May 2, 2024

H-GAC ITS Architecture and Website Update

H-GAC TSMO Subcommittee Briefing

Project Team

Project Manager

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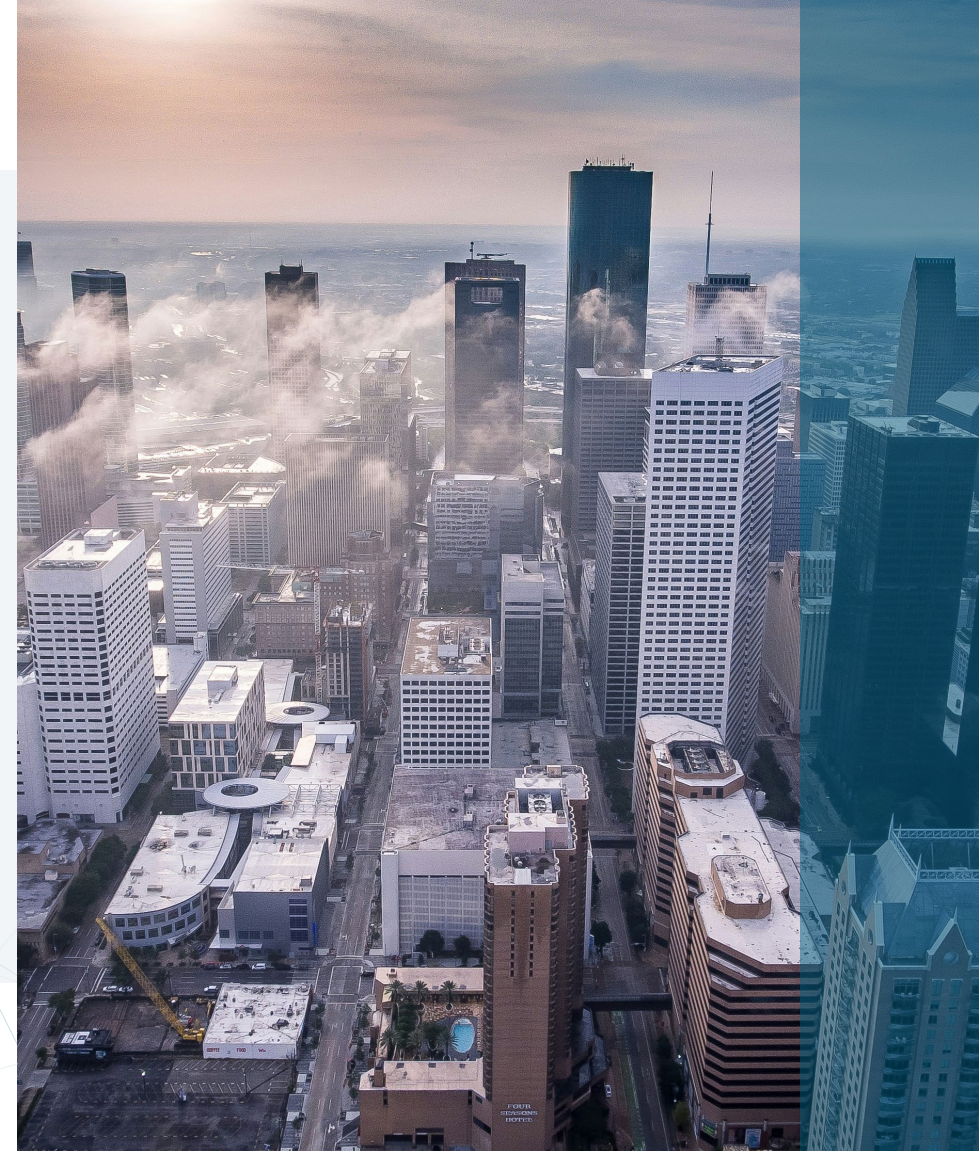
s+v+traffic
snyder | voigt traffic engineers

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What is an ITS Architecture

A plan for the **deployment**, **integration**, and **operation** of Intelligent Transportation Systems in a state or region

The plan includes **traffic**, **transit**, **tolling**, **public safety**, and **emergency management** agencies

The plan should be in developed in **coordination** with other **regional planning efforts** including the TxDOT Houston TSMO Program Plan, local ITS plans, and the H-GAC Regional Transportation Plan

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Why an ITS Architecture is Important?

