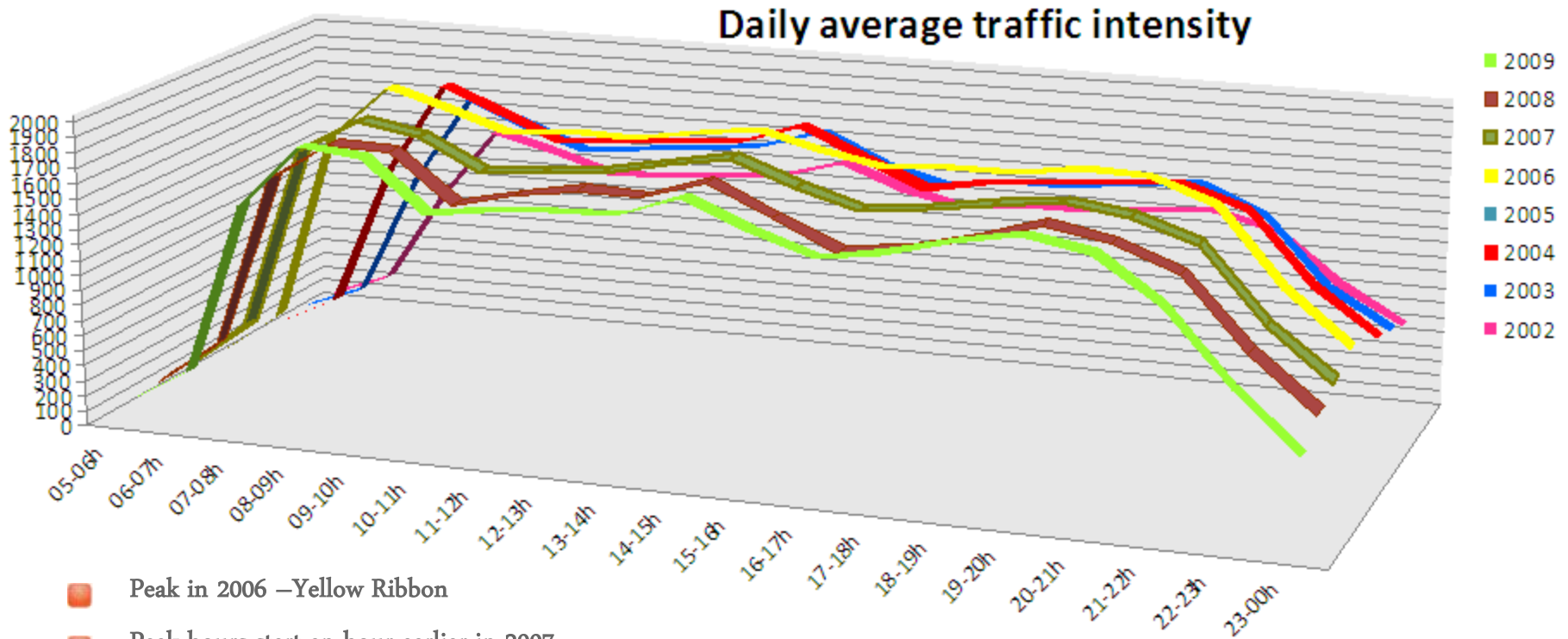
## Problem Statement

- Daily traveler information is at best sporadic.
- Integrated multi-modal information is rarely available.
- Much of the data is insufficient, incomplete and untimely.
- Service providers have limited access to real-time data.
- Rarely do systems provide any useful transit information.
- Generally only freeway routes are covered.
- Travelers have to search for information to assist them in making decisions

**Agencies have insufficient information to fully manage the entire transportation network and are therefore unable to disseminate accurate, timely and useful information to the traveling public.**



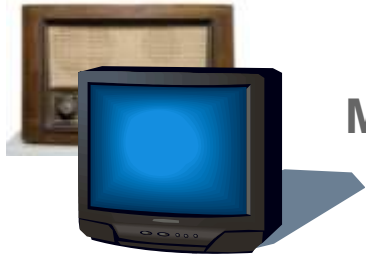
## Congestion is on the Increase



- Peak in 2006 –Yellow Ribbon
- Peak hours start an hour earlier in 2007
- Congestion continues to grow, nearing peak of 2006
- Currently starting earlier and finishing later
- Trend cannot continue

