Agenda

- Background
- Conception
- Procurement - Deployment
- Q&A
Background - DFW Region

- 5th most congested region in US
- #1 worst region for growth in congestion
- Population is over 6 million, adding 1 million every 7-8 years
- Travel demand and congestion continues to grow
- Several freeways scheduled for construction
Background-US 75

- US 75 is main north-south route from Dallas CBD to North Dallas area
- One of the top congested roadways in Texas
- No ability to expand freeway, arterials, or alternate routes
- Significant employers in corridor
- Numerous special events throughout year
- Showcase for ITS integration in the region
### Background-US 75

<table>
<thead>
<tr>
<th>US 75 Segment</th>
<th>Annual Hrs of Delay per Mile</th>
<th>Annual Hrs of Delay</th>
<th>Annual Cost of Delay</th>
<th>Avg. Daily Traffic (ADT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBD to 635</td>
<td>525,000</td>
<td>4,922,300</td>
<td>$104.5 million</td>
<td>266,700</td>
</tr>
<tr>
<td>635 to PGBT</td>
<td>309,500</td>
<td>2,048,700</td>
<td>$43.5 million</td>
<td>194,200</td>
</tr>
</tbody>
</table>

-Source: Texas Transportation Institute (TTI)-2010 data
Conception- US 75 ICM

- 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
Conception—What is ICM?

• The integrated management of freeway, arterial, transit, and parking systems within a corridor

• Management of the corridor as a system, rather than the more traditional approach of managing individual assets
Conception-Dallas US 75 ICM Vision

Operate the US 75 Corridor in a true multimodal, integrated, efficient, and safe fashion where the focus is on the transportation customer
Conception-How can ICM help?

- Individual agencies are operating their systems well
- Opportunities for advancement are in coordinated management
- Need alternatives for travelers, especially transit
- Need common, reliable data platforms for decision making
- Building on existing institutional arrangements was a key to building consensus
- Need to build trust with the public on accuracy and reliability of information
Conception-Identify Stakeholders

• All cities along corridor are DART member cities

• DART and TxDOT jointly managed HOV program that included US 75 corridor

• DART co-located at regional TMC

• DART is transit operator on US 75 corridor
Conception-Identify Roles & Responsibilities

• DART is Transportation provider for all the cities along the corridor
• DART identified resources internally to lead and implement ICM program with support from all stakeholders
• DART utilized existing off-the-shelf product in the market for integrating ATMS systems in Dallas
Conception-Identify Roles & Responsibilities

- DART utilized existing A & E services contractor for Stage-1 & Stage-2 process

- DART solicited RFQ and RFPs for Stage-3 under On-call A & E services contract

- DART utilized existing partnership with local universities and research institutions through all stages of USDOT
Conception-US DOT ICM Pioneer Sites

3 Stages for the Pioneer Sites:

- Stage 1 – Concept of Operations, Sample Data, and Requirements (FY07-08)
- Stage 2 – Analysis, Modeling, and Simulation (FY09-10)
- Stage 3 – Demonstration and Evaluation (FY10-FY14)
Analysis Modeling Simulation- (AMS) Stage-2 Results

- ICM improves
  - Mobility
  - Travel time reliability
  - Reduces fuel consumption
  - Reduces mobile emissions

- ICM strategies produce more benefits
  - At higher levels of Travel demand
  - During non-recurrent congestion
# Analysis Modeling Simulation (AMS) Stage-2 Results

<table>
<thead>
<tr>
<th></th>
<th>San Diego</th>
<th>Dallas</th>
<th>Minneapolis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Travel Time Savings</td>
<td>246,000</td>
<td>740,000</td>
<td>132,000</td>
</tr>
<tr>
<td>(Person-Hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improvement in Travel Time</td>
<td>10.6%</td>
<td>3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Reliability (Reduction in Travel Time Variance)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gallons of Fuel Saved Annually</td>
<td>323,000</td>
<td>981,000</td>
<td>17,600</td>
</tr>
<tr>
<td>Tons of Mobile Emissions Saved</td>
<td>3,100</td>
<td>9,400</td>
<td>175</td>
</tr>
<tr>
<td>Annually</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-Year Net Benefit</td>
<td>$104M</td>
<td>$264M</td>
<td>$82M</td>
</tr>
<tr>
<td>10-Year Cost</td>
<td>$12M</td>
<td>$14M</td>
<td>$4M</td>
</tr>
<tr>
<td>Benefit-Cost Ratio</td>
<td>10:1</td>
<td>20:1</td>
<td>22:1</td>
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</table>
US 75 Corridor Crash Data (Dallas County)
US 75 Corridor Crash Data (Collin County)
ICM Hypothesis

- Improve situational awareness
- Enhance response and control
- Better traveler information
- Improve corridor performance
- Positive or no negative impact on safety
- Positive or no impact on air quality
- Benefits greater than costs
- Provide useful and effective tool for ICM Project Managers
Elements of Dallas ICM

