ITS Intelligent Transportation Systems
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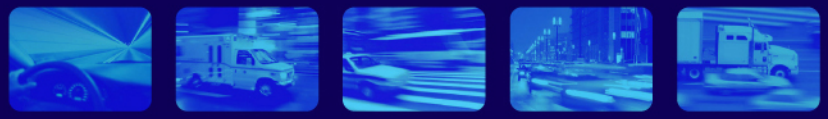
Integrated Corridor Management Project

Des Moines ICM Peer Exchange

June 3, 2021



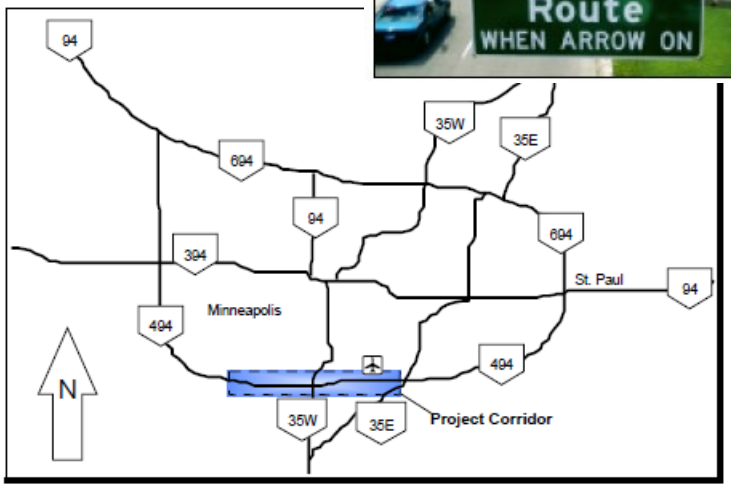
Why Integrated Corridor Management?

- Independent Network of Transportation Systems
  - Freeways, including managed lanes
  - Arterials
  - Transit Routes
- All already have ITS-based systems
- Historically Optimization is on Individual Networks
- Integrated Corridor Management
  - An opportunity to operate and optimize the entire system as opposed to the individual networks by integrating ITS systems.

ICM Pioneer Sites

I-494 Integrated Corridor Traffic Management

- Late 90s
- MnDOT, Hennepin County, Bloomington, Richfield, Edina
- SCATS on 68 traffic signals and 27 ramp meters
- Alternate Route Signing



