Bristol
Regional ITS Architecture Update
Kick-off Workshop

October 26, 2016

Kimley » Horn

Presentation Overview

Overview of ITS
- What is ITS?
- ITS Benefits
- ITS Applications

Overview of Regional ITS Architectures
- What is a Regional ITS Architecture?
- ITS Architecture Development Process
- Benefits of the Regional ITS Architecture

Discussion
- Existing and Planned Projects in the Region
- ITS Needs in the Region
- 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 Benefits

Increased roadway and transit efficiency

Enhanced incident and special event management

Improved safety for travelers, public safety, and maintenance personnel

Accurate and timely traveler information

ITS Program Areas

- Traffic Management

- Traveler Information

- Emergency Management

- Maintenance and Construction Management

- Public Transportation

- Archived Data Management

- Commercial Vehicle Operations

- Vehicle Safety

Traffic Management

Data Collection

Control

Roadside Traveler Information

Traveler Information

Traveler Information Website

511 Traveler Information Phone Number
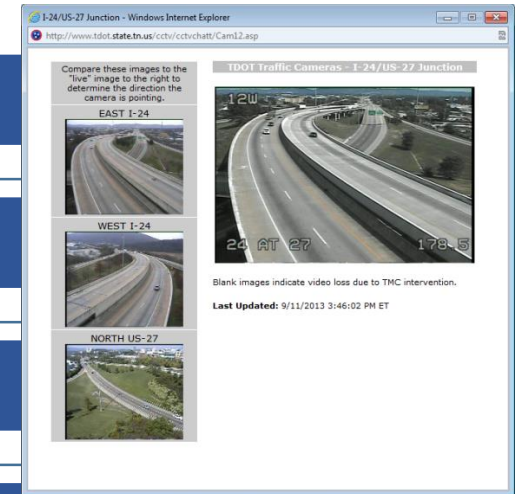
Emergency Management

Computer-aided Dispatch Systems

AMBER Alerts

Traffic Signal Preemption

Video/Information Sharing

Coordinated Incident Management

Public Transportation

Smart Fare Payment Systems

Automated Vehicle Location

Video Security Systems

Real-time Bus Arrival Information

Transit Signal Priority

Automated Passenger Counters

Commercial Vehicle Operations

Freight Administration

Weigh-In-Motion

HAZMAT Management

Freight Assignment Management

Not a large component of regional ITS planning because CVO are mostly determined at a state level.

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Maintenance & Construction Management

Smart Work Zones

Flood Detection and Closure Systems

Anti-icing Systems

Vehicle Tracking Systems
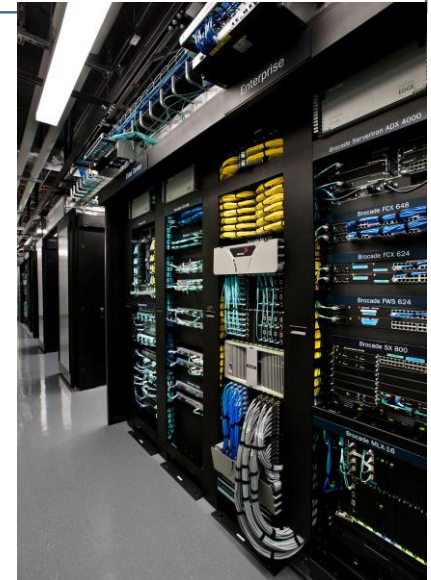
Archived Data Management

ITS Data Mart

ITS Data Warehouse / Virtual Data Warehouse

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Emerging ITS Technologies

- Automated Vehicles
- Connected Vehicles
- Active Traffic Management
- Integrated Corridor Management
- Decision Support Systems
- Vehicle Detection System (Bluetooth)
- Privatized Traffic Data

