Regional Multi-Jurisdictional Integrated Traffic Management

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Need for Regional Integrated Traffic Management

- Continuous Growth in:
  - Economics
  - Population
  - Traffics
  - Geographical Coverage of Urban Cities
Need for Regional Integrated Traffic Management

~SOLUTION~

Regional Multi-Jurisdictional Integrated Traffic Management
Regional Integration of Intelligent Transportation System (RIITS)

Integrated Regional Signal System (IRSS)

Regional Traffic Management Centre (RTMC)

Regional Advanced Traveller Information System (RATIS)
Regional Integration of Intelligent Transportation System (RIITS)
RIITS Network Objectives

- Provide Multi-Modal Real-Time Information
- Facilitate Multi-Jurisdictional co-operation and data sharing
RIITS for Los Angeles

Participating Agencies:

- MTA Bus Operations
- Port of Long Beach
- LADOT
- LAX Airport
- Access Services, Inc
- Santa Monica Big Blue Bus
- Caltrans District 7
- LA County Fire Dept.

- MTA Rail Operations
- LA County Public Works
- Long Beach Transit
- LA County Sheriff Dept.
- CHP
- LAPD
- Port of LA
Types of Traffic Information Collected

- Traffic Flow Conditions
- CCTV Camera Video Images
- Changeable Message Sign Displays
- Events (Scheduled and Unscheduled)
- MTA Bus Locations
- MTA Train Locations
Traffic Data Flow

- Arterial Streets in the City of LA
- Freeways in LA County (Caltrans District 7)
- Typically derived from In-pavement loops
- Collected at regular intervals
- Data consists of volumes, occupancies, and average speeds
- Displayed as colour-coded average speeds at points along roadways on map
- Data is useful to assess the impact of incidents on agencies operations
Closed-Circuit TV (CCTV)

- Video is live and in colour
- Video is viewable on PC monitors
- Selectable on a map display
- Viewable as streams and “snapshots”
Changeable Message Sign (CMS)

- Displays message content on sign as a part of freeway incident response
- Selectable on a map display
Event Data

- Major types of freeway or arterial events
  - Incidents (accidents)
  - Planned construction and maintenance activities
  - Special events
  - Emergency closures
  - Weather and other disasters

- Factors of interest
  - Location, type, estimated duration, impact
  - Data must be updated as event transpires
  - Starting and ending times; starting and ending locations
### Event Summary

#### Unscheduled

<table>
<thead>
<tr>
<th>Event Id</th>
<th>Agency</th>
<th>Location</th>
<th>City</th>
<th>Start Date/Time</th>
<th>Type</th>
<th>Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>89771</td>
<td>Caltrans07</td>
<td>91 W @ 1710</td>
<td>LONG BEACH</td>
<td>03/24/2004 02:17 PM</td>
<td>Incident</td>
<td>X</td>
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<tr>
<td>89907</td>
<td>Caltrans07</td>
<td>5 S @ LAKWOOD/BROOKSHI</td>
<td>DOWNEY</td>
<td>07/20/2004 02:38 PM</td>
<td>Incident</td>
<td>X</td>
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<tr>
<td>89809</td>
<td>Caltrans07</td>
<td>5 N @ TEMPLIN HWY</td>
<td>LOS ANGELES CO</td>
<td>04/08/2004 12:45 PM</td>
<td>Incident</td>
<td>X</td>
</tr>
<tr>
<td>89867</td>
<td>Caltrans07</td>
<td>2 E @ BEG OF FWY</td>
<td>LOS ANGELES</td>
<td>04/08/2004 10:25 AM</td>
<td>Emergency Closure</td>
<td>X</td>
</tr>
</tbody>
</table>

*RIITS Completed Unscheduled Events are in red*

#### Scheduled

<table>
<thead>
<tr>
<th>Event Id</th>
<th>Agency</th>
<th>Location</th>
<th>City</th>
<th>Start Date/Time</th>
<th>Type</th>
<th>Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>89838</td>
<td>Caltrans07</td>
<td>210 E @ SUNLAND</td>
<td>LOS ANGELES</td>
<td>04/19/2004 03:45 PM</td>
<td>Special</td>
<td>X</td>
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<tr>
<td>89837</td>
<td>Caltrans07</td>
<td>210 E @ PAXTON ST</td>
<td>LOS ANGELES</td>
<td>04/21/2004 03:30 PM</td>
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<tr>
<td>89836</td>
<td>Caltrans07</td>
<td>5 N @ LAKE HUGHES</td>
<td>LOS ANGELES CO</td>
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<td>X</td>
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<tr>
<td>89840</td>
<td>Caltrans07</td>
<td>5 N @ LINCOLN ST</td>
<td>BURBANK</td>
<td>05/29/2004 03:01</td>
<td>Special</td>
<td>X</td>
</tr>
</tbody>
</table>

