Austin Regional ITS Architecture
and Deployment Plan Update

ITS Architecture Workshop

March 30, 2015



Kimley»Horn

Workshop Overview

- Welcome and Introductions
- Regional ITS Architecture Use and Maintenance Training
  - Review of the Interactive Regional ITS Architecture and Other Resources
  - Systems Engineering Analysis
  - Project Conformity
  - Maintaining the Regional ITS Architecture Systems
- Break
- Turbo Architecture
  - Overview of the Turbo Architecture Software
  - Updating the Regional ITS Architecture Using Turbo Architecture
  - Reports, Diagrams, and Other Useful Features from Turbo
- Adjourn

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Project Overview

- Purpose: Update the 2007 Austin Regional ITS Architecture and Deployment Plan to accordance with the USDOT requirements

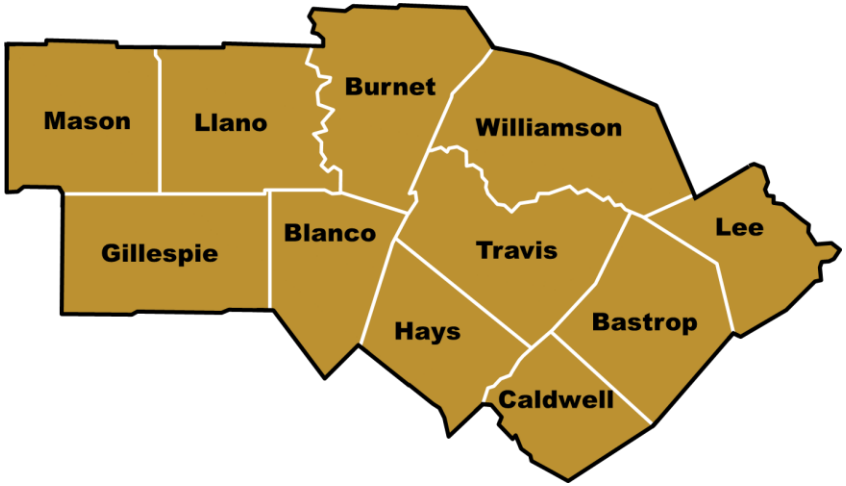
- Regional ITS Architecture Update Goals:
  - Include participation from traffic, transit, and public safety stakeholders representing local, state, and federal agencies in the Austin Region
  - Provide a high level plan that documents the Region's vision for the deployment, integration, and operation of ITS in the Austin Region
  - Assist the Region in meeting the FHWA and FTA requirements for ITS architecture conformity




Austin Regional Boundaries

The regional boundaries have been defined as the boundaries of the TxDOT Austin District

Bastrop, Blanco, Burnet, Caldwell, Gillespie, Hays, Lee, Llano, Mason, Travis and Williamson



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

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Project Overview

March 2014 — March — Apr 2015

Kick-Off Workshop
March 24

Stakeholder Interviews

ITS Architecture Workshop
July 22

Draft Regional ITS Architecture

Deployment Plan Workshop
November 20

Stakeholder Interviews

Draft Regional ITS Deployment Plan

Training on Use and Maintenance
March 30

Revised Draft and Final Documents
April

Agency Interview

Group Workshop or Training

Deliverables
(Remaining)

- Regional ITS Deployment Plan
  - Identifies ITS projects for the Region
  - Demonstrated project conformance to the Regional ITS Architecture
- Executive Summary
- Final Regional ITS Architecture and Deployment Plan

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Regional ITS Architecture Use and Maintenance Training

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Regional ITS Architecture Use and Maintenance

- Review of the Interactive Regional ITS Architecture and Other Resources
  - Austin Regional ITS Architecture Website
  - National ITS Architecture Website
- Discuss Systems Engineering Analysis
- Discuss Project Conformity
- Discuss Maintenance of the Regional ITS Architecture
  - Maintenance process for full updates
  - Maintenance process for interim updates