All transportation projects that incorporate ITS elements and are funded through the Highway Trust Fund must conform with an ITS Architecture

An ITS Architectures can also…

- Help scope projects appropriately

- Ensure regional interoperability

- Offer a focused perspective for long-range planning

- Ensure preparedness for future deployment of technology

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Project Goals

H-GAC ITS ARCHITECTURE AND WEBSITE UPDATE

1. Update the **existing H-GAC Regional ITS Architecture** to the current National ITS Architecture (Version 9.2)

2. Develop an ITS inventory software analysis tool that will **assist in transportation project prioritization**, benefit cost analysis, and economic impact analysis

3. Update and advance the existing Transportation Systems Management and Operations (TSMO) website

4. Create a **Geographic Information System (GIS) database of all ITS and signal fiber in the eight-county MPO**

5. Develop a standard method for collecting inventories and implementation plans from each stakeholder agency

6. Meet with all **eight counties and in the region (and cities)** to verify existing inventory and obtain plans for new ITS, signals, TMCs, and other deployments to be implemented over the next seven years

7. Meet with the **TxDOT Houston and Beaumont Districts** to inventory all existing ITS, signal, and tolling facilities and document their implementation plans for the next seven to 10 years

8. Determine which **cities will potentially surpass 50,000 residents** in the 2030 Census **and meet with them** to document their existing ITS and signal inventories and implementation plans leading up to 2030

9. Meet with all **Toll Authorities** in the MPO to inventory all existing ITS, signal, and tolling facilities and document the implementation plans for each for the next seven to 10 years
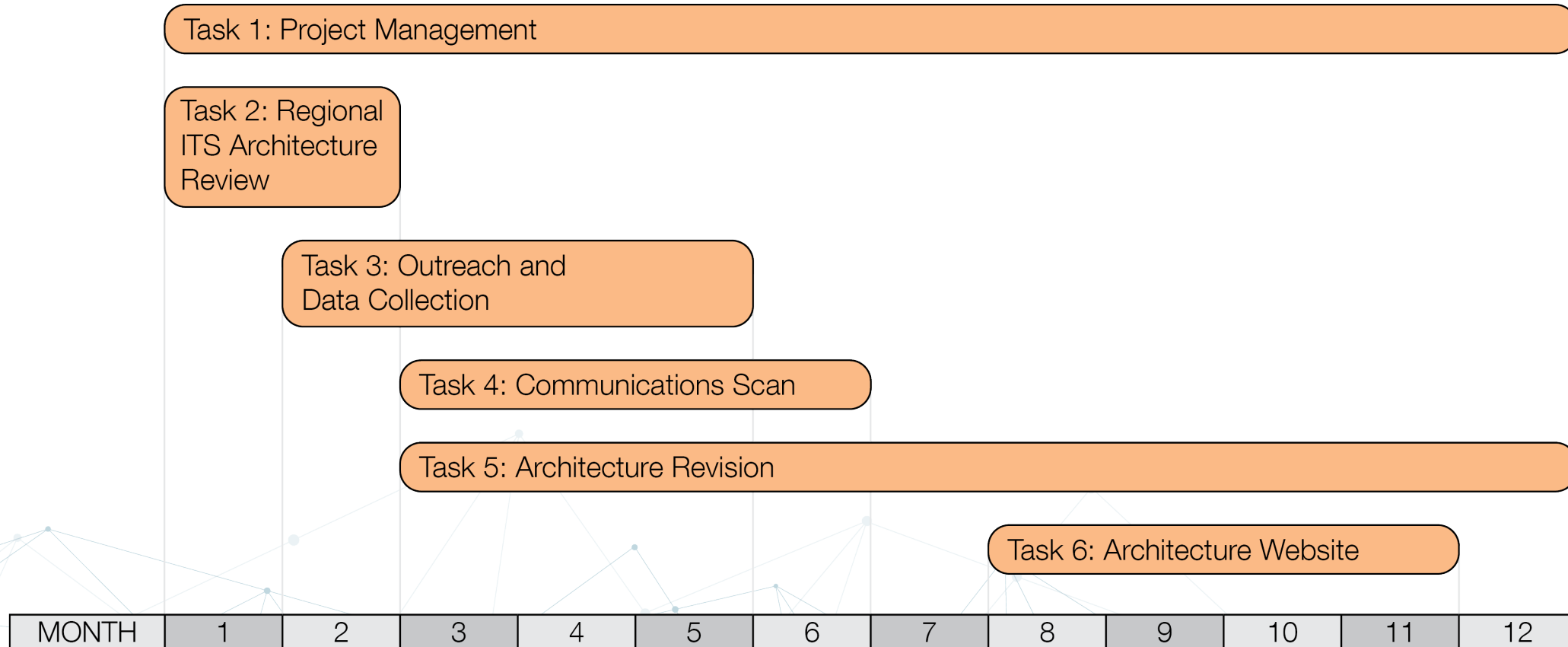
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H-GAC ITS Architecture History

