



# Kingsport Regional ITS Architecture Stakeholder Review Workshop



January 24, 2017

# Presentation Overview

## Review of the Regional ITS Architecture Document

- Key Changes to the Document
- ITS Service Package Prioritization
- Review Stakeholder Comments

## Discussion of Existing and Planned ITS Projects

- Existing and Planned ITS Projects in the Region

## Discussion on Use and Maintenance of the Regional ITS Architecture

- Planning for Operations
- Architecture Conformance for Federal Funding
- Maintenance of the Regional ITS Architecture

# What is ITS?

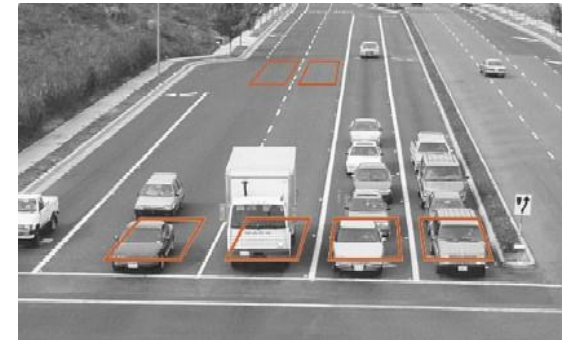
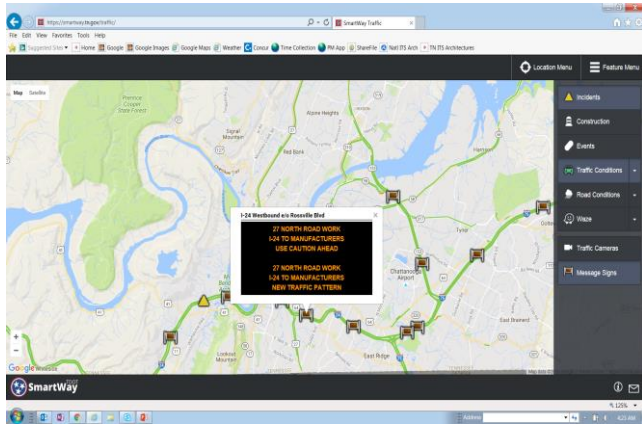
## ***ITS:***

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.

# What is ITS?





# ITS Applications

Traffic Management

Traveler Information

Emergency Management

Maintenance & Construction Management

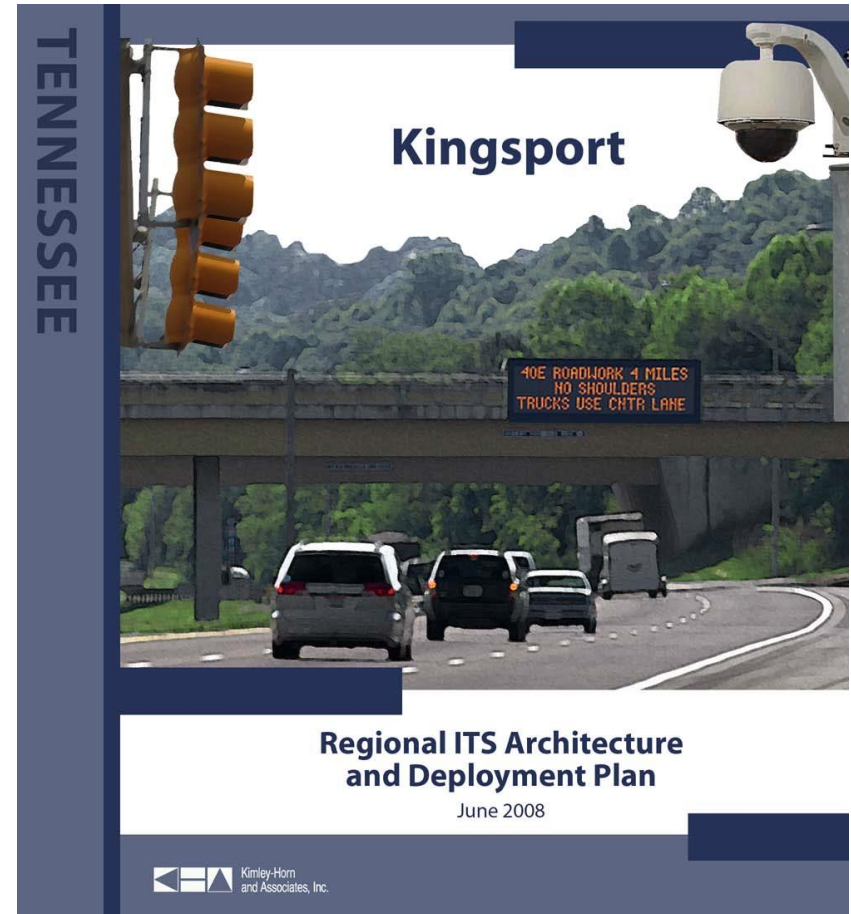
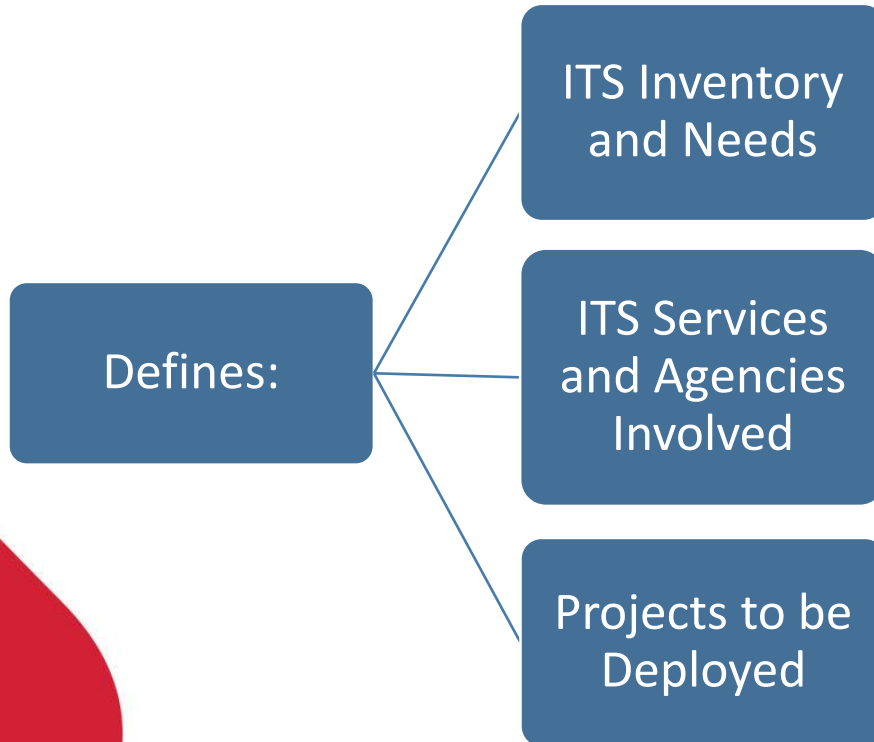
Public Transportation