Regional ITS Architecture Website

www.AustinITSArchitecute.com

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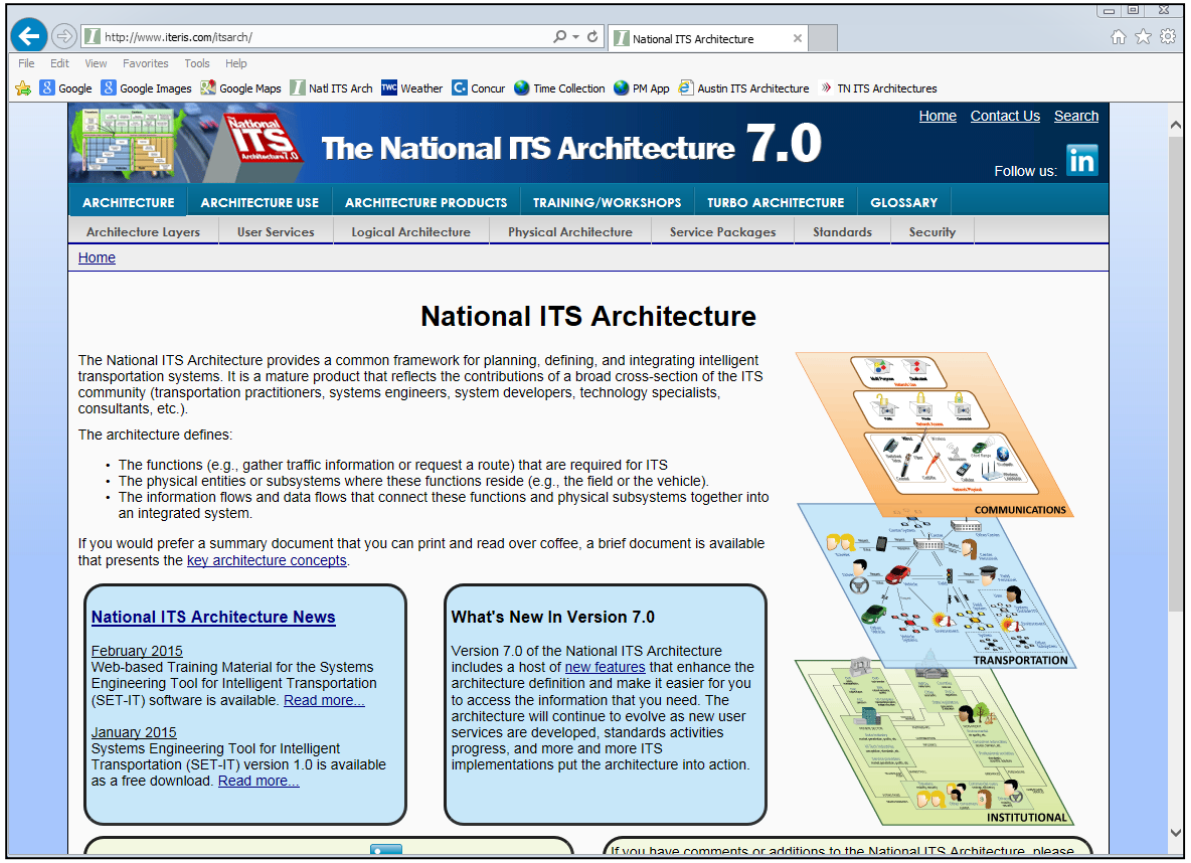
National ITS Architecture Website



www.iteris.com/itsarch/

(Link provided from the Austin Regional ITS Architecture website)

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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.

Additional guidance has been developed by the USDOT.