*Active Scheduled Events are in green*
Transit Information (Bus)

- Bus Routes (updated twice per year)
- Bus Schedules (updated twice per year)
- Bus Locations (real-time)
- Schedule Adherence (real-time)
- Bus Incidents (updated as needed)
<table>
<thead>
<tr>
<th>Bus Id</th>
<th>Line</th>
<th>Direction</th>
<th>Line Description</th>
<th>Status</th>
<th>Arrival Time</th>
<th>Timepoint Desc</th>
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<tbody>
<tr>
<td>161</td>
<td>30</td>
<td>East</td>
<td>West Pico BL/E. 1st St./Floral Dr.</td>
<td>B,C,D</td>
<td></td>
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</tr>
<tr>
<td>165</td>
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<td>West Pico BL/E. 1st St./Floral Dr.</td>
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<tr>
<td>5</td>
<td>460</td>
<td>East</td>
<td>Disneyland/Fullerton/Knott's Berry Farm/Norwalk/LA Express</td>
<td>C,E</td>
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</tr>
<tr>
<td>295</td>
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<td>East</td>
<td>West Pico BL/E. 1st St./Floral Dr.</td>
<td>B,C,D</td>
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<td></td>
</tr>
<tr>
<td>12</td>
<td>460</td>
<td>East</td>
<td>Disneyland/Fullerton/Knott's Berry Farm/Norwalk/LA Express</td>
<td>C,E</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Selected Buses:**
- Bus Id 161, Line 30, Direction East
- Bus Id 780, Line 180, Direction East
- Bus Id 347, Line 180, Direction East
- Bus Id 5, Line 460, Direction East

*On Time Buses are in blue
* Late Arrival Buses are in red
* Early Arrival Buses are in green
* Off Route Buses are in black

Send To Map
Transit Information (Rail)

- Rail Lines (updated twice per year)
- Rail Schedules (updated twice per year)
- Train Locations for Green Line (real-time)
- Schedule Adherence for Green Line (real-time)
- Rail Incidents (updated as needed)
Benefits

- Encourages Multi-Jurisdictional co-operation
- Enables sharing of real-time information
- Provides single data source for public and private participants
- Improves traveller information dissemination on a regional basis
Integrated Regional Signal System (IRSS)
IRSS

IS

- High Level System
- System of Systems
NOT

- Centralized Traffic Signal Management System
- Set of Computer or Traffic Signal Controller Specifications
Objectives of IRSS

- Provides means to coordinate traffic signal operations within the control region
- Allows individual agencies to still maintain autonomy over their roadways and traffic signals
Based on Centre-to-Centre (C2C) Communications Protocol

- Share information
- Facilitate coordinated operations
- Send/Receive event notices
- Provide links for other regional ITS initiatives
IRSS for Vancouver
Preliminary System Concept

- ITS Architecture for Canada
  - Regional Traffic Control User Sub-service

- BC ITS Strategic Plan
  - Regional Traffic Management User Sub-service

- Study Requirements
  - Needs Assessment + Legacy Systems

- Integrated Regional Signal System
  - Conceptual Design
Definition of ITS Architecture

- Physical representation:
  - Important ITS interfaces
  - Major system components
- Provides a high-level structure:
  - Processes
  - Data flows
- Not a detailed design
Provincial ITS Architecture
BC ITS Strategic Plan

- Identified 23 ITS Initiatives
  - 66 Distinct Projects
- Initiative 1 – Regional Traffic Management
  - Freeway Incident Management System
    - Integrated Regional Signal System
  - Arterial Traffic Management System
  - Portable Traffic Management for Construction Zones
  - Adaptive Traffic Signal Control System
Preliminary System Concept

