



Johnson City Regional ITS Architecture Update Kick-off Workshop



October 21, 2014

Johnson City *MTPO*
Metropolitan Transportation Planning Organization

Kimley»»Horn



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



**Video, Microwave, and Loop
Detection Systems**



**Flood Detection
and
Road Weather
Information 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



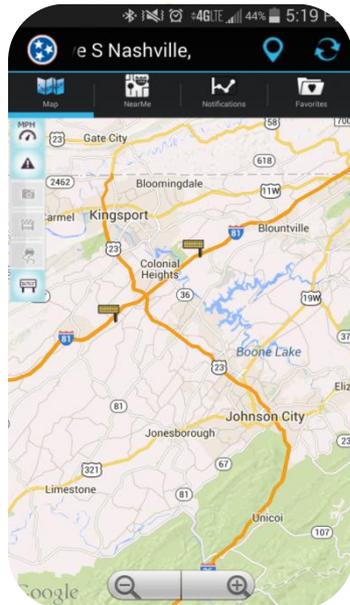
ITS Applications

Traveler Information

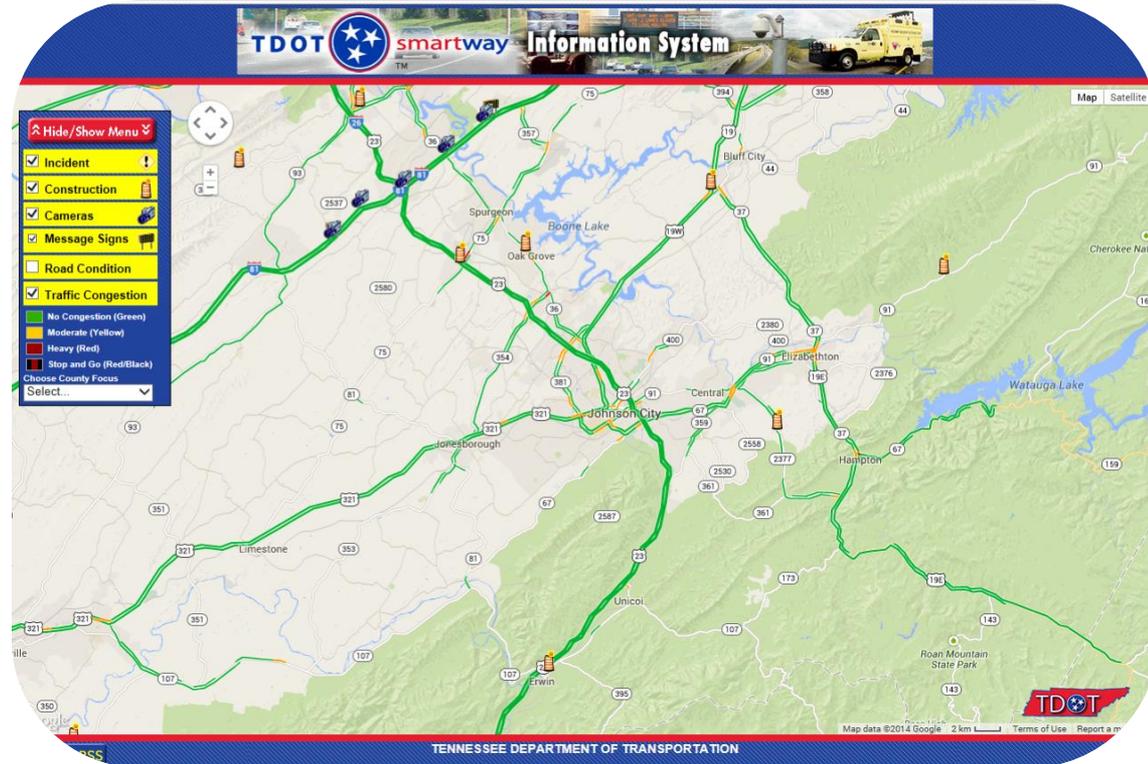
The **smartway**
to travel in Tennessee
www.TN511.com

