Dallas
Integrated Corridor Management & Weather

2013 Road Weather Management Stakeholder Meeting

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Shawn Truelson
Schneider Electric
US 75 Corridor Networks

- Freeway with continuous Frontage Roads
- Managed HOV lanes
- Dallas North Tollway
- 167 Miles of Arterials
- DART Bus Network
- DART Light Rail
- 900 Signals
- Multiple TMCs
- Regional ATIS
<table>
<thead>
<tr>
<th>Analysis, Modeling &amp; Simulation</th>
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<tbody>
<tr>
<td><strong>Annual Travel Time Savings (Person-Hours)</strong></td>
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<tr>
<td><strong>Improvement in Travel Time Reliability (Reduction in Travel Time Variance)</strong></td>
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<tr>
<td><strong>Gallons of Fuel Saved Annually</strong></td>
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<tr>
<td><strong>Tons of Mobile Emissions Saved Annually</strong></td>
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<tr>
<td><strong>10-Year Net Benefit</strong></td>
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<td><strong>10-Year Cost</strong></td>
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<td><strong>Benefit-Cost Ratio</strong></td>
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Committees & Lead Agencies

- Operations / DSS: TxDOT
- Policy & Programming: NCTCOG
- Signal Systems: Richardson
- Transit Applications: DART
- Outreach & Marketing: DART
- SmartNet / SmartFusion: DART
- Parking Management: Plano
- Arterial Street Monitoring: Dallas
- Video Sharing: NCTCOG
- 511 System: DART
- DART Data Portal: DART
- C2C: NCTCOG
- AMS / Evaluation: DART
SmartFusion Data Feeds
ICM Applications

- Responsive Traffic Signal System
- Arterial Street Monitoring System
- Third Party Data
- Parking Management
- Real-Time Transit Vehicle Information
- Freeway & HOV Systems
- Weather
- SmartNET
- Decision Support System
- 511
Severe Thunderstorm/Ice Storm
February 1, 2011
Severe Thunderstorm/Ice Storm
February 1, 2011
Real Time Weather Information

- Current weather conditions
- 5-day forecast
- Weather radar
Real Time Weather Information

- Current weather conditions
- 5-day forecast
- Weather radar
Roadway Specific Weather Alerts

Same technology as in the Integrating Clarus Data with the 511 New York Traveler Information System, June 30, 2011
ICMS - SmartNET/ SmartFusion

- Information Exchange Tool & Backbone of ICM Network
  - Web Based Interface to ICM System
  - Data Fusion Engine
  - Allows entry and management of Incidents, Planned Events
  - Receives and Publishes data to the Regional C2C System & Other External Systems
  - Feeds Data to the 511 System, Decision Support System and Public
SmartNET Map Interface

**Map Information:**

- **Layer:** Map
- **Options:** Map, Satellite, Hybrid

**Map Description:**

- **Layer:** Traffic, Transit, ITS Objects
- **Buttons:**
  - VMS
  - HAR
  - CCTV
  - Detectors

**Important Note:**

- **Marker:**
  - **Description:** TxDOT Dallas: construction on US 75 Southbound between Woodall Rodgers Fwy (Spur 366) and Live Oak St, 5/24/2013 5:00:00 AM through 8/23/2013 5:00:00 AM. The right lane of south bound US 75 and the exit ramp to Live Oak St, just south of Woodall Rodgers, will be closed continuously day and night for three months for new road construction.
Decision Support System (DSS)

• Will assist operating ICM agencies with responding to incidents in a coordinated manner

• Multiple stage implementation
  – Manual Interaction – use developed response plans
  – Real-time Data Integration
  – Predictive Model Integration - Utilize Model to Predict 30 minutes into future
DSS Concept

Monitor US 75 Congestion

Divert to Frontage Road

Divert to Frontage Road and Greenville Ave

Divert to Frontage Road, Greenville & the Red Line
## DSS Rules for Response Plan Development

