AN INTRODUCTION TO TRANSCOM’S DFE/SPATEL DATA ANALYSIS TOOL

Tom Batz
Sanjay Patel
Rob Bamford
TRANSCOM

Manny Insignares
Scott Altman
ConSysTec

With participation of infosenseglobal

UTRC Transportation Technology Symposium:
Innovative Mobility Solutions
November 20, 2015
TRANS.COM Systems Overview

Highlights
- 250,000 Links updated every 2 minutes
- Statewide NY-NJ-CT speed and travel times
What is DFE/SPATEL?

• **DFE – Data Fusion Engine**
  • Collects real-time and historical information from agency and private data sources:
    • **Events**: Incidents, Construction, Special Events (Highway and Transit)
    • **Roadway**: travel times, speed, and volume
    • **Transit**: trip times, vehicle location, and stop arrival/departure times
  • References a regional network model (links, nodes) (250,000 links)
  • Generates a normalized aggregated regional view of roadway and transit conditions every 2 minutes.

• **SPATEL – Selected Priorities Applied to Evaluated Links**
  • Web-based data analysis tool built around the DFE to support ongoing operational needs of member agencies
  • Historical data archive
  • Performance Measures for Planning and Federal Reporting
User Benefits

• **Policy and Decision Makers.** Numerical data analysis of transportation performance measures to justify funding for transportation improvements.

• **Agency Executives.** Performance measures, map, and dashboard views of real time and historical regional transportation network conditions.

• **Operations Staff.** Map and dashboard views of real-time regional transportation network conditions.

• **Operations Planning.** Performance measures and playback of events to review how well they were handled.

• **Traveler Information.** Real time information that supports SAFETEA-LU Section 1201 requirements.

• **Planning Staff.** View historical data, speed, and travel time data, for use in the planning process.

• **Developers.** Data feeds available for member agency and university research staff and developers.
SPATEL Tools: Operations & Analysis

Operations Tools

- Operational Map
- Regional Conditions Viewer
- CCTV / Video Wall Viewer
- Operations Dashboard
- Corridor View
- Project Viewer
- Zone Viewer
- Event Playback
- Regional Transit

Analytical Tools

- Historical Travel Time Analysis Tool
- Travel Time Comparison
- Data Source Comparison
- Historical Event Search
- Performance Measures
Operational Map: Roadways

Real time Roadway Conditions
Real time Transit Conditions: Rail and Train Locations
Operational Map: Transit Station Arrival/Departure Status

Real time Transit Conditions: Train Schedule Status
The following subsidiary tools can be accessed from within the Operations Dashboard:

**Cameras.** The user can view images from all of the CCTV cameras that are located along the selected trip.

**Events.** The user can view any events occurring along the length of the selected trip.

**Map.** The user can view the selected trip on a map.

**Travel Time Graph.** The user can graphically view the travel time along the trip.

**Last Hour Playback.** The user can view the last hour along the trip in the Event Playback tool.
Regional Event Playback

Playback of Event Information and Travel Time Impact
Supports same period on different dates
### Historical Travel Time Analysis

#### Data Entry

**Planning Dashboard**
- **Data Comparison**
- **Quick Data Search**
- **Historical Event Search**

**Base Time**
- **Year:** 2014
- **Data Source:** Month

**Comparison Time**
- **Year:** 2015
- **Data Source:** Month

#### Trip Location

**I-78 E: NJ TPK Exit 14 to the Holland Tunnel**

<table>
<thead>
<tr>
<th>Trip Description</th>
<th>Length (miles)</th>
<th>Free Flow TT (m/min)</th>
<th>Historical TT (m/min)</th>
<th>Planning Time Index</th>
<th>Buffer Time (m/min)</th>
<th>Buffer Time Index (%)</th>
<th>TT Index</th>
<th>Sample Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-78 E: NJ TPK Exit 14 to the Holland Tunnel</td>
<td>10.38</td>
<td>15.53</td>
<td>34.01</td>
<td>2.81</td>
<td>0.88</td>
<td>9.28</td>
<td>2.19</td>
<td>1.715</td>
</tr>
</tbody>
</table>
Historical Travel Time Analysis

Comparison of Travel Times and Travel Time Reliability
Historical Travel Time Analysis

View of Historical (2014) Travel Time Detail
Historical Travel Time Analysis

Trip Map and Comparison of Congestion Heat Map
Historical Travel Time Analysis

Historical Travel Time Analysis Data Entry
Performance Measures: Delay and Cost Analysis

DATA ENTRY

<table>
<thead>
<tr>
<th>Duration</th>
<th>Length (miles)</th>
<th>Rto</th>
<th>Hours Of Delay (hrs)</th>
<th>Delay Per Person (hrs)</th>
<th>Delay Cost</th>
<th>Per Vehicle Delay Cost</th>
<th>Per Person Delay Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-78 EB MP 51.760 To MP 67.830</td>
<td>16.61</td>
<td>2.86</td>
<td>4814.12</td>
<td>5776.95</td>
<td>604.65</td>
<td>604.65</td>
<td>5418.77</td>
</tr>
</tbody>
</table>

RESULTS

Note: Fields marked with asterisk (*) are mandatory.
Performance Measures: Delay Cost Graph
Thank You

• Contact Information
  • Tom Batz
  • Deputy Executive Director/Chief Technology Officer
  • TRANSCOM
  • Newport Financial Center
  • 111 Town Square Place – Suite 605
  • Jersey City, NJ 07310

  • E-mail: batz@xcm.org
  • Tel: 201-963-4033

  • TRANSCOM Web Site: www.xcm.org