Agenda

• Regional Planning Activities
• Organizational Structure
• Regional TSMO Projects
  • Operations
  • Travel Demand Management
  • Automated Vehicles
• Regional IEN DFW and 511DFW
• ATCMTD Grant Concept
• What’s Next?
2012 Management & Operations Workshop – Action Items

• Build on Corridor Level Approach
• Clarify Objectives, Roles, and Responsibilities to Identify Gaps
• Integrate and Coordinate Traveler Information
• Develop and Standardize Operational Performance Measures
• Integrate Policy Makers
• Develop Regional Coordination Entity
• Formalize Strategies and Agreements for Collaboration
Regional Planning Efforts

Regional ITS Architecture Update 2013

- Establishes a blueprint for transportation integration
- Updated periodically to reflect technological advances in ITS

ITS Deployment Plan Developed 2016

- Supports the Regional ITS Architecture
- Identifies specific projects and initiatives
- Support the vision of ITS integration and operations
Resolution/Policy

- MOU Guiding Principles for Multi-Agency Communication, Data and Video Sharing
- Resolution Supporting a Comprehensive, Coordinated, Interagency Approach to Freeway Incident Management (RTC Resolution R08-10)
- Metropolitan Transportation Plan Policy Bundle
  - Integration of Traffic Operations
  - Traffic Incident Management
  - Employer Trip Reduction Programs
Regional Transportation Management Coordination Focus Areas/Committees

- Roadway Operations (traffic signals, message boards, tolls, etc.)
- Transit Operations
- Incident Management
- Traveler Information
- Construction Coordination
- Others
Committees Elevate to Policy Group

Regional Policy and Funding Group

- Roadway Operations
- Incident Management
- Transit Operations
- Traveler Information
- Construction Coordination
- Other
Transportation Operations Projects

- IEN DFW & 511DFW
- Frontage Road Retiming
- Peak-Period Shoulder Lane
- Auto Occupancy Detection Technology
- Traffic Signal Data Sharing
- Video Sharing
- 911 Fiber Sharing
- Blocked Railroad Crossings
- Special Event Coordination
- Roadway Flooding
Demand Management Projects

- Try Parking It Commuter Incentive Program
- Vanpool Programs
- Carpool Matching Program
- Transit Options
- Bike/Ped Options
- Employer Trip Reduction Program
- Mobility as a Service/Mobility On Demand
Automated Vehicle Projects

AV Program 1.0

- Texas AV Proving Ground Network
  - UTA campus/streets
- Second AV shuttle deployment
- IH 30 test corridor (Managed Lanes 3.0)
- Transportation Data Infrastructure
  - Traffic signal data sharing
  - Transportation data sharing (511DFW)

AV Program 2.0

- AV Planning
- AV Deployment Cost
- Regional Priority AV Planning Deployments
Integrated Corridor Management System

Regional Information Exchange Network

511DFW
US 75 Corridor Networks

- Freeway with Continuous Frontage Roads
- HOV Lanes
- Dallas North Tollway
- DART Bus and Light Rail Network
- Three Cities, 900 Signals, 167 Miles of Arterials
- Multiple TMCs
- Regional ATIS
Situation Awareness
Real Time Transit Information
Improved Event Management
Incident Creation
Recommended Plan
IEN Expansion
IEN and 511 Enhancements - July 2018

- Updates to Public Facing Website, Personalized My511, App & IVR
- Adding Spanish Language
- Improve the Information Exchange Network (IEN)
- Simplified Data Input Form
- Data Archive
- Performance Measures Module
- 511DFW Data Sharing with Waze and Other App Developers
- Waze Data Imported to 511DFW
- EV Charging Station Information
- Freeway Motorist Assistance
IEN & 511DFW Architecture – Data Entry

SmartFusion Platform

EcoTrafiX GUI
Map, Devices, Events

Vertica Database (archive)

Fusion Database

Performance Measures and Reports Modules

Postgres Database

EcoTrafiX Data Fusion Platform

Weather

Transit AVL/APC/GTFS

Parking Management

HERE (RT, Archive) Traffic

HERE Route and Transit Planner

511 DFW

Public Web

IVR

Public XML

Trip Planner

Social Media

My511 - Alerts

Mobile App

API

Waze

3rd Party Event Management System

Weather

Transit AVL/APC/GTFS

Parking Management

HERE (RT, Archive) Traffic

HERE Route and Transit Planner

C2C (TxDOT, NTTA, Cities)

Waze

Alerts, forecast & radar overlay

Radar overlay

Event data

Incidents & link data

Postgres Database

Vertica Database (archive)