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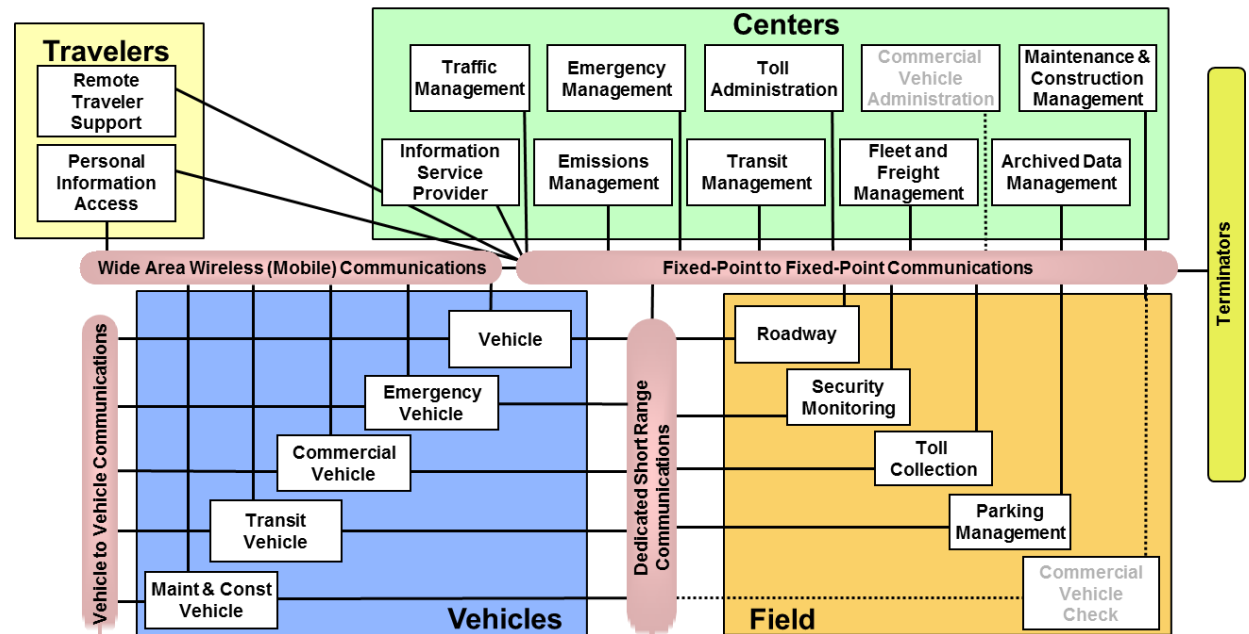- ITS Applications

Overview of Regional ITS Architectures

- **What is a Regional ITS Architecture?**
- **ITS Architecture Development Process**
- **Benefits of the Regional ITS Architecture**

Discussion

- Existing and Planned Projects in the Region
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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 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