Commercial Vehicle Operations

Archived Data Management

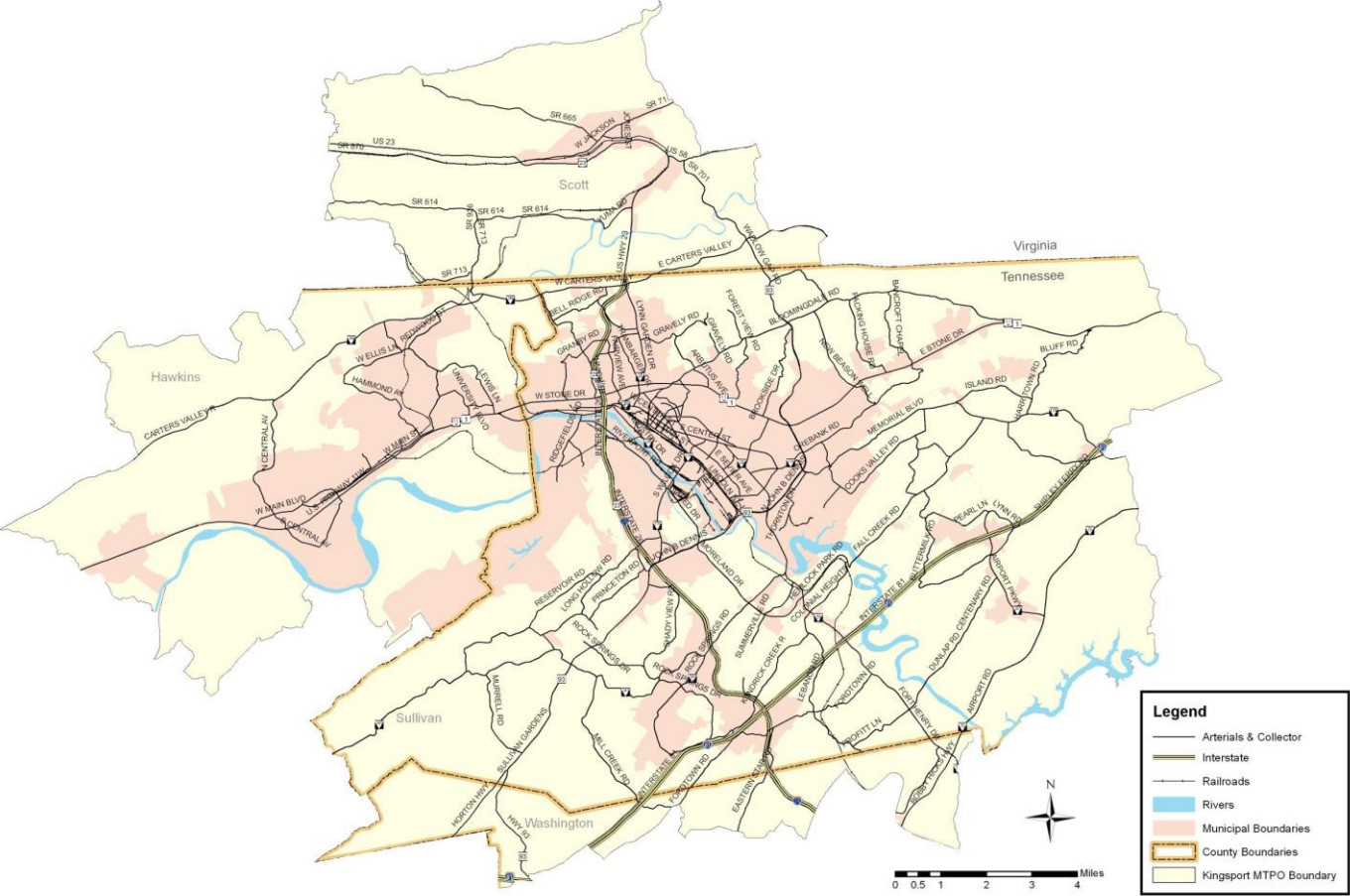
Vehicle Safety (Connected & Autonomous Vehicles)