## Use - Information Gathering

Media



Web



Alerts





## Agency - Information Gathering



Silo'd Operations

Disparate non-integrated systems

Older-style communication

Limited Infrastructure Intelligence

Congestion

Speed

Construction

Special Events

CAD AVL

Transit

Data in different formats

Limited aggregation of information

Limited real-time Information

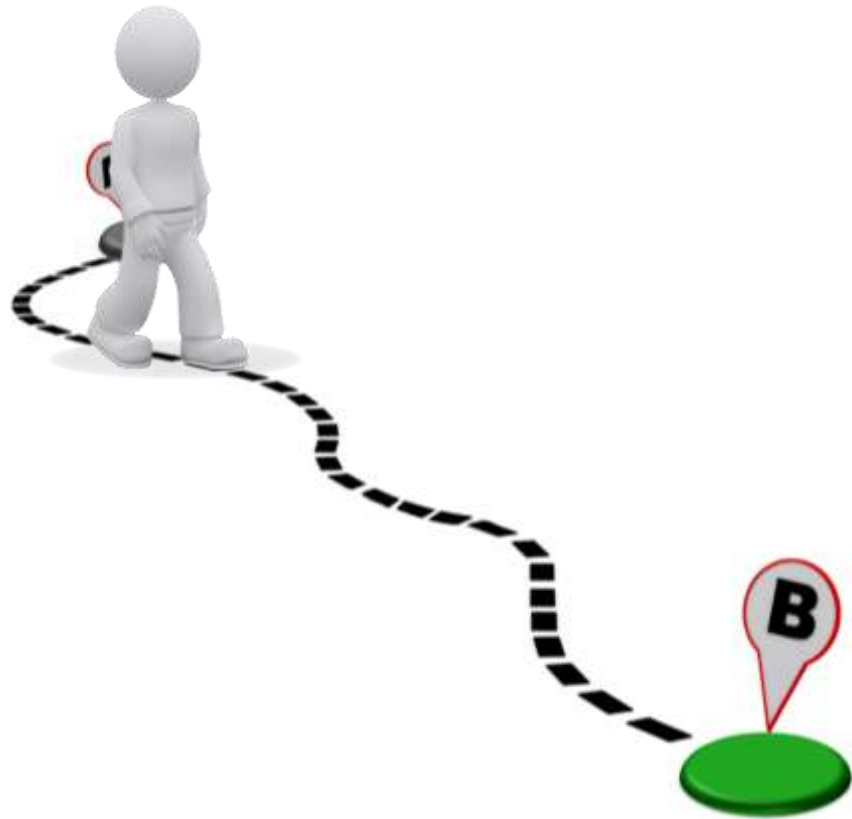
Almost no Prediction Capability



Turning **Vision** into **Action**

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Integrating ATMS and ATIS



## Something for Everyone – Travelers



### Car Driver

- Real-time and predictive Road Speeds
- Real-time weather Information
- Incidents and Construction Alerts
- Parking Guidance Destination
- Nearby Services
- HOT-HOV Lane utilization
- Congestion Charging
- Toll Plaza Information



### Transit User

- Real-time transit information
- Late running alerts
- Nearby Services
- Special Events Information
- Parking Guidance Origin
- On-demand Transit



### Shipper

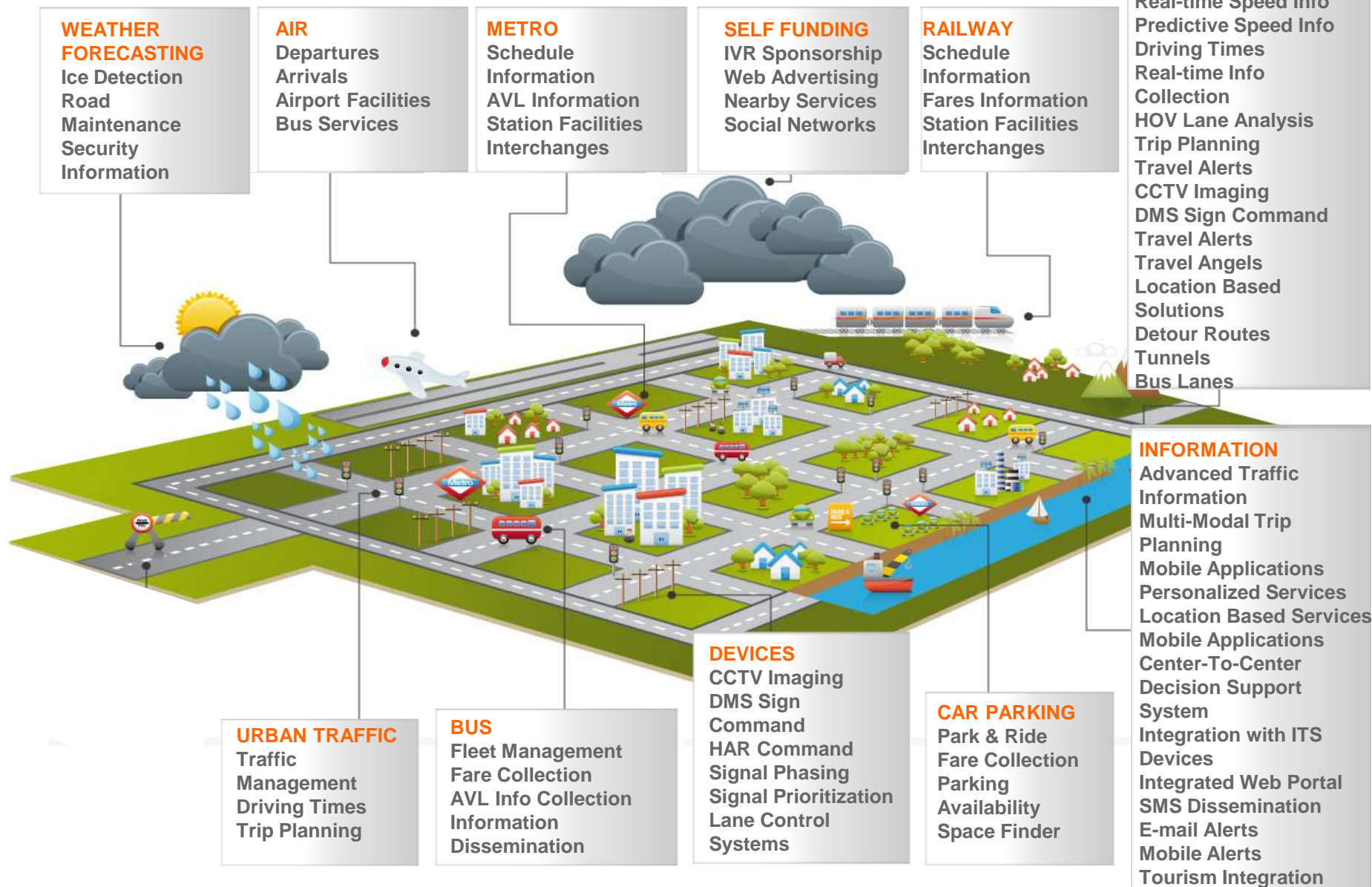
- Real-time and predictive Road Speeds
- Real-time weather Information
- Incidents and Construction Alerts
- En-route Truck Parking Guidance
- Roadway Capabilities
- Permitting
- Freight user charging
  - Economic Analysis

