Agenda

- Introductions
- Recap of Project Background
- Needs, Services, and Operational Concepts
- Functional Requirements and System Interfaces
- Project Sequencing, Agency Agreements, and Architecture Maintenance
- Next Meeting/Calendar Review
Project Background
What is ITS?

Intelligent Transportation Systems

Uses electronics, communications, and computers in an integrated manner to improve the efficiency and safety of roadways.
What is a Regional ITS Architecture?

Provides a structured framework for deployment and integration.

Helps to introduce and interconnect ITS services across the region.

Identifies “gaps” in systems and services.

Assists in the development of cooperative agreements.
What does a Regional ITS Architecture include?

- Description of the Region
- List of Stakeholders
- Current and Future ITS Elements
- Information Exchange between the ITS Elements
- Operational Concept for the ITS Services
- Functions of each of the ITS Elements
- Applicable ITS Standards
- Project Sequencing
- List of Agreements
### Project Work Scope

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
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<tbody>
<tr>
<td>Task 1</td>
<td>Project Management</td>
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<tr>
<td>Task 2</td>
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<td>Task 8</td>
<td>Develop Maintenance Plan</td>
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<td>Task 9</td>
<td>Produce Final Report</td>
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Deliverables

■ Chapter 1
  – Inventory Report

■ Chapter 2
  – ITS User Needs, Services & Operational Concepts

■ Chapter 3
  – Functional Requirements & Interface Definitions

■ Chapter 4
  – Project Sequencing

■ Chapter 5
  – List of Agency Agreements

■ Chapter 6
  – ITS Architecture Maintenance Plan
Deliverables

- Final Report:
  - Combines Chapters 1 through 6, incorporating all comments
  - Adds a Regional Perspective Section
  - Addresses ITS Standards
Stakeholders
Inventory
Needs
Services
Operational Concepts
Functional Requirements
System Interfaces and Flows

Entities that own/operate transportation systems or have an interest in regional transportation issues
Stakeholders
Inventory
Needs
Services
Operational Concepts
Functional Requirements
System Interfaces and Flows

Collection of transportation systems for which there is an opportunity for integration
Architecture Terms

- Stakeholders
- Inventory
- Needs
- Services
- Operational Concepts
- Functional Requirements
- System Interfaces and Flows

List of regional transportation problems and challenges
Things that can be done to improve the efficiency, safety, and convenience of the regional transportation system.
Architecture Terms

- Stakeholders
- Inventory
- Needs
- Services
- Operational Concepts
- Functional Requirements
- System Interfaces and Flows

Definition of each stakeholder’s role in providing ITS services
Architecture Terms

- Stakeholders
- Inventory
- Needs
- Services
- Operational Concepts
- Functional Requirements
- System Interfaces and Flows
Architecture Terms

- Stakeholders
- Inventory
- Needs
- Services
- Operational Concepts
- Functional Requirements
- System Interfaces and Flows

Description of which systems need to be connected to each other and what information should be exchanged to meet needs.
ITS Needs, Services, and Operational Concepts
ITS Needs

- Sorted by ITS Category
  - Arterial/Traffic Management
  - Freeway Management
  - Public Transportation Management
  - Emergency Management
  - Maintenance & Construction Operations
  - Traveler Information
  - Commercial Vehicle Operations
  - Electronic Payment Systems
  - Advanced Vehicle Control & Safety Systems
  - Integration (catch-all category)
ITS Needs

- Sorted by ITS Category

Then:
- Reviewed with Stakeholders
- Arrived at 85 Needs
- Prioritized (L-M-H)
ITS Services

- Compared Inland Empire (IE) Needs to List of Services (i.e. Market Packages)
  - Existing or Planned in the IE
  - Identified IE Need
  - No IE Need
  - IE Need Indeterminate

- Resulted in Understanding of MPs to Select for Interfaces
Operational Concepts

- Defines IE Stakeholder Role and Responsibility
- By Inland Empire Agency:
  - California Highway Patrol
  - Local Police, Fire, Ambulance
  - Caltrans D8
  - County Emergency Agencies
  - Local City and County Traffic Ops
  - Transit Operators
  - Commercial Vehicle Operators
Example Operational Concept – Caltrans D8

- Manage traffic on freeway on-ramps and Caltrans controlled highways using traffic signals including preemption for emergency
- Monitor traffic on freeway on-ramps and Caltrans controlled highways
- Provide traffic and incident information to drivers
- Implement traffic control response to incidents
- Coordinate traffic control response to incidents with emergency and traffic agencies
- Share traffic information with other emergency and transportation agencies
- Share control of field equipment with other transportation and emergency agencies
- Maintain field equipment
- Provide resources when requested by emergency management agencies
- Coordinate road closures with other agencies
- Maintain centralized emergency management systems software and systems
- Maintain centralized signal systems and software
- Receive signal priority requests from transit operators (where applicable)
- Provide transit signal priority requests (where applicable)
- Determine maintenance vehicle locations
- Send location information to agency center
- Maintain vehicle status for deployment
- Send status information to agency center
- Maintain AVI/AVL systems for maintenance vehicles
- Monitor weather conditions with available CCTV and RWIS sensors and provide road weather conditions to other agencies
- Provide snowplow operations support and availability information for other agencies (CHP, county sheriff, etc.)
- Update Information to ISP and Media Outlets (web sites, TV, etc.) and issue alerts on CMS and HAR equipment
- Install CCTV cameras, CMS and HAR along the freeways
- Share freeway CCTV, CMS and HAR equipment and its control with partner agencies
- Maintain systems
- Maintain resource database updated for others to monitor
Functional Requirements and System Interfaces


**Functional Requirements**

- **Steps:**
  - Identify the systems, existing or planned.
  - Use the regional needs and operational concepts to determine what the systems need to do.

