Minnesota's Statewide Approach to Systems Engineering for Traffic Management - the Rural Perspective

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Today’s Topics

- Statewide Systems Engineering Project
- Process and Results
- Rural Perspective
The Need

- Increased Demand for a Systems Engineering Process
- ConOps Developments for Small Projects Have Challenges
2 ConOps Documents

- ITS Concept of Operations for Statewide Arterial Traffic Management
2 ConOps Documents

• ITS Concept of Operations for Statewide Freeway Traffic Management
ConOps Focus

• Defining the Use of ITS Tools
  – “Who” uses the ITS Tools
  – “Why” are they used
  – “How” are the used
Freeway ConOps

- Many Existing Deployments
Arterial ConOps
Arterial ConOps

- Fewer ITS Deployments
• **Stakeholder Outreach**
  – Stakeholder Needs
  – Current Uses of ITS
  – Potential Uses of ITS

  – Operations & Maintenance Roles
4 Actions
Freeway Traffic Management

Observation & Detection

Data Processing & Response Formulation

Information Sharing

Traffic Control
4 Actions
Freeway Traffic Management

Defined ITS Tools

Observation & Detection

Data Processing & Response Formulation

Information Sharing

Traffic Control
4 Actions
Freeway Traffic Management

Scenarios

- Observation & Detection
- Data Processing & Response Formulation
- Information Sharing
- Traffic Control
4 Actions
Freeway Traffic Management

Who?
Why?
How?

Observation & Detection

Data Processing & Response Formulation

Information Sharing
Traffic Control
4 Actions
Freeway Traffic Management

Mapped to Needs

- Observation & Detection
- Data Processing & Response Formulation
- Information Sharing
- Traffic Control
4 Actions
Freeway Traffic Management

Dependencies And Constraints

Observation & Detection

Data Processing & Response Formulation

Information Sharing

Traffic Control
### Interdependencies of Needs Table

<table>
<thead>
<tr>
<th>In Order for Action #1 (Observation and Detection) to Meet This Need</th>
<th>This Need Must Be Met (The Dependency)</th>
<th>Action Responsible for Meeting Dependency</th>
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### Maintenance & Operations Table

<table>
<thead>
<tr>
<th>Operations &amp; Maintenance Activities</th>
<th>Metro Area Responsibility</th>
<th>Outstate Responsibility</th>
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## Operational Concept Table

<table>
<thead>
<tr>
<th>Why is the ITS Tool Used?</th>
<th>Who Uses the ITS Tool?</th>
<th>How is the ITS Tool Used?</th>
<th>Requirements</th>
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Other Components

- Constraint Table
- ITS Architecture Table
- ITS Checklist for Statewide Traffic Management Tools
Conclusions

- Promote Organized Deployment of ITS Statewide
- Ease the Systems Engineering Process
- Support the ITS Checklist Process
Questions

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