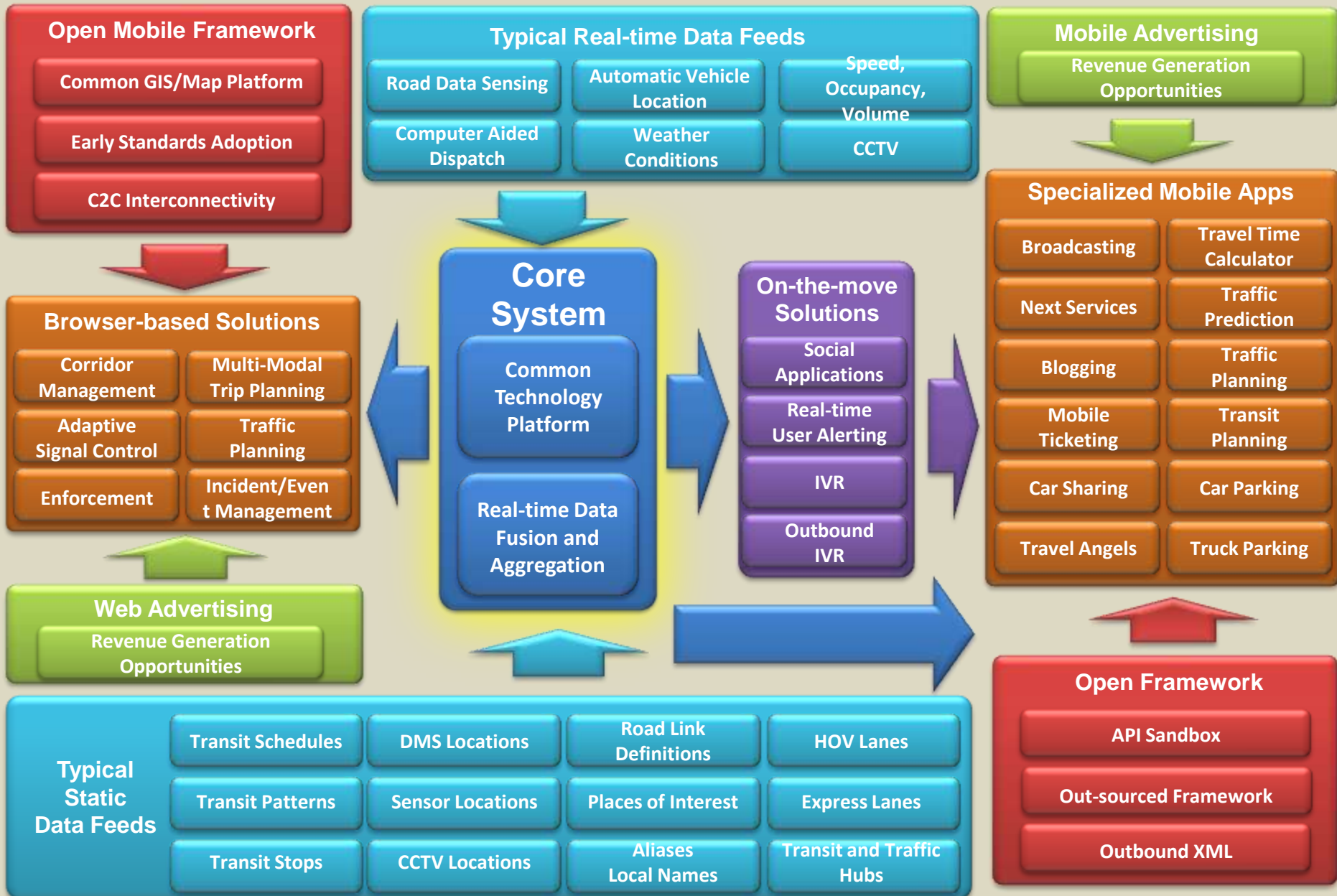


### Agency

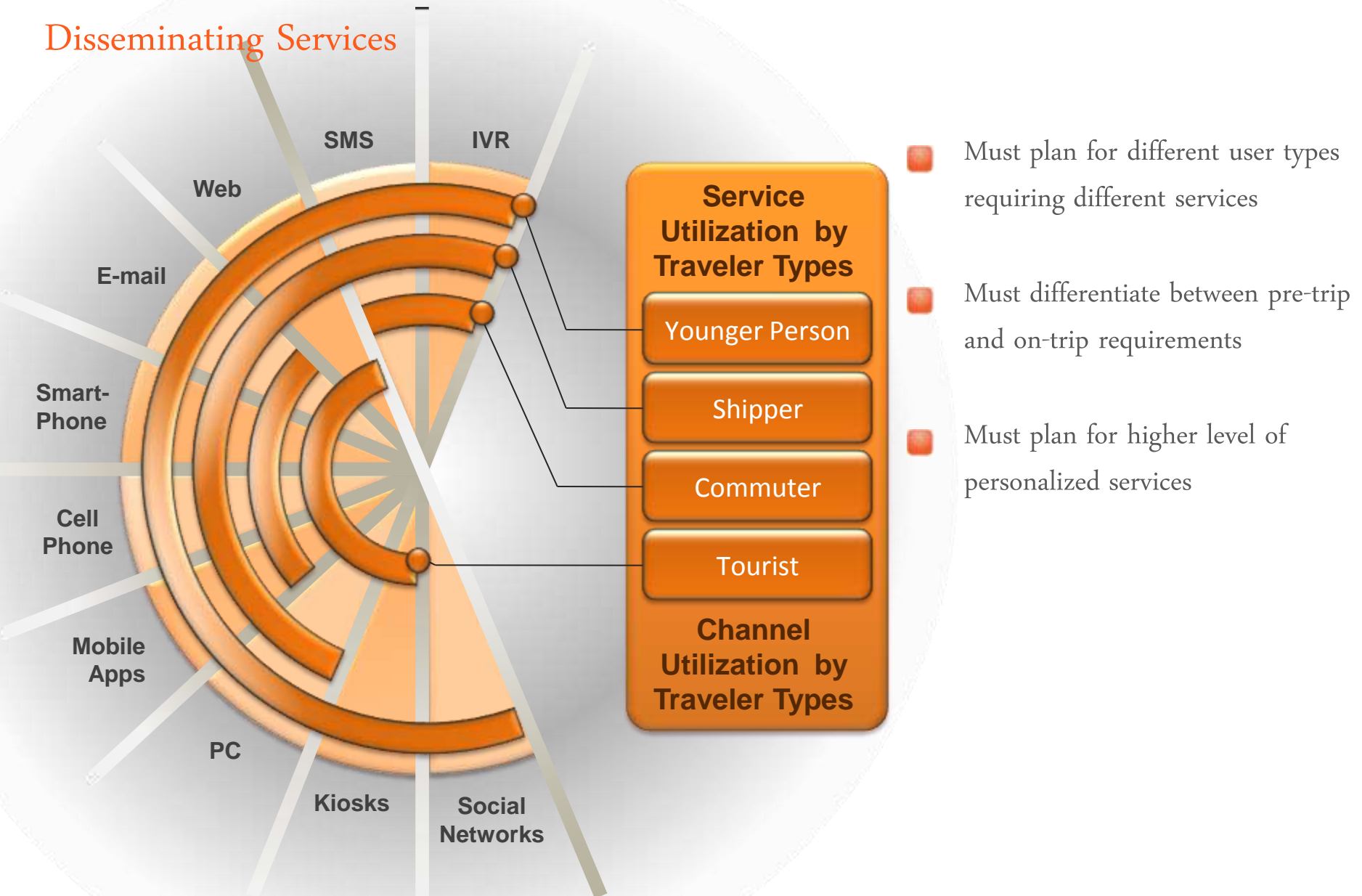
- Operation Coordination
- Operational real-time data
- Network efficiency
- Real-time and predictive Road Speeds
- Real-time weather Information
- Schedule Adjustment

## Collecting Data





## Disseminating Services

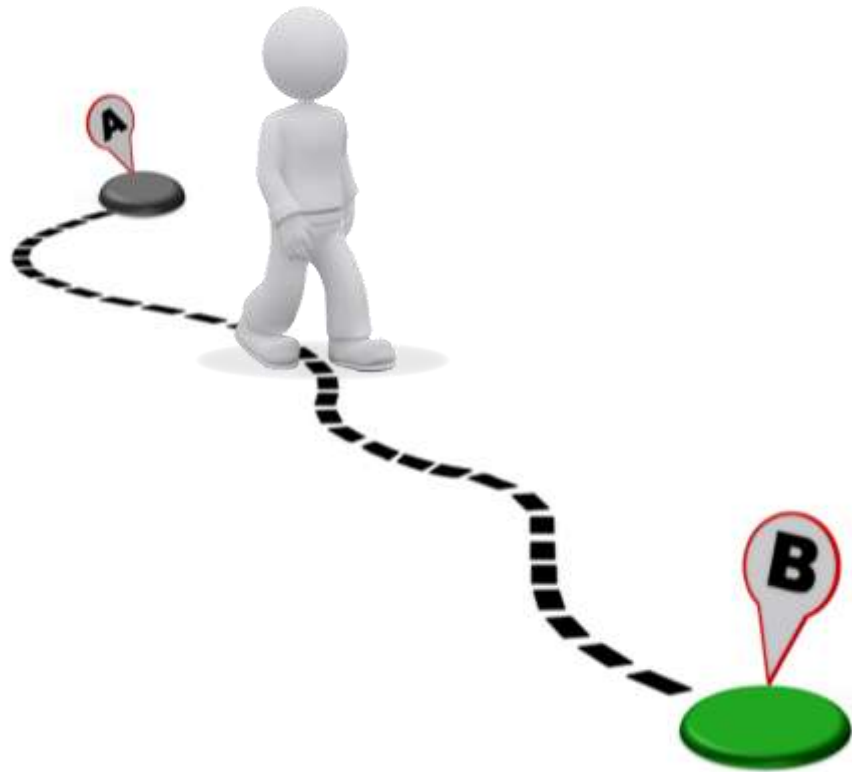


## In Summary

- Provide a tool to assist the management and planning of an entire transportation network including:
  - Incident and event management
  - Data aggregation, fusion and dissemination
  - Information portal delivery
  - Multi-channel Delivery
  - Consolidated platform for ease of solution integration
  - Traffic simulation engine
  - It can accept data from almost any source
  - It has full GIS capability

