



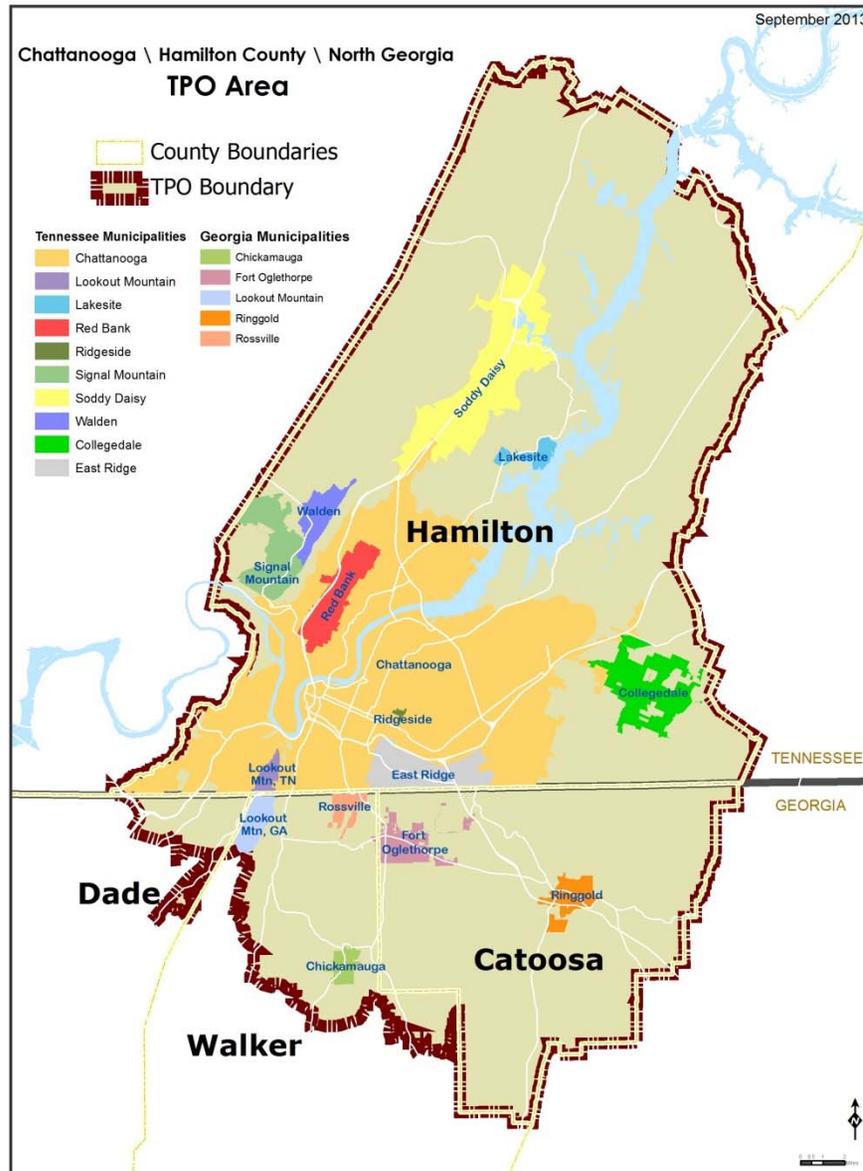
Chattanooga

Regional ITS Architecture Update Workshop

September 24, 2013



CHCNGA TPO Boundaries



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**
- ITS Architecture Development Process
- Existing Regional ITS Architecture
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- Regional Inventory and Needs



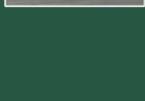
Nationally...

- According to the *2012 Urban Mobility Report*, in 2011

- Congestion caused urban Americans to travel **5.5 billion hours** longer and use an extra **2.9 billion gallons** of fuel for an estimated congestion cost of **\$121.9 billion**

- Annual delay for the average traveler was **38 hours**, wasting **19 gallons** of fuel at a value of about **\$818** per traveler

- Some of the most common causes of congestion included incidents, special events, and weather



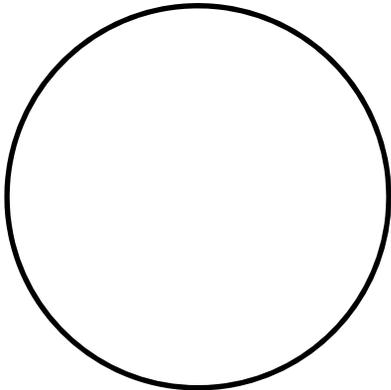
In the Chattanooga Area...

