ITS Architecture Use in Transportation Planning: the Southeast Michigan Experience

Talking Technology and Transportation (T3) Webinar: ITS Architecture Use and Maintenance

July 30, 2014
City of Detroit
4.7 million people
233 local units of government
- 7 county road agencies
- 2 MDOT regions
- Police, Fire, EMS (approx. 233 x 3)
Development and Maintenance

- Initial Architecture developed with assistance by National Architecture Development Team, 2000
- Minor updates in 2005
- MDOT development/update in 2008 (included a Deployment Plan)
- Minor updates in 2014
Integration of ITS (Arch.) and Planning

- SEMCOG Regional ITS Architecture was initially adopted as part of 2025 Regional Transportation Plan
- Included as part of SEMCOG Congestion Management Process (CMP)
Integration of ITS (Arch.) and Planning (cont.)

- Integrated with Traffic Incident Management (TIM)
- Lead to the development of Regional Concept for Transportation Operations (RCTO) (FHWA demo)
- Elements of the Architecture were used in traffic incident management / operations planning
FHWA Awards Demonstration Initiative Grants - April 2005

- Detroit
- Portland
- Tucson
Southeast Michigan Transportation Operations (RCTO) Vision

“Southeast Michigan will have reliable and managed transportation operations across jurisdictional, geographic and modal boundaries for both routine traffic operations and traffic incident management that saves lives, time, and money for its travelers.”
RCTO Objectives

- Improve responder safety
- Provide safe, quick clearance
- Disseminate operations information to stakeholders
- Retime traffic signals regularly
- Identify priority corridors for future investment
Top Stakeholder Suggestions:

Clearing incidents quickly and safely

- Local removal practices
- Responder safety workshop
- Table top exercises/After Action
- Crash investigation sites
- Alternative route planning
- Visibility
Clearing Incidents Quickly and Safely:

- Quick Clearance Laws Needed

✔ Driver Removal Law
✔ Authority Removal Law

• Hold Harmless Law
Top Stakeholder Suggestions:

Disseminate operations information

www.mi.gov/drive
Top Stakeholder Suggestions:

Disseminate operations information
Top Stakeholder Suggestions: Retime traffic signals regularly

- Approximately 5,400 traffic signals regionally
Retime Traffic Signals Regularly:

Ownership

- Detroit: 18%
- Wayne Co.: 20%
- Oakland Co.: 11%
- Macomb Co.: 8%
- Washtenaw Co.: 2%
- Monroe Co.: 1%
- Dearborn: 1%
- St Clair Co.: 1%
- MDOT: 31%
- Monroe Co.: 1%
- Pontiac: 1%
- Royal Oak: 1%
- Ann Arbor: 2%
Retime Traffic Signals Regularly:

Funding and Application Criteria

- Congestion Mitigation Air Quality Improvement Program
  - Priority Ranking Points
    | Priority Ranking    | Points |
    |--------------------|--------|
    | Regional           | 40     |
    | Sub-regional       | 30     |
    | Higher-local       | 20     |
    | Local              | 10     |

- Annual Local Safety Program
  - Maximum of $600,000 per project (80/20 match)
Top Stakeholder Suggestions: *Identify arterial streets as priority corridors*

- Approximately 28,000 road-miles regionally
  - approximately 8,000 road-miles of federal-aid eligible
    » Grouped into approximately 1,200 “like/peer” corridors
## Identify Arterial Streets as Priority Corridors:

**Evaluation criteria for prioritizing corridors**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
<th>Based On</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>0-3</td>
<td>Weighted CPI (Crash Probability Index) per mile scaled to a maximum of (3)</td>
</tr>
<tr>
<td>Congestion</td>
<td>0-3</td>
<td>Percent of corridor overlapped by congested segments scaled to a maximum of (3)</td>
</tr>
<tr>
<td>Freight</td>
<td>0/3</td>
<td>(1) for corridors designated as truck routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) for identified corridors connecting to ports, airports, or intermodal facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) for identified corridors serving high-priority regional freight corridors</td>
</tr>
<tr>
<td>Transit</td>
<td>0-3</td>
<td>Transit ridership by category ((1): 1-4,999 riders per day; (2): 5,000-9,999 riders per day; (3): 10,000+ riders per day)</td>
</tr>
</tbody>
</table>
Identify Arterial Streets as Priority Corridors:
Evaluation criteria for prioritizing corridors

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<tr>
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<tbody>
<tr>
<td>Volume</td>
<td>1-3</td>
<td>Volume by category ((1): 1-9,999 vehicles per day; (2): 10,000-29,999 vehicles per day; (3): 30,000+ vehicles per day)</td>
</tr>
<tr>
<td>Density</td>
<td>0/3</td>
<td>(3) for corridors intersecting TAZ with household density &gt; 3.0 or job density &gt;4.0</td>
</tr>
<tr>
<td>Activity Centers</td>
<td>0/3</td>
<td>(3) for corridors intersecting 1/2 mile buffer around identified activity centers</td>
</tr>
<tr>
<td>Functional Classification</td>
<td>0-3</td>
<td>See handout</td>
</tr>
<tr>
<td>Traffic Signals</td>
<td>0-3</td>
<td>Density per mile: 0, 1-2, 3-4, &gt;4</td>
</tr>
</tbody>
</table>
For More Information

• SEMCOG’s Website (www.semcog.org)
  – ITS Architecture and Deployment Plan
    www.semcog.org/ITS.aspx
  – Regional Operations –
    www.semcog.org/RegionalOperations.aspx
  – Creating Success in Transportation (2040 RTP)
    www.semcog.org/Long-RangeTransportationPlans.aspx

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