Second National Workshop on Weather Responsive Traffic Management (WRTM)

Traffic Data Resources for WRTM

Salt Lake City, Utah
September 25-26, 2013
Organization

Data Integration to support WRTM decision making

- The Data
- Data Sources
- Data Acquisition
- Data Integration

Traffic Flow
Traffic Events
Weather Data
Road Condition
Asset Data
Other Agency Data
Customer Feedback
Traffic Management Centers (TMCs)

• TMCs perform critical functions to manage traffic during all weather conditions
  
  – Monitor and control traffic flow
  
  – Detect and manage responses to traffic incidents
  
  – Operate and maintain traffic control devices and infrastructure
  
  – Provide information to operators and travelers
# Traditional Traffic Data During Weather Events

## Traffic Stream Data
- Traffic volume, speed, density, etc.
- Vehicle type (size, weight, profile)
- Travel times and delays
- Predictability and reliability of flow

## Traffic Event Data
- Collisions, crashes, (location, number, severity, injury, fatalities)
- Road closures and restrictions (location, extent, duration)
- Construction (location, impacts, timing)
- Scheduled events (sports events, concerts: location, state/end times)

## Asset Information
- Inventory of assets
  - Pavements, Bridges, Sensors, cameras
  - Signs, Vehicles, equipment, materials
- Infrastructure characteristics and condition
  - Structural condition, Weather vulnerability, Power and communication links

## Other Agency Data
- TMCs
  - Within state; other states’ TMCs
- State DOTs
  - Adjacent DOTs and DOTs along extended interstate routes
- Agencies
  - Transit, State patrol; local police
  - Emergency services, Other private sector entities
Traditional Sources of Traffic Data

• Traffic monitoring devices
  – Cameras, radar, loop detectors
  – Probe data (automatically collected and transmitted from vehicles through transponders such as toll tags, bluetooth enabled phones)

• Data archives
  – State transportation databases (PEMS –CA, ADMS- VA)
  – National databases (HPMS)
  – University Archives (RITIS – MD and others, PORTAL- OR)

• Reports from observers
  – State patrol
  – DOT motorist assist patrols
  – DOT maintenance crews
  – Traveler observations
Crowdsourced Data

• Feedback from travelers en-route through Smartphones (Apps, Social Media)
  – Waze
  – WeatherMob
  – Inrix
  – Others
• Small population of users can produce vast quantities of data
• Issues – Fidelity, Quality, Data ownership

Figure Source: The New Analytics for Transportation Management: Using “Big” and Crowd-sourced Data, James Pol, RITA ITS-JPO, May 2012
Probe Data

• Travel times on a wider range of facilities
• Travel time information can be essential in comparing the performance of a transportation facility during normal dry conditions and inclement weather
• New business models involving private sector provided data
• I-95 Vehicle Probe Project is a good example of use of probe data by several State DOTs in the room today
New Data Visualization Tools

• Bottlenecks
• Congestion Heat Maps
• Incident timelines

Figure Source: CATT Lab, University of Maryland
Decision Support Tools

- Integrated Corridor Management is demonstrating the use of DSS
- Use of weather information still evolving