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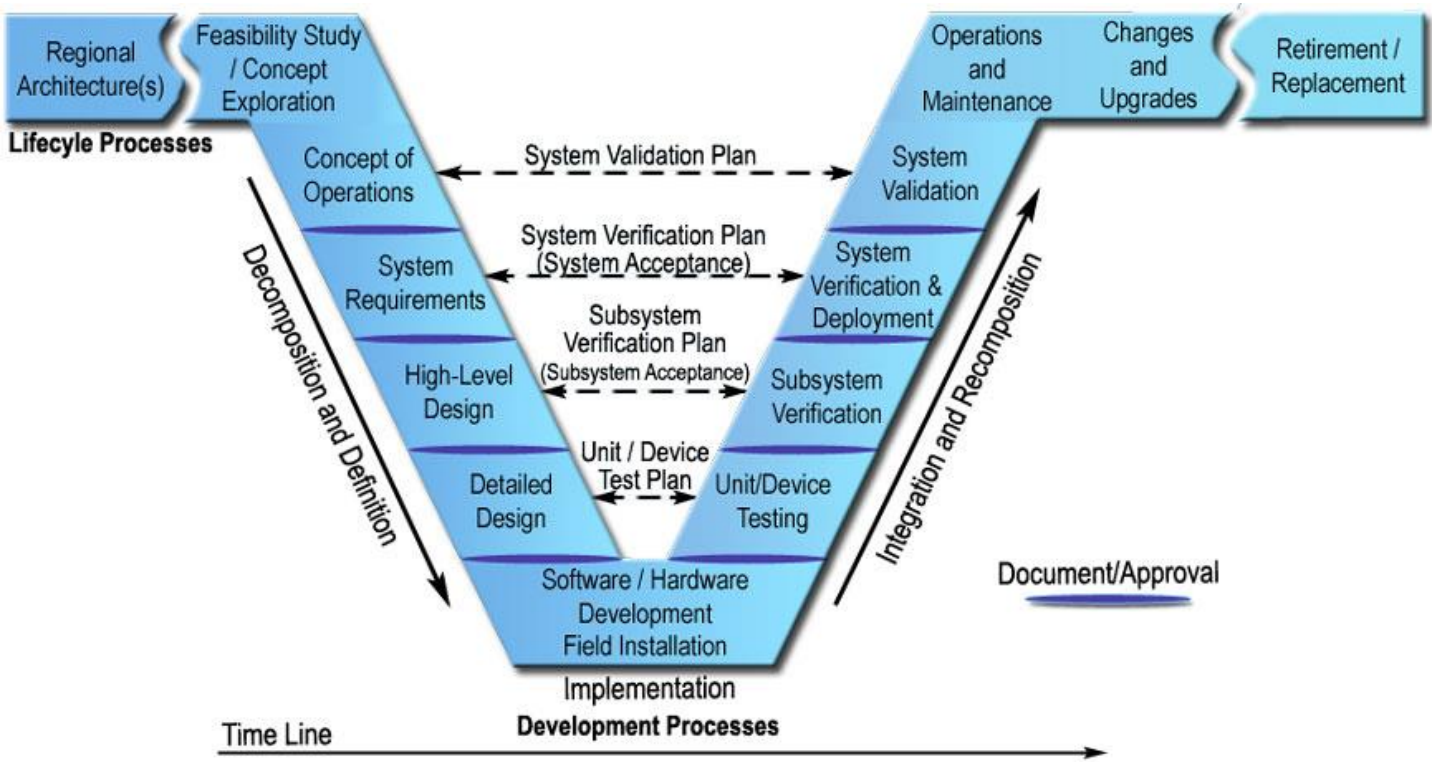
Systems Engineering



Why Use the Systems Engineering Process

- Looks at the entire project lifecycle…not just design
- Emphasizes up-front planning and addresses risk early
- Functionality first…technology purchase later
- Better documentation of system development, including trade-offs, alternatives, and design decisions
- Required for federally funded ITS projects
- Benefits: Establishes expectations, reduces risk, minimizes costs and schedule overruns, ensures the systems does what you need



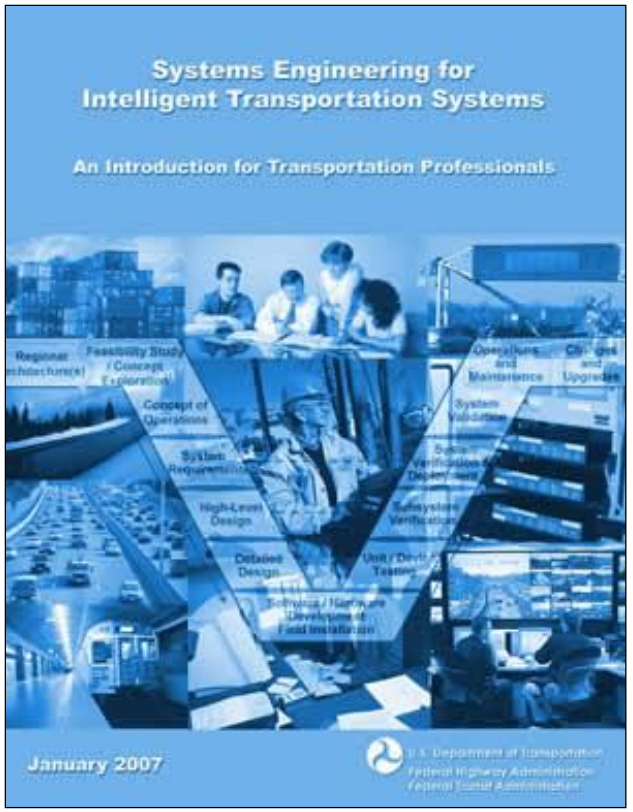

Systems Engineering Components Supported by the Regional ITS Architecture

- **Regional ITS Architecture**
  - Show conformance to the Regional ITS Architecture
- **Concept Exploration/Concept of Operations**
  - Use the ITS Service Package diagrams, Context diagrams, and Interfaces from the Regional ITS Architecture
- **System Requirements**
  - Use the Functional Requirements from the Regional ITS Architecture
- **Detailed Design**
  - Use the standards associated with applicable data flows in the Regional ITS Architecture

