Dallas Integrated Corridor Management

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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
ICM Concept

Monitor US 75 Congestion

Divert to Frontage Road

Divert to Frontage Road and Greenville Ave

Divert to Frontage Road, Greenville & the Red Line
Dallas ICMS Architecture

DSS Sub-System
- Expert Rules
- Prediction
- Evaluation

SmartNET Sub-System
- DSS Dialogue
- SmartNET
- ICM Coordinator
- Agency User
- Agency Administrator

SmartFusion Sub-System
- Collection & Fusion platform
- C2C
- DART Events
- AVL/APC
- DART GTFS
- Weather
- NAVTEQ Arterials
- Parking Management
- TxDOT XML (HOV)

511DFW
- Public Web
- IVR
- Public XML
- Trip Planner
- Social Media
- My511 - Alerts
- Mobile Application
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.
8. Examines current roadway conditions such as: incident location, light rail utilization, lanes blocked, available capacity of alternative routes.
9. Forecasts 30-minute impact of implementing the recommendation to ensure value added.
10. Agency implements the recommended solution.

**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**
## DSS Rules Evaluation for Response Plan Generation operations

<table>
<thead>
<tr>
<th>Strategies</th>
<th>No. Affected Lanes (GP &amp; HOV)</th>
<th>Main Lanes</th>
<th>Speed FR (on Diversion Route) [mph]</th>
<th>Speed GV (on Diversion Route) [mph]</th>
<th>Park-n-Ride Utilization</th>
<th>Red LRT Utilization</th>
<th>Prediction MOEs</th>
<th>Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Incident: Short Diversion to FR.</td>
<td>≥ 1</td>
<td>[30]</td>
<td>0.5 &lt; Q &lt; 1</td>
<td>&gt; 20</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Major Incident: Long Diversion to FR.</td>
<td>≥ 1</td>
<td>&lt; 30</td>
<td>Q ≥ 1</td>
<td>&gt; 20</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Major Incident: Diversion to FR. &amp; GV.</td>
<td>≥ 2</td>
<td>&lt; 30</td>
<td>Q ≥ 1</td>
<td>&lt; 20</td>
<td>&gt; 20</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
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<tr>
<td>Major Incident: Diversion to FR. &amp; GV., Transit</td>
<td>≥ 2</td>
<td>&lt; 30</td>
<td>Q &gt; 4</td>
<td>&lt; 20</td>
<td>&lt; 20</td>
<td>&lt;85%</td>
<td>&lt;85%</td>
<td></td>
</tr>
</tbody>
</table>

FR = Frontage Rd. GV = Greenville
Response Plans

- 400+ Response Plans
- Multi-jurisdictional
- Time-of-Day dependent
- Actions: DMS, traffic signal timing, rail and parking occupancy, and 511
- DSS Committee reviews response plans recommendations every month
National Cooperative Highway Research Program
Project 20-68A: US Domestic Scan Program

Domestic Scan 12-02: Advances in Strategies for Implementing Integrated Corridor Management (ICM)
Scan Locations

- **Week 1:**
  - New York/New Jersey/Pennsylvania
  - Dallas, TX

- **Week 2:**
  - Minneapolis, MN
  - Phoenix, AZ
  - San Diego, CA
LESSONS LEARNED

Dallas ICM &
NCHRP 20-68A, Scan 12-02
• What is “ICM”? 
• What is “DSS”? 
• 30/70, Technology vs. Others
Plan Big, Start Small

- ICM must be in your regional ITS strategic plan
- Plan for future ICM expansion
  - Geographic
  - Systems
  - Agencies
  - Applications
- Deal with Institutional Issues from beginning
- Everyone must win for the program to succeed
- Everyone must be committed
- Data sharing is a good start for ICM systems
Proceed with **O&M** in Mind

- Envision ultimate working system
  - Determine who is in charge up front
  - Determine resources needed honestly
  - Define roles and responsibilities
  - Identify funding sources
  - Identify regional agreements and policies in advance
- Invest on the ConOps
- It is all about commitments
Be Flexible

- Plans are plans
- Expect unexpected
- You either don’t have it or don’t know it
- It is OK to go back to basics
Data

- It is all about data
- Whose Data, map, naming, etc.? 
- MPO’s Regional data or DOT’s facility data? 
- Why not Google, Microsoft, others? 
- Regional Standards (ESRI, Google, Microsoft, etc.)? 
- Events data should drive the map data selection.
- Is probe based travel time data good enough? 
- Translation of nodes and links are huge 
- Individual system static data updates has to be coordinated. 
- Open data policy
Final Thoughts.......  

- Once the ICMS is deployed, test, update and validate the strategies.  
- Train on real system  
- This is a work in progress.
Final Thoughts.....

• ICM is a name, a concept, a tool as apart of the much bigger concept of cooperation among regional agencies to better operate a corridor, a city, a region and more.

• ICM has to become an integral part of any future local, regional and statewide ITS strategic plans.

• Proper planning will assure the essential political buy-in of the concepts and funding.
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