**The solution needs to be a full integrated Decision Support System which enables the best possible flow across the network by encouraging and facilitating the most efficient blend of traffic, freight and transit needs**

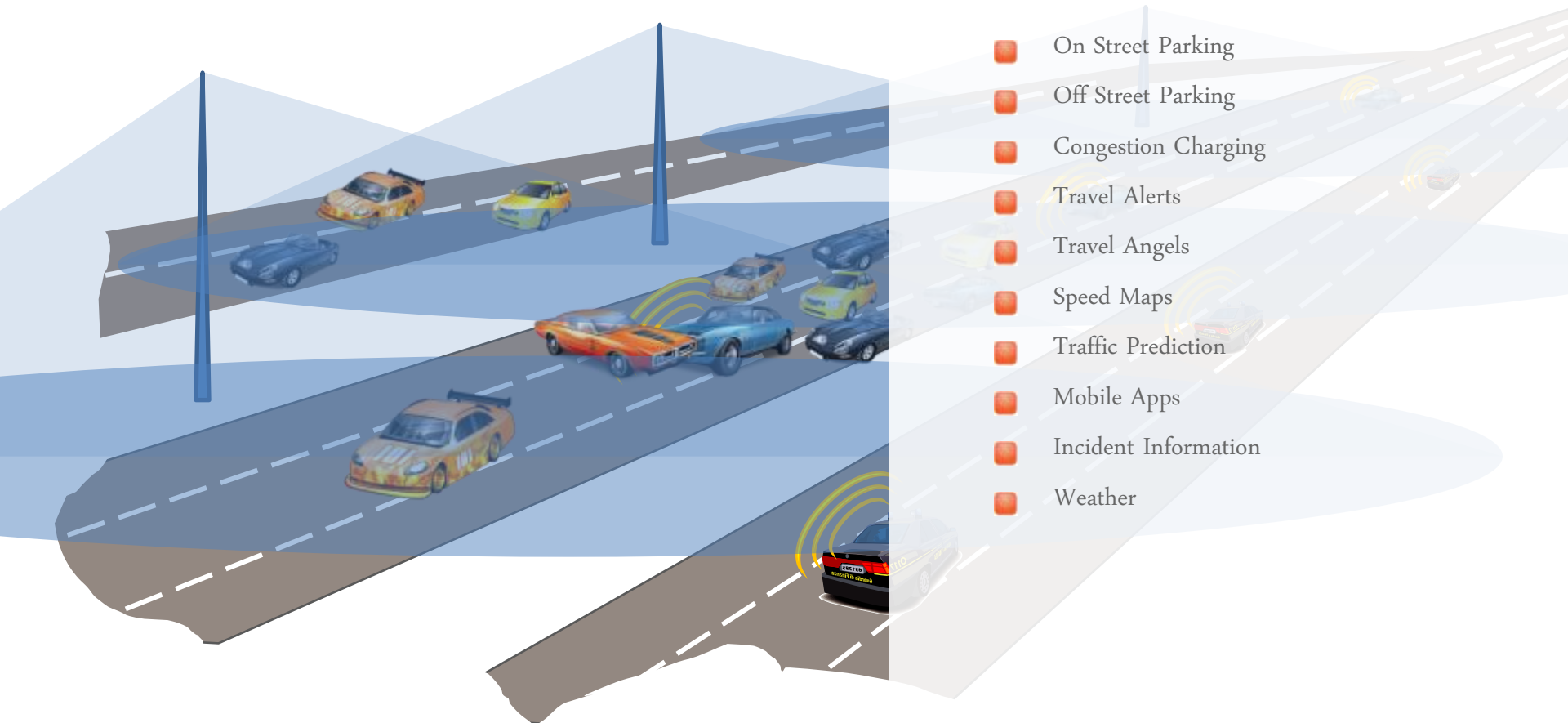
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What do users really want?



## Traffic Information



- On Street Parking
- Off Street Parking
- Congestion Charging
- Travel Alerts
- Travel Angels
- Speed Maps
- Traffic Prediction
- Mobile Apps
- Incident Information
- Weather

## Transit Information



- Transit Route Information
- Next Departures
- Facility Information
- Nearby Services
- Detour Information
- Bus Stop Locations
- Trip Planning
- Cycle Facilities
- Disabled Access
- Steps, Elevators, Escalators
- Parking
- Fares



DEPARTMENT OF TRANSPORTATION

# 511 TRAVELER INFORMATION

Search MD Sites

Email Friend

Print Page

**Alerts | There are no service alerts at this time.**

Home

My Maryland 511

Interactive Map

Traffic Events

Traveler Information

Weather Conditions

☐ Weather
 ☐ Construction
 ☐ Incidents
 ☐ Cameras
 ☐ Message Signs
 ☒ Speed

Region: Statewide



Tennessee 511

1H345-TAYLOR

NORTH

08:30

08:15 08:45



## ICM<sup>SM</sup>

Hwy msg: icy conditions along IH 77 region Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud (...)

