Memphis Urban Area MPO
Regional ITS Architecture
Update Kick-Off Workshop

March 6, 2014





Memphis MPO
METROPOLITAN PLANNING ORGANIZATION
Strengthening Regional Transportation

Kimley-Horn and Associates, Inc.

Presentation Overview

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

Presentation Overview

- **Overview of ITS**
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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)

Flood Detection and RWIS

CCTV Cameras

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

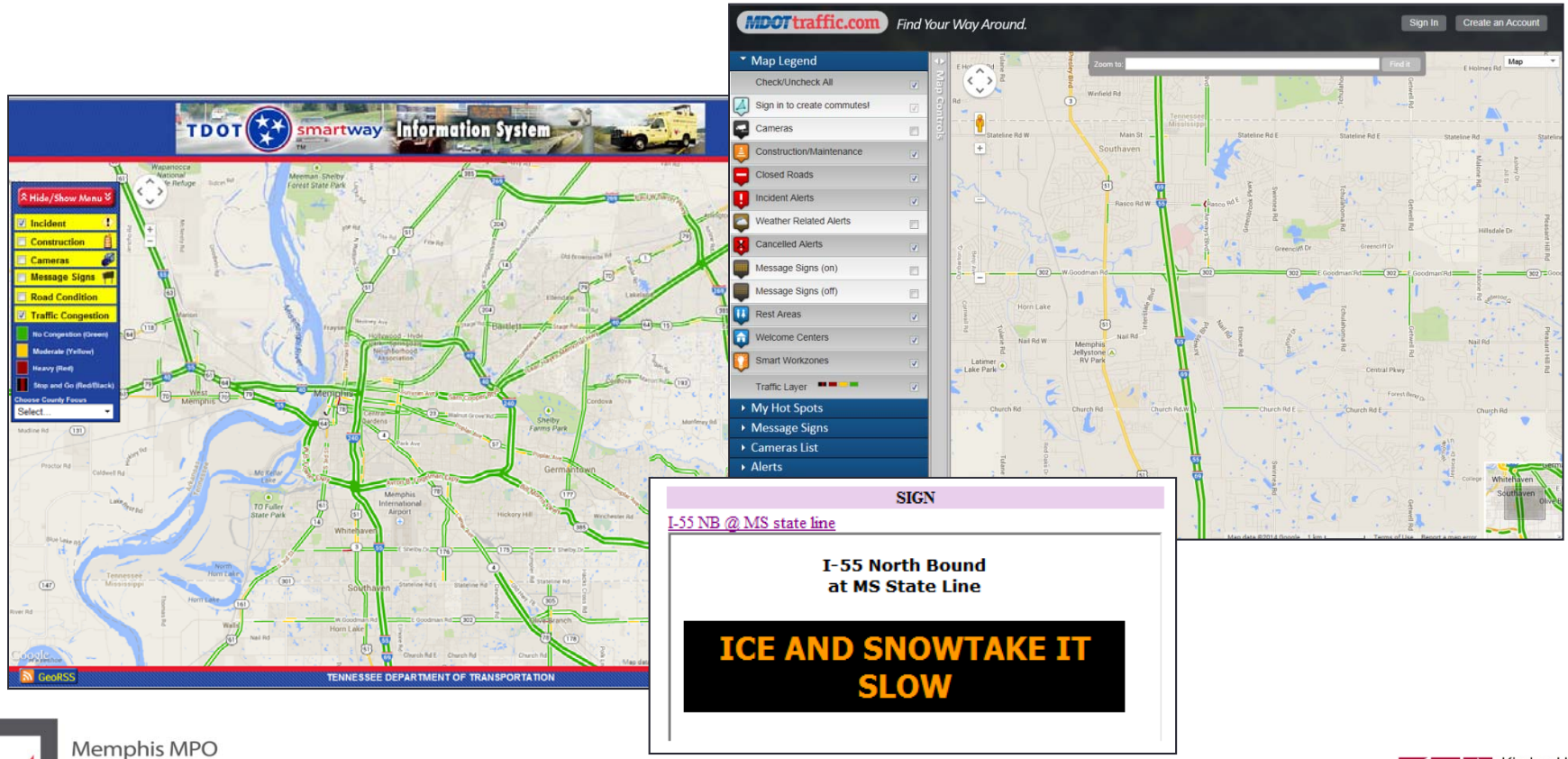
ITS Applications

Traveler Information

The smartway to travel in Tennessee
www.TN511.com
511
call.click.Go

511 Traveler Information

Internet Sites



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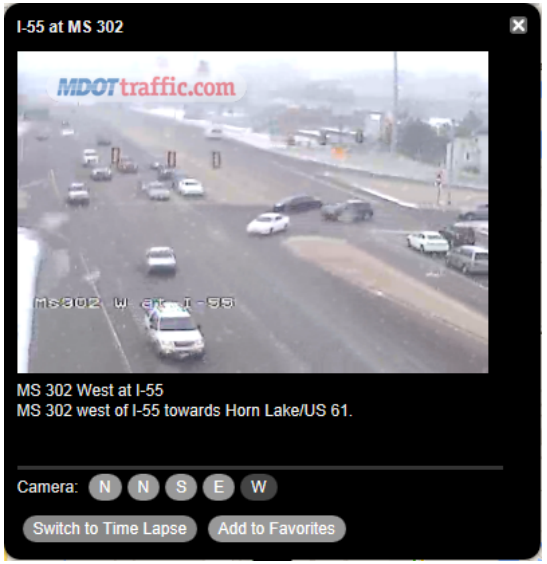
ITS Applications