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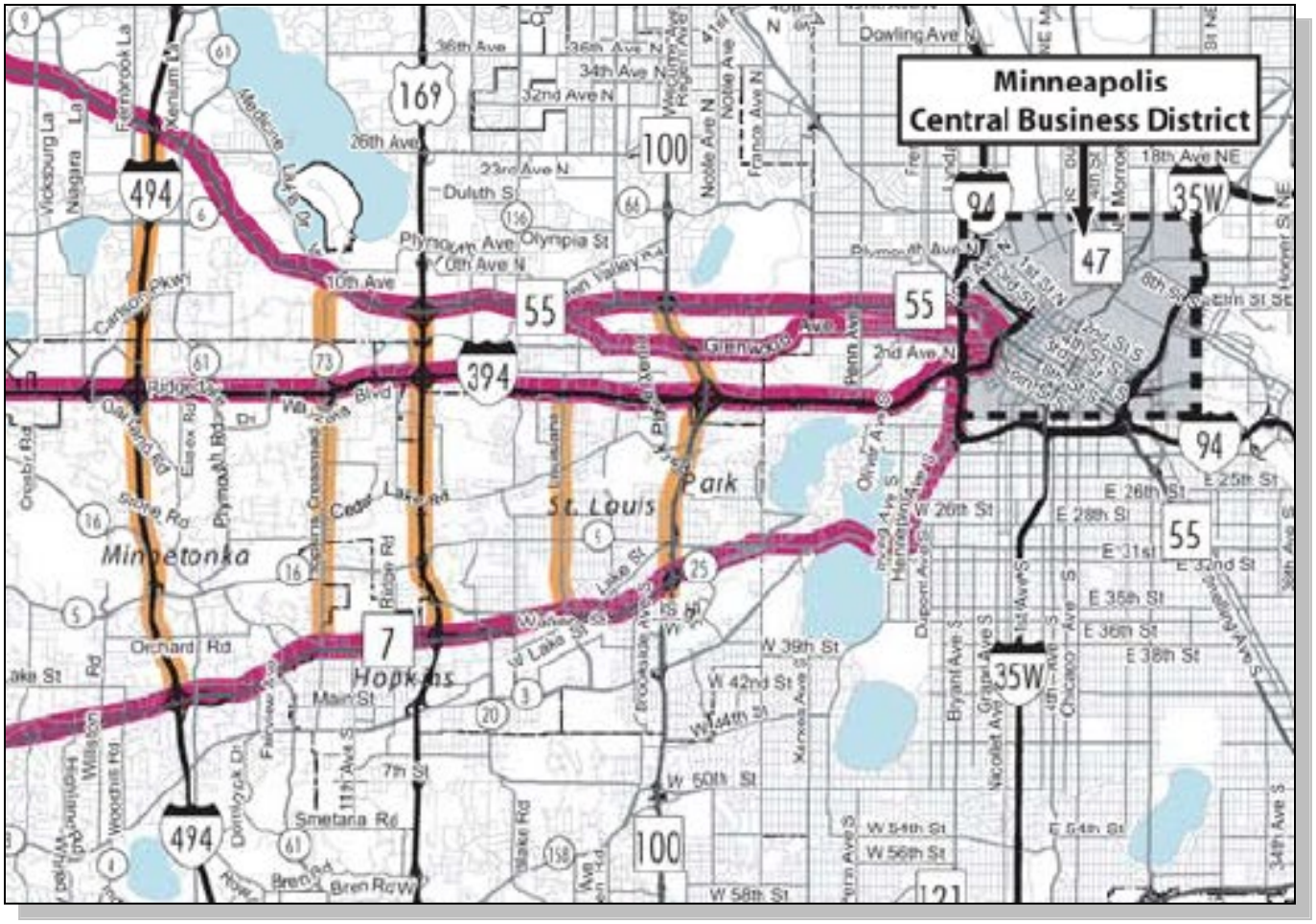
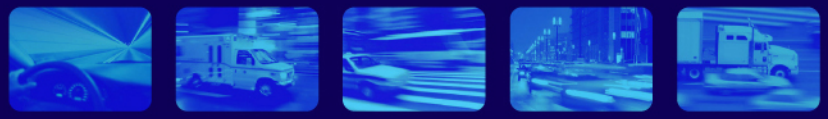
Minnesota
I-394 ICM Corridor

I-394 Existing Corridor Networks



I-394 Existing Corridor Networks

- Operations Centers
- Freeway Management System
- Arterial Network
- 511 Traveler Information
- ABC garages
- Transit Network
- HOT Lanes



Stakeholder Involvement

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

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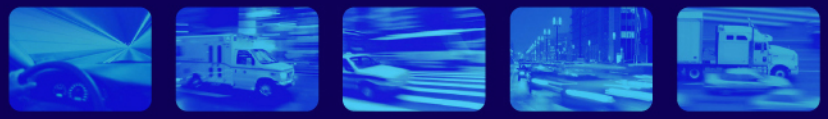
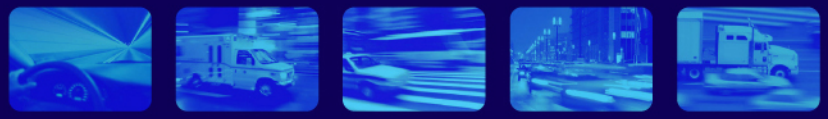
I-394 ICM Corridor Concept of Operations