call.click.Go

511 Traveler Information



Smartphone Applications



Internet Sites



ITS Applications

Emergency Management



Computer-Aided Dispatch Systems



AMBER Alerts



Video/Information Sharing



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



Video Security Systems



Real-Time Bus Arrival Information



Smart Fare Payment Systems



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



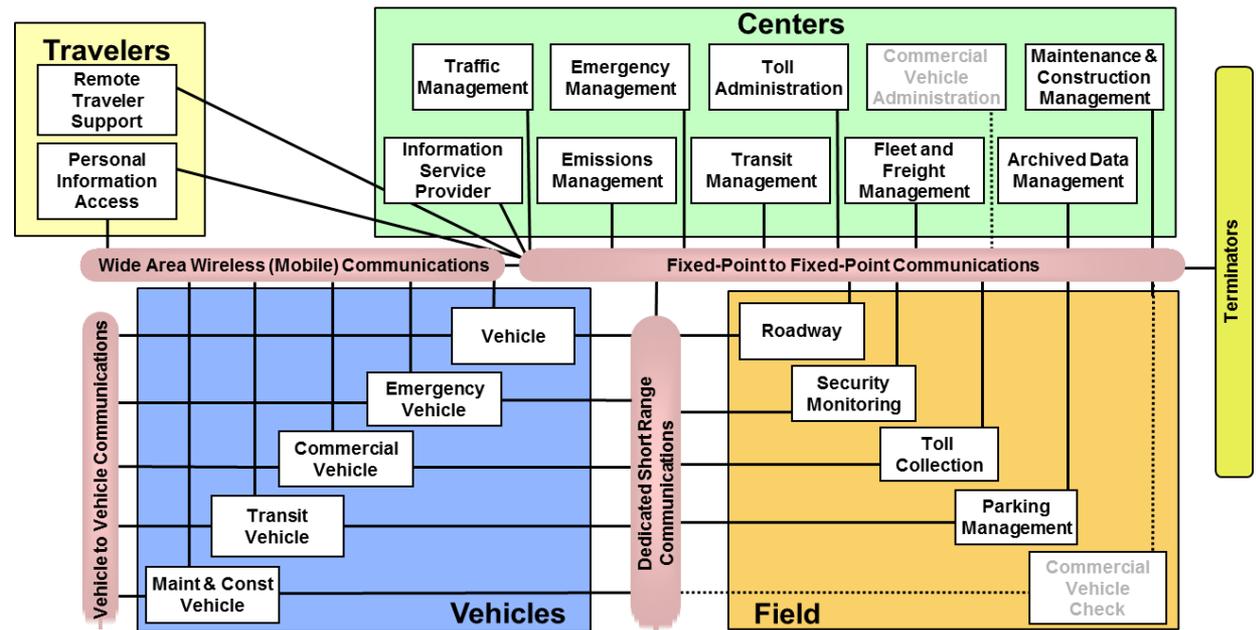
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What is a Regional ITS Architecture?