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

Smart Work Zones

Anti-icing Systems and Automated Snowplows

ITS Applications

Public Transportation

Automated Vehicle Location

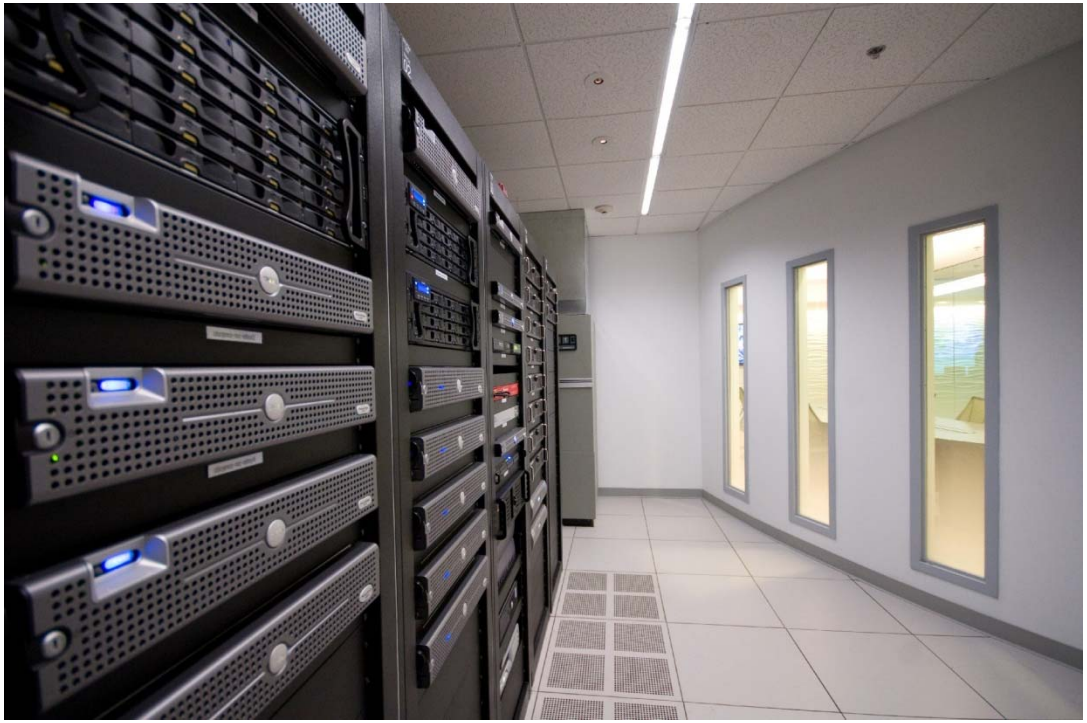
Smart Fare Payment Systems

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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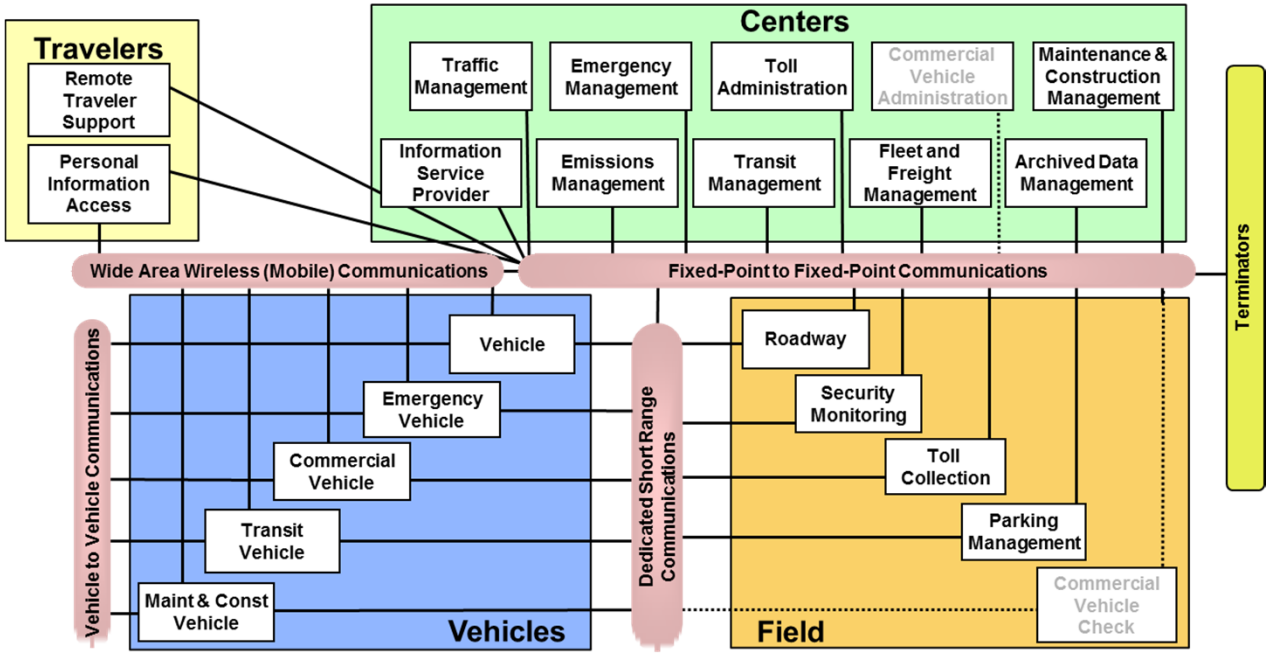
What is a Regional ITS Architecture?

- A plan for implementing and operating ITS
- An ITS architecture defines:
  - Transportation needs
  - ITS solutions
  - Agencies to be connected
  - Projects to be deployed



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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