First Developed in 2003

Updated in 2010

Updated in 2017

Current Update for 2024

Key Tasks and Timeline

Task 1: Project Management

Task 2: Regional ITS Architecture Review

Task 3: Outreach and Data Collection

Task 4: Communications Scan

Task 5: Architecture Revision

Task 6: Architecture Website

MONTH	1	2	3	4	5	6	7	8	9	10	11	12

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	2024											2025		
Task	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1 PROJECT MANAGEMENT														
Invoicing, Progress Reports, and Document Control	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
Bi-Weekly Project Coordination Meetings	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
TSMO Subcommittee Meetings				● May 2			● Aug 1			● Nov 7			● Feb 6	
Project Kick-off Meeting	▓													
2 REGIONAL ITS ARCHITECTURE REVIEW														
Review existing H-GAC Regional ITS Architecture		▓												
Identify areas for updates and strategies for proceeding		▓												
Present findings to TSMO Subcommittee				●										
Document findings in ITS Architecture Review Tech Memo		▓	▓	◆ *ITS Architecture Review Tech Memo*										
3 OUTREACH AND DATA COLLECTION														
Develop interview script for all agencies			▓											
Develop unique questions for each agency			▓											
Assemble initial inventory based on KH knowledge of stakeholders			▓											
Schedule interviews with counties and cities			▓											
Conduct interviews with counties and cities				▓	▓									
Develop Stakeholder Interview Summary Report				▓	▓	◆ *Stakeholder Interview Summary Report*								
Develop inventory of existing and future projects using Excel or PowerBI				▓	▓	▓	◆ *Inventory of Existing and Future Projects*							
4 COMMUNICATIONS SCAN														
Discuss communications with stakeholders as part of Task 3				▓										
Conduct national scan of emerging communications technology					▓									
Develop potential communication projects and ConOps for consideration					▓									
Present communication scan findings to the TSMO Subcommittee						●								
Develop Communication Scan White Paper					▓	▓	◆ *Communications Scan White Paper*							
5 REGIONAL ITS ARCHITECTURE REVISION														
ITS Architecture Update				▓	▓	▓	▓	▓	*Final Regional ITS Architecture and Executive Summary*				◆	
Develop training documentation on how to use the Regional ITS Architecture				▓	▓	◆ *ITS Architecture Training Documentation*								
Develop protocols for updating the Regional ITS Architecture						▓	◆ *Protocol for ITS Architecture Updates*							
Develop ConOps/planning goals/objectives/agreements/procedure/project recommendations							▓	▓	▓					
Present recommendations to TSMO Subcommittee				▓	▓	▓	▓	▓	▓		●			
Develop Draft Regional ITS Architecture and Maintenance Plan								*Draft Regional ITS Architecture and Maintenance Plan*				◆		
Develop Revised Draft Regional ITS Architecture and Maintenance Plan								*Revised Draft Regional ITS Architecture and Maintenance Plan*					◆	
Develop Final Regional ITS Architecture and Executive Summary								*Final Regional ITS Architecture and Executive Summary*						◆
5.2 Virtual Stakeholder Workshop														
Conduct virtual stakeholder workshop to review recommendations										●	●			
5.3 Training Classes														
Develop training classes for use of the Regional ITS Architecture and Website												▓		
Conduct training on use of the Regional ITS Architecture and Website (2 Classes)												▓ ●	● ▓	
5.4 ITS Inventory Software Analysis Tool														
Conduct best practices scan for ITS project scoring											▓			
Develop revised scoring process												▓		
Present ITS project scoring process to TSMO Subcommittee												●		
5.5 Whitepaper on Additions and the Architecture and Presentation to TSMO Subcommittee														
Develop whitepaper on additions and changes to the Regional ITS Architecture												▓		
Present whitepaper and ITS scoring process to TSMO Subcommittee													●	
6 REGIONAL ITS ARCHITECTURE WEBSITE														
Update RAD-IT database									▓					
Build and publish RAD-IT interactive regional website									▓ *RAD-IT Interactive Website*			◆		
Develop RAD-IT and website maintenance/installation procedures for use by H-GAC staff									*RAD-IT and Website Maintenance/Installation Procedures*				◆	

TSMO Subcommittee Participation

TSMO Subcommittee Meetings

August 2024 – Summary of Stakeholder Outreach and Communications Scan

November 2024 – Regional ITS Architecture Recommendations

February 2025 – Training Overview and ITS Scoring Process

Other TSMO Subcommittee Touchpoints

May/June 2024 – Stakeholder Interviews

December 2024 – Virtual Stakeholder Workshop to Review Recommendations

January/February 2025 – Stakeholder Training

On-Going – Drafts and Revised Draft Report Reviews

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Stakeholder Agencies to be Interviewed

