TSMO Workforce Development:
Future Workforce Requirements and Descriptions

Session Presentation:
Pathways: Leadership/Management, Operations
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Acknowledgements

- AZTech Strategic Steering Committee
- Project Champions
  - Nicolaas Swart, P.E., Maricopa County DOT
  - Reza Karimvand, P.E., Arizona DOT
- AZTech Partner Agencies
  - Transportation Operations and Management
  - Human Resources participants
Project Background and Need

- AZTech partnership recognizes that agency roles for system operations will continue to evolve and change
- Traditional roles are shifting to ones that are more complex, technology-driven and collaborative
- Influences on transportation agency staffing and workforce:
  - Technical skills
  - Training needs
  - Types of roles needed to support the transportation system of the future
  - How can AZTech partners address this need?
The Transportation Environment is Changing

- Operations is 24/7/365
- We rely more on information and technology
- Increasing customer needs and expectations
- Growing emphasis on measuring performance and how well investments are paying off
- Reduced financial resources
- Opportunities to integrate technologies across agencies, modes
Local Innovations in System Operations

• Smarter Corridors
  o Managing freeways and street operations during freeway closures (ICM focus)
  o Sharing data across agency boundaries

• Expanding our ability to monitor what is happening on roads with new partnerships

• Systems are advancing
  o Bell Road Adaptive Corridor
  o Real-time traffic alerts for agencies
  o Social media and mobile apps to provide traveler information

• Increasing collaboration among agencies
  o Traffic Incident Management Coalition
  o Large scale special events

• Connected and Automated Vehicles
What This Means for Agency Staff Resources

- Traditional staff roles and responsibilities are changing
- Advanced operations strategies and systems require new skill sets
- We are getting asked to do more with fewer resources
- More focus on managing the network as a region, not just the streets within individual jurisdiction boundaries
- Increased need for training for operations and maintenance on new technologies
- New focus on business processes and analytics require skill sets outside of traffic engineering
National Focus on Workforce Development

- Federal Highway Administration and the National Operations Center of Excellence
- 2016 TSMO Workforce National Summit
- Key themes:
  - How we define specific skill sets for transportation operations
  - How can we make sure the talent pipeline can meet our needs – universities, community colleges, vocational schools
  - How can we acquire and sustain these unique skills sets (training, recruiting, career paths)
- NCHRP study on state DOT TSMO workforce needs
Project: TSMO Job Description Templates

- AZTech partners collaborated on identifying future workforce needs – technical skills, training, types of staff resources needed

- Challenges:
  - Agency Human Resources processes
  - Leadership support for changing/modifyng job duties and descriptions
  - Recruiting for specialized technical positions, retaining key staff
  - Aligning job descriptions with actual duties and expectations
  - Ongoing evolution of technology

- Preliminary survey and follow-up workshop with transportation operations and agency HR departments

- New TSMO roles, training needs, certifications

- Templates to develop agency-specific job descriptions
What Skill Sets Do Operations Staff Need?

- **Engineering**
  - Traffic, civil, electrical, systems, computer

- **Computer Science**
  - Programming, database management, hardware

- **Planning**

- **Telecommunications**
  - Wireless, networking

- **Business/Data Analysis**
  - Data management, predictive analysis, performance management

- **Operations**
  - Incident and event response, advanced corridor operations (ICM)
Other Skills for Operations

- Project Management
- Public Policy
- Communications and Public Information
- Organizing and delivering training
- Understanding new procurement models and processes
- System and Equipment Maintenance
Priorities for AZTech Partner Agencies

Future Skill Sets
Workshop with HR and Transportation

- Held a half-day workshop with transportation operations and agency HR representatives
- Objectives:
  - Better understand HR perspective and processes
  - Identify some common workforce needs, issues and challenges
  - Understand agency-specific processes and requirements
  - Identify what tools would be of most benefit for AZTech partners
  - Set the stage for ongoing discussion and collaboration with HR
Developing New Job Descriptions and Roles – Processes and Challenges
Challenges

- Defining specific skill sets
- Frequency of job description reviews/updates
- Specific requirements at different agencies
  - Example: who can go into the cabinet to make changes?
- Cross-cutting roles (combining technology, IT, systems, communications, etc.) and impact on salary/requirements
- Modifying existing roles vs. creating new roles
- New types of skills (analytics, business processes, hardware)
- Preferences vs. requirements
- Career paths for unique skill sets – impact on staff retention
## Templates to Generate Job Descriptions

### Operations “Job Family”

<table>
<thead>
<tr>
<th>General Role</th>
<th>Functional Role</th>
<th>Example Titles</th>
<th>Education</th>
<th>Experience</th>
<th>Salary Range</th>
<th>Roles &amp; Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMC Manager</td>
<td>Brief, general description</td>
<td>ITS Supervisor, ITS Engineer, TMC Manager, Sr. Traffic Analyst</td>
<td>“Preferred” vs. Required</td>
<td>“Preferred” vs. Required</td>
<td>Varies by experience, supervisor responsibility, agency salary ranges</td>
<td>Select from list of key duties</td>
</tr>
<tr>
<td>TMC Operator</td>
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<tr>
<td>Data Analyst</td>
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<tr>
<td>IT/Network Admin</td>
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</tbody>
</table>
Templates, continued

- Job Description Generator
- Certification Resources
  - Types of available certifications
  - Applicability to different TSMO roles
  - Time/cost requirements and prerequisites
  - Agency to determine applicability to their staff
- Training Resources
  - National resources available through NHI, CITE, ATSSA
  - Course type (online, in-person)
  - Time/cost requirements and prerequisites
Future Steps

- Assess how agencies are using the TSMO job description templates
- Update periodically to reflect new duties, expanded position requirements, titles, etc.
- Keep workforce as an AZTech Strategic Steering Committee priority initiative
- Keep the dialogue going with agency HR representatives
  - Their staff changes over time too!
  - Value in hearing these needs from partners, not just their own agencies
- Ongoing need to keep agency leadership apprised of staffing needs, technical skill set needs, and build champions at the leadership levels
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