Step One

Identify ITS Inventory and Needs

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

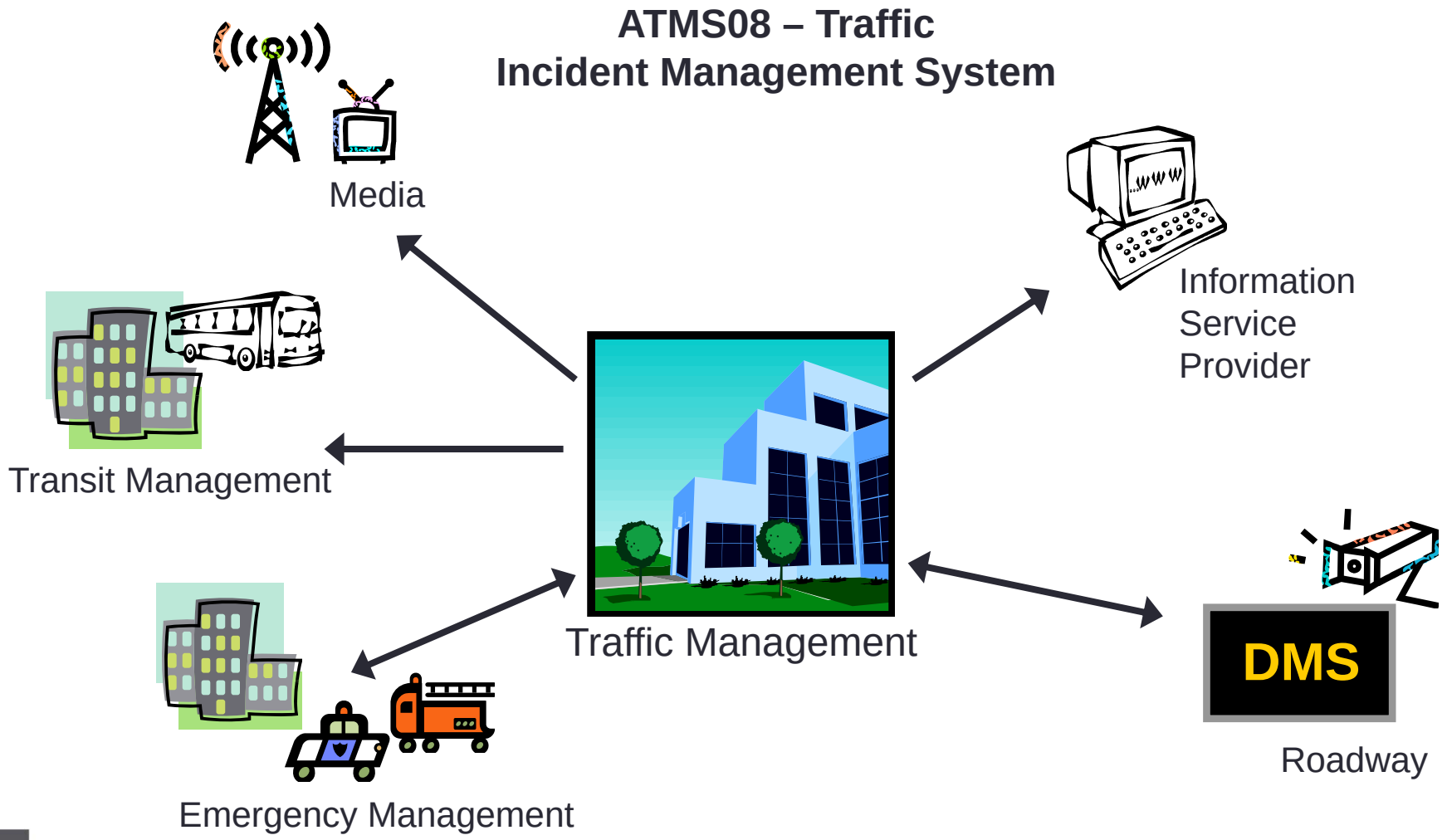
- Needs
  - Identify transportation needs in the Region
  - Needs can be general or specific to ITS
  - Continually update needs list throughout the project