H-GAC Counties	H-GAC Cities	Regional Agencies
Brazoria *(Includes Toll Road Authority)* Chambers Fort Bend *(Includes Toll Road Authority and Transit)* Galveston Harris Liberty Montgomery *(Includes Toll Road Authority)* Waller	Baytown Conroe Galveston Houston League City Missouri City Pasadena Pearland Sugar Land Texas City	TxDOT Houston District *(Includes the BlueRidge Transportation Group)* TxDOT Beaumont District Brazos Transit District Harris County Regional Transit Authority Houston Metro Port of Freeport Port of Houston Uptown TIRZ Woodland Regional Transit Authority

Note: Stakeholders cites were chosen based on population over 50,000 people.

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Regional ITS Architectures Reviewed

Atlanta	Dallas-Fort Worth
Los Angeles County	Other

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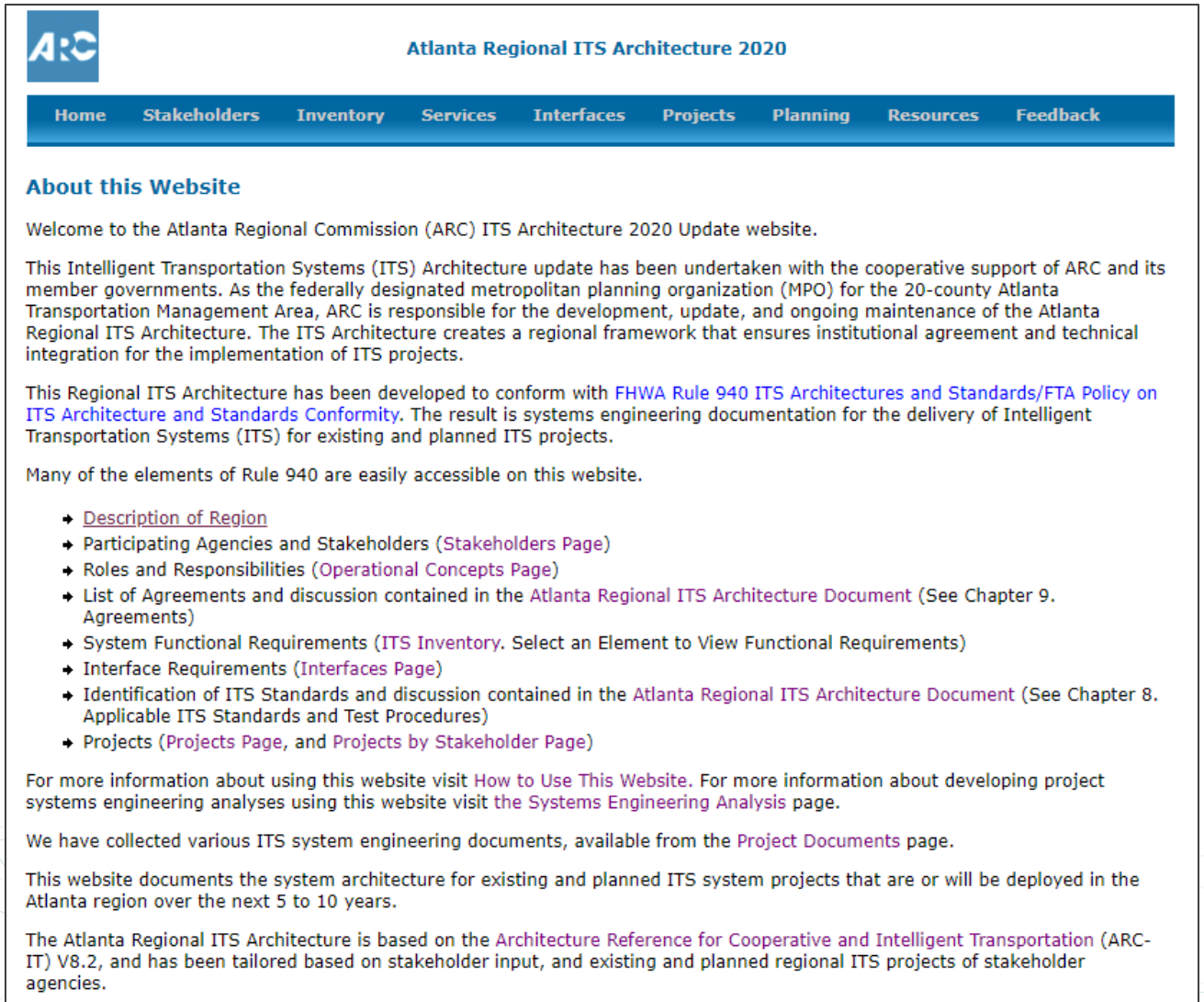
Atlanta Regional ITS Architecture