Event data

External Sources

Available to Users

External Sources

API

Manual Event Entry

3rd Party Event Management System

 inherited

511 DFW

Public Web

IVR

Public XML

Trip Planner

Social Media

My511 - Alerts

Mobile App

Event & parking data

Waze

HERE

Agencies

3rd Party Data Providers

C2C (TxDOT, NTTA, Cities)

Waze

HERE

Agencies

3rd Party Data Providers

External Sources

Available to Users

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API

Manual Event Entry
EcoTrafiX GUI
Map, Devices, Events

Incidents & link data
Postgres Database

Vertica Database (archive)

3rd Party Event Management System
Weather
Transit AVL/ APC/GTFS
Parking Management
HERE (RT, Archive) Traffic
HERE Route and Transit Planner
C2C (TxDOT, NTTA, Cities)
Waze

Radar overlay
Event data

EcoTrafiX Data Fusion Platform

Performance Measures and Reports Modules

Public Web
IVR
Public XML
Trip Planner
Social Media
My511 - Alerts
Mobile App

511 DFW

Fusion Database
Archive Database

Vaze
HERE
Agencies
3rd Party Data Providers

External Sources

LEGEND
Available to Users

Alerts, forecast & radar overlay

Events, cameras (status & snapshots), DMS (status & messages), link data

Manual Event Entry

Waze

HERE Route and Transit Planner

Public XML

Trip Planner

Social Media

My511 - Alerts

Mobile App

511 DFW

Public Web
IVR

JEN & 511DFW Architecture – Data Push
511DFW Architecture – Data Fusion

SmartFusion Platform

EcoTrafiX Data Fusion Platform

Postgres Database

Vertica Database (archive)

Incidents & link data

EcoTrafiX GUI
Map, Devices, Events

Performance Measures and Reports Modules

511 DFW

Public Web

IVR

Public XML

Trip Planner

Social Media

My511 - Alerts

Mobile App

Fusion Database

Archive Database

Waze

HERE

Agencies

3rd Party Data Providers

LEGEND

Available to Users

External Sources
Simplified Event Entry Forms

Traffic Incident

20170830003005
Traffic Incident at QUEEN ELIZABETH WAY Eastbound (Fort Erie). From 8/30/2017 08:30 AM with minor impact.

- Organization: MTO
- Access Level: Public
- Type: QUESTION
- Roadway: QUEEN ELIZABETH WAY Eastbound
- Exit: 7
- From: 8/30/2017 08:30 AM
- Estimated Duration: days, hours, minutes
- Impact: Minor

Use right click to set affection on lanes or shoulders.

Add more details
Create

Transit Construction

20170830003006
Construction due to crossing grade repairs on route 100 between stops 104 and 106.

- Organization: MTO
- Access Level: Public
- Type: Crossing grade repairs
- Route: 100
- In stop: 104
- End stop: 106
- From: 8/30/2017 08:30 AM
- Until: 8/30/2017 08:30 AM
- Impact: Minor

Use right click to set affection on lanes or shoulders.

Add more details
Create

Traffic Construction

20170830003006
Traffic Construction at QUEEN ELIZABETH WAY Eastbound (Fort Erie). From 8/30/2017 08:30 AM with minor impact.

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- Roadway: QUEEN ELIZABETH WAY Eastbound
- Exit: 7
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- Impact: Minor

Use right click to set affection on lanes or shoulders.

Add more details
Create
WAZE Integration
511DFW EV Charging Stations
Performance Measures – Incidents Regional Clusters
Performance Measures – Incidents by City

Events
110,525

Daily Average (ev/day)
107
Performance Measures – Travel Time Corridors
IEN and 511DFW Future Improvements

- Enhanced Intersection Event Entry
- Enhance Transit Event Entry
- Bike and Pedestrian Routes
- Regional Parking Information
- Flood Information
- Traffic Signal Operating Module
- Marketing for 511DFW Promotion and Awareness
IEN and 511DFW Possible Improvements

- Wrong Way Driving Notifications
- Mobility on Demand Features
- Video Sharing Capabilities
- Real Time Signal Data Sharing Network
- Asset Management
- Command and Control (Signals, CCTV, and DMS)
- Association of Transit Routes to Traffic Network to Provide Traffic Event Alerts
- ICM, DSS, Analytics and Forecasting
- Other External Data Sources (Permits, CAD, Flooding Roadways, AVLs, etc.)
### ATCMTD Grant Proposal:

“Next Generation Platform for Regional Multimodal Transportation Management”