Step Two

Develop ITS Service Packages

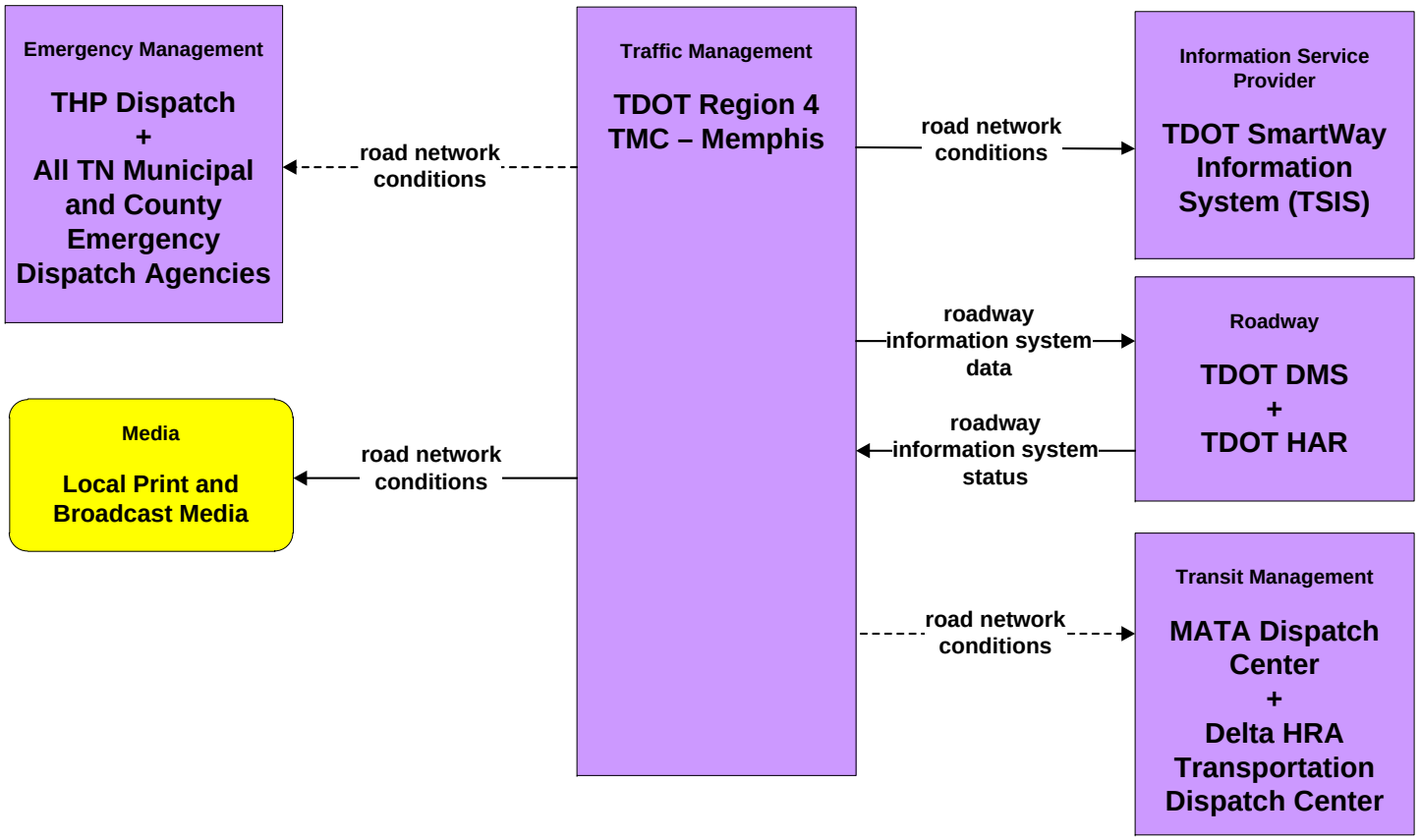
- ITS service packages describe how ITS is operated in the Region
- Common service packages:
  - Network Surveillance
  - Traffic Signal Control
  - Traffic Information Dissemination
  - Traffic Incident Management
  - Emergency Routing
  - Transit Vehicle Tracking