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

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

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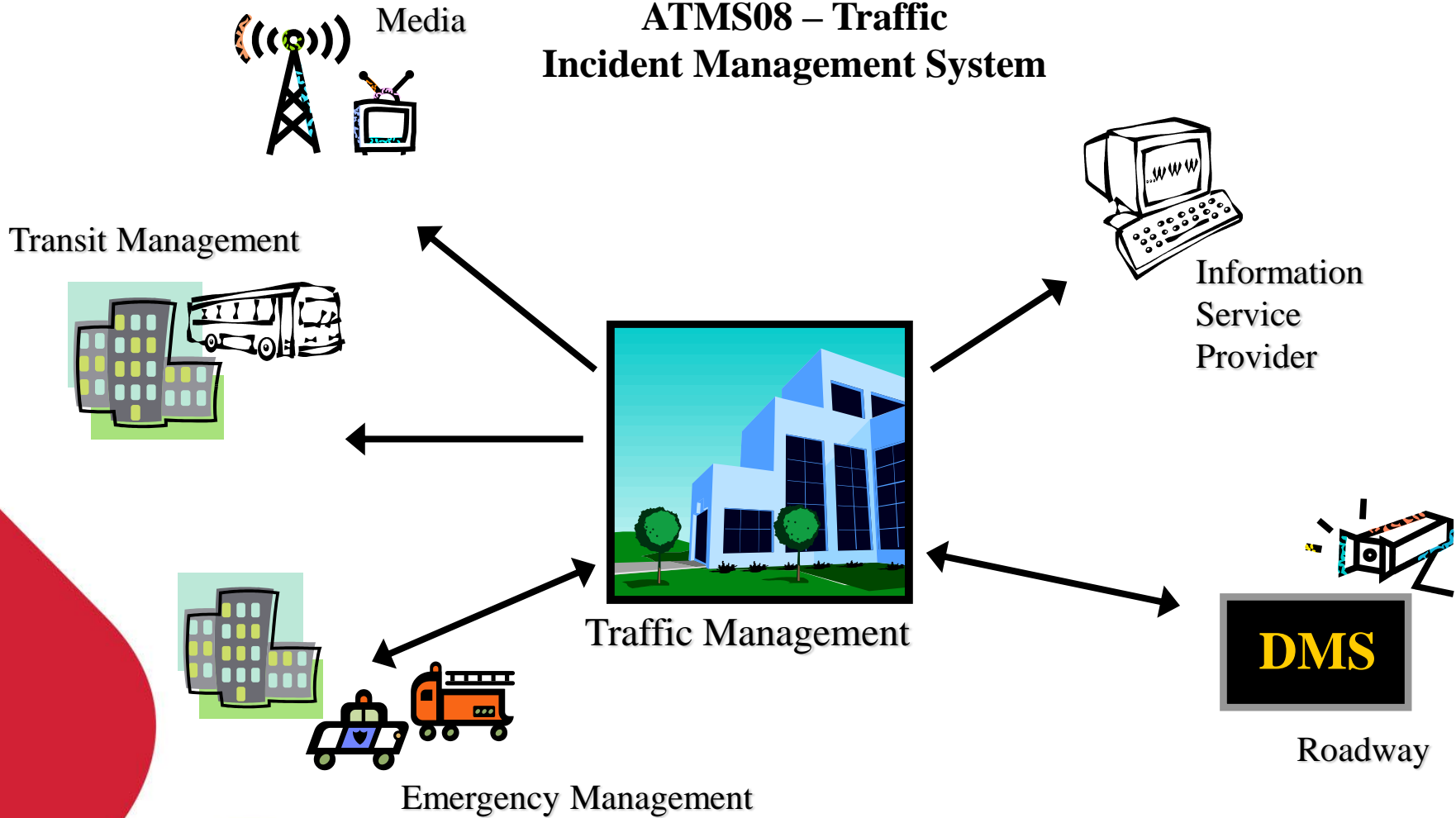 - Identify all existing and planned connections between components

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

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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