Integrated Regional Signal System (IRSS) Gateway

VANCOUVER
IRSS Gateway
Signal System

RICHMOND
IRSS Gateway
Signal System

BURNABY
IRSS Gateway
Signal System

COQUITLAM
IRSS Gateway
Signal System

OTHER AGENCIES
IRSS Gateway
Signal System

IRSS Communications Network

Integrated Regional Signal System

ATIS Gateway
IRSS
Barriers to Integration

- Consensus building among agencies
  - Multiple agencies involved
- Proprietary technology of legacy systems
  - Dependent on supplier cooperation
- ‘Isolated’ MoT intersections
  - Need for system integration
Opportunities

- Improve inter-agency cooperation and coordination
- Improve accessibility to timely and accurate traffic data
- Reduce vehicle delays and congestion
- Linking is first step to achieving regional traffic management benefits through:
  - Traveller Information
  - Incident Management
  - Transit Signal Priority
  - etc.
Regional Traffic Management Centre (RTMC)
Traditional TMC

- Standalone systems
- Lack of interoperability between agencies
- Adoption of different standards and protocols
RTMC Objectives

- Improves coordination
- Supports multiple centres/nodes
- Multiple agencies/vendors
- Encourages data sharing
- Open system – scalable, interoperable
RTMC Roles

- Centre for monitoring and traffic control
- Clearinghouse for data / information exchange
- Provides coordination between travel modes
- Provides support for other transportation programs
Regional Advanced Traveller Information System (RATIS)
What is RATIS?

- Regional network to exchange multi-modal transportation information in real-time
- It is a privileged internet for transportation and emergency service agencies, provide multi-modal real time information at their fingertips
- Provides a data feed for information service providers (ISPs) to enable wide dissemination of traveler information
RATIS

- RATIS Provides:
  - Real-time traffic status
    - Incident/closure/events
    - CCTV images
    - Travel time
    - Border wait time
    - Service disruptions
    - Parking
  - Travel mode information
  - Travel planner / mode choice tool
ITS Corporation’s ATIS Vision

• Agency Administration
• Ferry & Ports
• Rideshare
• Transportation Services
• Commercial Vehicle
• Paratransit
• Incident Management
• Emergency Management
• Traffic Management

• Transit
• Rail
• Aviation
• Public Media
• ISPs
• Value Added
• Re-Sellers
• Public Tourist
• Travelers
• Research
• Universities
• Entrepreneurs
• Commercial Firms
• Commercial Fleet Management

• Real Time Traffic
• Roadway Information
• Planned Events (Construction)
• Transit Schedules/Paratransit
• Rail Schedules
• Airport Information
• Port Information
• Ferry Information
• Parking Information
• Air Quality Information
• Weather
• Safety Advisory
• Emergency Information
• Transportation Services
• Traffic Enforcement
• Non-Motorized
• Environmental Conditions
• Weather

Fully Integrated - All Modes All Roads
RATIS for Greater Vancouver Area

Welcome

Welcome to the Greater Vancouver Area Regional Advanced Traffic Information System web portal, brought to you by TransLink. This portal provides access to information regarding transportation in and around the Greater Vancouver Area, including an interactive map showing current traffic incidents, images from 289 traffic cameras located throughout the region and route and access information for all major modes of transportation, including road, rail, air and marine.

Travel Advisories

Cameras

Interactive Map

There are currently 27 reported advisories.

There are currently 125 active cameras.
RATIS for Greater Vancouver Area

RATIS Deployment

- CARS
- MoT PHCC
- MoT Border ATIS
- BC Ferries
- MoT Bridges Tunnels
- Env. Canada
- ECOMM CAD
- Hwy 91
- Alex Fraser Bridge
- TransLink TCOMM
- Gateway
- Golden Ears Bridge
- Pitt River Bridge
- Traffic Management Centre
- IOC Centre
- TCH
- Sea to Sky
- BC Ferries
- ECOMMCAD

Phase 1
- Web Portal

Phase 2
- Web Portal Kiosks, Email, PDA

Phase 3
- Web Portal Kiosks, Email, PDA, DMS, In Vehicle

DEPLOYMENT

| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |

Regional ATIS 2010
RATIS for Greater Vancouver Area

- RATIS Promotes:
  - “One-Stop” transportation Portal
  - Multi-Jurisdiction Coordination and Dissemination of transportation information:
    - Local Municipalities
    - Public Transit Authorities
    - Airport Authority
    - Port Authority
    - Provincial Ministry of Transportation
Conclusion

- Innovative Concepts
- New Partnerships
- New Technologies
- Multi-Jurisdictional Co-operations
- Regional Integrations
Questions & Answers?

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