- According to the same *2012 Urban Mobility Report*, on average travelers in urban areas of less than 500,000 experience that:
 - Approximately **27% of vehicle miles** traveled are in congestion which results in a cost of **\$123 million** to the region
 - The average traveler is delayed **23 hours per year** and when fuel is factored in congestion costs amount to **\$497 per peak traveler**

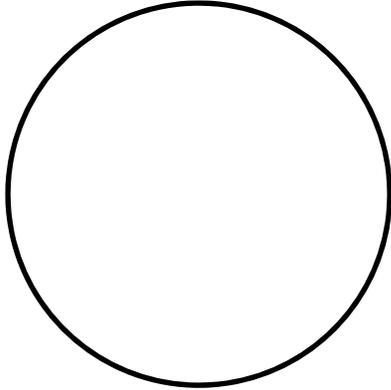


Role of ITS

**Transportation
Issues**

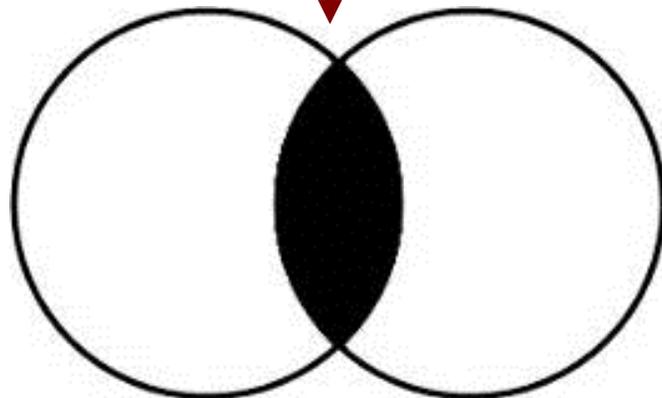


**ITS
Solutions**



Role of ITS

Regional ITS Architecture



Transportation
Issues

ITS
Solutions



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
- Commercial Vehicle Operations
- Archived Data Management
- Vehicle Safety



ITS Applications

Traffic Management (Data Gathering)



CCTV Cameras



RWIS and Flood Detection



Video, Microwave, and Loop Detection

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)

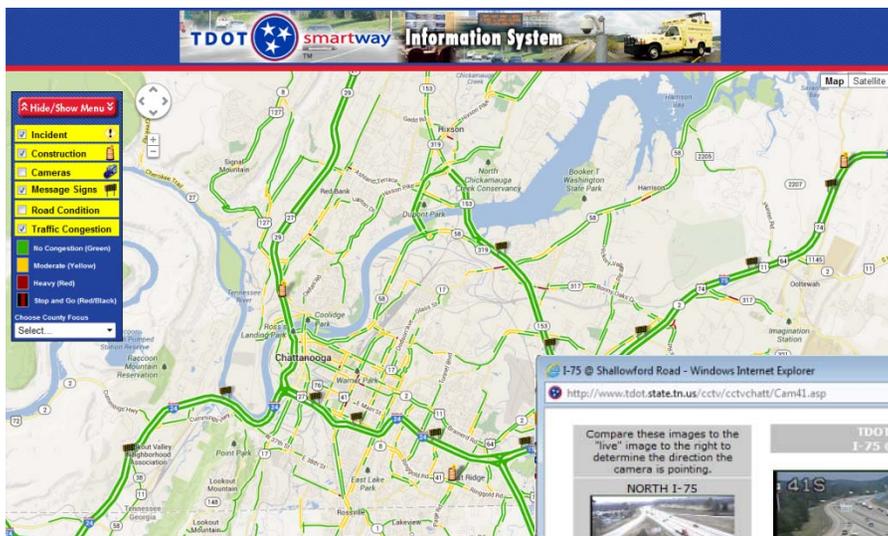


Electronic Toll Collection



ITS Applications

Traveler Information



511 Traveler Information

SIGN

I-24 Westbound e/o Rossville Blvd

I-24 Westbound
e/o Rossville Blvd

**DON'T DRINK
AND
DRIVE**

TENNESSEE DEPARTMENT OF TRANSPORTATION

Internet Sites

I-75 @ Shallowford Road - Windows Internet Explorer

http://www.tdot.state.tn.us/cctv/cctvchatt/Cam11.asp

Compare these images to the "live" image to the right to determine the direction the camera is pointing.