# Kingsport Regional ITS Architecture



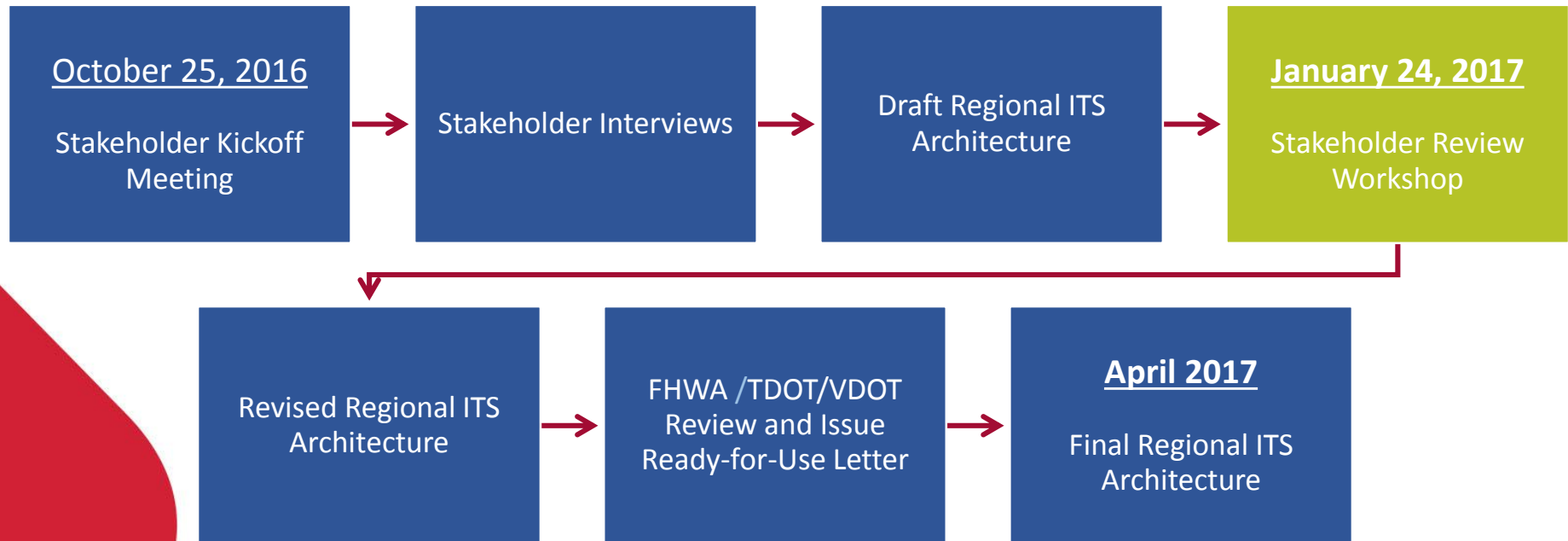
Created in 2008

# Kingsport MPO Planning Area



# Update Process

## Schedule





# Project Website

Project Website Located at the Follow Link:

[www.kimley-horn.com/Projects/TennesseeITSArchitecture/kingsport.html](http://www.kimley-horn.com/Projects/TennesseeITSArchitecture/kingsport.html)

**Or Just Google  
Kingsport Regional ITS Architecture**



Kimley-Horn and Associates, Inc.

Kimley»Horn

TENNESSEE REGIONAL ITS ARCHITECTURES AND DEPLOYMENT PLANS

OVERVIEW

STATEWIDE

BRISTOL

CHATTANOOGA

CLARKSVILLE

CLEVELAND

JACKSON

JOHNSON CITY

KINGSPORT

KNOXVILLE

LAKEWAY

MEMPHIS

NASHVILLE

## Kingsport Regional ITS Architecture

The Kingsport Regional ITS Architecture and Deployment Plan provides a long-range plan for the deployment, integration, and operation of ITS in the Kingsport Region. An update to the plan is being led by the Tennessee Department of Transportation (TDOT) in coordination with the Kingsport Metro Transportation Planning Organization (MTPO). The update is expected to be completed in the Spring of 2017.

The Kingsport Regional ITS Architecture regional boundaries are comprised of the western half of Sullivan County, TN; northeastern Hawkins County, TN; extreme northern Washington County, TN; and south central Scott County, VA. Stakeholders included representatives from traffic, transit, emergency management, and public safety agencies at the local, state, and federal level. Two stakeholder workshops and several interviews with stakeholder agencies are being conducted to gather input for the plan.

### Project Documents (2017 Version)

#### Regional ITS Architecture and Deployment Plan

- [Draft Kingsport Regional ITS Architecture and Deployment Plan](#)
- [Draft Kingsport Turbo Architecture Database](#)
- Draft Kingsport Interactive ITS Architecture (In Development)

#### Workshop Materials

- [Kickoff Workshop Agenda – October 2016](#)
- [Kickoff Workshop Minutes – October 2016](#)
- [Kickoff Workshop Presentation – October 2016](#)
- [Review Workshop Agenda – January 2017](#)
- Review Workshop Minutes – January 2017 (To be Added Later)
- Review Workshop Presentation – January 2017 (To be Added Later)

#### Other Documents and Presentations

- [ITS Overview Sheet – October 2016](#)

### Project Documents (2008 Version)

#### Executive Summary

- [Kingsport Executive Summary](#)

#### Regional ITS Architecture

- [Kingsport Regional ITS Architecture](#)
- [Kingsport Regional ITS Architecture Appendices](#)
- [Kingsport Turbo Architecture Database \(download\)](#)



### Project Contacts

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# Workshop Outline

## Review of the Regional ITS Architecture Document

- Key Changes to the Document
- ITS Service Package Prioritization
- Review Stakeholder Comments

## Discussion of Existing and Planned ITS Projects

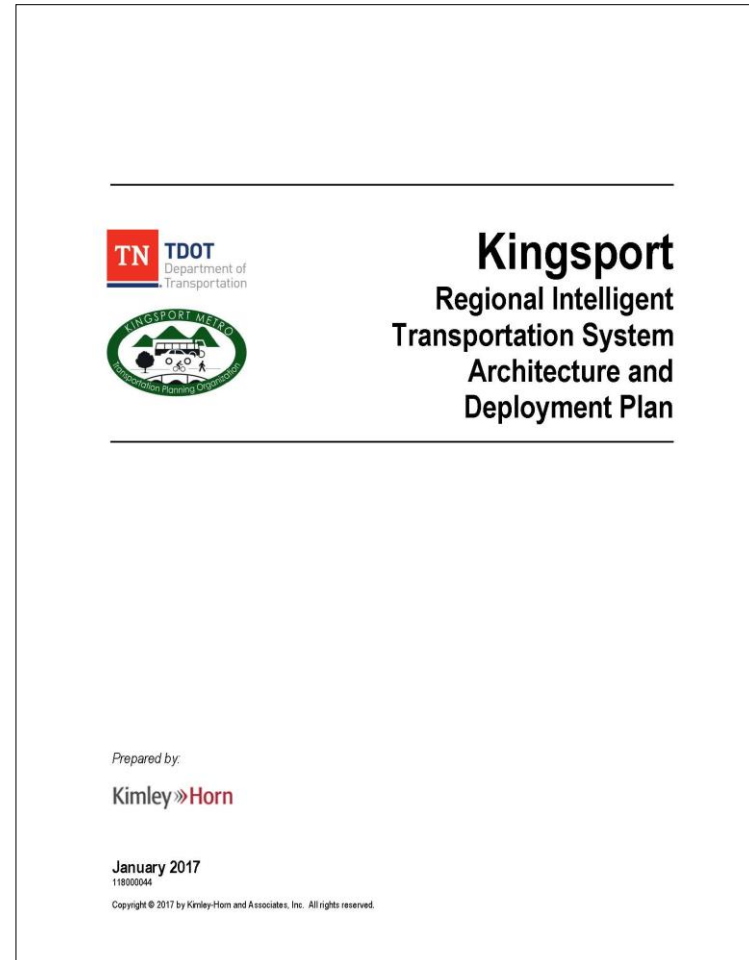
- Existing and Planned ITS Projects in the Region