< Previous · Next > ||

Events view

Link view

Map view

Objet editor

Alarms

User tools

## Create new event

1. Main info 2. Times 3. Contact info 4. Edit schedule 5. Edit description 6. Alert / Alarm setup optional steps

Event Type Incident Mode Traffic

Available incidents types

Abnormal load  
Accident cleared  
Accident

Selected types

Abandoned Vehicle

From

Facility / Route IH 77 Same Facility/Route as Point To? ☐

Type of point

Exit

I20

I30

I45

Exit 86 - Richardson

Cross Street

US75

Exit 86 - Richardson

Exit

Between

Exit 87 - University Park

Mile Marker

US80

Exit 88 - Farmers Branch

To

Place of Interest

IH 77

Exit 89 - Plano

Exit 90 - Irving

Exit 91 - Garland

Type of point

Mile Marker

Mile Marker - 287

Direction North

Lane detail

Status Closed

Lanes affected 3

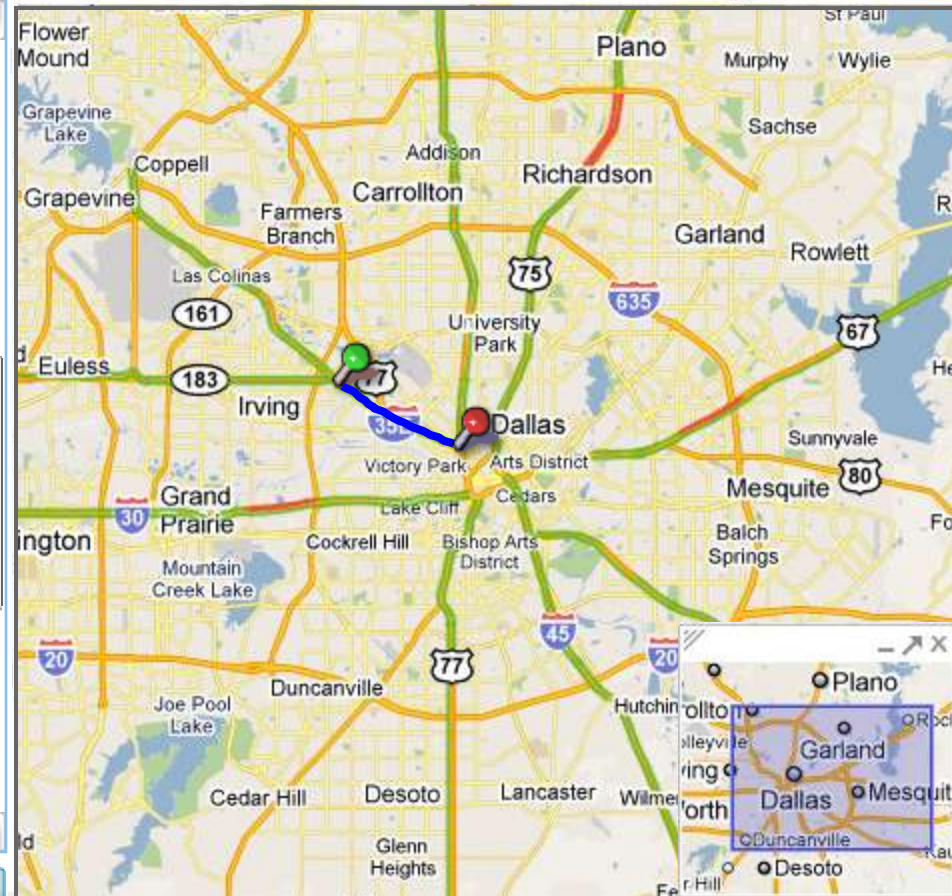
S 1 2 3 4 5 6 7 ↑

Save Draft

Cancel

Next Step ▶

Description



ICM<sup>SM</sup>

Hwy msg: icy conditions along IH 77 region Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud (...)

[< Previous](#) · [Next >](#) ||

Events view

Link view

Map view

Objet editor

Alarms

User tools

## Map View

Connected as: Admin 311 | ?

[Layer controls](#) [Maps controls](#) | 

## Layer Controls

## Event Layers

- ☒ Planned Constrt
- ☒ Active Constr
- ☒ Planned Spec Event
- ☒ Active Spec Event
- ☐ Incident
  - ☐ Transit
  - ☐ Traffic
- ☐ Others
  - ☒ Links
  - ☒ VMS
  - ☐ HAR
  - ☐ CCTV
  - ☐ Readers
  - ☐ Milepost

## Transit Layers

- ☐ Planned Constrt
- ☐ Stations
- ☐ Transit line
- ☐ Bus stop

## VMS # 367 US 77 North

IH35E NORTH  
AT IH635  
RIGHT LANE CLOSED

VMS Name 367 - US77 - North  
Type NTCIP Compliant  
Connection https://123.234.44.54  
Location 123456.45 - 7654323.78  
Owned By TXDOT  
Matrix 18 x 3  
New Message Severe Delays Due to Overturned Truck

Post Message

Cancel



ICM<sup>SM</sup>

Hwy msg: Icy conditions along IH 77 region Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud (...)

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Events view

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## Map View

Connected as: Admin 311 | ?