Systems Engineering Resources

FHWA Systems Engineering for Intelligent Transportation Systems

An Introduction for Transportation Professionals



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Regional ITS Architecture Conformity

- USDOT requires that all federally funded ITS projects conform to a regional ITS architecture
- FHWA Final Rule 940 and FTA Final Policy on Regional ITS Architecture established this requirement
- Final Rule and Final Policy were established in response to the Transportation Equity Act for the 21st Century (TEA-21) which was enacted in 1998

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

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Regional ITS Architecture Conformity

Step 1 – Identify

Identify the ITS components of the project

Step 2 – Evaluate

Evaluate the applicable ITS service packages to determine if the project is accurately documented

Step 3 – Document

Document the conformance of the project to the Regional ITS Architecture

Regional ITS Architecture Conformity

ATMS06 – Traffic Information Dissemination
City of Cedar Park Traffic Operations Center

Roadway
City of Cedar Park DMS

roadway information system status

roadway information system data

Traffic Management
City of Cedar Park TMC

current asset restrictions

Maintenance and Construction Management
Municipal/County PWD
+
TxDOT Austin District Maintenance Sections Dispatch
+
Williamson County Maintenance and Construction Operations

Transit Management
CapMetro Fixed-Route Operations Center
+
CapMetro MetroAccess Paratransit Operations Center
+
CapMetro Freight and Passenger Rail Operations Center
+
CARTS Transit Operations Center
+
Independent School District Dispatch
+
Private Transportation Provider Operations

road network conditions

road network conditions

Emergency Management
DPS Communications
+
Municipal Public Safety Dispatch and PSAP
+
Williamson County Emergency Communications Center

road network conditions

road network conditions
+
traffic images

Information Service Provider
Municipal Website
+
Private Sector Traveler Information Services
+
TxDOT 511 System

Information Service Provider
City of Cedar Park Public Information Office

traveler information for media

Media
Local Print and Broadcast Media

planned/future flow
existing flow
user defined flow

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Regional ITS Architecture Conformity

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CapMetro MetroAccess Paratransit Operations Center
+
CapMetro Freight and Passenger Rail Operations Center
+
CARTS Transit Operations Center
+
Independent School District Dispatch
+
Private Transportation Provider Operations

road network conditions

road network conditions

Emergency Management
DPS Communications
+
Municipal Public Safety Dispatch and PSAP
+
Williamson County Emergency Communications Center

road network conditions

road network conditions
+
traffic images

Information Service Provider
Municipal Website
+
Private Sector Traveler Information Services
+
TxDOT 511 System