## Discussion on Use and Maintenance of the Regional ITS Architecture

- Planning for Operations
- Architecture Conformance for Federal Funding
- Maintenance of the Regional ITS Architecture

# Regional ITS Architecture Update

**Comments Requested by  
February 8, 2017**



# Regional ITS Architecture Update

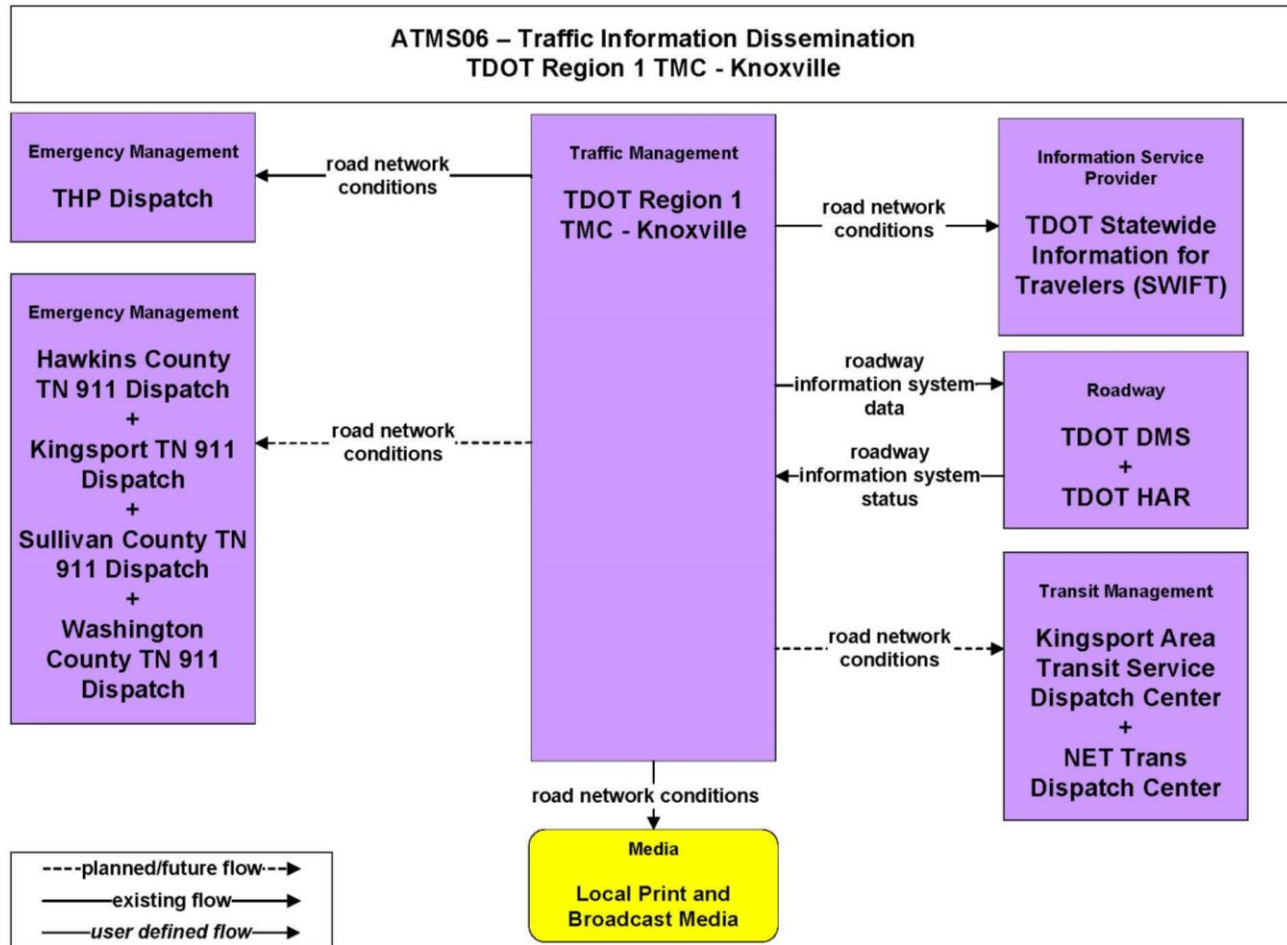
- Updated the following areas:
  - ITS Needs
  - Status of ITS Elements (Several Planned Elements are now Existing)
  - ITS Service Packages (Updated Data Flows, Added New ITS Service Packages)
  - ITS Deployment Plan Projects
  - Use and Maintenance Guidance Including Systems Engineering Guidance
- Comments requested by February 8, 2017



