SANDAG I -15 ICMS -
Performance Measures Integration

presented by
Derek Miura, Iteris
May 7, 2105
Agenda

- Integrated Corridor Management System use of Big Data
- System Overview
- Decision Support System
- Incident Analysis
What is Integrated Corridor Management?

- Multi-modal integration and management
- Enhanced response and control
- Leveraging unused capacity
- Better-informed travelers
- Optimization of existing infrastructure
- Improved situational awareness
- Congestion management tool
- Enhanced response and control
- Better-informed travelers
- Improved situational awareness
- Congestion management tool
San Diego’s I-15 ICMS Pilot Project

Interstate-15 ICMS:
- 21 Mile Corridor with:
  - 8 Mile Express Lane w/ BRT
  - Parallel Arterials

Agency Partners
- Caltrans
- SANDAG
- MTS – SD Transit
- North County Transit
- City of Escondido
- City of Poway
- City of San Diego
- US DOT
- FHWA
- FTA
Integrated Corridor Mang. System

- Freeway Management
- Transit Management
- Arterial Management
- Ramp Metering
- Event Management
- Parking Management

Integrated Facilities with Decision Support System

- Inventory Items:
  - Freeway and arterial links
  - Data detectors
  - Traffic signal control
  - DMS signs
  - Toll Signs
  - Ramp meter signals
  - Parking facilities
  - Transit Operations
  - Transit Facilities
Analysis Modeling Simulation

FHWA – Process for Continuous Improvement for Integrated Corridor Management Systems

Performance Measurement

Comprehensive Situational Awareness

Archived Data

Substantive Alternatives Analysis

Modeling and Simulation

Trusted Models
What is happening today?

• Top plots show prediction error for freeway and arterial links

• Bottom tables show route travel times over the course of the day
• Observed Travel time and four travel time prediction ranges

• Measured speed can be compared with 15/30/45/60 minute predictions
• Can see the spread of the different 5 min. predictions when things start to change

• Different errors for different predictions out into the future
ICMS Decision Support System (DSS)

Traffic Prediction every 5 min

Incident Response Plan Estimation

Real – Time Traffic Modeling
• Ribbon displays events by date and time of day
• Selecting an event time provides incident location map, details of the incident and proposed response plan
- Event selection provides further details on incidents and lists response plans with their rankings for effectiveness.

- Ranking of Effectiveness: Higher values equate to impact. Positive and Negative signs are estimated benefits or degradation to the system.
Here we’re showing the DMS, Ramps and list of signals that were given a directive in the response plan.
Table of events and their response plans

- Designed to show the progression of response plans over time
- Each is evaluated and scored
- If there is a response plan that has a score above a threshold then it’s “recommended”
- If another threshold is met then it’s “approved”
- Waiting to see an approved response plan
Detailed Response Plan Storage

- Details of each response plans is stored
- Each element that was given a directive with an effective rank
- Details of each ATIS/ 511: Displays alternative route detour details
Contact Information:
Derek Miura
510.292.4384
dsm@iteris.com
ICMS – PeMS: Big Data – Q & A

RAMS
- Ramp Meter Information System
- Lane Closure System
- Regional Arterial Mgmt
  - Arterial Congestion
  - Intersection status
  - System alarms
  - Local traffic advisories

RMIS
- Construction/Maint
- Metering Status
- Signal timing plans

FMS
- Freeway Mgmt System
- Regional Event Mgmt System
- System Services

REMS
- Performance Monitoring Sys.
  - Performance measures
  - Visualizations
  - Storage of predictions and events

CPS
- Congestion Pricing System

ATTS
- Arterial Travel Time System
- 511 Usage Statistics
- Alert messages

511
- 511 Usage Statistics
- Alert messages

Weather NWS
- Real-Time Data
- Predictions

NPS
- Network Prediction

RTSS
- Real-Time Simulation

SPS
- Smart Parking System

ICMS
- System Services
- IMTMS
- DSS

DSS
- System Services

Other systems and interfaces:
- One-way IMTMS interface
- Two-way IMTMS interface
- DSS control interface

New or Upgraded System