Development of a regional intelligent transportation system (ITS) architecture and deployment plan is an important step in the planning and implementation of ITS in a region. The ITS architecture and deployment plan allows stakeholders to plan for what they want their system to look like in the long term and then break the system into smaller pieces that can be implemented over time as funding permits. Development of an ITS architecture and deployment plan encourages interoperability and resource sharing among agencies and allows for cohesive long-range planning among regional stakeholders.

In Chattanooga, the first regional ITS architecture was developed in 2003. Since that time a number of new ITS projects have been implemented and the National ITS Architecture, which serves as the basis for the Chattanooga Regional ITS Architecture, has been updated. In order to reflect these changes the Chattanooga-Hamilton County/North Georgia Transportation Planning Organization (TPO), in coordination with the Tennessee Department of Transportation (TDOT), began an update of the Chattanooga Regional ITS Architecture in 2009.

In addition to the planning benefits of developing a regional ITS architecture, project conformance to the regional ITS architecture is also a requirement for any agency in the Region to be eligible for federal funding of an ITS project.

The development of the Chattanooga Regional ITS Architecture and Deployment Plan was led by the Chattanooga-Hamilton County/North Georgia TPO in coordination with a series of three workshops conducted in 2009 and 2010 to develop the Regional ITS Architecture and Deployment Plan.

Chattanooga Regional Stakeholders

The Chattanooga Region is comprised of Hamilton County in Tennessee and the northern portions of Dade, Walker, and Catoosa Counties in Georgia. The geographic boundaries of the Region correspond with the boundaries of the Chattanooga-Hamilton County/North Georgia TPO.

Stakeholder agencies included:
- Chattanooga Area Regional Transportation Authority
- Chattanooga-Hamilton County Health Department
- Chattanooga-Hamilton County Regional Planning Agency
- City of Chattanooga
- City of East Ridge
- Federal Highway Administration – Georgia Division
- Federal Highway Administration – Tennessee Division
- Georgia Department of Public Safety
- Georgia Department of Transportation
- Northwest Georgia Regional Commission
- TDOT – Long Range Planning Division
- TDOT – Region 2
- Tennessee Highway Patrol

What is ITS?

Intelligent Transportation Systems (ITS) are the application of electronic technologies and communications to improve the operation of roadway and transit systems.
Chattanooga Project Approach
The Chattanooga Regional ITS Architecture was developed using a consensus approach with input from stakeholder agencies throughout the Region. Three key steps were used to develop the plan:

Step 1 — Identify needs and ITS Inventory
Stakeholder needs as well as existing and planned ITS elements were identified. Elements were categorized as centers, vehicles, travelers, or field devices as shown in the diagram below.

Step 2 — Develop ITS Market Packages (Services)
ITS market packages represent the services that ITS can provide to address one or more needs in the Region. In the Chattanooga Region, a total of 38 market packages were identified and prioritized as high, medium, or low. Market packages not only identify services, but also show how those services will be operated and the data flows that will occur between agencies.

Step 3 — Identify Sequence of ITS Projects to Deploy in the Region
The ITS Deployment Plan identifies the projects that stakeholders recommended for deployment in order to implement the ITS services identified in the market packages.

What is an ITS Architecture?
An ITS Architecture is a framework for the deployment and operation of ITS in a region.

Chattanooga ITS Market Packages
ITS market packages outline the functions and services that stakeholders envision ITS to perform now and in the future. Stakeholders selected and prioritized market packages as high, medium, or low priority based on regional needs, feasibility, likelihood of deployment, and overall contribution of the market package to meeting the goals and vision for ITS functionality in the Region. The high-priority ITS market packages identified by stakeholders in the Chattanooga Region are listed below.

Traffic Management
- Network Surveillance
- Surface Street Control
- Traffic Information Dissemination
- Regional Traffic Management
- Traffic Incident Management System

Emergency Management
- Emergency Call-Taking and Dispatch
- Emergency Routing
- Roadway Service Patrols

Maintenance and Construction Management
- Work Zone Management
- Maintenance and Construction Activity Coordination

Public Transportation Management
- Transit Vehicle Tracking
- Transit Fixed-Route Operations
- Demand Responsive Transit Operations
- Transit Traveler Information

Traveler Information
- Broadcast Traveler Information
- Interactive Traveler Information

What is an ITS Deployment Plan?
An ITS Deployment Plan identifies the projects that need to be implemented in order to deliver the services identified in the ITS Architecture.

ITS Deployment Examples:

Chattanooga Area Regional Transportation Authority
- SmartBus Project:
  - Automatic Vehicle Location
  - Computer Aided Dispatch
  - Alarm System
  - Automated Passenger Counter
  - Next Stop Automated Announcement
  - Smart Card Fare Payment System
  - On-Board Security Cameras
  - Fixed-Route Transit Traffic Signal Priority
  - Next-bus Arrival Dynamic Message Sign (DMS)

Chattanooga-Hamilton County / North Georgia TPO
- Chattanooga-Hamilton County/North Georgia TPO Archive Data Warehouse
- Hamilton County
  - Hamilton County 911 Dispatch Coordination with Municipal TOCs
  - Hamilton County Emergency Operations Center Backup for Municipal TOCs
- Municipalities
  - Traffic Operations Centers (TOCs)
  - Regional Advanced Traffic Management
  - Regional Traffic Management Systems
  - Closed Circuit Television (CCTV) Cameras
  - Arterial DMS
  - Road Weather Information Systems
  - Railroad Grade Crossing Advance Notification Systems
  - Real-Time Traveler Information Websites
  - TOC Coordination with TDOT Region 2 Traffic Management Center
  - Emergency Vehicle Traffic Signal Preemption

Tennessee Department of Transportation
- SmartWay Traffic Management Center (under construction)
- SmartWay Freeway Management System Deployment (under construction)
- SmartWay Freeway Management System Central Operating Platform
- SmartWay Weather Detection