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Funding Amount</th>
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<tbody>
<tr>
<td>Grant Application Request</td>
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<tr>
<td>CMAQ/STBGP</td>
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<tr>
<td>Local Initiative Projects (LIP) Funding from Clean Air Account No. 151</td>
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</tr>
<tr>
<td>Total</td>
<td>$50 Million</td>
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ATCMTD Concept
Transportation Systems & Services

• Regional Information Hub
• Performance Measures & Management
• New Data Elements
  o Mobile Location Data
  o Emission Monitoring
  o Freight Parking and Routing
  o Auto Occupancy Verification
  o Vehicle Detection Data
• Automated/Connected Vehicles Test Corridors
  o Signals
  o Transit
  o Bicycles & Pedestrians
Next Generation Platform for Regional Multimodal Transportation Management

- Data/Information Hub
  - Real-time
  - Archive

- Public Sector Partners

- TxDOT Data Lake

- Performance Measures/Big Data

- Test Technology Corridors Implementation (i.e. SM Wright, 1 to 2 other Pilots)

- Hardware/Technology Deployments

- Integration of Existing and New Software/Data

- Process Standards Policies

- Developer Community Public

- Public Sector Partners
Selected Technology Corridors

S.M. Wright Project Corridor

Dallas

Arlington Entertainment District

Comet Cruiser Route

Farm-to-Market Road 1709

Cities of Plano and Frisco
Proposed Connected Vehicles Elements

Traffic Signals
- SPaT Equipment and DSRC
- Audible Signals
- Bicycle Detection and Signal Faces
- Emergency Vehicle Pre-emption

Transit
- Transit Signal Priorities
- Blind Spot Warning Technology
- Smart Shelters
- Bus Stop Beacons

Bike and Pedestrian
- Intersection Markings, Bike Boxes and Bike Lane Treatments
- Protected Intersections
- Bicycle Count Equipment
- Radar Vehicle Speed Signs

Autonomous Vehicles
High Level Architecture

Regional Data Warehouse

Regional Mobility Data Bus

Decision Support System
- Expert Rules
- Evaluation
- Predictive Engine / Machine Learning

DataMart
- Retrieving client-facing data
- Data Wrangling
- Fusion & Transformation

GUI – Coordination Situation Awareness
- Video Sharing
- Context Awareness
- ICM Strategies

Advanced Alerting
- Alerts Mgmt.
- Push Notifications

Performance Measures
- Performance Indicators
- Reports & Dashboards
- Data Visualization

DFW Open Data Transportation Portal
- WebServices
- Filters & Profiles

Data Interfaces

Regional Transportation Systems
- TxDOT
- Cities
- NTTA
- Counties
- Transit Agencies
- Others

Connected Vehicles Pilots (CVO)

Freight Carriers

Private Data Providers
- HERE
- Verizon
- Waze
- Weather
- Other Mobility Services

Operations
Multiagency Coordination
Emergency Responders
Traveler Information Systems
Third-party data consumers
What’s Next for Us…

- Coordination between ITS Plans, TSMO Concepts and Future Roadmap
- More Data
- Regionwide Information Exchange Network
  - Expand Usage - Traditional Operational Data and Videos
  - Expand Application - SPAT Data, CV, Others
- Transition to Integrated Regional Management (IRM)
  - Apply ICM Concept on Other Corridors
- Strategies, Analytics and Decision Support System
  - Existing - Online Modeling, Expert Rule Engine
  - Planned - Analytics, Forecasting, Machine Learning, Others
What's Next for Us...

- Performance based Management of Corridors Operations
- Private Sector Partnership, Data and Operations
- Traveler Information Dissemination
  - 511, DMS, Third Parties
  - Mobility On Demand, MaaS, V2I
- Travel Demand Management
- Integrated Incident Management System (Integration with EMS Providers)
- Automated Vehicles
- Organizational Structure Changes
- What Else?
Questions & Answers
Regional Information Hub & Performance Measures

- Leverages the existing regional ITS infrastructure
- Integrates transportation operating systems along a corridor to balance demand across all modes
- Provides a platform to integrate construction activity to better coordinate closures
- Creates opportunity to address arterial traffic congestion on a regional corridor basis
- Allows dissemination of data between agencies for improved coordination & operations
- Provides regional data for planning organizations or academia for performance measures, research, and analysis
- Supplies regional traffic signal and other critical arterial data to the developer community and auto makers for the deployment of connected vehicle technologies
- Identifies gaps in the data to determine new data sources that are needed
- Integrates real-time transit information to provide users with transit options and trip information
- Allows for implementation and management of coordinated traffic plans across agency boundaries
- Creates opportunity for cohesive multi-agency responses to incidents
- Affords real-time analysis of regional performance measures
- Supports third-party applications that share real-time information with travelers