NORTH I-75

SOUTH I-75

TDOT Traffic Cameras - I-75 @ Shallowford Road

41S

75 AT SHALLOWFORD 5.6

Blank images indicate video loss due to TMC intervention.

Last Updated: 9/11/2013 3:21:55 PM ET

ITS Applications

Emergency Management



© Doug Wilson 2009

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



Smart Fare Payment Systems



Automated Vehicle Location



Video Security Systems



Real-Time Bus Arrival Information

ITS Applications

Commercial Vehicle Operations



Weigh-In-Motion





ITS Applications

Archived Data Management



Archived Data User Service

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



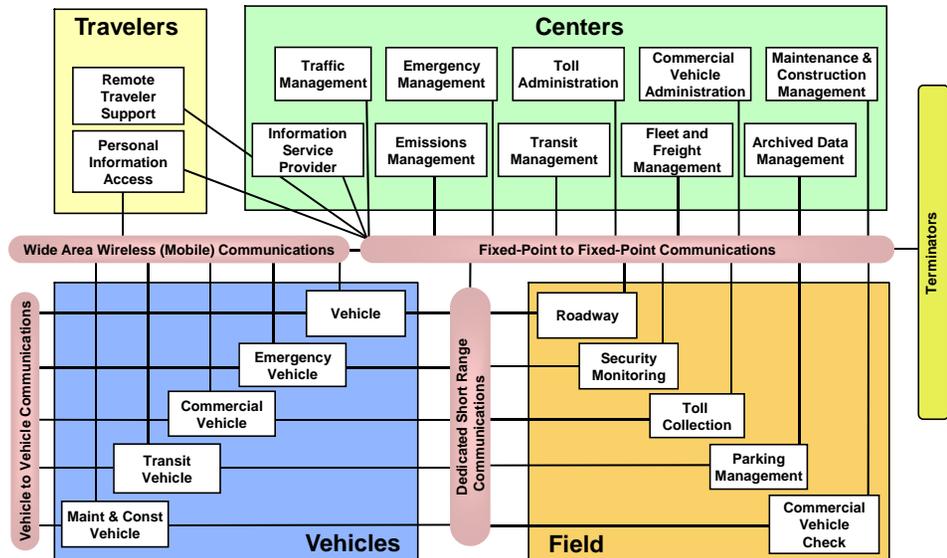
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- **ITS Architecture Development Process**
- Existing Regional ITS Architecture
- Regional Boundaries and Stakeholders
- Regional Inventory and Needs