Stakeholders

Included all cities
(population as low as 6,500)

All cities have elements mapped towards them

North Central Texas ITS Architecture

Stakeholders

Included all cities and towns in the DFW area as stakeholders (population as low as 383)

Only large cities, such as Dallas, Fort Worth, Arlington, and Plano have elements listed on the NCTCOG ITS Architecture

RAD-IT

Regional ITS Architecture Dec2022-Update

Home
Scope
Planning
Stakeholders
Inventory
  By Physical Object
  By Stakeholder
Services
Roles and Resp
Needs
Functions
Interfaces
Communications
Agreements
Projects

Architecture Scope

The scope of the Regional ITS Architecture can be described in terms of: 1) the size of the region and jurisdictions covered (geographic scope), 2) the planning or time horizon, and 3) the variety of transportation services that are covered. This scope is defined in the context of adjacent and overlapping Regional ITS Architectures.

Description

The North Central Texas ITS Architecture is an update to the Regional Intelligent Transportation System (ITS) Architecture for the North Central Texas Region. The North Central Texas Regional ITS Architecture is the Regional ITS Architecture for the North Central Texas Region. The Regional ITS Architecture establishes a blueprint for transportation integration and needs to be updated periodically to reflect technological advances in ITS. In addition, the Regional ITS Architecture needs to maintain consistency with the National ITS Architecture.

Time Frame: Existing to twelve years.

Geographic Scope

North Central Texas is a 16–county region of North Central Texas, which is centered around the two urban centers of Dallas and Fort Worth. It covers the following counties:

– Collin
– Dallas
– Denton
– Ellis
– Erath
– Hood
– Hunt
– Johnson
– Kaufman
– Navarro
– Palo Pinto
– Parker
– Rockwall
– Somervell
– Tarrant
– Wise

Service Scope

– Archive Data Management
– Public Transportation
– Traffic Management
– Traveler Information
– Emergency Management
– Automated Vehicles Safety Systems
– Maintenance and Construction
– Commercial Vehicle Operations

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Los Angeles County ITS Architecture

