

Lakeway Regional ITS Architecture and Deployment Plan

Executive Summary

April 2017

Introduction

The Lakeway Regional Intelligent Transportation System (ITS) provides a long-range plan for the deployment, integration, and operation of ITS in the Lakeway Region. The Regional ITS Architecture 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 a Regional ITS Architecture encourages interoperability and resource sharing among agencies and allows for cohesive long-range planning among regional stakeholders. Completion and update of the plan is also required by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) in order to use Highway Trust Fund money for ITS projects in the Region.

In the Lakeway Region, the first Regional ITS Architecture was developed in 2008. Since that time, several new ITS projects have been implemented and the National ITS Architecture, which serves as the basis for the Lakeway Regional ITS Architecture, has been updated. In order to reflect these changes, the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) with assistance from the Tennessee Department of Transportation (TDOT), completed an update of the Regional ITS Architecture in 2017.

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Lakeway Regional Stakeholders

The update of the Lakeway Regional ITS Architecture was led by TDOT in coordination with LAMTPO. The plan was driven by input from local, state, and federal stakeholders in the Lakeway Region. These stakeholders participated in workshops, interviews, and document reviews to update the Regional ITS Architecture. Stakeholder agencies included:

- City of Jefferson City
- City of Morristown
- Cumberland Gap Tunnel Authority
- East Tennessee Human Resource Agency
- Federal Highway Administration
- Hamblen County
- Jefferson County
- LAMPTO
- Morristown Chamber of Commerce
- Morristown-Hamblen County Emergency Management Agency
- TDOT Region 1
- TDOT Long Range Planning Division
- TDOT Traffic Operations Division
- Walters State Community College

What is ITS?

Intelligent Transportation Systems (ITS) are the application of electronic technologies and communications to improve the operation of the transportation system. Examples include traffic detectors, cameras, dynamic message signs, and real-time information on traffic conditions and bus locations.



ITS Architecture

Lakeway Regional ITS Architecture Project Approach

The Lakeway 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 in the Region were identified. Elements were categorized as centers, vehicles, travelers, or field devices when developing the Regional ITS Architecture.

Step 2 – Develop ITS Service Packages

ITS service packages represent the services that ITS can provide to address one or more needs in the Region. In the Lakeway Region, a total of 40 service packages were identified and prioritized as high, medium, or low. Service packages not only identify a service, but also show how that service will be operated and the information flows that will occur between agencies.

Step 3 – Identify Sequence of ITS Projects to Deploy in the Region

The ITS Deployment Plan section of the Regional ITS Architecture identifies the projects that stakeholders recommended for deployment in the Lakeway Region. These projects will assist the regional with implementing the ITS services identified in the ITS service packages.

What is an ITS Architecture?

An ITS architecture is a long-range plan for how to deploy, integrate, and operate ITS in a region.

Lakeway Region ITS Service Packages

ITS service packages outline the functions and services that stakeholders envision ITS will perform now and in the future. Stakeholders selected and prioritized ITS service packages into high, medium, and low priorities based on regional needs, feasibility, likelihood of deployment, and overall contribution of the ITS service package to meeting the goals and vision for ITS functionality in the Region. The high priority ITS service packages identified by stakeholders in the Lakeway Region are listed below.

Traffic Management

- Network Surveillance
- Traffic Signal Control
- Traffic Information Dissemination
- Regional Traffic Management
- Traffic Incident Management System
- Standard Railroad Grade Crossing

Emergency Management

- Emergency Call-Taking and Dispatch
- Emergency Routing
- Roadway Service Patrols
- Wide-Area Alert

Commercial Vehicle Operations

- Weigh-in-Motion
- Roadside HAZMAT Security Detection and Mitigation
- HAZMAT Management

Maintenance and Construction Management

- Road Weather Data Collection
- Weather Information Processing and Distribution
- Work Zone Management
- Maintenance and Construction Activity Coordination

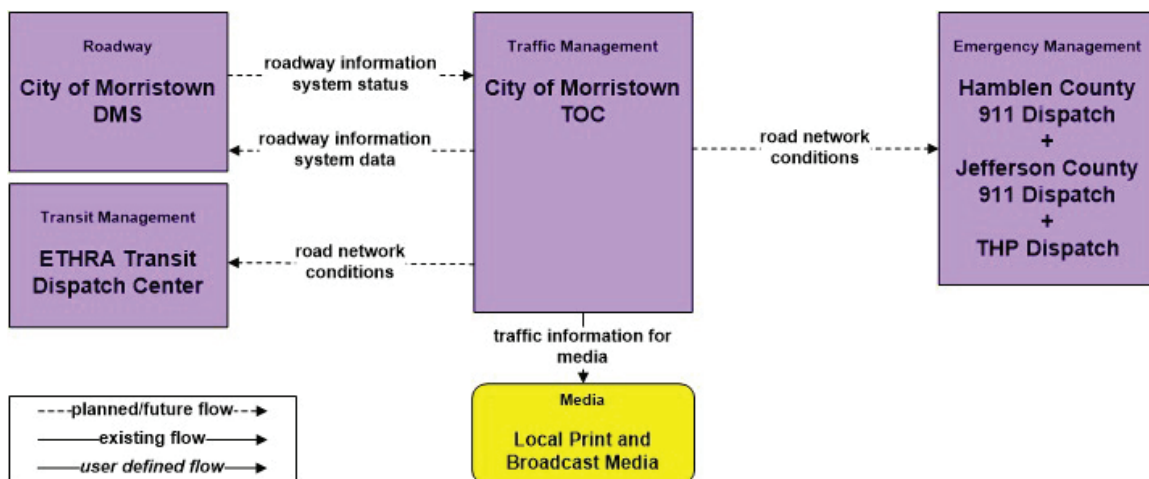
Public Transportation Management

- Transit Vehicle Tracking
- Transit Fixed-Route Operations
- Demand Response Transit Operations
- Transit Security
- Transit Traveler Information