- 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**



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



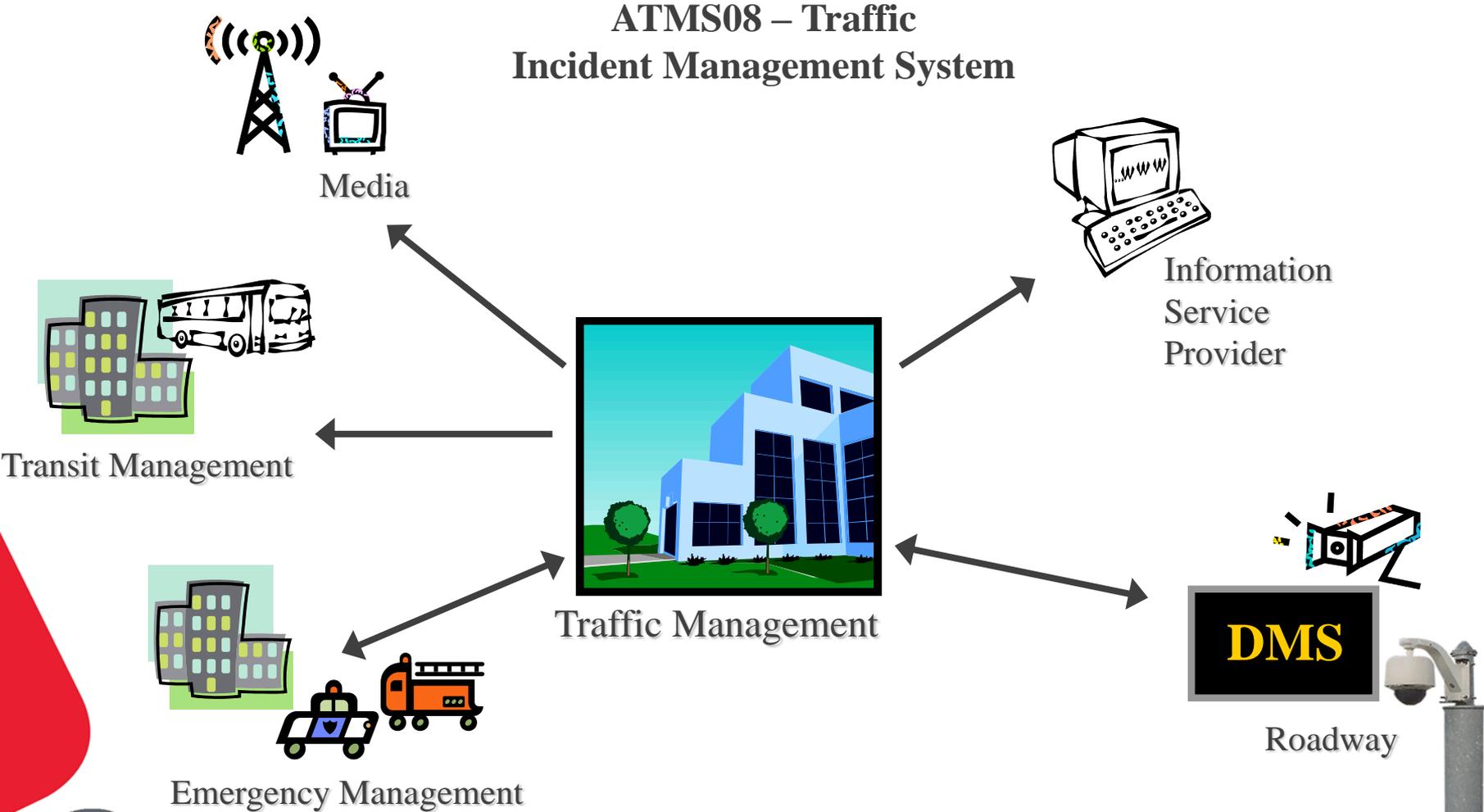
Step
Two

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
- Johnson City selected 32 ITS service packages in 2006

