Traffic Operations Asset Management Systems

7th National Conference on Transportation Asset Management

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Motivation

- Significant investment in ITS, signals and signs
- Elevate the visible need for TOAM
- Technologies management
- New organizational and procedural relationships
- Distributed responsibilities

Business Architecture

Context

- Importance of Operations
- Value of equipment
- Skill sets not always compatible with traditional maintenance personnel

Previous Efforts

- FHWA Identification of Operations Assets (September 2005)
  - Framework
  - Categorization
- Elements of a Comprehensive Signals Asset Management System (Dec 2004)
- NCHRP Synthesis 37-03 (signs, markings, signals)
Category of Operations

Assets

MRUTC selection process
TAM Pooled Fund
Selected Spring 2007
Focus on Physical & Systems Assets
Components
- Survey
- Planning Meeting
- Peer Exchange

What is TOAM?

Asset management for:
- Traffic Control Devices
- Traffic Management Systems
Integrates
- asset management
- configuration management

Characteristics of traffic operations assets

Active and dynamic
- Signs, signals and ITS devices
Related tangible and intangible components
- communications links, networks, servers, fiber optics, data, software versions
Monitoring and condition assessment characteristics
- "bath tub" mortality curve
- Average time to failure
- Technical obsolescence
- Field maintenance

Phase I Survey

May 2007 survey
- 40 questions
15 responses
Sample Survey Questions
- Does your agency have formal systems?
- What are your agency's primary motivations for implementing formal systems?
- How is it being used?

Does your agency have a formal process?

- 5 states identified formal processes
- 2 said no
- 7 informal
Primary motivations for implementing or considering?
- Provide an internal analytical and management tool
- Legislative mandate
- Increase accountability to legislature
- Provide an integrated asset management system

How is your program being used?
- Assess roadway safety (e.g., surface condition, roadway design)
- Assess condition and preservation
- Budget allocation for maintenance, improvement or new project
- Enhanced techniques and decision-making accountability
- Legislative reporting (justify maintenance budgets and requests)
- Maintain assets pertinent information
- Maintenance policy analysis (establish maintenance standards)
- Maintenance work planning
- Resource allocation within and across different jurisdictions
- Facilitate regional/multi-agency coalitions

Topics of interest
- Elaborating analysis capabilities
- Life-cycle cost analysis
- Needs-based analysis on performance measurement
- Alternative investment scenario assessment
- Integration into overall asset management process
- Promoting systems approach to become the way of doing business

Setting in Madison
- Partnership between
  - Subcommittee on Maintenance (SCOM)
  - Subcommittee on Systems Operation and Management (SSOM)
- MRUTC Project selected for Grant Year 8

Peer Exchange Planning Group
- Sponsors
  - Midwest Regional University Transportation Center at University of Wisconsin
  - Transportation Asset Management Pooled Fund Research Program
    - Wisconsin DOT
    - Michigan DOT
    - New York DOT

Phase II Survey
- Distributed in September
- Expanded to SCOTE Members
- Class activity
**Components / Systems**

- CCTV Cameras (traffic surveillance)
- Pavement Sensors (temperature)
- Loop Detectors (traffic count, occupancy and speed)
- VMS Signal System (signal heads, controllers)
- 511 Telephone Dial-in Service
- Automated Crash Notification System
- Advanced Traveler Information System
- Advanced Traffic Management System
- Incident Management System
- Road Weather Information System

**Sample Questions**

- Components
  - CCTV Cameras
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**Sample Questions**

- Maintenance policy?
  - Preventive
  - Corrective
  - Inspection
  - Replacement

- Importance of:
  - Repair/replace
  - Upgrade
  - Condition assessment
  - Training, etc.

- Data kept:
  - Characteristics / Capabilities
  - Maintenance Requirements
  - Maintenance Cost
  - History Repair / Failure History
  - Age / Condition

**Preliminary Responses**

- 15 states, 23 respondents
- Early respondents are geographically dispersed with East (3), West (5), South (2) and Midwest (5) states represented.
- 8 states did not indicate preventive maintenance activities for ITS components

**Develop Computerized Management Systems**

- States Reporting
  - Very Important: 4
  - Important: 4
  - Moderately Important: 2
  - Not Important: 1

- Ratings
  - 1: Very Important
  - 2: Important
  - 3: Moderately Important
  - 4: Not Important
Contracting for System Maintenance

Prioritizing Scheduling & Maintenance for ITS

Other

Possible topics of interest:
- Obsolescence planning
- Outsourcing
- ITS MMS
- PPP/contracting

Responses

“I found very different opinions about how people suggest we answer the questions in your survey. Some think we have no process for certain things, others believe we do. It demonstrated the areas where we have some work to do on communicating with each other across the agency.”

Currently our inventory is done manually. Our maintenance of devices is in the hands of each one of our 11 engineering districts offices. They each maintain their own maintenance agreements; this is an area I want to improve. We are currently developing ITS device uptime standards and metrics.”

Observations

Crosses agency silos/functional areas
Varied responses; varied sophistication
Challenges on getting accurate agency responses
Next Steps // Schedule of Activities
- Phase II Survey (responses were due November 8 TODAY)
- Gap Analysis and Scan
- TOAM Peer Exchange and Workshop (Spring 2008, Milwaukee)

Peer Exchange Outcomes
- Develop best practices for maintenance of ITS equipment and systems
- Integrate management of traffic operations assets into the overall asset management system
- Develop strategic investment scenarios
- Longer-term
  - Multi-state Pilot
  - Pooled fund to develop management tools
  - Work with industry

Who is involved
- States:
  - Wisconsin DOT
  - Washington DOT
  - Oregon DOT
  - Indiana DOT
  - Alabama DOT
  - Caltrans
  - Virginia DOT
- AASHTO

Proposed Format & Agenda
- 1.5 days
- Survey results and analysis
- 4 case studies
  - Systems
  - Success factors
  - Investment strategies
- Identify gaps and assess needs
- Consider next steps

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- Student staff
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- AASHTO Staff
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Get Involved
- Transportation Asset Management Pooled Fund
- Planning teleconferences open
- Contact:
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