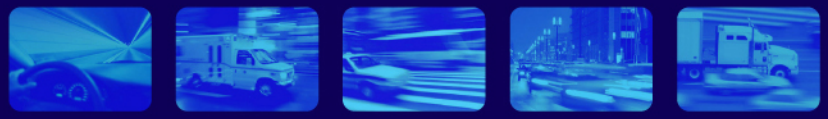
Goal of Concept of Operations

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



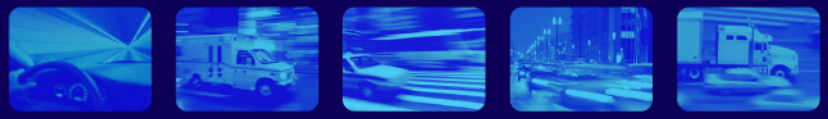
Need for Corridor Wide Traveler Information

- Develop Traveler Information for Multi Routes and Multi Modes
  - Freeway Travel
  - Arterial Travel
    - Arterial Travel Times
    - Collect Incident Information from Local Responders.
  - Transit Travel
    - Park and Ride Lot Availability
    - Bus Arrival Information
    - Travel Time Comparisons



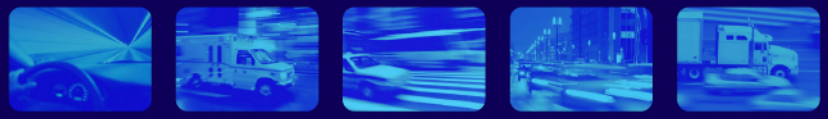
Need to Better Travel Time Reliability

- Incident Management
  - Reducing the impact of incidents on congestion
    - Traveler Information
    - Notification between agencies
    - Incident Clearance
    - Alternate Route information and incident management signal retiming plans



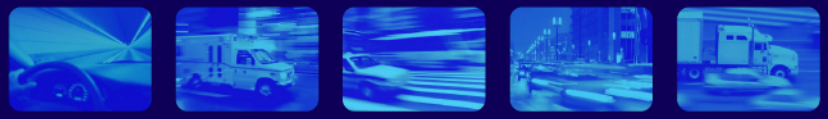
Need to Provide Incentives for Transit Use

- Modal Shift Incentives
  - Transit Signal Priority
  - Park and Ride Lot Availability
  - Transit Decision Support System



Need for Corridor Wide Monitoring of Conditions

- Extensive Freeway Management System
- Develop Arterial Management Systems
  - Upgrading Equipment Performance and Reliability
  - Improved Co-Development of Signal Timing Plans between Agencies
  - Deployment of Cameras, Detections, and CMS
- Integrate with Transit Systems



ICM Operational Scenarios

- Scenario #1: Major Traffic Incident
- Scenario #2: Minor Traffic Incident
- Scenario #3: Major Arterial Highway Incident
- Scenario #4: Infrastructure Reliability Incident – Traffic Signal Outage
- Scenario #5: Minor Transit Incident – Bus Breakdown
- Scenario #6: Major Planned Event Scenario – Afternoon Baseball Game
- Scenario #7: Major Planned Event Scenario - Evening Baseball Game
- Scenario #9: Weather Incident Scenario – Snow Storm
- Scenario #10: Major Event on a Secondary Arterial Impacting a Freeway
- Scenario #11: Daily Operational Scenario (Recurring Congestion)