Stakeholders

Does not include specific cities within Los Angeles County

Uses "Local Agency" for cities within the LA County Region

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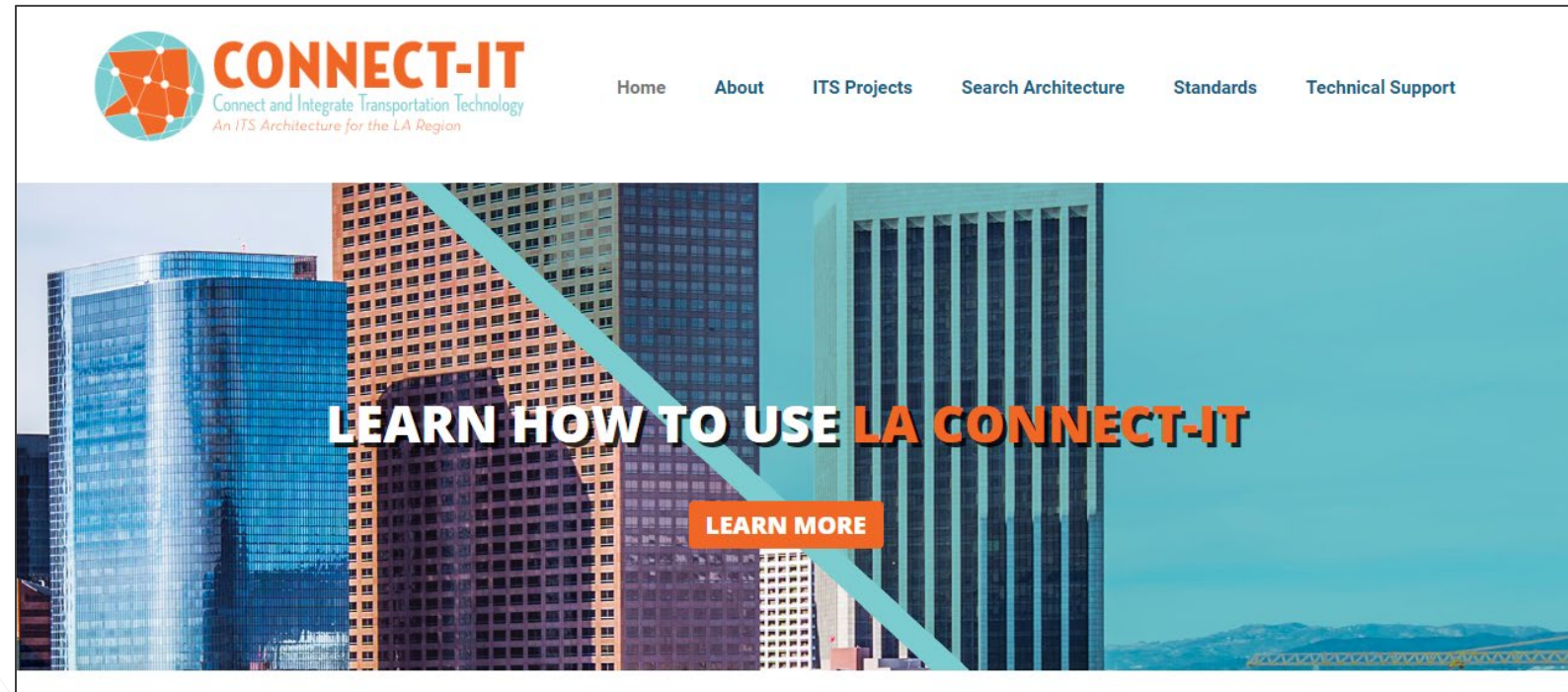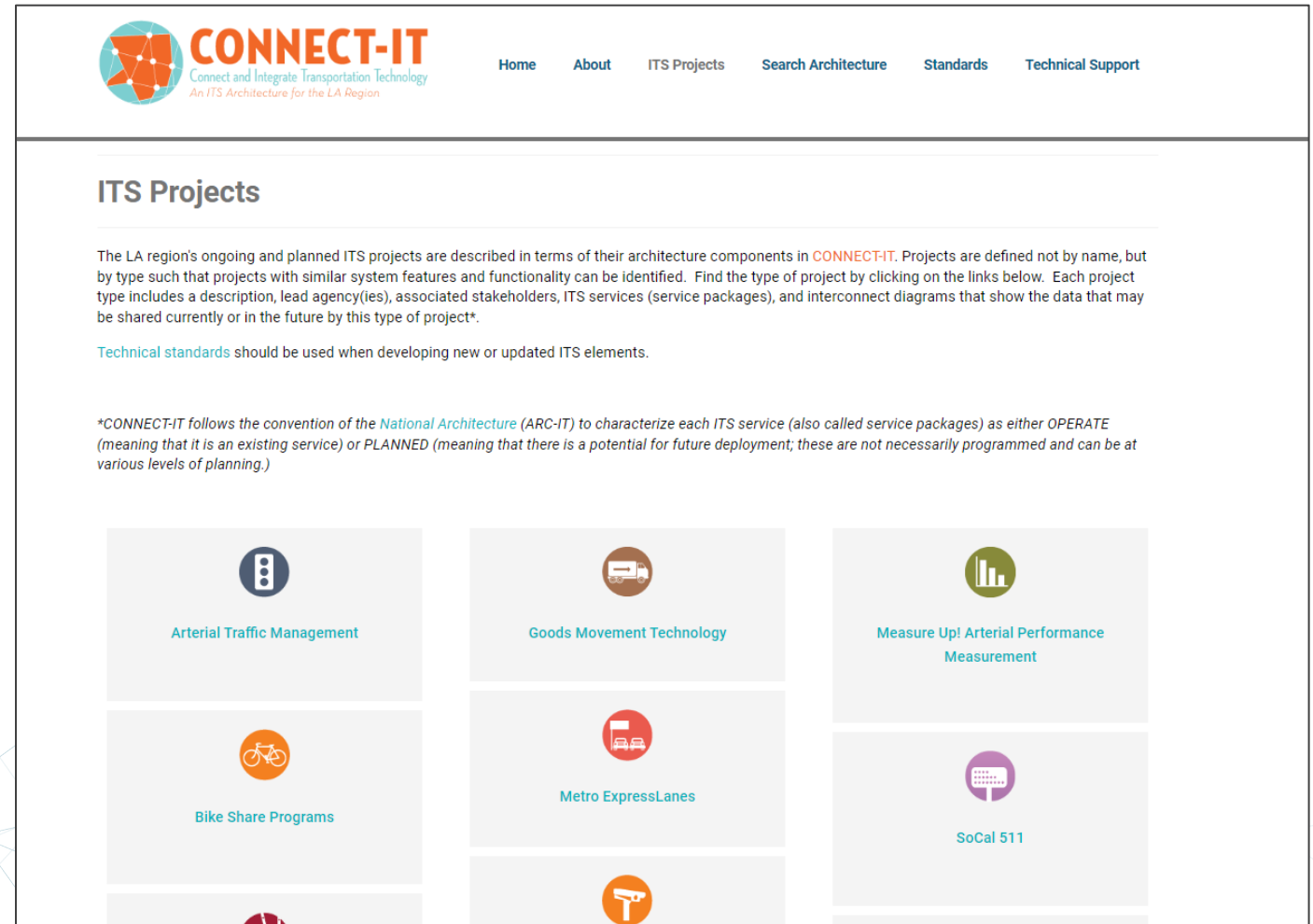
Los Angeles County ITS Architecture

