Reliability Project L06

Institutional Architectures to Advance Operational Strategies

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Disclaimer

This presentation solely reflects the opinion of the SHRP 2 contractor and does not necessarily represent the opinion of the National Academies, the National Research Council, or the sponsors of the research.
Need for Continuous Measurable Improvement in TSM&O

- Context demands improved operational performance
- But: Lack of measurable progress
- Constraints of traditional Civil engineering Culture
- Unsuitable processes/institutional arrangements
- Not a mainstreamed “program” (champion-based)
- Limited network performance measurement
What Research found as basis for Guidance

- Identified Characteristics of a effective program?
- Recognized dependence on specific business & technical processes
- Identify needed supporting organization structure & relationships

The “Program”

Processes that support Program

Supporting Institutional Framework
Adapting CMM

- Presumes outcome improvements can be managed
- Measured stepwise effectiveness improvement
- Combines features of: TQM, OD, BPR--short & long run
How it works

- Identifies high level target vision & common terms
- Focuses on program, processes, institution relations
- Mainstreams improvement: standardization, documentation, integration, accountability, performance measurement
- Works in evolutionary doable levels & clear criteria
The Dimensions of Capability

1. *Business processes* -- planning, budgeting,
2. *Systems & Technology* -- Engineering & selection
3. *Performance* -- measurement/utilization
4. *Culture* -- understanding/championship of TSM&O
5. *Organization and workforce* -- structure/develop
6. *Collaboration* -- public and private
Criteria for capability levels determines strategies to improve

Most Agencies Today

LEVEL 1
Performed
• Activities & relationships ad hoc
• Champion-driven

LEVEL 2
Managed
• Processes developing
• Staff training
• Limited accountability

LEVEL 3
Integrated
• Process documented
• Performance measured
• Organization/partners aligned
• Program budgeted

LEVEL 4
Optimized
• Performance-based improvement
• Formal program
• Formal partnerships

Goal for the Future
### Capability Maturity Self Evaluation Structure

<table>
<thead>
<tr>
<th>ELEMENTS</th>
<th>LEVEL 1 PERFORMED</th>
<th>LEVEL 2 MANAGED</th>
<th>LEVEL 3 INTEGRATED</th>
<th>LEVEL 4 OPTIMIZING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning &amp; Programming</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systems &amp; Technology</td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Culture</td>
<td></td>
<td>✗</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization/staffing</td>
<td></td>
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<tr>
<td>Collaboration</td>
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</tbody>
</table>

- **Lowest level is constraint**
- **For each dimension guidance provided to get to next level**
### Ex: High Level Dimension Criteria

**DIMENSION: PLANNING**

**DIMENSION: ORGANIZATION**

**DIMENSION: PERFORMANCE MEASUREMENT**

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</thead>
<tbody>
<tr>
<td>Some outputs measured and reported by some jurisdictions</td>
<td>Output data used directly for after-action debriefings and improvements; data easily available and dashboarded</td>
<td>Outcome measures identified (networks, modes, impacts); and routinely utilized in common for objective-based program improvements</td>
<td>Performance measures reported internally for utilization and externally for accountability and program justification</td>
</tr>
</tbody>
</table>

Performance measures are critical for accountability and program justification.
The Rules of Improving TSM&O Capability

- The objective is continuous improvement
- All (6) dimensions are essential/synergistic
- Dimension at the lowest level is the constraint
- Levels of capability can not be skipped
**Guidance is Detailed for Actions**
(21 elements × 3 sets of level transitions)

<table>
<thead>
<tr>
<th>Business Processes</th>
<th>Systems &amp; Technology</th>
<th>Performance Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Planning</td>
<td>• Regional architectures</td>
<td>• Measures definition</td>
</tr>
<tr>
<td>• Scoping</td>
<td>• Project systems engineering/Testing and validation</td>
<td>• Data acquisition</td>
</tr>
<tr>
<td>• Programming/Budgeting</td>
<td>• Standards/Interoperability</td>
<td>• Measures utilization</td>
</tr>
<tr>
<td>• Project Development/Procurement</td>
<td></td>
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</tbody>
</table>

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<tr>
<th>Culture</th>
<th>Organization/ Workforce</th>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Technical understanding</td>
<td>• Program status</td>
<td>• Public safety agency collaboration</td>
</tr>
<tr>
<td>• Leadership/Championship</td>
<td>• Organizational structure</td>
<td>• Local government/MPO/RTPA cooperation</td>
</tr>
<tr>
<td>• Outreach</td>
<td>• Recruitment and retention</td>
<td>• Outsourcing/PPP</td>
</tr>
<tr>
<td>• Program Status/Authorities</td>
<td>• Staff development</td>
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Self-evaluation & customized guidance require Web functionalities

http://aashtosomguidance.org/