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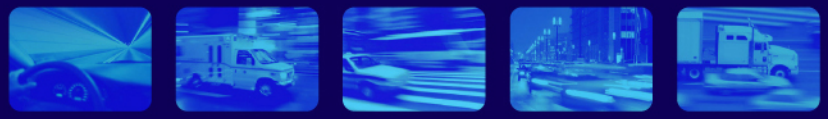
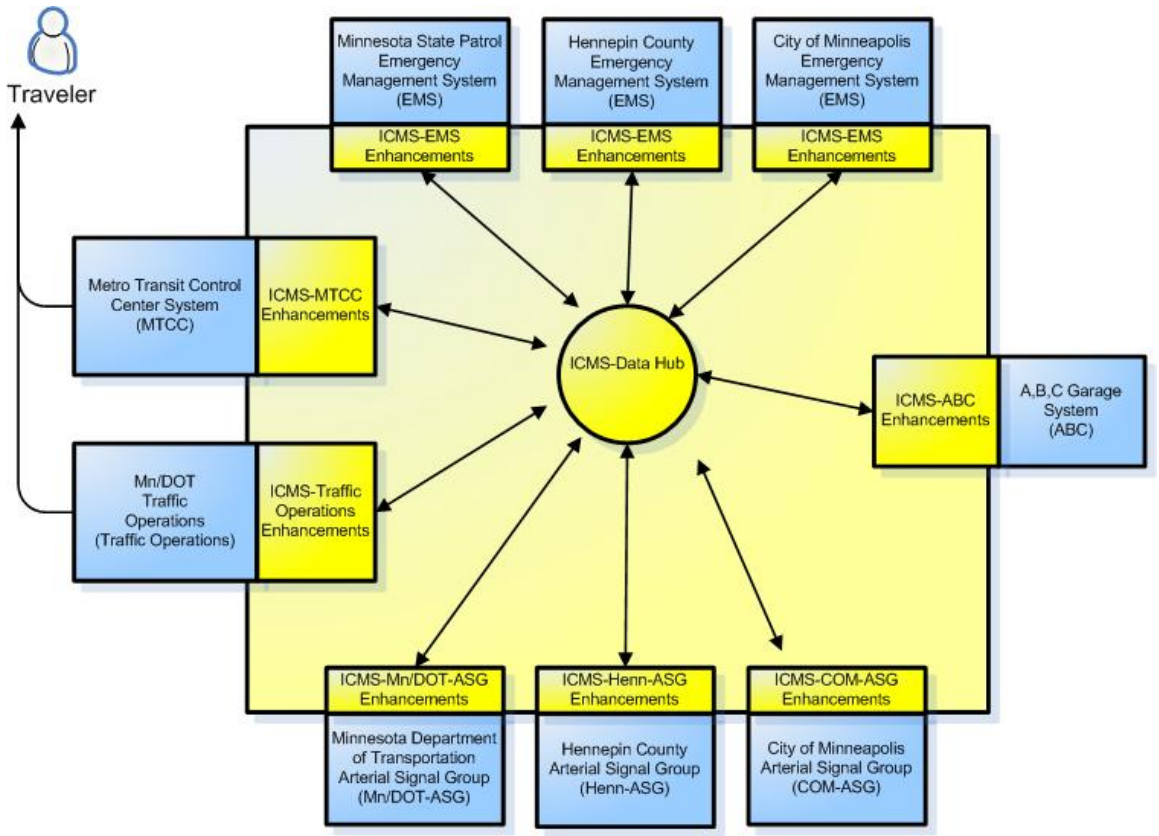
I-394 ICM Corridor Systems Requirements



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….”