Project Focused

Project focused with regional ITS architecture tied to 16 regional project initiatives

For each project initiative, the following are identified:

- Description
- Lead and Associated Agencies
- ITS Services Packages

![Kimley-Horn logo]

Other - San Diego MPO ITS Architecture

Project Focused

Identified "5 Big Moves" for the San Diego Region regarding ITS

1. Complete Corridors
2. Transit Leap
3. Mobility Hubs
4. Flexible Fleets
5. Next Operating System

SANDAG

Regional ITS Architecture

Home
5 Big Moves
Services
Needs
Scope
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Stakeholders
Inventory
  By Physical Object
  By Stakeholder
Roles and Resp
Functions
Interfaces
Agreements
Sitemap

5 Big Moves

The Regional ITS Architecture provides a starting point for 5 Big Move definition. It provides an overall framework that shows how anticipated projects will integrate with each other and with existing systems. This page lists the 5 Big Moves that have been mapped to the regional ITS architecture.

Project	Description
5 Big Moves #1: Complete Corridors	An integrated, comprehensive vision to provide a variety of travel choices and technology to manage the use of highways, arterials and other assets in real time. Complete Corridors provides a balance of dedicated, safe space for all travelers in the region, including local commuters, through travelers, freight and delivery vehicles and active transportation users who walk, bike, use transit, and utilize Flexible Fleets.

Key features of Complete Corridors include: managed lanes, active transportation and demand management (ATDM), smart infrastructure and connected vehicles, priority for transit, active transportation and shared mobility services, curb management and electric vehicle infrastructure.

Projects that fall within Complete Corridors will be evaluated against SANDAG 2021 Regional Transportation Plan goals and objectives. |
| **5 Big Moves #2: Transit Leap** | Transit Leap could create a complete network of fast, high–capacity, high–frequency transit services that connect major residential areas with employment centers and attractions throughout the San Diego region. Transit Leap services could connect to supporting Flexible Fleets in Mobility Hubs. New high–speed services — covering longer distances with limited stops— may be separated from vehicle traffic with bridges, tunnels, or dedicated lanes. Improvements to existing transit services—such as the Trolley, COASTER, SPRINTER, and Rapid—may include additional rail tracks, more frequent service, dedicated transit lanes, and traffic signal priority to keep transit moving quickly.

Transit Leap will provide practical transit choices that are viable alternatives to driving for most trips along Complete Corridor highways.

Projects that fall within Transit Leap will be evaluated against SANDAG 2021 Regional Transportation Plan goals and objectives. |

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North Central Texas ITS Architecture