- SmartNET & SmartFusion
- Decision Support System
- 511 System
- Freeway Management
- HOV Lane Monitoring
- Arterial Street Monitoring
- Responsive Traffic Signal
- Transit Signal Priority
- Parking Management
- Real Time Transit Vehicle Info
- Regional Trip Planner
- Weather Integration
- DART Data Portal
- Video Sharing Network
- External Data Sources
- Training
- O&M
- Marketing
- AMS & Evaluation Support
ICM Strategies

- Prioritize non-recurring congestion based on historical crash data
- Identify available alternatives for route/mode diversion along the corridor
- Route Diversion Strategy (minor incident)
  - Diverts traffic to parallel frontage roads
- Route Diversion Strategy (major incident)
  - Diverts traffic to frontage road and strategic arterials
- Mode Diversion Strategy (major incident)
  - Diverts travelers to DART Red Line
- Combined Route and Mode Diversion Strategy
  - Diverts travelers to frontage roads, strategic arterials, and DART Red Line
- Advanced Traveler Information (all scenarios)
  - Better pre-trip, en-route, and multi-modal information
Implementation-ICMS Concept
Implementation-SmartNET Map layer
Implementation-Freeway Management

Diversion Plan:

**Minor Incidents** 1-lane and shoulder blocked, <2-mile queue
- Divert US 75 traffic to Frontage Rd

**Major Incidents** 2-lanes or more blocked, 2 to 4-mile queue
- Divert US 75 traffic to (any or all): Frontage Road
- Greenville Ave
- Red Line light rail transit
Implementation - Arterial Street Monitoring

• Proven Bluetooth Technology

• Have deployed about 40 detectors along diversion routes

• DSS will use Travel Time and Speeds on diversion routes to select recommended plan

• External Data Sources
Implementation - Real Time Transit Vehicle Information

- Install APC on all Red Line cars.
- Transmit and integrate real time AVL and APC data to ICM System.
Implementation - Parking Management

- 5 Park & Ride lots along LRT Red Line
- Monitor availability at each Park & Ride lot
- Publish to 511 System
- Publish to TxDOT DMS
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**

Logos:
- DART
- City of Dallas
- Transportation Institute
- SMU
- University of Texas at Arlington
- TELVENT
Multimodal Traffic and Transit Information disseminated through:

- A Public Web Site
- Interactive Voice Response (IVR)
- A Mobile Web Site and Mobile Application
- My511 (Web, IVR, Alerts)
- Social Media
ALERTS: There are no service alerts at this time.

WELCOME TO 511DFW

511DFW is the Dallas and Fort Worth Region’s official traffic and travel info source. Whether you drive or take public transit, 511DFW will help you reach your destination in the most efficient manner. Wherever you’re going, 511DFW will get you there from here.

To learn more about 511DFW, see our Frequently Asked Questions (FAQs).
ALERTS: There are no service alerts at this time.
TRIP RESULTS

From: 1401 Pacific Avenue, Dallas, TX 75202, USA
To: Plano, TX, USA

Itinerary 1: 44 mins

- Walk to Akard Station
  (About 2 mins - 0.1 mi)

  - **ORANGE** Light rail towards E - Orange Line - Parker Road
  - **Downtown Plano Station** - Arrive 5:54pm
    (38 mins, 14 stops)

- Walk to 1101-1125 East 15th Street, Plano, TX 75074, USA
  (About 5 mins - 0.2 mi)

Itinerary 2: 44 mins

Itinerary 3: 44 mins

Itinerary 4: 44 mins
Reported By: Dallas: special event State Fair of Texas on Grand Ave both directions at 2nd Ave (Dallas), Friday September 27th, 2013 thru Sunday October 20th, 2013, Entire week/Friday/Saturday, 10:00 AM thru 10:00 PM, Friday September 27th, 2013 thru Sunday October 20th, 2013, Sunday/Monday/Tuesday/Wednesday/Thursday, 10:00 AM thru 09:00 PM
Recent Dallas Ice Storm
**Personalize Your Travel Information Experience with My511DFW**

You can now quickly access traffic and transit conditions for your commute and other frequent trips you make. The service is free and easy to use. Just set up your profile and you will be ready to use My511DFW.

Follow the steps below for setting up your My511DFW travel and transit preferences:

- Click on the “Sign Up” button and create your user profile.
- Set up your traffic and travel time preferences
- Set up your transit preferences
- Verify your account upon receiving an email confirmation

**Get traffic and transit conditions on the PHONE**

Listen to Demo >>

**Get traffic and transit conditions on the WEB**

View Sample Page >>
Cost

- Funded by the US DOT $5.31M
- Local Share by project partners (over $3M)
- DART share from existing expenses
- Total project value $8.38M
- Additional federal funds ($0.9M)
Schedule

• Go-Live (Soft Launch): April 2013

• Go-Live (Hard Launch): October 2013

• 1 Year demonstration ends October 2014
For More Information

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Project Manager
Mobility Programs Development
Dallas Area Rapid Transit

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rgundimeda@dart.org
Next Steps

• Continue thinning out pylons
• Continue Signing Improvements
• Determine access/egress type including full split access/egress
• Update and Complete the Report
• TxDOT will call a Meeting after August 15