ICM System Development – General System



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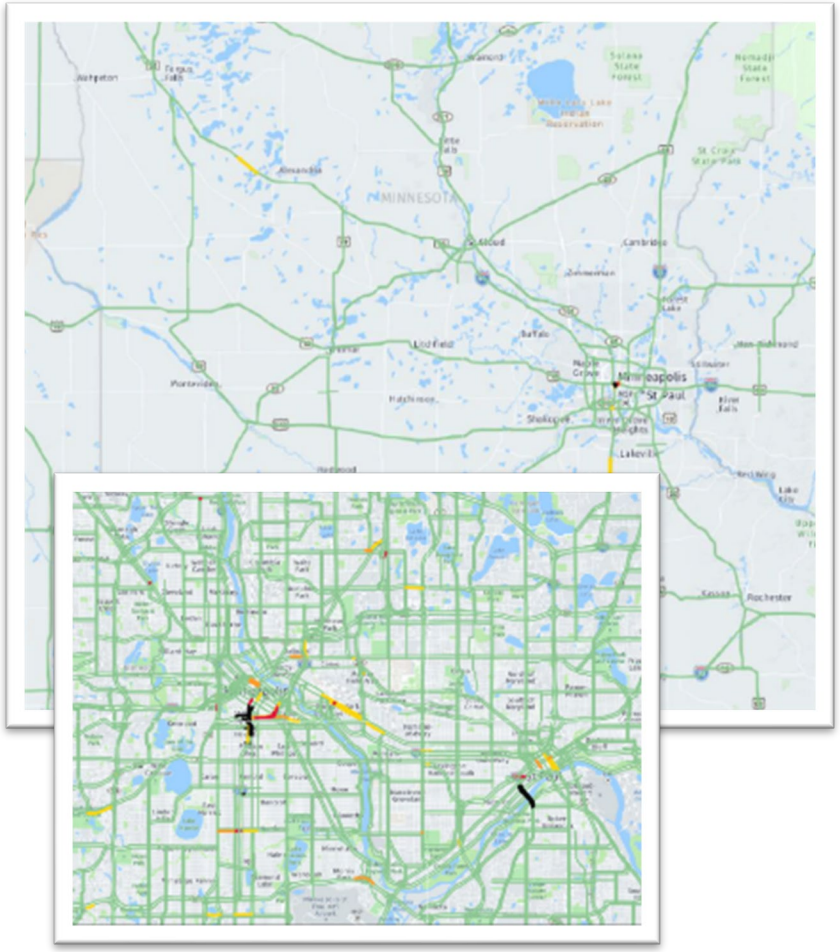
I-394 ICM Corridor Lessons Learned

Improved System Monitoring

ClearGuide with HERE Data

- HERE Probe Data
- ClearGuide reporting tool provided by Iteris
  - Average speeds, travel time, buffer time index, planning time index
  - Animations and congestions reports
- Real-time Data for Travel Times
  - Arterial Routes
  - Recreational Routes

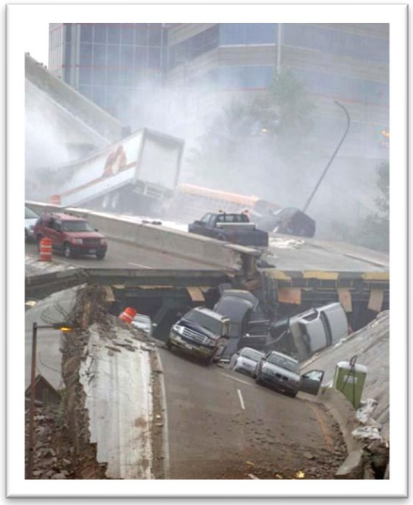


Improved Agency Coordination

- Improved Coordination and Communications Between Stakeholders in Responding to Changing Traffic Conditions