- Bristol selected 32 ITS service packages in 2008

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ITS Service Package Concept

**ATMS08 – Traffic
Incident Management System**

Media

Transit Management

Information
Service
Provider

Traffic Management

DMS

Roadway

Emergency Management

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ITS Service Package Concept

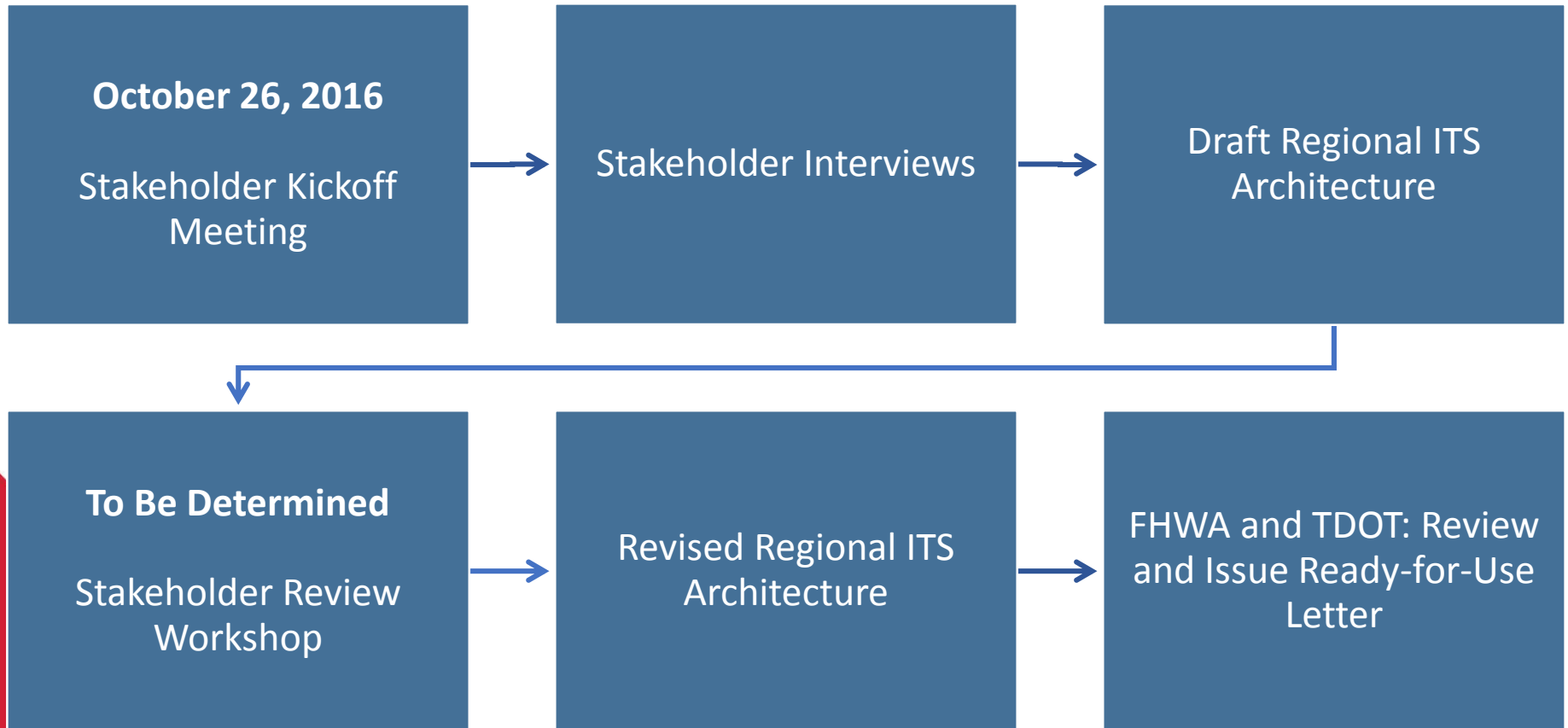## ATMS07 – Regional Traffic Management

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

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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

October 26, 2016

Stakeholder Kickoff Meeting

→ Stakeholder Interviews

→ Draft Regional ITS Architecture

To Be Determined

Stakeholder Review Workshop

→ Revised Regional ITS Architecture

→ FHWA and TDOT: Review and Issue Ready-for-Use Letter

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Deliverables

- Regional ITS Architecture Update and Deployment Plan Report

- Executive Summary

- Turbo Architecture Database
  (Version 7.1 of Turbo Architecture)

- Project Website

  http://www.kimley-horn.com/Projects/

  TennesseeITSArchitecture/bristol.html

Bristol City Regional ITS Architecture History

- First Regional ITS Architecture completed in June 2008
    - Used National ITS Architecture Version 6.0
      (Currently on Version 7.1)
    - Used Turbo Architecture Version 4.0
      (Currently using Version 7.1)

- This effort is the first to update the Regional ITS Architecture plan

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Bristol Regional ITS Architecture Update

- Current effort will complete the Regional ITS Architecture update in early 2017

- 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 5 years

Bristol Regional Boundaries

The regional boundaries have been defined as the boundaries of the Bristol MPO Planning Area

Sullivan County, TN (Eastern)
Washington County, VA

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

Bristol Regional ITS Architecture
will be coordinated with the
Johnson City and Kingsport Regional ITS Architectures

