Mainstreaming Integrated Corridor Management (ICM)

Webinar

FHWA Office of Operations
May 19, 2020
Webinar Purpose

- Provide an overview of the new resource available to practitioners: *Mainstreaming Integrated Corridor Management Primer.*
  - Report [FHWA-HOP-19-040](#)
- Discuss key concepts and messages of primer.
• Provide executive level public sector decision-makers and transportation officials with an understanding of ICM.
• Describe ICM best practices and lessons learned.
• Empower transportation officials to mainstream ICM in their business processes.
  – Transportation planning.
  – Project development.
  – Operations practices.
  – Funding.
  – Institutional collaboration.
ICM Mainstreaming Primer
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What is Integrated Corridor Management?

**Integrated** . . combining or coordinating separate agencies so as to provide a harmonious, interrelated “whole”

**Corridor** . . a travel shed of trips anchored by one or more highway, arterial, or rail line

**Management** . . the coordination of jointly managing all the travel therein in order to achieve defined objectives
Mainstream (noun) – a principal or dominant course, tendency, or trend.

Mainstreaming (verb) – to send to the principal or dominant or widely accepted group, movement, or style.

Source: Dictionary.com
Integrated Corridor Management Approach

- Resource-Shared.
- Management of all existing modes and assets within a particular corridor (i.e., travel shed).

**ICM**
- Better-informed travelers
- Improved situational awareness
- Enhanced response and control
- Dynamic management of supply relative to demand

**Multi-Agency**
**Multi-Jurisdictional**
**Multi-Modal**
**Multi-User**
**Pro-Active Management**
**Joint Response**
**Common Objectives**

**Integrated Corridor Management Approach**

- Pro-Active Management
- Joint Response
- Common Objectives
- Multi-Modal
- Multi-Jurisdictional
- Multi-Agency

Resource-Shared.
Management of all existing modes and assets within a particular corridor (i.e., travel shed).
ICM Requires 3 Types of Integration

**Institutional**

ICM requires coordination of collaboration among various agencies and jurisdictions that transcends institutional boundaries (e.g., memorandums of agreements and working agreements, etc.)

**Operational**

ICM requires multi-agency and cross-network operational strategies to collectively manage the total capacity and demand of the corridor (e.g., signals, routes, proactive actions, and responses, etc.)

**Technical**

ICM requires sharing and distribution of information, and system operations and control functions to support the immediate analysis and response (e.g., shared data, cross-approvals for actions, and complementary response assistance.)
ICM Characteristics

<table>
<thead>
<tr>
<th>ICM is not...</th>
<th>ICM is...</th>
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<tr>
<td>Siloed decisions, optimizing individual agency’s systems (freeway management, arterial signal, incident management, or bus operations/dispatching system)</td>
<td>Multi-Agency decisions, via business rules, optimizing corridor as a whole</td>
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<tr>
<td>Reactive, ad-hoc</td>
<td>Proactive, planned, predictive</td>
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How Does ICM Work?

ICM is implemented through a **Decision Support System (DSS)**. A DSS is an information system that supports business or organizational decision-making activities, resulting in ranking, sorting, or choosing from among alternatives. A DSS must be programmed to incorporate **business rules** and agreements with relevant entities when making recommendations.

- The right information.
- To the right stakeholder.
- At the right point in the workflow.
- Through the right channel.
- In the right format.

(Source: U.S. Department of Health and Human Services)
DSS In the ICM Context...

• An ICM DSS monitors for ‘atypical’ congestion on a corridor to alert ‘triggers’ that would invoke a DSS response(s).

• The ICM DSS evaluates alternative responses or diversion strategies and selects the best response (including do nothing)

• ICM managers then accept or decline recommended actions to mitigate that atypical event.

• ‘Acceptance’ then initiates the pre-agreed ‘rules’ amongst the varying agencies.

• Various levels of automation can be applied through software

Source: FHWA (San Diego ICM Pilot Project)
Why Should You Invest in ICM?

• Key findings from two pioneers ICM sites showed improved:
  o Inter-agency cooperation and coordination.
  o Situational awareness / response and control.
  o Mobility.
  o Traveler information and satisfaction.
  o Decision Support Systems (DSS).
  o Alternate routes / signal timing.
1. Is there significant congestion and unreliability?
   - The most critical – and most obvious – attribute is . . need.