The screenshot displays the TELVENT ICM Map View interface. The main map shows the Dallas area with various roads and landmarks. A sidebar on the left contains 'Layer Controls' with two sections: 'Event Layers' and 'Transit Layers'. The 'Event Layers' section includes checkboxes for 'Planned Constr', 'Active Constr', 'Planned Spec Event', 'Active Spec Event', 'Incident', 'Transit', 'Traffic', 'Others', 'Links', 'VMS', 'HAR', 'CCTV', 'Readers', and 'Milepost'. The 'Transit Layers' section includes checkboxes for 'Planned Constr', 'Stations', 'Transit line', and 'Bus stop'. A 'CCTV # 457 US 77 North' window is open, showing a night-time view of traffic on a highway. The map also features a 'Layer Controls' sidebar with a minus sign, a 'CCTV # 457 US 77 North' window with an 'Edit / Status' button, and a 'Map View' title bar. The bottom right corner shows a small inset map of the Dallas area.

**Layer Controls**

**Event Layers**

- ☒ Planned Constr
- ☒ Active Constr
- ☒ Planned Spec Event
- ☒ Active Spec Event
- ☐ Incident
- ☐ Transit
- ☐ Traffic
- ☐ Others
- ☒ Links
- ☒ VMS
- ☐ HAR
- ☒ CCTV
- ☐ Readers
- ☐ Milepost

**Transit Layers**

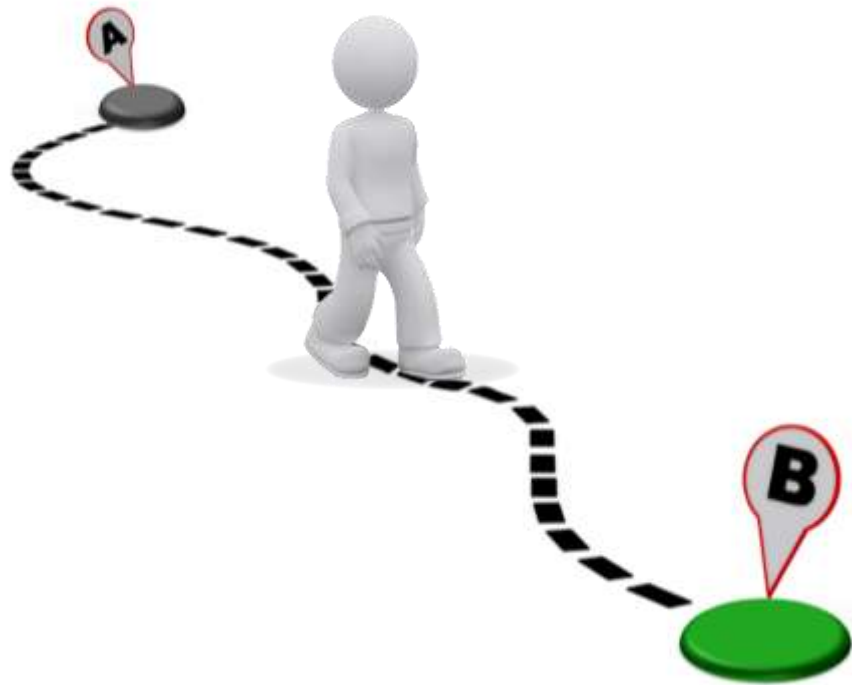
- ☐ Planned Constr
- ☐ Stations
- ☐ Transit line
- ☐ Bus stop

**CCTV # 457 US 77 North**

Edit / Status



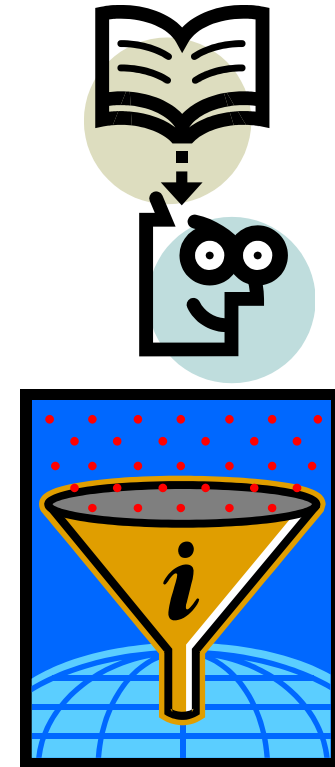
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Analytics & Decision Support

## Analytics & Performance Monitoring

- Rule #1 – You must have the data!
- Add Value
  - Turn Data into Information  
“Actionable Intelligence”
  - Develop Criteria for Action
- Evaluate & Reassess
  - Performance Monitoring
  - Pattern Detection
  - Causal Analysis
- How important is the data?