Bristol MPO Planning Area
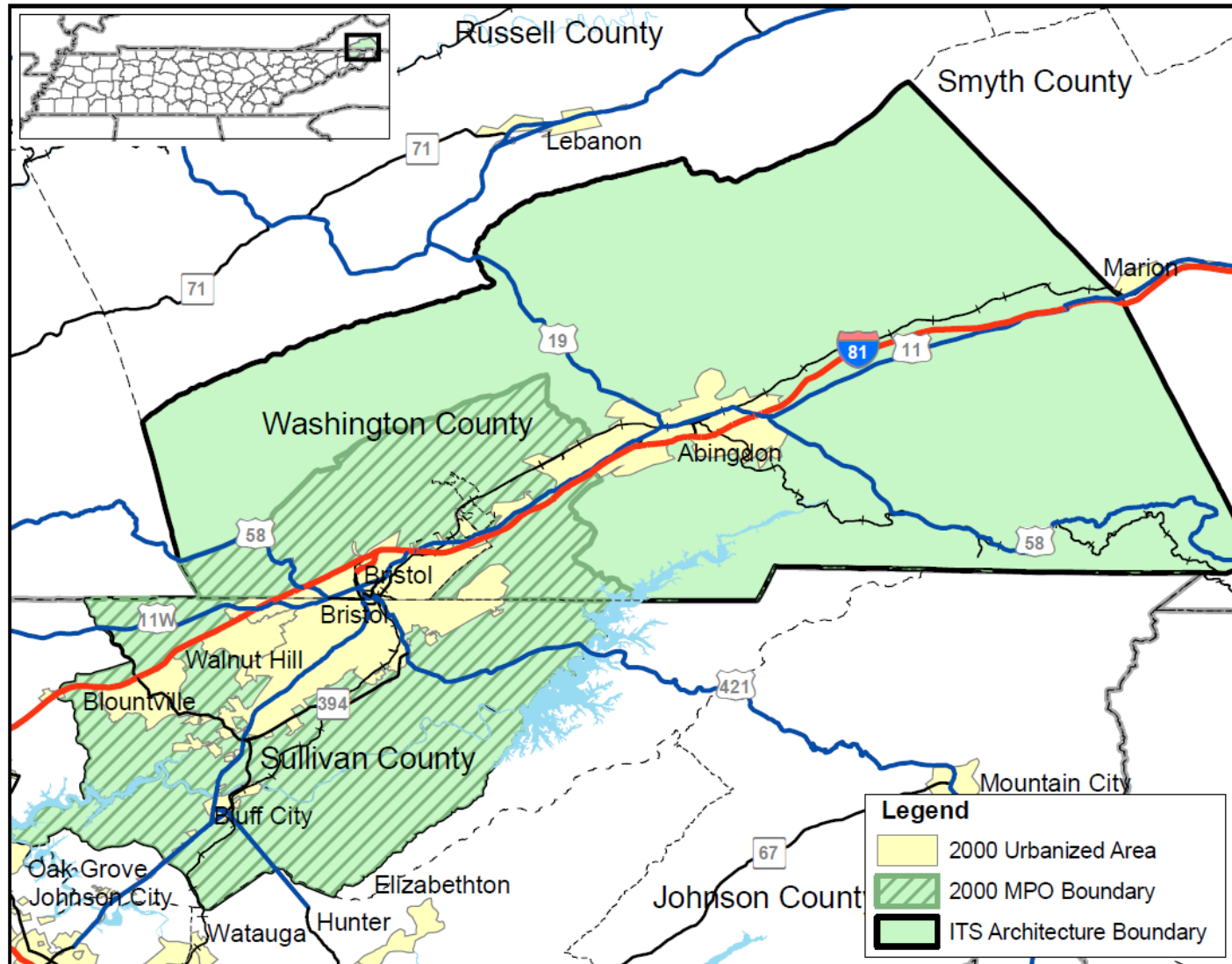
Bristol Regional ITS Stakeholders

CITIES & TOWNS

- City of Bristol, TN
- City of Bristol, VA
- Town of Abingdon, VA

COUNTIES

- Sullivan County, TN
- Washington County, VA

TRANSIT

- Bristol Tennessee Transit
- Bristol Virginia Transit
- N.E.T. Trans (First Tennessee HRA)

STATE

- Tennessee DOT
- Virginia DOT
- Tennessee Highway Patrol
- Virginia State Police

FEDERAL

- Federal Highway Administration

MPOs

- Bristol MPO
- Kingsport Metro TPO
- Johnson City MPO

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Existing and Planned Projects

- Traffic Management

- 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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