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



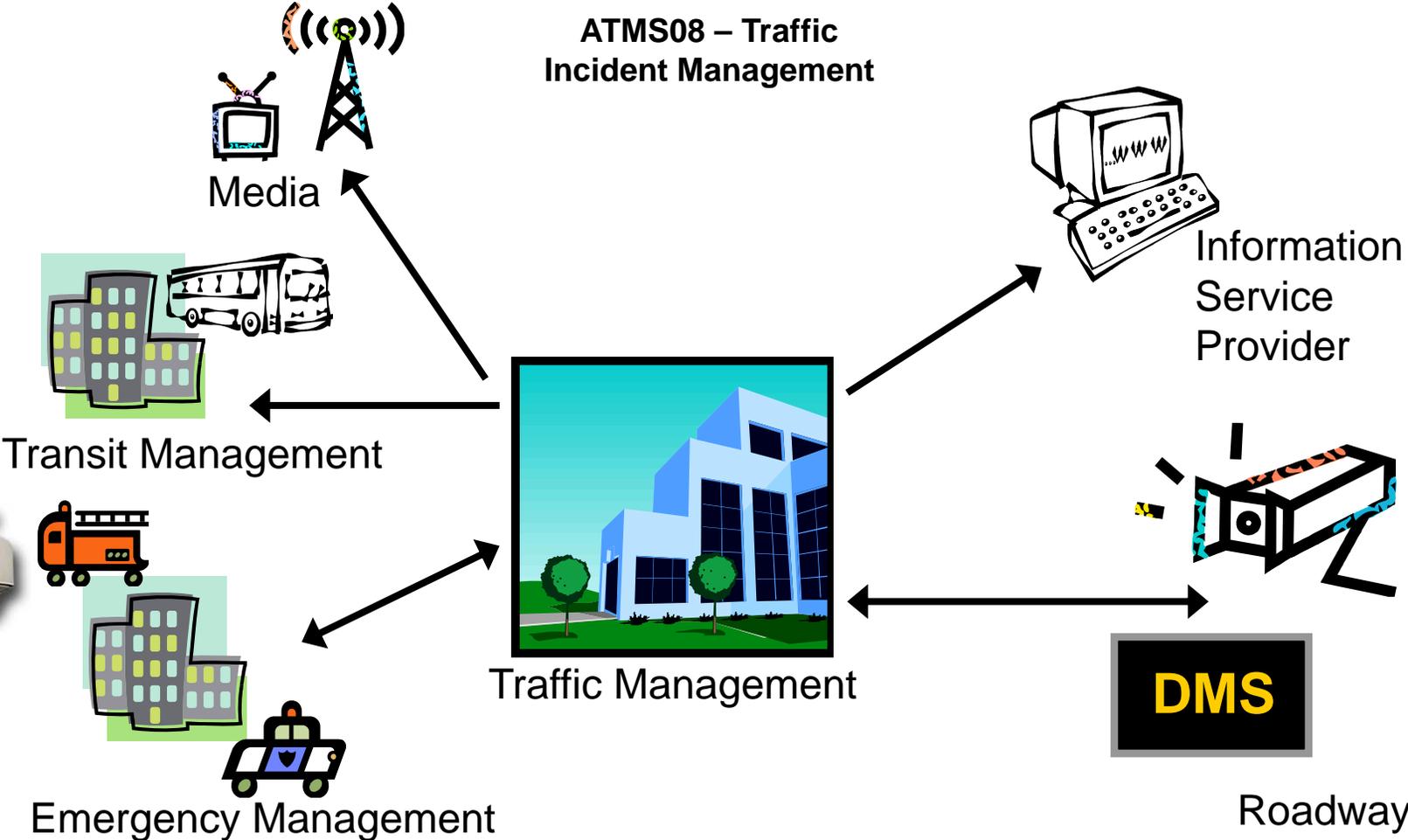
Step
Two

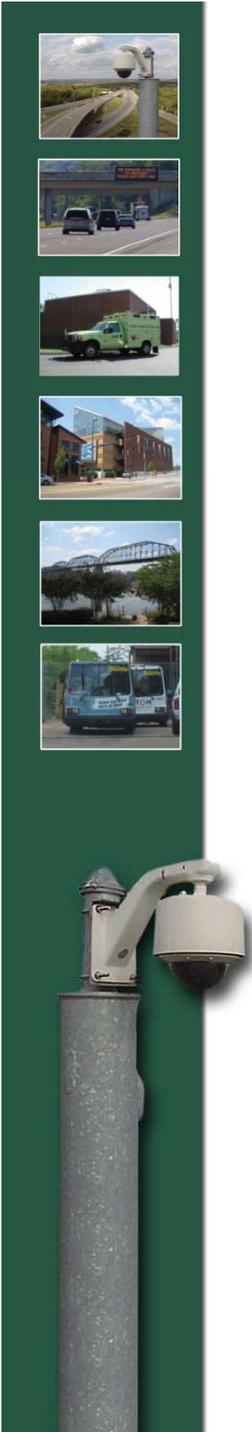
Develop ITS Service Packages

- ITS service packages are the services that ITS can provide in the Region
- Common service packages:
 - Network Surveillance
 - Traffic Information Dissemination
 - Road Weather Data Collection
 - Transit Vehicle Tracking
 - Transit Security
 - Evacuation and Reentry Management
- A total of 97 service packages exist in the current version of the National ITS Architecture

ITS Service Package Concept

ATMS08 – Traffic Incident Management





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

- Provides vision for ITS deployment and operations in the Region
- Identifies opportunities for resource sharing between agencies
- Avoids gaps in the system and allows agencies to plan for expansion
- Supports use of ITS standards in deployment
- Meets USDOT requirement that ITS projects funded with federal transportation funds conform to its regional ITS architecture