- A total of 97 service packages exist in the current version of the National ITS Architecture
- Memphis selected 44 ITS service packages in 2010

ITS Service Package Concept



ITS Service Package Concept

ATMS06 – Traffic Information Dissemination



Step Three

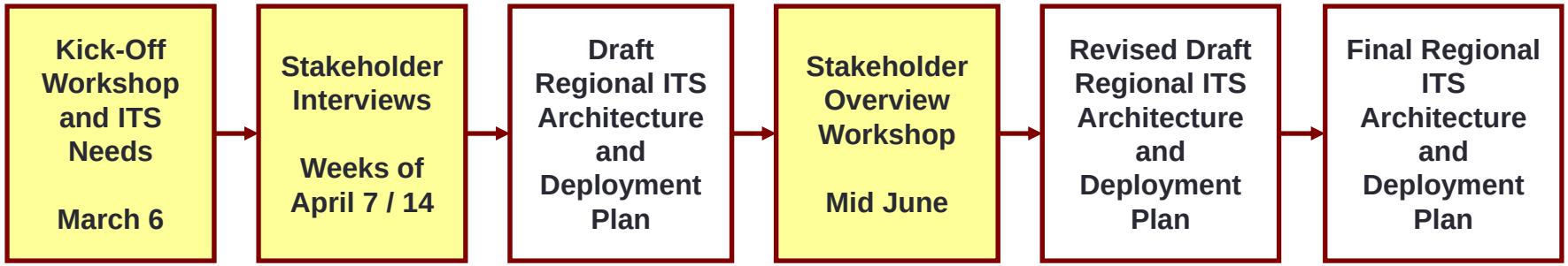
Identify Projects for Deployment in the Region