2. Is sufficient infrastructure available?
   - Parallel arterials, transit routes, mode hubs, alternatives to the clogged freeway.

3. Are there multimodal capabilities?
   - Bus, rail, transit, and freeway platforms must be able to communicate with each other.

4. Is there a centralized data hub?
   - A transportation management center (TMC) makes it easier to organize and analyze the data dump.

5. Are there successful regional procurement practices?
   - Needed: ITS experts who understand expertise requirements.

Continued on next page . .
6. Is transit readily available?
   All of these can relieve a clogged highway.

7. Are current systems optimized?
   - Validate that roads cannot be improved by physical or operational means except ICM.

8. Is there public engagement?
   - A dedication to transparent and real-time public information and access.

9. Is there open-mindedness for change?
   - Educating the public to accept mode and route changes is paramount.

10. Is there institutional support?
    - A strong ICM Champion, strong leadership, a clear vision, and robust participation are vital to laying the foundation for success.
Specifically: What is Mainstreaming ICM?

- **What is mainstreaming ICM?** This involves incorporating ICM strategies into the processes of multi-agency planning and programming.

- **Why is mainstreaming ICM important?** Without an effort to mainstream ICM, it will always remain a separate initiative within a region, not fully understood or supported. It may be underfunded and could likely lose momentum.

- **Strive for broad, multi-level institutional acceptance.**
How to Mainstream ICM Across Agencies

- Build on an existing collaborative group.
- Ensure there is at least one committed champion.
- Establish a lead coordinator.
- Organize and train staff.
- Achieve multi-agency support.
- Gather support from government leadership.
- Engage stakeholders.
Mainstreaming ICM: Transportation Planning

- Adopt ICM-centric goals.
- Use Federal Highway Administration (FHWA) resources.
- Use Analysis, Modeling and Simulation (AMS) tools.
- Incorporate ICM strategies into Transportation System Management Operations (TSMO) Plans.
- Integrate ICM into planning meetings.
- Consider ICM strategies in planning studies, and alternative analyses.
- Make ICM part of standard regional processes.
Mainstreaming ICM: Transportation Programming

• Include ICM in Transportation Improvement Programs (TIP).
• Ensure that project selection procedures consider the impacts of ICM.
• Utilize federal funding opportunities for ICM projects.
Mainstreaming ICM: Project Development

- Plan for incremental deployment of your ICM systems.
- Use the system engineering process.
- Use and update your regional ITS architecture.
- Recognize that ICM projects are like other ITS projects.
Mainstreaming ICM: Operations and Maintenance

• Include ICM components in Intelligent Transportation Systems (ITS) operations, maintenance contracts, technological refreshes, or equipment swap outs.
• Incorporate ICM Management Systems (ICMS) into performance review meetings.
• Address ongoing ICMS operations and maintenance roles and funding needs.
Locations of ICM Efforts

- Pioneer (initial) sites (8)
- Pioneer modeling sites (3)
- ICM Demonstration sites (2)
- 2013 ICM planning grant sites (13)

Map is as-of 2019
Funding ICM Best Practices

- Consider integrating ICM into your regional TSMO, ITS, and State and local short and long-range plans.
- Decide whether to incorporate ICM into your department’s programmatic, TSMO, and ITS budgets.
- Assess if your organization might add ICM to larger project proposals for Discretionary Grant Programs.
- Take into account whether your agency might budget for long-term operations and maintenance.
Where Can Funding for ICM Be Found?

- Federal grant programs. (See next slide.)
- Congestion Mitigation and Air Quality (CMAQ) program.
- Highway Safety Improvement Program (HSIP).
- National Highway Performance Program (NHPP).
- Surface Transportation Program (STP)/Surface Transportation Block Program (STPB).
- Metropolitan planning activities.
• Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD).
• Better Utilizing Investments to Leverage Development (BUILD).
• Infrastructure for Rebuilding America.
ICM Resources for Next Steps

- See the **Mainstreaming Integrated Corridor Management: An Executive Level Primer** for a full list of resources that may be useful as you consider moving forward with ICM in your region.
- Website has htm and pdf versions (URL below).

Where Can You Find This Resource?

Here is a screenshot of the Office of Operations’ ‘Corridor Traffic Management’ website.

Item

https://ops.fhwa.dot.gov/program_areas/corridor_traffic_mgmt.htm
Contact Information

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Website
https://ops.fhwa.dot.gov/program_areas/corridor_traffic_mgmt.htm