Information Service Provider
City of Cedar Park Public Information Office

traveler information for media

Media
Local Print and Broadcast Media

planned/future flow
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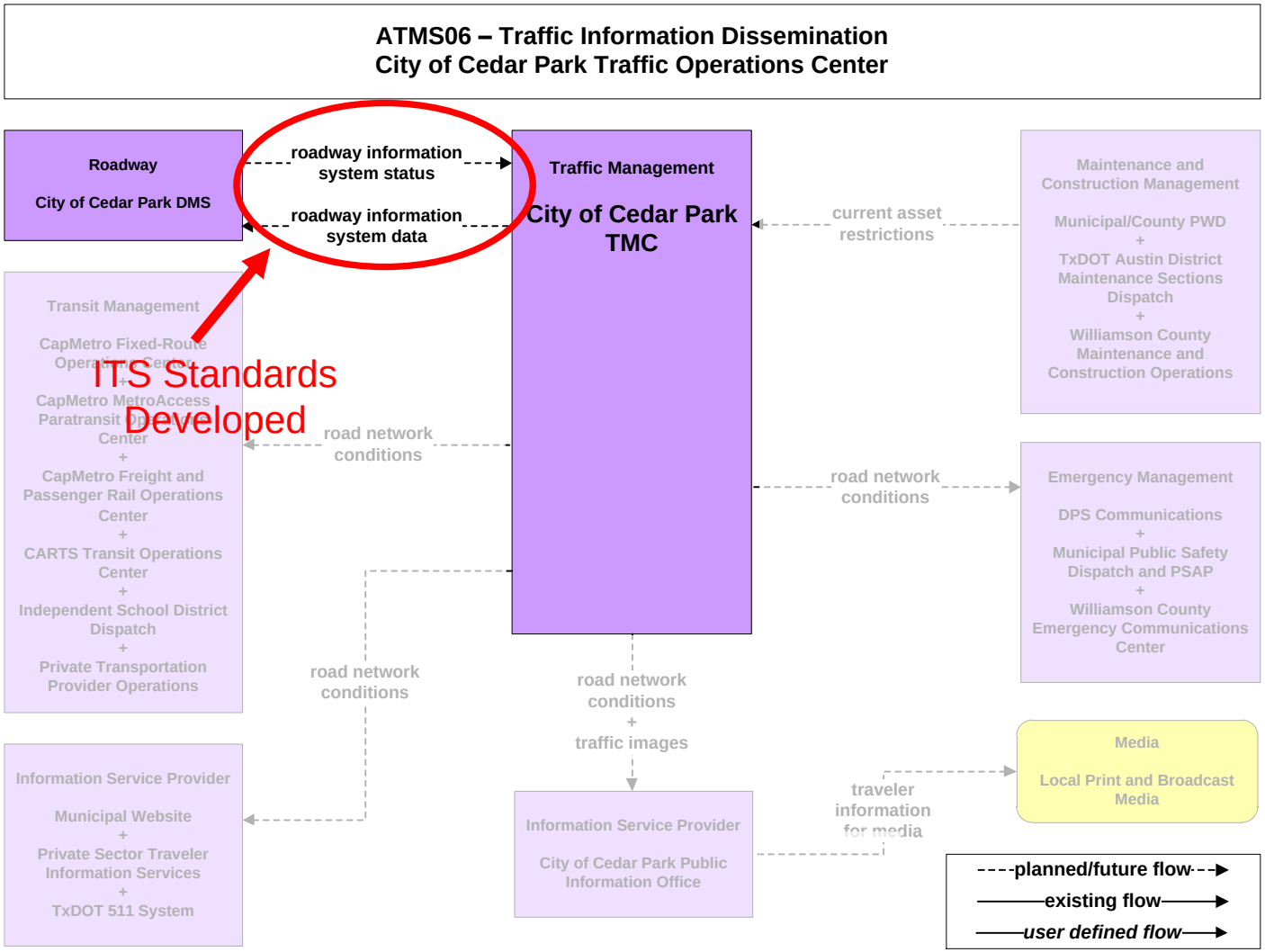
Regional ITS Architecture Conformity



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Maintenance Process

Maintenance Details	Regional ITS Architecture and Deployment Plan	
	Modification	**Complete Update**
Timeframe for Updates	As needed	Review prior to update of Regional Transportation Plan (RTP) to determine need for update. Review annually if not updated in conjunction with the RTP update.
Scope of Update	Update ITS service packages to satisfy architecture conformity requirements of projects. Other changes to the Regional ITS Architecture and Deployment Plan as required.	Entire ITS Architecture and Deployment Plan
Lead Agency	CAMPO - Responsible for Bastrop, Burnet, Caldwell, Hays, Travis, and Williamson Counties TxDOT – Responsible for Blanco, Gillespie, Lee, Llano, and Mason Counties	Joint TxDOT and CAMPO led effort
Participants	Stakeholders impacted by modifications to ITS service packages	Entire stakeholder group
Results	Documentation of changes to ITS service packages or other components of the Regional ITS Architecture and Deployment Plan	Updated Austin Regional ITS Architecture and Deployment Plan document, Appendices, and Turbo Architecture database