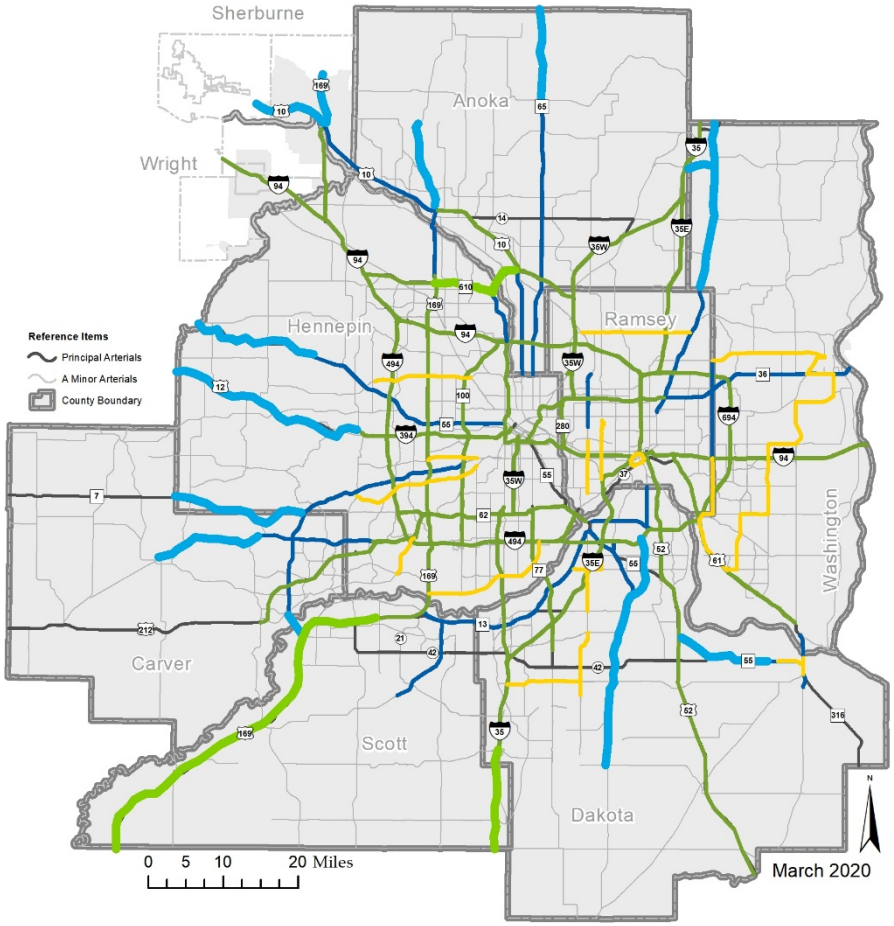
- Incident Management
  - 35W Bridge Collapse
  - I-394/I-94 Tanker Rollover

- Special Events
  - US Bank Stadium
  - Super Bowl and Final Four



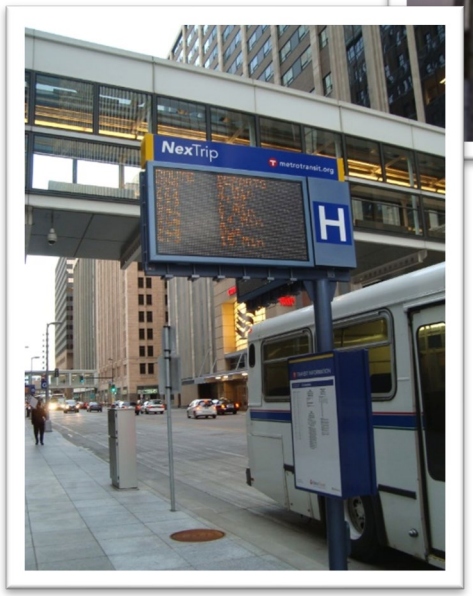
Improved Arterial Traffic Management

- Arterial Traffic Management on Hwy 13
- Arterial Traffic Management on Hwy 5 and Hwy 7
- Continued Expansion on Arterials