**Answer:**

**See Rule #1**

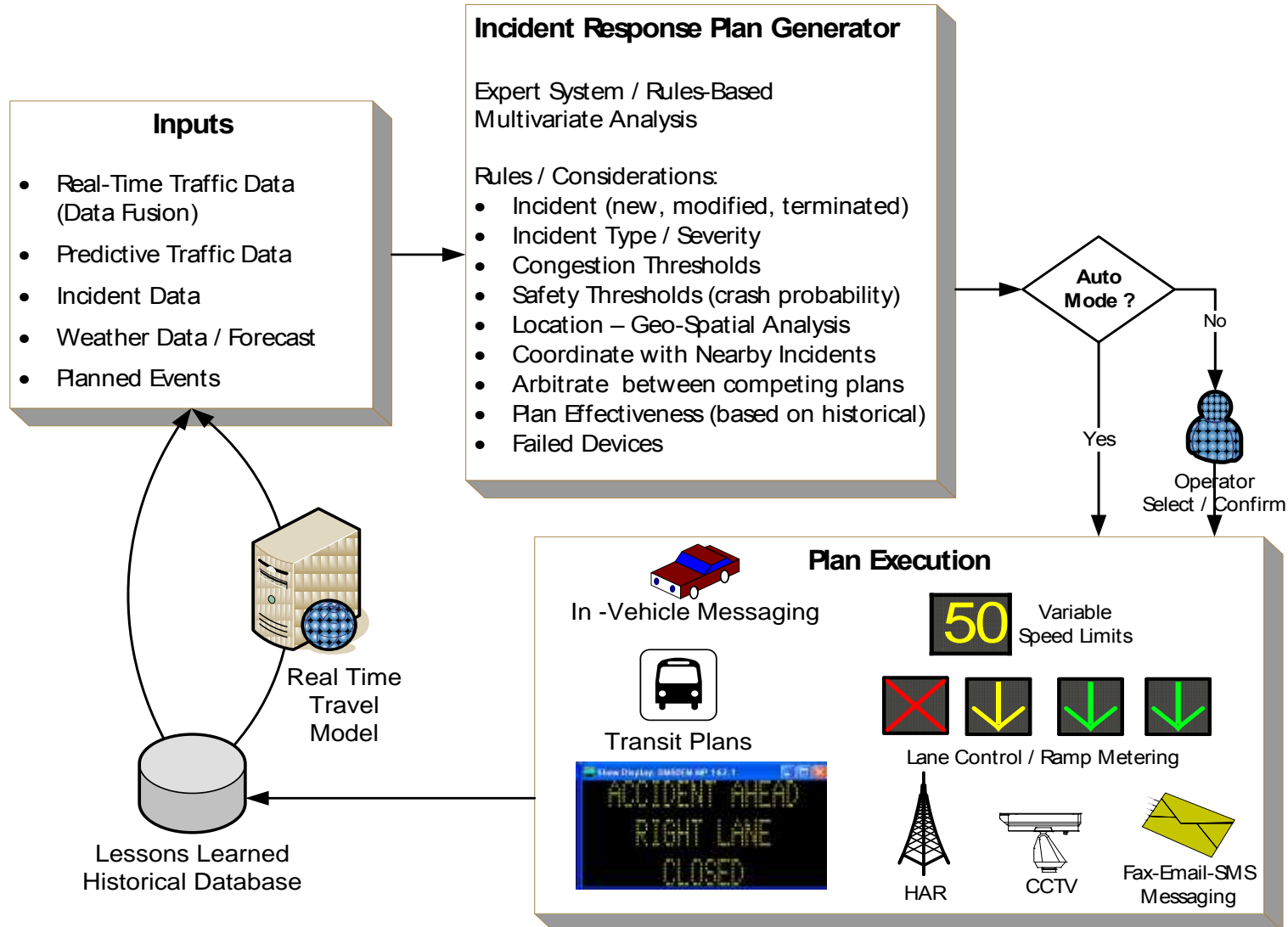
## Decision Support Systems

What is a Decision Support System?

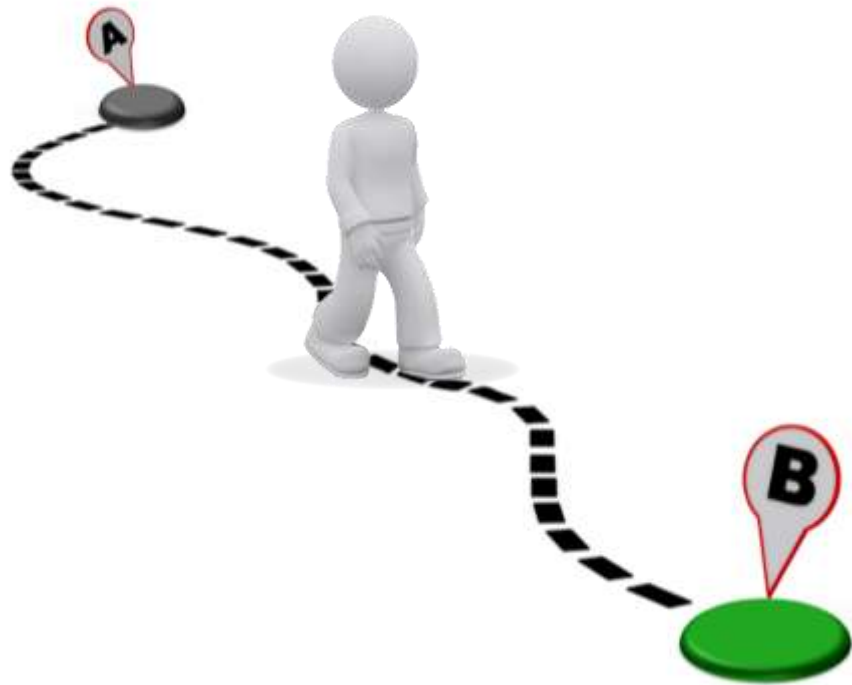
- Data Driven
  - Queue Detection
  - Speed Thresholds
  - Pavement Temperature
  - AQ Thresholds
- Model Driven
  - Scenario Comparison
  - Predicted Conditions
- Expert System – Rules Based
  - Policies & Procedures
  - Conditional Execution
  - Arbitration Rules



## Decision Support Systems



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Next Steps for Tennessee

Smart Information for a Sustainable World

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Any Questions?







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Thank you