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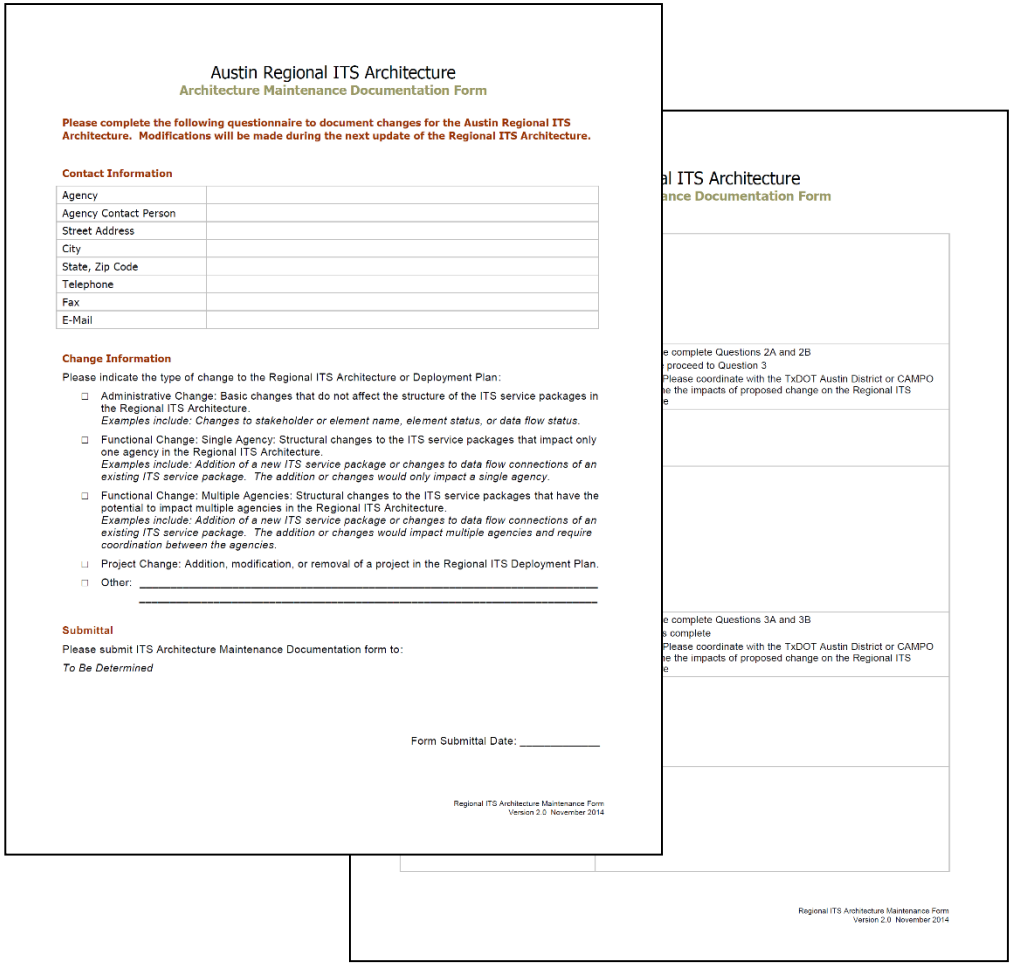
Maintenance Process

Project Manager Evaluates Conformance to Regional ITS Architecture

If Project Does Not Conform to Regional ITS Architecture, Project Manager Completes ITS Architecture Maintenance Documentation Form and Submits to Maintainer

Maintainer Confirms Receipt of Form and Files Form for Use During Next Update



Austin Regional ITS Architecture
Architecture Maintenance Documentation Form

Please complete the following questionnaire to document changes for the Austin Regional ITS Architecture. Modifications will be made during the next update of the Regional ITS Architecture.

Contact Information

Agency	
Agency Contact Person	
Street Address	
City	
State, Zip Code	
Telephone	
Fax	
E-Mail	

Change Information

Please indicate the type of change to the Regional ITS Architecture or Deployment Plan:

- ☐ Administrative Change: Basic changes that do not affect the structure of the ITS service packages in the Regional ITS Architecture.
  Examples include: Changes to stakeholder or element name, element status, or data flow status.
- ☐ Functional Change: Single Agency: Structural changes to the ITS service packages that impact only one agency in the Regional ITS Architecture.
  Examples include: Addition of a new ITS service package or changes to data flow connections of an existing ITS service package. The addition or changes would only impact a single agency.
- ☐ Functional Change: Multiple Agencies: Structural changes to the ITS service packages that have the potential to impact multiple agencies in the Regional ITS Architecture.
  Examples include: Addition of a new ITS service package or changes to data flow connections of an existing ITS service package. The addition or changes would impact multiple agencies and require coordination between the agencies.
- ☐ Project Change: Addition, modification, or removal of a project in the Regional ITS Deployment Plan.
- ☐ Other: _____

