Minnesota I-394 Integrated Corridor Management (ICM)

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Presentation Overview

- USDOT ICM Initiative
- Minnesota ICM Systems Engineering Process
- Lessons Learned
- Applicability to Alaska
ICM Pioneer Sites
ICM Project Stages

- **Stage One**
  - Includes all 8 sites
  - Development of Concept of Operations
  - Development of Requirements Document
  - Final Deliverables – March 2008

- **Stage Two**
  - 3 sites selected in Fall 2008 including Minnesota
  - Analysis and modeling of proposed ICM Concepts

- **Stage Three**
  - Dallas & San Diego Selected for Deployment
Minnesota
I-394 ICM Corridor
I-394 Existing Corridor Networks
I-394 Existing Corridor Networks

- Operations Centers
- Freeway Management System
- Arterial Network
- 511 Traveler Information
- ABC garages
I-394 Existing Corridor Networks

- Transit Network
  - 1 Public
  - 2 Private

- I-394 MnPass HOT Lanes
I-394 ICM Corridor Concept of Operations
Goal of Concept of Operations

- To Define and Address *Needs* and *Problems*
  - Meetings with Local Stakeholders
  - Set Goals and Objectives
  - Develop Operational Approaches and Strategies
  - Does Not Focus on Technology
Stakeholder Involvement

• Stakeholders
  – Mn/DOT (Freeway, Arterials, MnPASS, Parking)
  – Hennepin County (Traffic, EMS dispatch)
  – City of Minneapolis (Traffic, EMS dispatch)
  – Transit Agencies (Metro Transit, SW Transit, Plymouth Transit)
  – Minnesota State Patrol
Minnesota ICM Goals

• Goal #1: Mobility and reliability
• Goal #2: Corridor-wide Capacity Utilization
• Goal #3: Corridor Event and Incident Management
• Goal #4: Integrated Traveler Information delivery
Timing of Initiatives

• Immediate initiatives (pre-ICM implementation)
• Short term ICM initiatives (<5 years)
• Long term ICM initiatives (>5 years)
Types of Initiatives

1. Information Sharing/Distribution:

2. Improve the Operational Efficiency of Network Junctions and Interfaces:

3. Accommodate/Promote Cross-Network Route and Modal Shifts

4. Manage Capacity – Demand Relationship Within Corridor:
   - “Real-time” / short term
   - Long term
I-394 ICM Corridor Systems Requirements
Goal of System Requirements

• To Define Verifiable and Testable Requirements

  – Define “what” the system will do,

  – But not “how” it will do it.

  – E.g. “The ICMS System shall…..”
Traffic Operations

Mn/DOT
Traffic Operations

Existing Today
<table>
<thead>
<tr>
<th>Mn/DOT Traffic Operations</th>
<th>ICM Enhancements To Traffic Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Today</td>
<td>Planned ICM Enhancement</td>
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</tbody>
</table>
The Overall System

- Minnesota State Patrol Emergency Management System (EMS)
- Hennepin County Emergency Management System (EMS)
- City of Minneapolis Emergency Management System (EMS)
- Metro Transit Control Center System (MTCC)
- Mn/DOT Traffic Operations (Traffic Operations)
- Minnesota Department of Transportation Arterial Signal Group (Mn/DOT-ASG)
- Hennepin County Arterial Signal Group (Henn-ASG)
- City of Minneapolis Arterial Signal Group (COM-ASG)
- ICMS-MTCC Enhancements
- ICMS-Traffic Operations Enhancements
- ICMS-Mn/DOT-ASG Enhancements
- ICMS-Henn-ASG Enhancements
- ICMS-COM-ASG Enhancements
- ICMS-EMS Enhancements
- ICMS-EMS Enhancements
- ICMS-EMS Enhancements
- ICMS-Data Hub
- A,B,C Garage System (ABC)
I-394 ICM Corridor Lessons Learned
Development of Near and Long Term Strategies

• Incident Data Sharing Example

  – Near Term Strategy
    • Manual sharing of incident data via phone or radio.

  – Long Term Strategy
    • Automated sharing of incident data via integrated CAD/AVL systems.
Development of Near and Long Term Strategies

• Discussing ‘Concepts’ and ‘Strategies’ is Challenging

• Stakeholders are Most Comfortable Discussing Technologies

• Scenarios Help to Encourage Discussions
Applicability to Alaska

- A lot to gain from the Systems Engineering Process – even if no new systems are procured

- There are low cost ICM Options

- Consider all the Partners to Involve
Potential ICM Partners

• State and Municipalities
• Traffic Operations & Emergency Response
• Transit (Public & Private)