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<tbody>
<tr>
<td>Minor Incident: Short Diversion to FR.</td>
<td>0.5 &lt; Q &lt; 1</td>
<td>&lt; 30</td>
<td>&lt; 2</td>
<td>&gt; 20</td>
<td>N/A</td>
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<td>1 &lt; Q ≤ 4</td>
<td>&lt; 30</td>
<td>≥ 2</td>
<td>&gt; 20</td>
<td>N/A</td>
<td>?</td>
<td>N/A</td>
<td>N/A</td>
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<td>Major Incident: Diversion to FR. &amp; GV.</td>
<td>1 &lt; Q ≤ 4</td>
<td>&lt; 30</td>
<td>≥ 2</td>
<td>&gt; 20</td>
<td>&gt; 20</td>
<td>?</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Major Incident: Diversion to FR. &amp; GV., Transit</td>
<td>Q &gt; 4</td>
<td>&lt; 30</td>
<td>≥ 2</td>
<td>&gt; 20</td>
<td>&gt; 20</td>
<td>?</td>
<td>&lt;90%</td>
<td>&lt;90%</td>
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**Alert (Send Heads Up Notification to ICM Coordinator, “N-1”)**

FR = Frontage Rd.  
GV = Greenville  
Q = Queue in US-75 main lanes
Integrated Corridor Management (ICM) Decision Support System (DSS)
Alternatives for Agencies, Options for Commuters When Incidents Occur on US 75

**THE PROCESS**

1. **An incident occurs on US 75 and is entered into SmartNET by agency staff**
2. **SmartNET relays the incident information to DSS**
3. **DSS evaluates the incident and commuting alternatives using expert rules**
4. **DSS recommends solutions to multiple operating agencies**
5. **ICM coordinator recommends DSS solution implementation**
6. **Commuters receive information and make alternative travel choices**
7. **DSS reevaluates solution based on roadway conditions and incident status**

**THE BENEFITS**

- Improved travel time reliability for commuters
- Enhanced decision making support for operating agencies
- Achieves a 20:1 return ($278.8 million) on the project’s cost over 10 years
- Less pollution from idling vehicles in congested traffic
Typical DSS Response Plan

J 75 S 266
Major Incident between Renner Exit and Campbell-Galatyn Exit

LEGEND
- Diversion Route
- Incident Segment
- Dynamic Message Sign
- TxDOT
- DART
- NTTA
- Dallas
- LBJ Express
- Park-n-Ride Rail Station

Approved: 1/11/13
Revised:
Not To Scale
Plano

- Frontage road: activate signal timing signal plan #32 and monitor every 15 min.

<table>
<thead>
<tr>
<th>Native Signal ID</th>
<th>Name</th>
<th>SmartNet Signal ID</th>
<th>DIRECT Signal ID</th>
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<tbody>
<tr>
<td>4324</td>
<td>CENTRAL @ NORMAN WHITSITT</td>
<td>1010147250</td>
<td>4408</td>
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<tr>
<td>4318</td>
<td>CENTRAL @ PLANO</td>
<td>1010147190</td>
<td>4418</td>
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<tr>
<td>4331</td>
<td>CENTRAL @ PARK</td>
<td>1010147320</td>
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- Greenville/K Avenue: activate signal timing signal plan #34 and monitor every 15 min.

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<th>DIRECT Signal ID</th>
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<tr>
<td>4695</td>
<td>PARK @ STATE HWY 5</td>
<td>1010151710</td>
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<td>4332</td>
<td>18TH @ STATE HWY 5</td>
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<td>4330</td>
<td>15TH @ STATE HWY 5</td>
<td>1010147310</td>
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<td>4329</td>
<td>14TH @ STATE HWY 5</td>
<td>1010147300</td>
<td>4280</td>
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<tr>
<td>4322</td>
<td>PLANO @ STATE HWY 5</td>
<td>1010147230</td>
<td>4282</td>
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<tr>
<td>4321</td>
<td>PLANO RD @ PGBT WB FR</td>
<td>1010147220</td>
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<tr>
<td>4697</td>
<td>FM 2514 @ STATE HWY 5</td>
<td>1010151730</td>
<td>5708</td>
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Schedule

• Soft Launch – April 26, 2013
• Shake out period – Six months
• Hard Launch – October 2013