Submittal

Please submit ITS Architecture Maintenance Documentation form to:

To Be Determined

Form Submittal Date: _____

Regional ITS Architecture Maintenance Form
Version 2.0 November 2014

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Austin Regional ITS Architecture

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  _____

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Please submit ITS Architecture Maintenance Documentation form to:

To Be Determined

Form Submittal Date: _____

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Austin Regional ITS Architecture

Architecture Maintenance Documentation Form

Question 1 Describe the requested change to the Regional ITS Architecture or Deployment Plan.	
Question 2 Are any of the Regional ITS Architecture service packages impacted by the proposed change?	☐ Yes: Please complete Questions 2A and 2B ☐ No: Please proceed to Question 3 ☐ Unknown: Please coordinate with the TxDOT Austin District or CAMPO to determine the impacts of proposed change on the Regional ITS Architecture
Question 2A *List all of the ITS service packages impacted by the proposed change.*	
Question 2B *Include a copy of the ITS service packages impacted by the proposed change and mark any proposed modifications to the ITS service packages. Add any additional notes on proposed changes in this section.*	
Question 3 Does the proposed change impact any stakeholder agencies other than the agency completing this form?	☐ Yes: Please complete Questions 3A and 3B ☐ No: Form is complete ☐ Unknown: Please coordinate with the TxDOT Austin District or CAMPO to determine the impacts of proposed change on the Regional ITS Architecture
Question 3A *Identify the stakeholder agencies impacted by the change and a contact person for each agency.*	
Question 3B *Describe the coordination that has occurred with the stakeholder agencies and the results of the coordination?*	

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Austin Regional ITS Architecture

Architecture Maintenance Documentation Form

Example of Completed Documentation Form

Question 1 Describe the requested change to the Regional ITS Architecture or Deployment Plan.	*Example: City A is planning to deploy CCTV cameras for network surveillance on arterial streets. In the Regional ITS Architecture, the City A Traffic Operations Center (TOC) is shown as the only center controlling the CCTV cameras. The City A TOC is now planning to provide images and control of the CCTV cameras to the City A Police Department for use during incidents.*
Question 2 Are any of the Regional ITS Architecture service packages impacted by the proposed change?	☑ Yes: Please complete Questions 2A and 2B ☐ No: Please proceed to Question 3 ☐ Unknown: Please coordinate with the TxDOT Austin District or CAMPO to determine the impacts of proposed change on the Regional ITS Architecture
Question 2A *List all of the ITS service packages impacted by the proposed change.*	*Example: ATMS08 – Traffic Incident Management System* *ATMS01 – Network Surveillance*
Question 2B *Include a copy of the ITS service packages impacted by the proposed change and mark any proposed modifications to the ITS service packages. Add any additional notes on proposed changes in this section.*	*Example: A sketch of the ATMS08 – Traffic Incident Management System ITS service package diagram for City A is attached. Changes have been marked by hand to indicate the new data connections that will be established to allow the City A TOC to send traffic images to the City A Police Department, and for the City A Police Department to control the CCTV cameras. The deployment of the CCTV cameras will also result in several of the data flows in ATMS01 – Network Surveillance being changed from planned to existing. These have also been marked on the ITS service package diagram. (Note: The ITS service package diagrams can be found in Appendix B of the Regional ITS Architecture.)*
Question 3 Does the proposed change impact any stakeholder agencies other than the agency completing this form?	☑ Yes: Please complete Questions 3A and 3B ☐ No: Form is complete ☐ Unknown: Please coordinate with the TxDOT Austin District or CAMPO to determine the impacts of the proposed change on the Regional ITS Architecture
Question 3A *Identify the stakeholder agencies impacted by the change and a contact person for each agency.*	*Example: The City A TOC and City A Police Department are the two agencies impacted by this change. (Note: Assuming the City A TOC representative is completing this form, the contact person from the City A Police Department working on this project should be listed.)*
Question 3B *Describe the coordination that has occurred with the stakeholder agencies and the results of the coordination?*	*Example: The City A TOC and City A Police Department have had several meetings in the last year to discuss the operations of the arterial CCTV cameras. An agreement for the joint operations of the CCTV cameras is currently being developed.*

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Break

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Turbo Architecture Software Training

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Next Steps

- Send Draft Regional ITS Deployment Plan and Revised Draft Regional ITS Architecture
- Develop Executive Summary
- Final Reports and Website

Thank You!

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