Presentation Overview

- Overview of ITS
- ITS Architecture Development Process
- Existing Regional ITS Architecture
- Regional Boundaries and Stakeholders
- Regional Inventory and Needs
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What is ITS?

ITS is an acronym that stands for *Intelligent Transportation Systems*

One definition of ITS: The application of data processing and data communications to surface transportation to increase safety and efficiency.
ITS Program Areas

- Traffic Management
- Traveler Information
- Emergency Management
- Maintenance and Construction Management
- Public Transportation
- Archived Data Management
- Commercial Vehicle Operations
- Vehicle Safety
ITS Applications
Traffic Management (Data Gathering)

CCTV Cameras

Flood Detection and RWIS

Video, Microwave, and Loop Detection Systems
ITS Applications
Traffic Management (Control)

Traffic Management Center

Arterial Signal Systems

Lane Control Systems

Ramp Meters
ITS Applications
Traffic Management (Roadside Traveler Information)

Dynamic Message Signs

Highway Advisory Radio
ITS Applications
Traffic Management (HELP Service Patrols)

HELP Service Patrols
ITS Applications
Traffic Management (Electronic Payment)

Electronic Toll Collection
ITS Applications

Traveler Information

Internet Sites

511 Traveler Information

511 Traveler Information

Memphis MPO
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ITS Applications

Emergency Management

Computer-Aided Dispatch Systems

Video/Information Sharing

AMBER Alerts

Traffic Signal Preemption
ITS Applications
Maintenance and Construction Management

Flood Detection and Closure Systems

Anti-icing Systems and Automated Snowplows

Smart Work Zones
ITS Applications

Public Transportation

Automated Vehicle Location

Smart Fare Payment Systems

Video Security Systems

Real-Time Bus Arrival Information
ITS Applications
Archived Data Management

Archived Data User Service
ITS Applications
Commercial Vehicle Operations

Weigh-In-Motion
ITS Applications
Vehicle Safety

- Navigation Devices
  - Intelligent Cruise Control
  - Lateral and Longitudinal Collision Avoidance
  - On-Star
ITS Benefits

• Increased efficiency for roadway and transit users

• Enhanced incident management and special event management capabilities

• Improved safety for travelers, public safety, and maintenance personnel

• Accurate and timely traveler information for all roadway users
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What is a Regional ITS Architecture?

- A plan for implementing and operating ITS

- An ITS architecture defines:
  - Transportation needs
  - ITS solutions
  - Agencies to be connected
  - Projects to be deployed
ITS Architecture Requirements

- Description of the Region
- Identification of stakeholders
- ITS needs
- ITS services to implement
- Information flows between elements
- ITS standards
- Sequence of projects
- Maintenance plan
ITS Architecture Deadlines

• Federal Highway Administration Final Rule and Federal Transit Administration Final Policy from 2001
  • Regions deploying ITS must have a regional ITS architecture in place by April 2005
  • Regions with no ITS deployed must have a regional ITS architecture developed within 4 years after their first ITS project reaches final design
  • ITS projects receiving federal transportation funding must conform to a regional ITS architecture
Key Steps to Develop an ITS Architecture

Step One
Identify ITS Inventory and Needs

Step Two
Develop ITS Service Packages

Step Three
Identify Projects for Deployment in the Region
Identify ITS Inventory and Needs

Step One

- **Inventory**
  - Identify all existing and planned ITS components
  - Identify all existing and planned connections between components

- **Needs**
  - Identify transportation needs in the Region
  - Needs can be general or specific to ITS
  - Continually update needs list throughout the project
Develop ITS Service Packages

- ITS service packages describe how ITS is operated in the Region

- Common service packages:
  - Network Surveillance
  - Traffic Signal Control
  - Traffic Information Dissemination
  - Traffic Incident Management
  - Emergency Routing
  - Transit Vehicle Tracking

- A total of 97 service packages exist in the current version of the National ITS Architecture

- Memphis selected 44 ITS service packages in 2010
ITS Service Package Concept

ATMS08 – Traffic Incident Management System

Media

Transit Management

Emergency Management

Traffic Management

Information Service Provider

DMS

Roadway

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Strengthening Regional Transportation

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ITS Service Package Concept

ATMS06 – Traffic Information Dissemination

Emergency Management
THP Dispatch
+ All TN Municipal and County Emergency Dispatch Agencies

Traffic Management
TDOT Region 4
TMC – Memphis

Information Service Provider
TDOT SmartWay
Information System (TSIS)