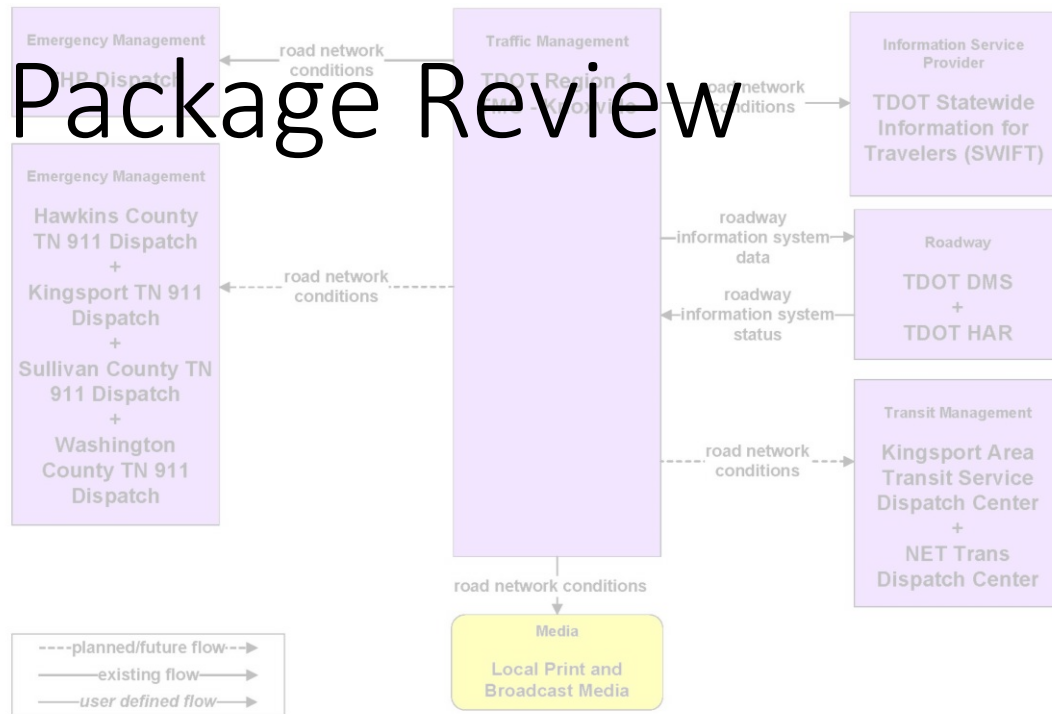
# Regional ITS Architecture Service Package Changes

Kingsport Regional ITS Architecture Service Package Updates		
Service Packages Added or Removed	Service Packages with Added, Removed, or Edited Elements	Service Packages with Changes to Data Flows Only
<p><b>ADDED:</b></p> <p>ATMS01 – Network Surveillance (VDOT TMC – Salem)</p> <p>ATMS06 – Traffic Information Dissemination (VDOT Bristol District)</p> <p>ATMS13 – Standard Railroad Grade Crossing (City of Kingsport TN)</p> <p>ATMS22 – Variable Speed Limits (TDOT Region 1 TMC – Knoxville, City of Kingsport TN)</p> <p>ATMS24 – Dynamic Roadway Warning (TDOT – Overheight Vehicle Detection, VDOT – Overheight Vehicle Detection, City of Kingsport TN – Illuminated Chevron Signs, City of Kingsport TN – Ramp Queue Warning System, City of Kingsport – Roadway Flood Warning, Municipal/County – Roadway Flood Warning)</p> <p>ATMS26 – Mixed Use Warning System (City of Kingsport TN, Municipal/County)</p> <p>EM02 – Emergency Routing (VDOT)</p> <p>MC01 – Maintenance and Construction Vehicle and Equipment Tracking (VDOT Bristol District Maintenance)</p> <p>MC04 – Weather Information Processing and Distribution (City of Kingsport TN)</p> <p>MC10 – Maintenance and Construction Activity Coordination (VDOT)</p> <p>APTS01 – Transit Vehicle Tracking (NET Trans)</p>	<p>ATMS01 – Network Surveillance (SWIFT and Skyline OneView)</p> <p>ATMS06 – Traffic Information Dissemination (SWIFT, Bristol TN 911 Dispatch, BTT Dispatch Center, and Hawkins County TN 911 Dispatch)</p> <p>ATMS07 – Regional Traffic Management (City of Bristol TN TOC, Kentucky Transportation Cabinet, City of Bristol VA TOC, and Town of Abingdon VA TOC)</p> <p>ATMS08 – Traffic Incident Management System (TDOT Region 1 District Operations, Virginia 511, and SWIFT)</p> <p>EM01 – Emergency Call-Taking and Dispatch (Bristol TN 911 Dispatch, Bristol VA 911 Dispatch, and Washington County VA 911 Dispatch)</p> <p>EM08 – Disaster Response and Recovery (City of Bristol TN Public Works Department, Bristol TN 911 Dispatch, Bristol VA 911 Dispatch, Washington County VA 911 Dispatch, Washington County VA Department of Emergency Service)</p> <p>EM10 – Disaster Traveler Information (Local Media, TDOT Region 1 District Operations, SWIFT, and Virginia Department of Emergency Management)</p> <p>MC01 – Maintenance and Construction Vehicle and Equipment Tracking (TDOT Region 1 District Operations)</p>	<p>MC03 – Road Weather Data Collection (TDOT Region 1 District, TDOT Region 1 Maintenance, City of Kingsport Public Works Department, City of Kingsport RWIS)</p> <p>MC04 – Weather Information Processing and Distribution (SWIFT, Bristol TN 911 Dispatch, City of Bristol TN TOC, and Municipal/County TOC)</p> <p>MC10 – Maintenance and Construction Activity Coordination (TDOT Region 1 District Operations, SWIFT, BTT Dispatch Center, City of Bristol TN Public Works Department, Kentucky Transportation Cabinet, Other TDOT Region District Operations, and Other TDOT Region Maintenance)</p> <p>APTS02 – Transit Fixed-Route Operations (SWIFT)</p> <p>APTS07 – Multi-modal Coordination (NET Trans)</p> <p>ATIS01 – Broadcast Traveler Information (Bristol TN 911 Dispatch, SWIFT, Local Print and Broadcast Media, TDOT Region 1 District Operations, Social Networking Sources, TDOT Office of Community Relations)</p> <p>AD1 – ITS Data Mart (TDOT Long Range Planning, SWIFT)</p> <p>ATMS03 – Traffic Signal Control (City of Kingsport TN)</p> <p>ATMS24 – Dynamic Roadway Warning (VDOT DMS)</p> <p>EM02 – Emergency Routing (City of Kingsport TN Traffic Signals)</p> <p>EM08 – Disaster Response and Recovery (VDOT Bristol District and VDOT TMC – Salem)</p> <p>MC08 – Work Zone Management (City of Kingsport TN TOC)</p> <p>MC10 – Maintenance and Construction Activity Coordination (City of Kingsport TN Public Works Department)</p> <p>APTS09 – Transit Signal Priority (City of Kingsport TN TOC)</p>