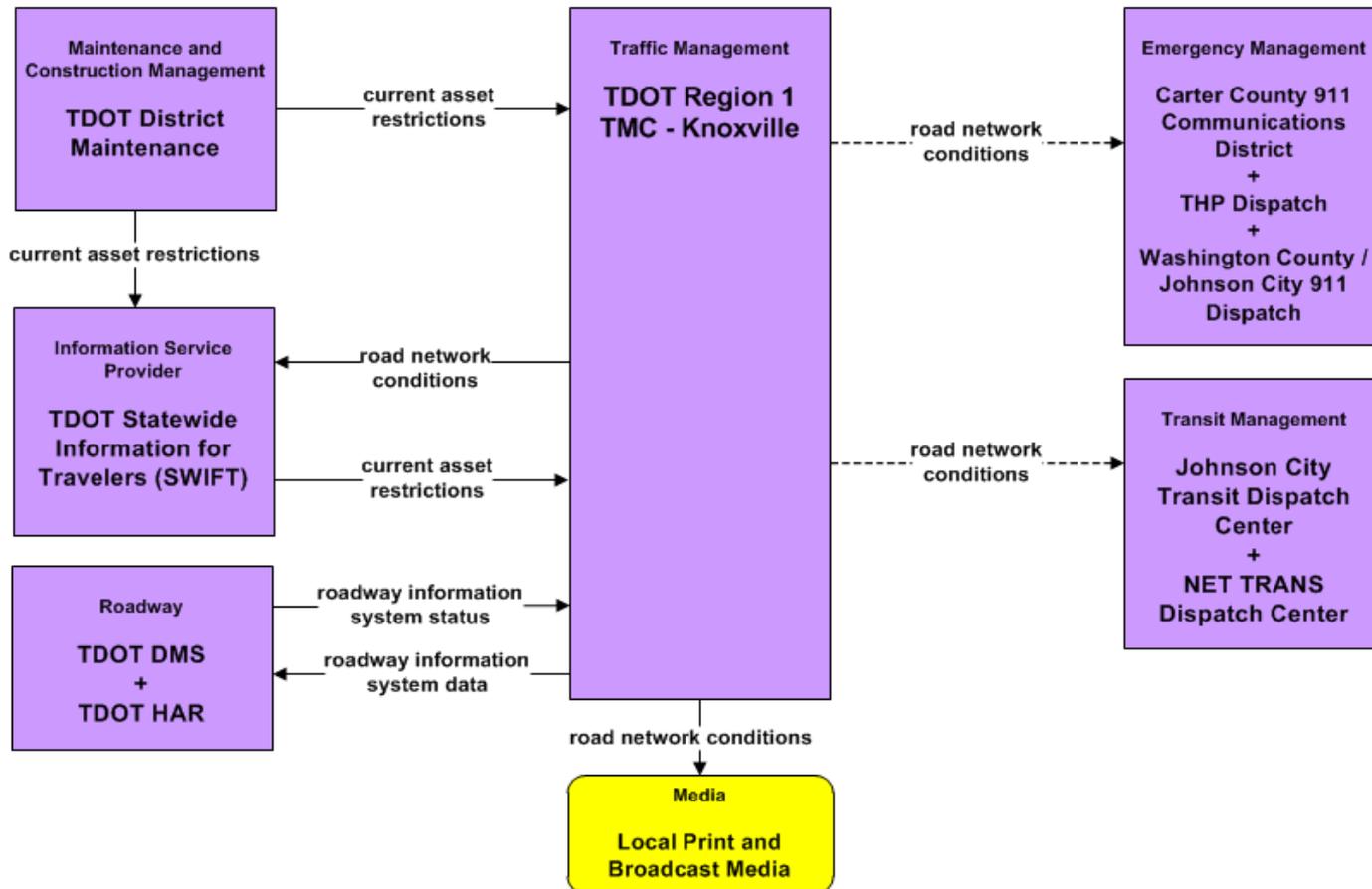


ITS Service Package Concept



ITS Service Package Concept

ATMS06 – Traffic Information Dissemination



Identify Projects for Deployment in the Region

Step Three

- 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

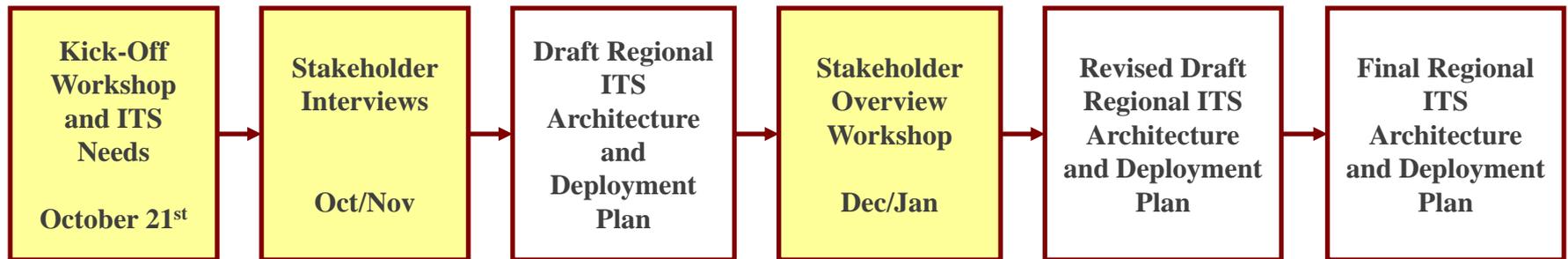


Benefits of an ITS Architecture and Deployment Plan

- 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



Shaded Box
Indicates
Stakeholder
Meeting



Deliverables

- Regional ITS Architecture Update and Deployment Plan Report
- Executive Summary
- Turbo Architecture Database
(Version 7.0 of Turbo Architecture)
- Project Website

<http://www.kimley-horn.com/projects/tennesseeITSarchitecture/johnsoncity.html>



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Johnson City Regional ITS Architecture History

- First Regional ITS Architecture completed in August 2006
 - Used National ITS Architecture Version 5.1
(Currently on Version 7.0)
 - Used Turbo Architecture Version 5.1
(Currently using Version 7.0)
- This effort is the first to update the Regional ITS Architecture plan



Johnson City Regional ITS Architecture Update

- Current effort will complete the Regional ITS Architecture update in **March 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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Johnson City Regional Boundaries

The regional boundaries have been defined as the boundaries of the Johnson City MTPO Planning Area