Traveler Information

- Broadcast Traveler Information
- Interactive Traveler Information

Example Service Package ATMS06 – City of Morristown Traffic Information Dissemination



Lakeway Region Recommended ITS Projects

A list of recommended ITS projects for the Lakeway Region was developed through input from stakeholders during the Regional ITS Architecture development process. Stakeholders grouped projects into timeframes for deployment based on priority, dependence on other projects, technology, and feasibility. Below is a summary of projects recommended for deployment in the short-term by stakeholder agencies in the Region. A complete listing of all the projects identified is found in the ITS Deployment Plan section of the Regional ITS Architecture.

Municipal Projects

- City of Jefferson City Public Works Department Vehicle Automated Vehicle Location (AVL)
- City of Jefferson City Fire Department AVL and Mobile Data Terminals (MDTs)
- City of Jefferson City Fire Department Traffic Signal Preemption
- City of Morristown Traffic Operations Center (TOC) Expansion
- City of Morristown Traffic Signal System Upgrades
- City of Morristown Closed Circuit Television (CCTV) Cameras
- City of Morristown Portable Dynamic Message Signs (DMS)
- City of Morristown TOC Coordination with Hamblen County 911 Dispatch
- City of Morristown Fire Department AVL and MDTs
- Town of White Pine Fire and Police Department Traffic Signal Preemption

County Projects

- Morristown-Hamblen County Emergency Medical Services (EMS) AVL and MDT
- Morristown-Hamblen County EMS Traffic Signal Preemption
- Jefferson County EMS AVL and MDTs
- Jefferson County EMS Traffic Signal Preemption
- Jefferson County 911 Dispatch CCTV Camera Image Sharing



EMS Vehicle Traffic Signal Preemption



CCTV Cameras

What is an ITS Deployment Plan?

An ITS Deployment Plan identifies the projects that need to be implemented in order to meet ITS needs and deliver the ITS services identified in the Regional ITS Architecture



Portable Dynamic Message Sign



Fire Vehicle Traffic Signal Preemption



Morristown Traffic Signals

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Lakeway Use and Maintenance Plan

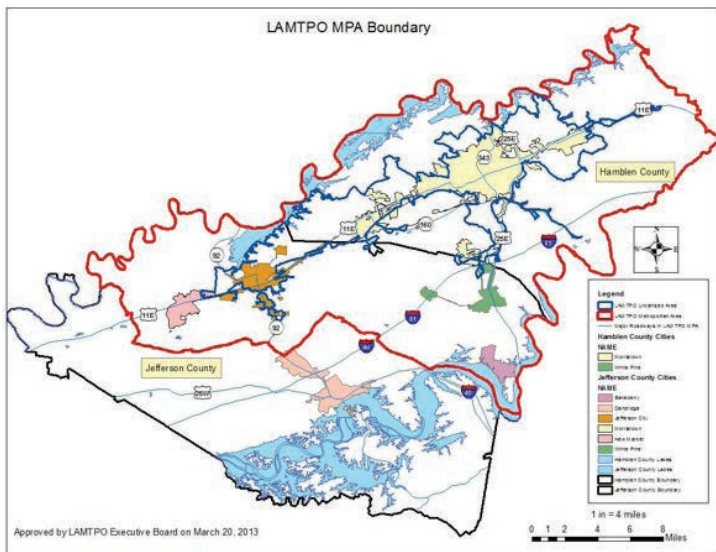
Use and maintenance of the Regional ITS Architecture and Deployment Plan will be important to ensure that requirements are met for the use of federal transportation funding of ITS in the Lakeway Region. Stakeholders in the Region developed the following guidelines to address use and maintenance of the plan.

ITS Architecture Use

As ITS projects are developed, they will be compared to the applicable ITS service packages in the Regional ITS Architecture to ensure those projects are eligible for federal transportation funding. Any discrepancies between the planned project and the Regional ITS Architecture will be resolved either by modifying the project or the ITS service packages. Changes to the ITS service packages will be documented on an Architecture Maintenance Documentation Form. All change forms will be retained by LAMTPO until the next plan update.

Lakeway Regional Boundaries

The Lakeway Region is comprised of Hamblen and Jefferson Counties in east Tennessee. Municipalities include Morristown, Jefferson City, and White Pine. The regional boundaries encompass all of the LAMTPO service area as well as the remaining portions of Hamblen and Jefferson Counties not included in the LAMTPO boundaries.



Lakeway Regional ITS Architecture Boundaries

ITS Architecture Maintenance

The stakeholder group agreed that the Regional ITS Architecture should be reviewed every five years, in the year preceding the Regional Transportation Plan (RTP) update, to determine if a full update is necessary. By completing a full update prior to the RTP update, stakeholders will be able to determine the ITS needs and projects that are most important to the Region and document those needs and projects for consideration when developing the RTP. An updated Regional ITS Architecture will also make it easier for the stakeholders to show conformance to the Regional ITS Architecture, which is required when deploying ITS projects using federal transportation funds.

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