# Example ITS Service Package



# ITS Service Package Review



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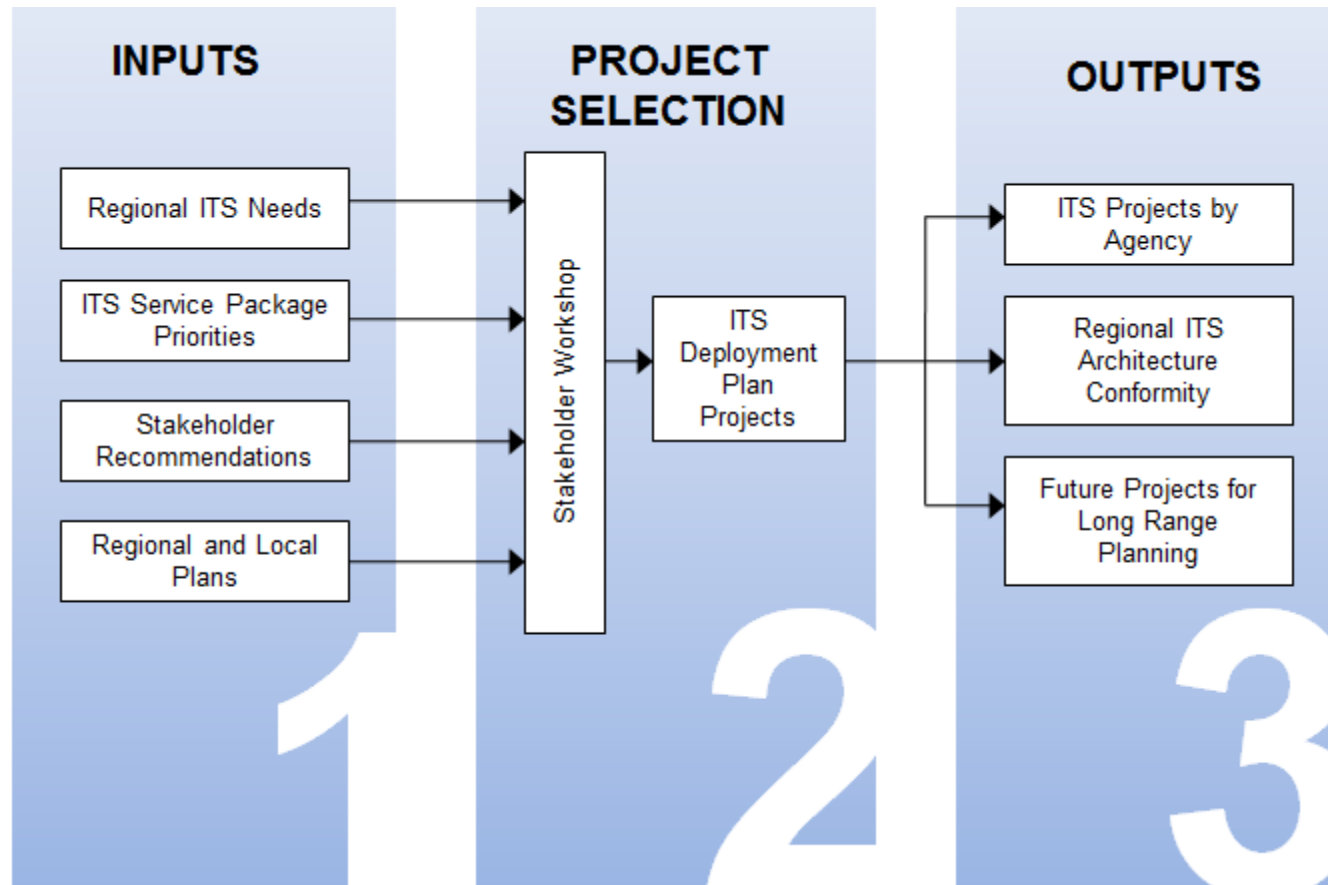
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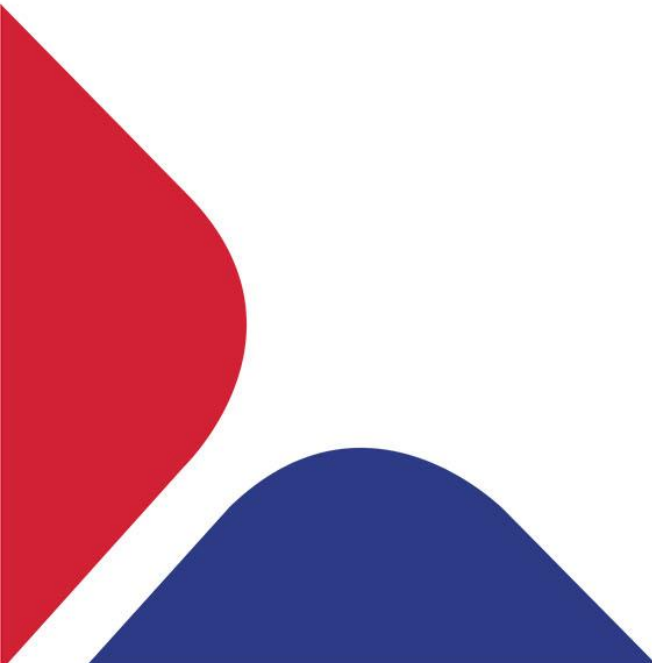
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# Regional ITS Deployment Plan