- **Refer to Chapter 3 Report**
Architecture Process

Inventory 
Needs

Services Provided by ITS to Address Needs

Roles & Responsibilities 
Functions

System Interfaces and Info Flow

Stakeholder Input
TurboArchitecture

- Software tool that supports development of regional and project ITS architectures using the National ITS Architecture as a starting point.
- Uses ITS inventory as input; output includes reports, diagrams, and preliminary architecture.
Interconnect vs. Flow Diagrams

- Interconnects = physical or logical connections between systems
- Information Flows = content of data exchanged over the interconnect
“Sausage” Diagram

- A diagram which depicts all **subsystems** in the **National ITS Architecture** and the basic communication channels between these subsystems.

- The sausage diagram is a top-level **architecture interconnect** diagram.
Inland Empire “Sausage” Diagram

**Travelers**
- Remote Traveler Support
- Personal Information Access

**Centers**
- Traffic Management
- Emergency Management
- Toll Administration
- Commercial Vehicle Administration
- Maintenance and Construction Management
- Emissions Management
- Transit Management
- Fleet and Freight Management
- Archived Data Management

**Wide Area Wireless Communications**
- Vehide
- Emergency Vehicle
- Commercial Vehicle
- Transit Vehicle
- Maintenance and Construction Vehicle

**Wireline Communications**
- Roadway
- Toll Collection
- Parking Management
- Commercial Vehicle Check

**Vehicles**

**Roadside**

**Vehicle to Vehicle Communications**

**Information Service Provider**

**Emerging Technologies**
- Dedication Short Range Communications
- Wide Area Wireless Communications
System Interfaces/Information Flows

- Refer to Chapter 3 Report
Project Sequencing, Agency Agreements, and Architecture Maintenance
Project Sequencing

- Provides a Path to Regional ITS Implementation
- Needs to be Factored into Traditional Regional Planning Methods
- Demonstrates how Regional ITS Architecture Supports the Life Cycle of a Project
Project Sequencing

Steps:

- Identify regional technical and institutional gaps and issues.
- Review any existing planning documents for ITS “pieces”.
- Develop list of activities/projects to resolve gaps and issues.
- Rate the projects for implementation as short, medium, and long-term.
- Develop project sequencing and dependencies.
Project Sequencing

- Project Focus:
  - Interconnect Gaps
  - Data Flow Needs
  - Regional Systems
  - System Management
  - Infrastructure
Project Sequencing

Some Examples:
- Multi-Jurisdictional Regional Arterial Management
- Regional Transportation Status Web Site
- Smart Corridor Traffic Management
- Arterial-Based Network Surveillance
- Transit Traveler Information and Security System
- Advanced Parking Information System
- Transit Signal Priority
- Incident Response and Management
Agency Agreements

- Each connection between systems represents cooperation between stakeholders.
- An agreement may be necessary to realize regional integration.
- Doesn’t mean that 100’s of connections equals 100’s of agreements.
Agency Agreements

Steps:

- Compile any existing agreements.
- Create list of agreements based on interconnects.
- Determine agreement type and sample clauses.
- Provide a few sample agreements.
Agency Agreements

Agreement Types:
- Handshake Agreement
- Memorandum of Understanding
- Interagency Agreement
- Intergovernmental Agreement
- Operational Agreement
- Funding Agreement
Agency Agreements

Agreement Focus:
- Scope of Service
- Info to be Exchanged
- Responsibility for Components
- Authority to Execute
- Should be Technology Independent
Architecture Maintenance

Two Purposes:
- Use of the Plan
- Maintain the Plan
Use of the Plan:

– When Developing the Regional Transportation Plan and Long Range Planning Documents
– When Trying to Promote System and Inter-Jurisdictional Integration
– During Project Definition and RFP Development
Maintain the Plan:
- Who will be responsible?
  - Individual, Agency, or Group
- Who will support?
- Who will manage?
- What outputs will be maintained?
- How will changes be introduced and by whom?
Architecture Maintenance

- Maintain the Plan:
  - How often will changes be performed?
  - Who will evaluate changes for inclusion into the baseline?
  - What group will review the change recommendations and make decision?
  - Who will actually modify the architecture baseline?
  - How and who will be notified?
Architecture Maintenance

- Maintain the Plan:
  - Need TurboArchitecture Tool
  - Periodic (quarterly, once or twice a year)
Web Site URL

www.iteris.com/inlandempire-its
Next Meeting/Calendar Review
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Upcoming Deliverables

- Draft Functional Requirements and Interfaces Report
- Draft Project Sequencing Report
- Draft List of Agency Agreements
- Draft Architecture Maintenance Report
- Comment Disposition(s)
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<th>Workshop #1: Stakeholders/Inventory</th>
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