- 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 of federal funding opportunities
- Meets USDOT requirement that ITS projects funded with federal transportation funds conform to its regional ITS architecture

ITS Architecture Work 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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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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Memphis Area Regional Boundaries

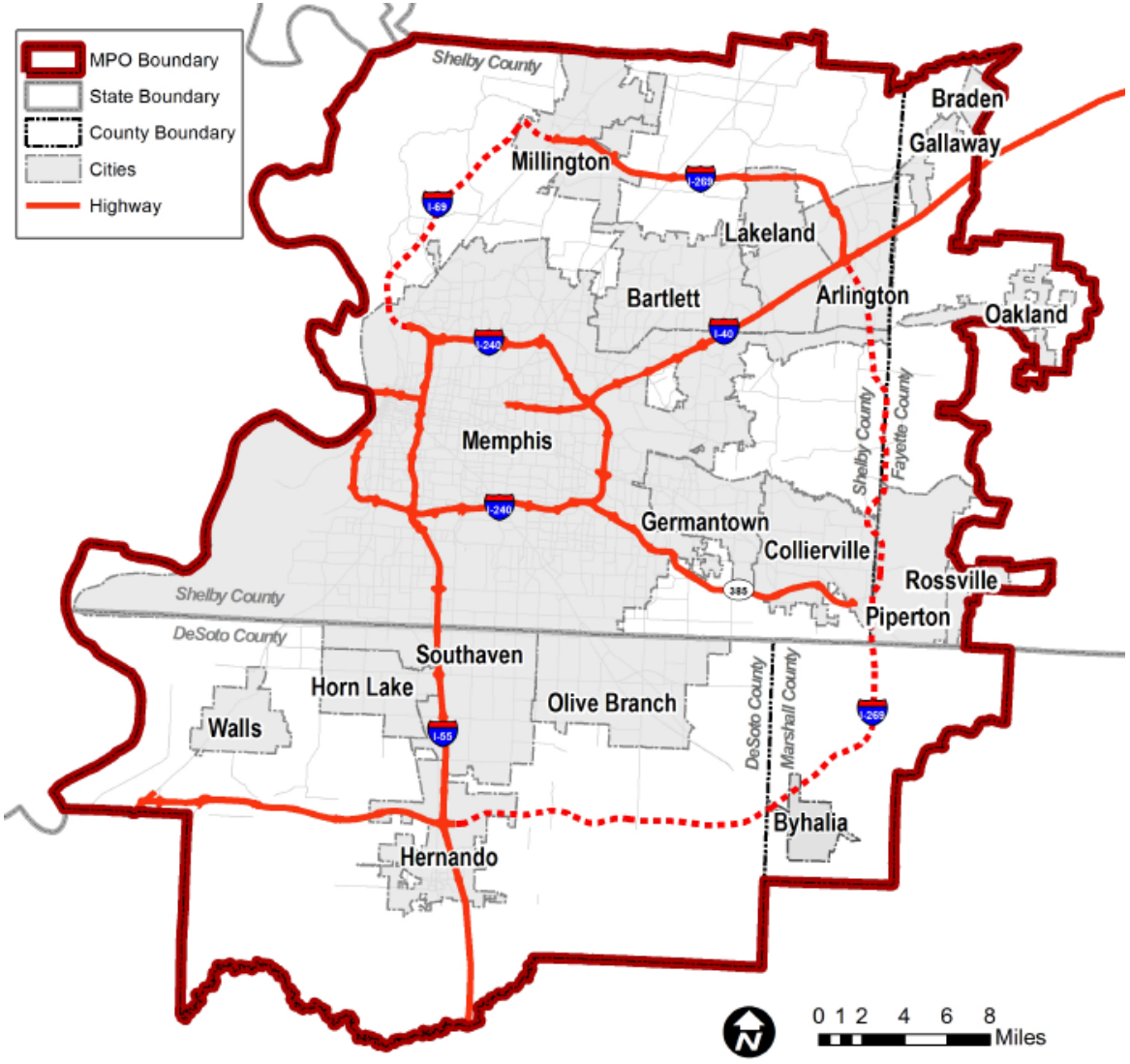
The regional boundaries have been defined as the boundaries of the Memphis Urban Area MPO

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 MPO Boundaries



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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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- Traveler Information
- 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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