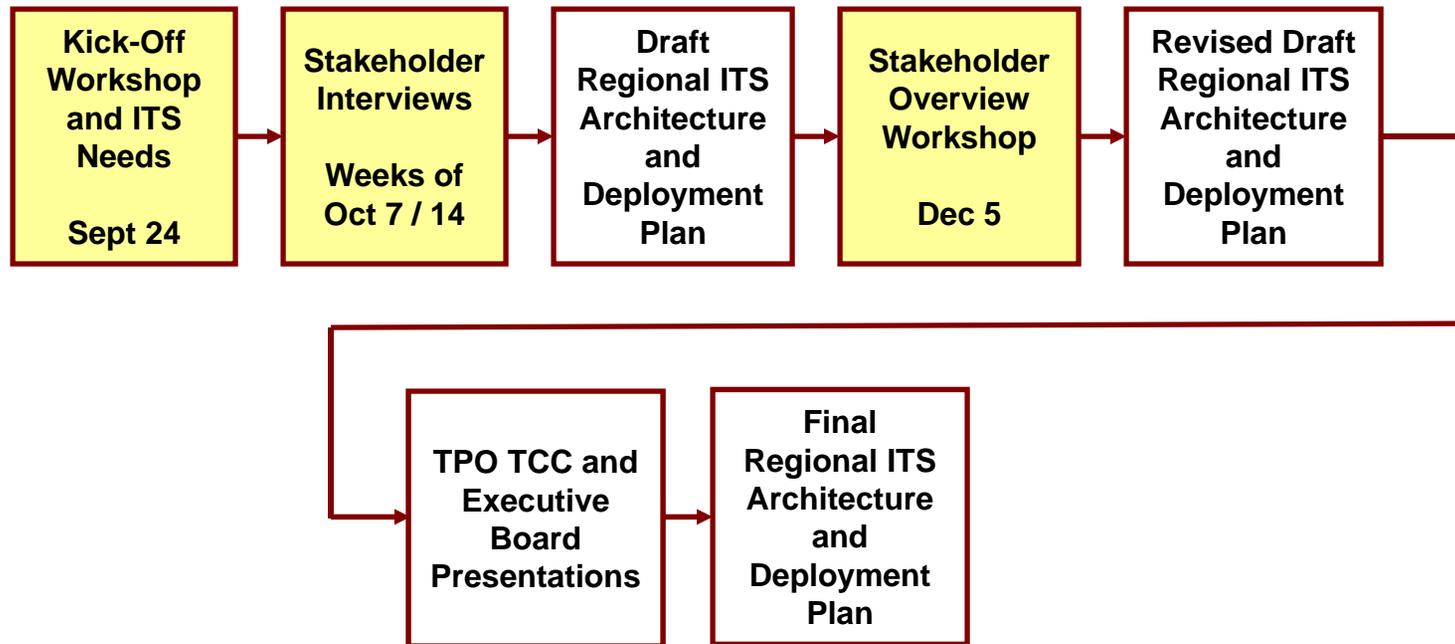


Benefits of an ITS Deployment Plan

- Supports long range planning through a phased plan for ITS deployment
- Provides a structured framework for deployment and integration
- Assists agencies in looking for federal funding opportunities
- Meets USDOT requirements for using federal transportation funds on ITS projects (Demonstrates conformity)



ITS Architecture Work Plan



Deliverables

- Regional ITS Architecture Update and Deployment Plan Report
- Executive Summary
- Presentations to the TPO Executive Board and Technical Committee
- Turbo Architecture Database
(Version 7.0 of Turbo Architecture)
- Project Website



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Chattanooga Regional ITS Architecture History

- First Regional ITS Architecture completed in October 2003
 - National ITS Architecture Version 3.0 (Currently on Version 7.0)
 - Turbo Architecture Version 1.0 (Currently using Version 7.0)
- In 2010, the TPO completed the first update of the Regional ITS Architecture



Chattanooga Regional ITS Architecture Update

- Current effort will complete the Regional ITS Architecture update in 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
 - Chattanooga's plan calls for an update every 4 years



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Chattanooga Regional Boundaries