# Regional ITS Project Review



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# Systems Engineering

## Definition

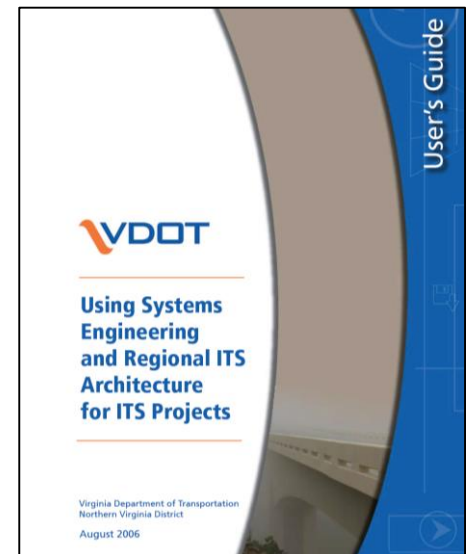
Systems engineering is an interdisciplinary approach to enable the realization of successful systems. It **focuses on defining customer needs and required functionality early** in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem.

## Requirements

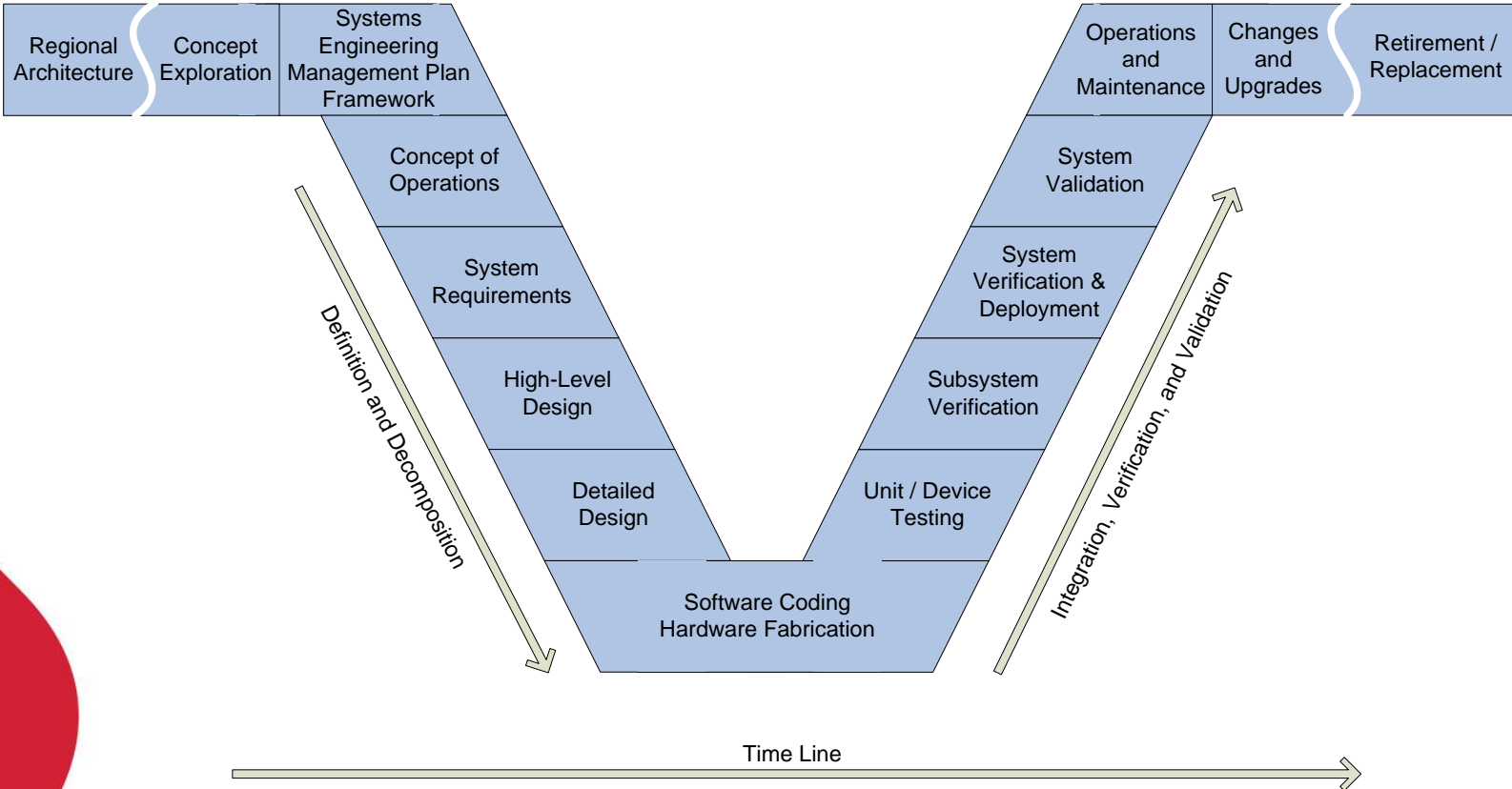
Using a systems engineering approach is required by the USDOT for ITS projects. The process includes demonstrating conformance to the Regional ITS Architecture.