Roadway
TDOT DMS
+ TDOT HAR

Transit Management
MATA Dispatch Center
+ Delta HRA Transportation Dispatch Center

Media
Local Print and Broadcast Media

Road network conditions
roadway information system data
roadway information system status
road network conditions
Step Three  

Identify Projects for Deployment in the Region

- Development of an ITS Deployment Plan for the Region
- Prioritizes projects into:
  - Short-term (next 5 years)
  - Mid-term (5 to 10 years)
  - Long-term (beyond 10 years)
- For each project the following information is included:
  - Project description
  - Responsible agency
  - Estimate of probable cost
  - Applicable service packages
- Does not guarantee funding of the projects
Benefits of an ITS Architecture and Deployment Plan

• Provides vision for ITS deployment and operations in the Region
• Supports resource sharing and interoperability of systems
• Supports long range planning through a phased plan for ITS deployment and integration
• Assists agencies in looking for federal funding opportunities
• Meets USDOT requirement that ITS projects funded with federal transportation funds conform to its regional ITS architecture
ITS Architecture Work Plan

- **Kick-Off Workshop and ITS Needs**
  - March 6

- **Stakeholder Interviews**
  - Weeks of April 7 / 14

- **Draft Regional ITS Architecture and Deployment Plan**

- **Stakeholder Overview Workshop**
  - Mid June

- **Revised Draft Regional ITS Architecture and Deployment Plan**

- **Final Regional ITS Architecture and Deployment Plan**
Deliverables

• Regional ITS Architecture Update and Deployment Plan Report

• Executive Summary

• Turbo Architecture Database
  (Version 7.0 of Turbo Architecture)

• Project Website

  www.memphismpo.org/plans/safety-mobility/its
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**Existing Regional ITS Architecture**

• Regional Boundaries and Stakeholders
• Regional Inventory and Needs
Memphis Urban Area
Regional ITS Architecture History

- First Regional ITS Architecture Plan completed in August 2002
  - Used National ITS Architecture Version 3.0
    (Currently on Version 7.0)
  - Used Turbo Architecture Version 1.0
    (Currently using Version 7.0)

- In 2010, the MPO completed the first update of the Regional ITS Architecture
Memphis Area Regional ITS Architecture Update

- Current effort will complete the Regional ITS Architecture update in August 2014

- Reason for update
  - Changes and additions to the National ITS Architecture
  - New stakeholder agency representatives in the Region
  - New ITS deployments in the Region
  - Updated Regional ITS Architecture important to meet ITS architecture conformity rule
  - Stakeholder set a goal to update the plan every 4 years
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• **Regional Boundaries and Stakeholders**

• Regional Inventory and Needs
Memphis Area Regional Boundaries

The regional boundaries have been defined as the boundaries of the Memphis Urban Area MPO:
- Shelby County, TN
- Fayette County (Western Area), TN
- DeSoto County (Northern Area), MS
- Marshall County (Northwest Corner), MS

Connections will be added to all agencies outside the regional boundaries as appropriate.

Memphis Urban Area ITS Architecture coordinated with the West Memphis and Northwest Mississippi ITS Architectures.
Memphis Area Regional ITS Stakeholders

CITIES & TOWNS
- City of Bartlett
- City of Braden
- City of Gallaway
- City of Germantown
- City of Hernando
- City of Horn Lake
- City of Lakeland
- City of Memphis
- City of Millington
- City of Olive Branch
- City of Piperton
- City of Southaven
- Town of Arlington
- Town of Collierville
- Town of Oakland
- Town of Rossville

COUNTIES
- DeSoto County
- Fayette County
- Marshall County
- Shelby County

TRANSIT
- Memphis Area Transit Authority
- Delta Human Resource Agency

STATE
- Arkansas Highway Patrol
- Arkansas State Highway & Transportation Department
- Mississippi DOT
- Mississippi Highway Patrol
- Tennessee DOT
- Tennessee Highway Patrol

FEDERAL
- Federal Highway Administration
- Federal Transit Administration
- US Coast Guard

MPOs
- Memphis MPO
- West Memphis MPO

OTHER
- Memphis-Shelby County Airport Authority
- International Port of Memphis
Additional Stakeholders

Are there other stakeholders that should be included?
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Existing and Planned Projects

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- Emergency Management
- Maintenance and Construction Management
- Public Transportation
- Archived Data Management
- Commercial Vehicle Operations
- Vehicle Safety
Regional ITS Needs

• Traffic and congestion
• Incident management
• Traveler information
• Weather related issues
• Special events
• Evacuation
• Major construction projects
• Regional coordination challenges
• Other needs
Thank You!

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