The regional boundaries have been defined as the
boundaries of the

Chattanooga-Hamilton County/

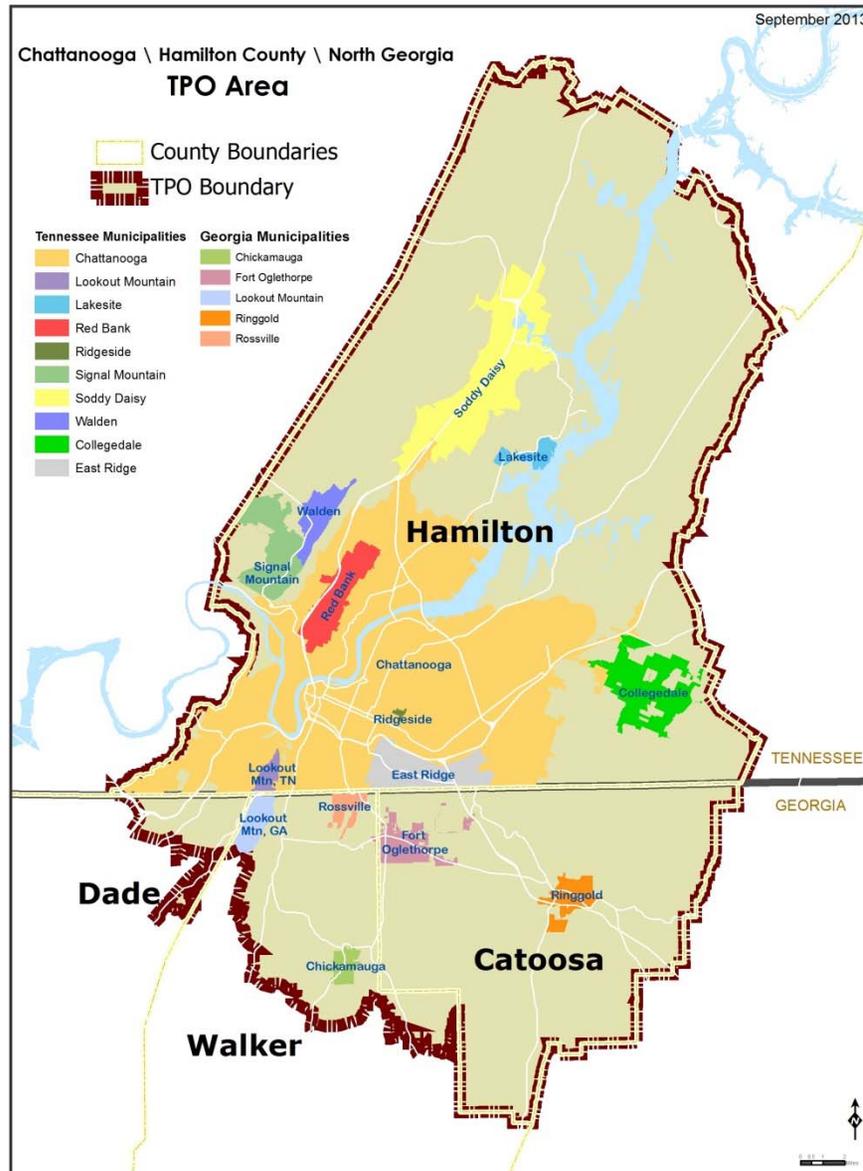
North Georgia (CHCNGA) TPO

(Hamilton County, TN and northern portions of Dade, Walker and Catoosa
Counties, GA)

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



CHCNGA TPO Boundaries



Chattanooga Regional ITS Stakeholders



CITIES

- City of Chattanooga
- City of Collegedale
- City of Dalton
- City of East Ridge
- City of Ft. Oglethorpe
- City of Lookout Mountain
- City of Red Bank
- City of Rossville
- City of Soddy-Daisy
- Town of Signal Mountain
- Town of Lookout Mountain

COUNTIES

- Catoosa County
- Dade County
- Hamilton County
- Marion County
- Sequatchie County
- Walker County

TRANSIT

- Chattanooga Area Regional Transportation Authority
- Southeast TN Human Resource Agency

STATE

- Georgia DOT
- Georgia EMA
- Georgia DPS
- Tennessee DOT
- Tennessee Highway Patrol

FEDERAL

- Federal Highway Administration
- Federal Transit Administration

OTHER

- Chattanooga Metropolitan Airport Authority
- Chattanooga-Hamilton County/North Georgia TPO
- Northwest Georgia Regional Commission

Additional Stakeholders

Are there other stakeholders that should be included?



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Existing and Planned ITS Projects

- Traffic Management
- Traveler Information
- Emergency Management
- Maintenance and Construction Management
- Public Transportation
- Commercial Vehicle Operations
- Archived Data Management



Regional Needs

- Traffic Management
- Traveler Information
- Emergency Management
- Maintenance and Construction Management
- Public Transportation
- Commercial Vehicle Operations
- Archived Data Management
- Other Needs...Mobility Issues, High Accident Locations, Severe Weather, Special Events, etc.
- ITS Service Packages



Thank You!