Transportation Systems Management and Operations

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1. Predict future **traffic volumes**

2. Then **fund expensive major capital projects** to provide additional capacity

But this....

- Only addresses **40%** of the congestion problem
- Can be difficult to implement due to **physical/financial constraints**
The Transportation Environment is Changing – A New Paradigm

- Increased opportunities with **information** and **technology**
- Emergence of **Automated Vehicles**
- Emergence of **Mobility as a Service (MaaS)**
- Growing emphasis on **performance measurement**
- Increasing **financial constraints**
Transportation Systems Management and Operations (TSM&O) strategies keep traffic moving by:

- **Maximizing** existing roadway capacity
- **Minimizing** impact of unexpected events
- **Improving** safety for all users
- **Improving** reliability

*Photo: © Kevin Lee, Kittelson & Associates, Baltimore, MD*
Regional integration is a central component

All strategies require inter-agency collaboration, including:

- Signal Timing
- Incident Response
- Security
Different Cost Model

• Requires **continued investment** versus **large upfront costs**
• Solutions **MUST BE MAINTAINED** to work!
TSM&O in Support of Livability

- Considers **ALL** users
- Focuses on **context-sensitive** solutions
- Addresses **safety**
- Helps provide range of **transportation choices**
- Supports **public transportation**
- Employs **travel demand management** (TDM) approaches
  - Traveler information, managed lanes, and pricing
- Works in concert with traditional improvements
<table>
<thead>
<tr>
<th>TSM&amp;O Strategy</th>
<th>Example Benefits</th>
<th>Used Here</th>
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<tbody>
<tr>
<td>Adaptive Signal Control</td>
<td>• Delay reduced 4-40%</td>
<td>✓</td>
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<tr>
<td>Transit Signal Priority</td>
<td>• Bus times improved 2 - 15%</td>
<td>✓</td>
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<td></td>
<td>• Minimal impact to side streets</td>
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<tr>
<td>Integrated Corridor</td>
<td>• Estimated B/C ratio of 5-10 : 1</td>
<td>✓</td>
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<tr>
<td>Dynamic Shoulder Running</td>
<td>• Travel times reduced up to 25%</td>
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<tr>
<td></td>
<td>• No impact on safety</td>
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<tr>
<td>Dynamic Speed Limits</td>
<td>• Crashes reduced 10-30%</td>
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<td></td>
<td>• Secondary crashes reduced 50%</td>
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<tr>
<td></td>
<td>• Improved reliability</td>
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<tr>
<td>Ramp Metering</td>
<td>• Crashes reduced 15-40%</td>
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<td></td>
<td>• Travel times increased 10% +</td>
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TSM&O Examples in Central Florida

- Automated Traffic Signal Performance Measures (ATSPM)
- Integrated Corridor Management (ICM)
- Software platforms, Big Data, and Data Management
- Coordination with UCF
- Signal Technician Training with Orange Technical College
- Standardizing practices
- Working with LYNX to develop a Technology Master Plan
Traffic Signal Re-timing along State Facilities

• District Five is responsible for operating and maintaining 1,629 signals
  ▪ Signals Retimed: ~ 922 signals (57%) (from 2013 through 2017)

57% Retimed

• For reference, a recent MetroPlan Orlando study determined the annual Benefit-Cost ratio ranges of signal re-timing from 14.4 to 58:1
Successes Here

- **ITS Master Plans**
  - District 5, MetroPlan Orlando, SCTPO, R2CTPO, Sumter, Lake

- **Smart Cities designation**

- Central Florida Automated Vehicle Partners (CFAVP); USDOT Automated Vehicle Proving Ground Pilot Site designation

- **TSM&O Program**
  (Documentation, Consortium, etc.)

- **ATCMTD Grant - $11.9 million**
  (largest single recipient)
A **successful TSM&O program** must include:

- Supportive business/technical processes – “**Mainstreaming TSM&O**”
- Preparation for **future needs and technologies**
- Key **stakeholder buy-in**
- Consistent **inter-agency / inter-departmental collaboration**
- Constant **performance measurement**
Next Steps

• For Consideration at the Next MPO Alliance Meeting

  ▪ Five-year plan of regional TSM&O projects
  ▪ Seeking approval to be incorporated into Strategic Regional Plan
  ▪ Coordination towards an I-4 Corridor regional project
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