Washington County (Majority), TN

Carter County (Northern and Western Area), TN

Unicoi County (Northern Area), TN

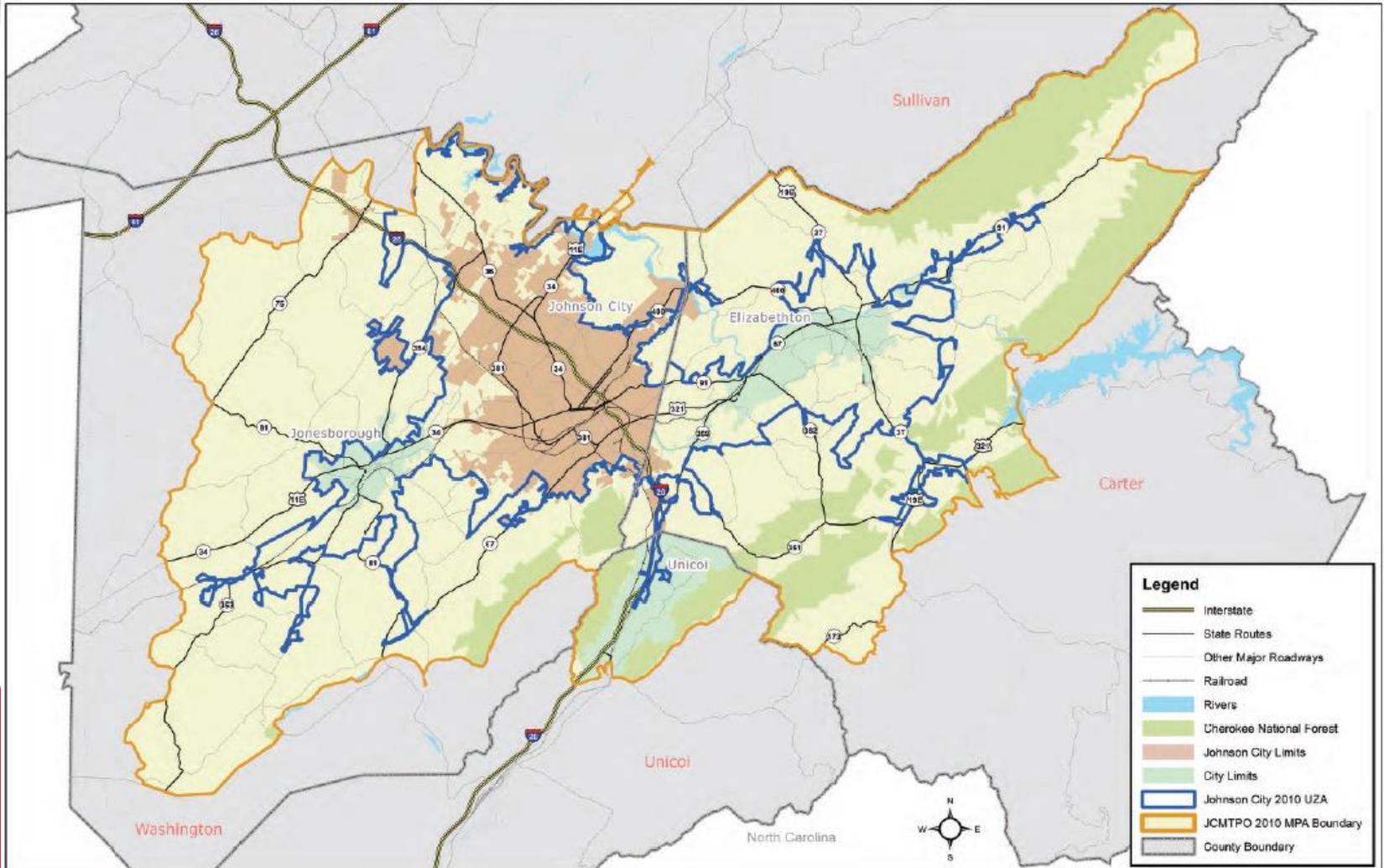
Sullivan County (Small Portion in South Central), TN

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

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



Johnson City MTPO Planning Area



Johnson City Regional ITS Stakeholders

CITIES & TOWNS

- City of Johnson City
- City of Elizabethton
- City of Watauga
- Town of Jonesborough
- Town of Unicoi

COUNTIES

- Carter County
- Sullivan County
- Unicoi County
- Washington County

TRANSIT

- Johnson City Transit System
- N.E.T. Trans (First Tennessee HRA)

STATE

- Tennessee DOT
- Tennessee Highway Patrol

FEDERAL

- Federal Highway Administration

MPOs

- Bristol MPO



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!

Glenn Berry

glennberry@jcmpo.org

Tom Fowler

thomas.fowler@kimley-horn.com

Terrance Hill

terrance.hill@kimley-horn.com