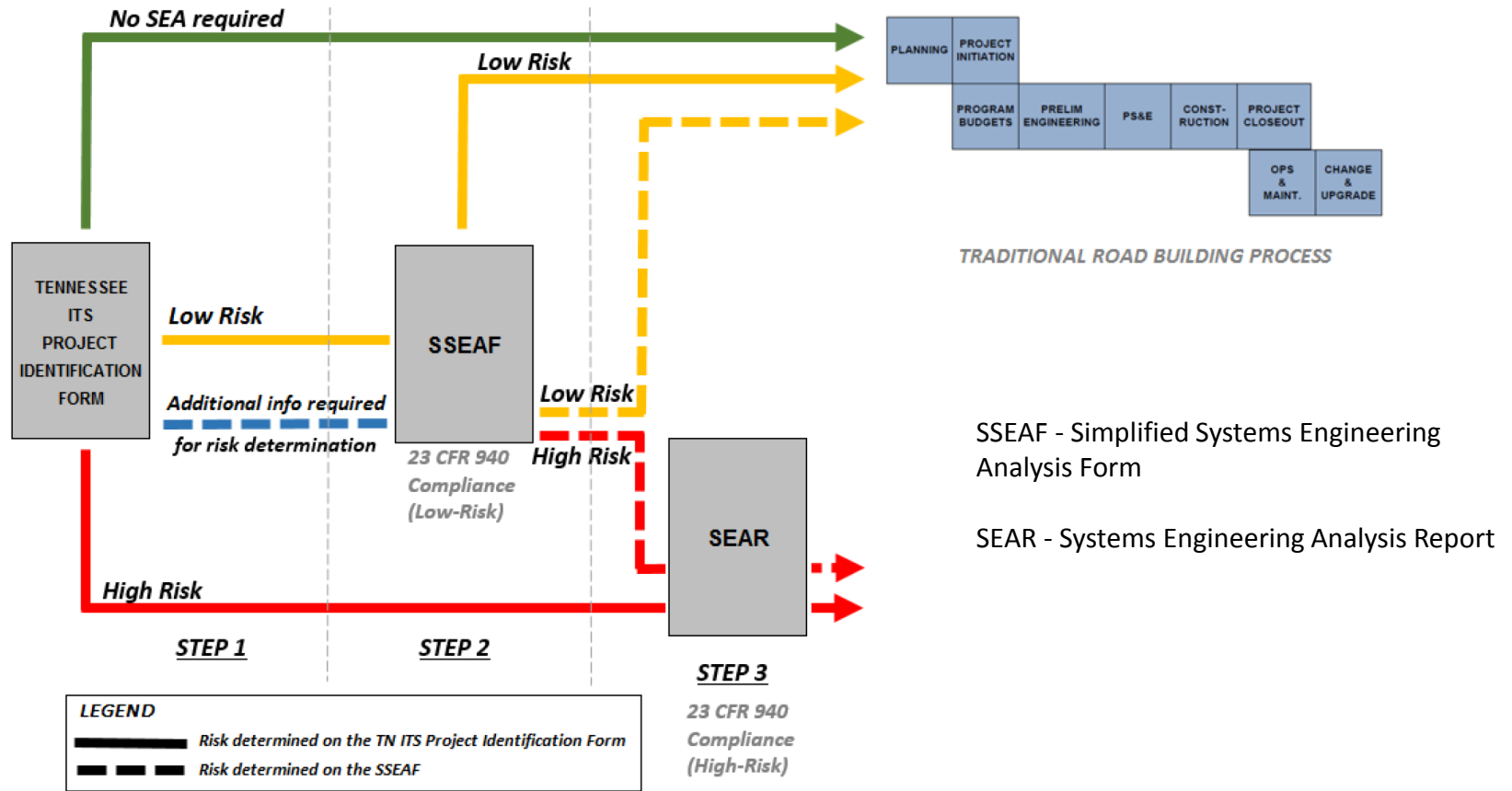
Guidance can be found in the *TDOT ITS Project Development Guidelines* and *VDOT Using Systems Engineering and Regional ITS Architecture for ITS Projects*



# Systems Engineering Vee Diagram



# TDOT SEA Decision Process



## TDOT's Process for ITS Systems Engineering Documentation

Source: TDOT ITS Project Development Guidelines (2016)

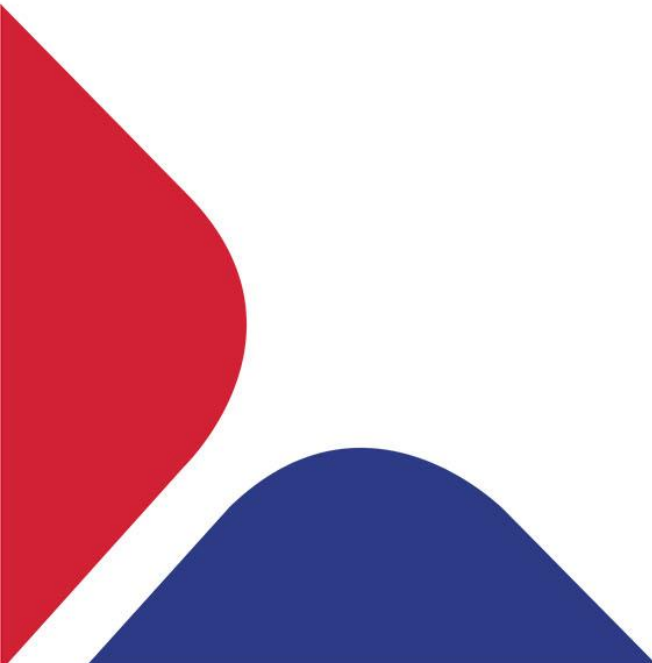


# Regional ITS Architecture Maintenance

## Kingsport Regional ITS Architecture Maintenance Summary

Maintenance Details	Regional ITS Architecture and Deployment Plan	
	Minor Update	Full Update
Timeframe for Updates	As needed	Review every 4 years in the year preceding the Metropolitan Transportation Plan update to determine if a full update is required
Scope of Update	Review and update service packages to satisfy architecture compliance requirements of projects or to document other changes that impact the Regional ITS Architecture.	Entire Regional ITS Architecture and Deployment Plan
Lead Agency	Kingsport Metro TPO in Coordination with TDOT	
Participants	Stakeholders impacted by service package modifications	Entire stakeholder group
Results	ITS service package or other change(s) documented for next complete update	Updated Regional ITS Architecture and Deployment Plan document, Appendices, and Turbo Architecture database

# Comments and Questions



# Next Steps

- Stakeholders provide comments on the Draft Regional ITS Architecture and Deployment Plan Document by February 8, 2017
- Kimley-Horn incorporates comments and submits to FHWA and TDOT for “Ready for Use” review
- Obtain FHWA and TDOT “Ready for Use” letter and finalize documents

# Thank You!

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