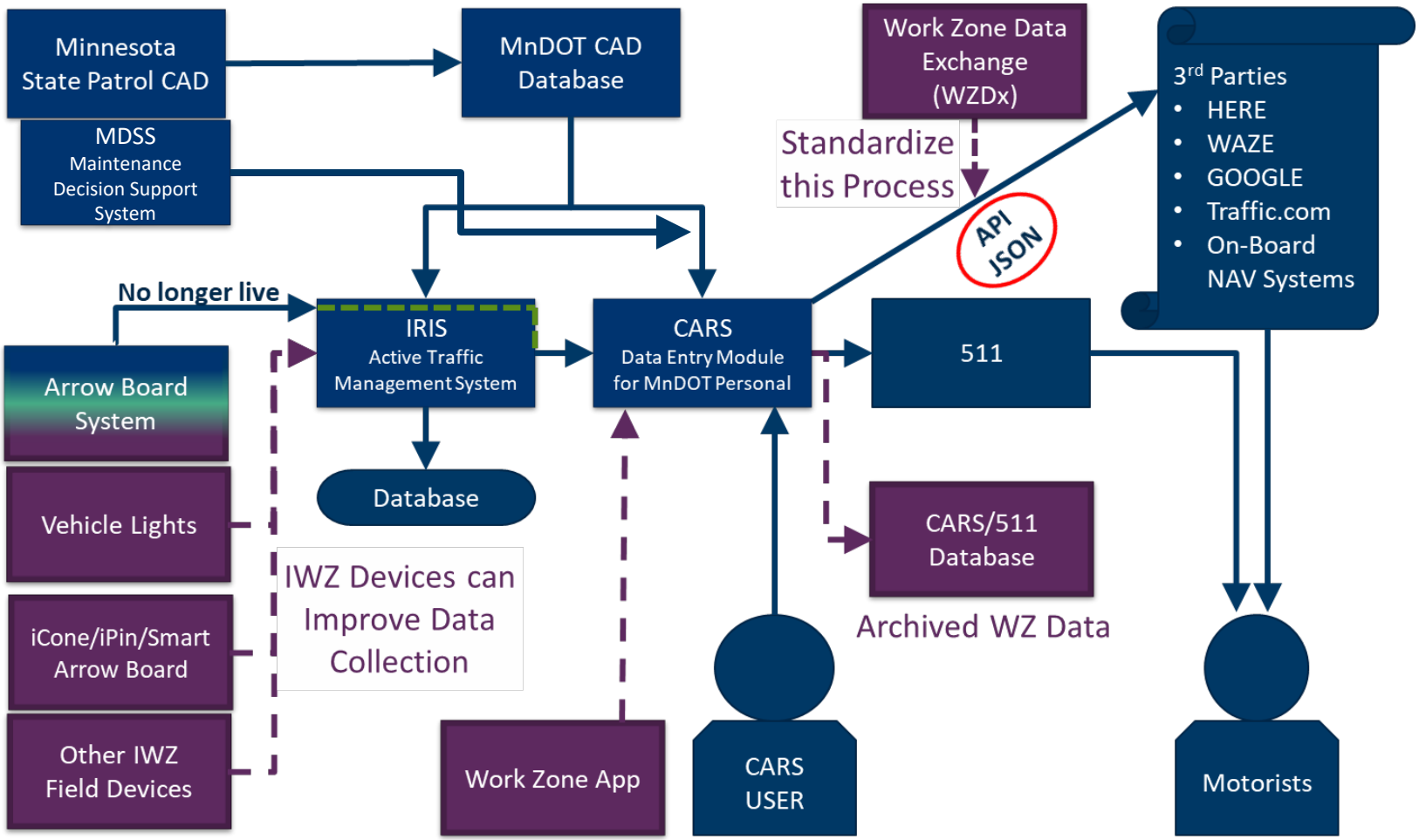


Improved Transit Traveler Information

- Transit Traveler Information
  - Park and Ride Lot Availability
  - Next Bus Arrival Times
  - Travel Time Comparisons



Improved Traveler Information and System Integration



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Active Traffic Demand Management in Minnesota

Ramp Meters

- MnDOT Operates Over 420 Meters in the Twin Cities
- Traffic Responsive
  - Rates update every 30 seconds
  - Turn-on, Turn-off logic
  - Meters look at traffic density on mainline and demand at the ramp

Smart Lanes on I-35W and I-94

- Intelligent Lane Control Signals (ILCS) located every ½ mile over every lane.
- A total of 297 ILCS.
  - 187 ILCS on I-35W
  - 110 ILCS on I-94
- ILCS are a 4ft x 5ft full color matrix signs.
- Use of the ILCS is for incident management , variable speeds and priced dynamic shoulder lane.

I-35W Priced Dynamic Shoulder Lane

- 3 Mile Segment on I-35W Northbound
- Effectively extends the MnPASS lane into downtown Minneapolis
- Corridor is currently under reconstruction