Training

Learning Center

North Central Texas Regional ITS Architecture Update Usage Seminar Videos

Usage Seminar - Part 1: Using the Architecture

Usage Seminar - Part 2: Project Consistency with the Architecture

Usage Seminar - Part 3: Architecture Maintenance

North Central Texas Regional ITS Architecture Update Usage Seminar – Part 1

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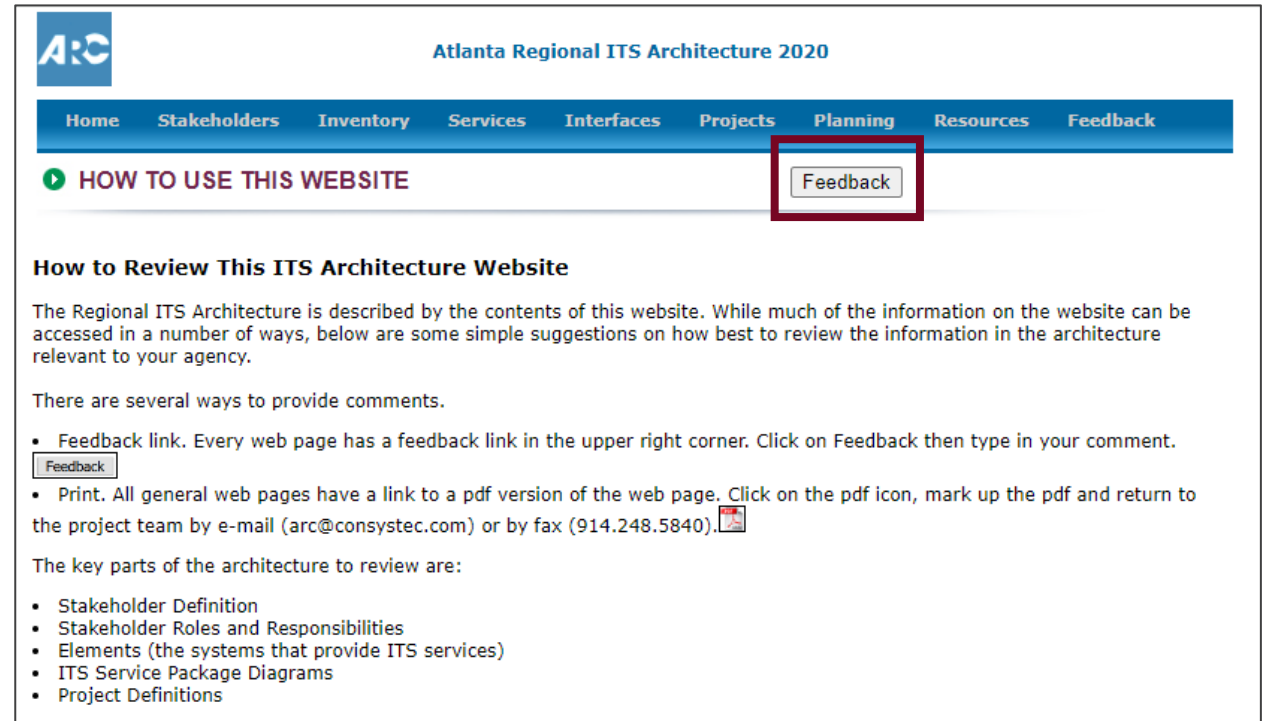
Atlanta Regional ITS Architecture

Use and Feedback

Website includes a "How to Use this Website" page

Website includes a "Feedback" feature on all pages of the website which allows users to email updates or questions

Los Angeles County ITS Architecture

Use and Feedback

How to Use CONNECT-IT page to walk user through use of regional ITS architecture

Explains what the ITS architecture is and resources that are available

Technical Support / Send Updates page

Other - El Paso MPO ITS Architecture

ITS Architecture Performance Metrics Dashboard

1. Stakeholder Involvement
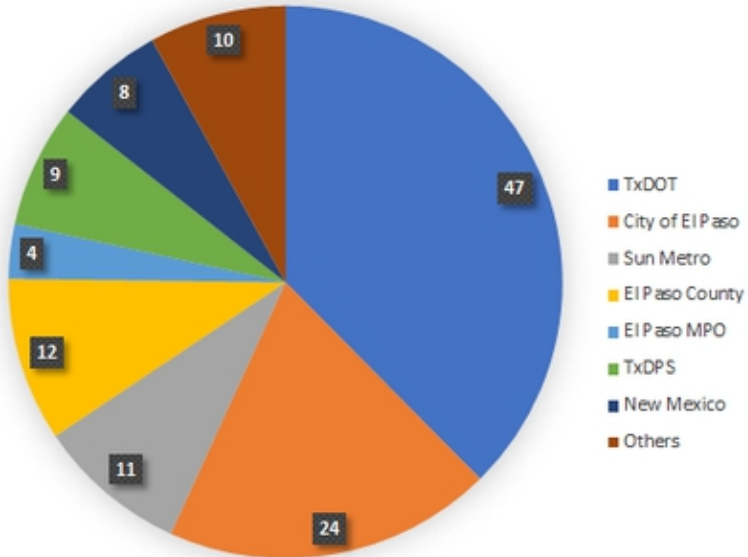
2. Current and Future ITS Service Packages in the Region

3. Number of Transportation Needs Identified by Stakeholders

4. Number of ITS Projects Addressing Stakeholder Needs
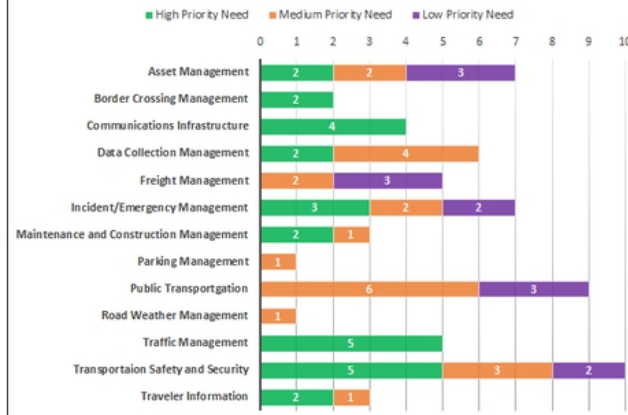
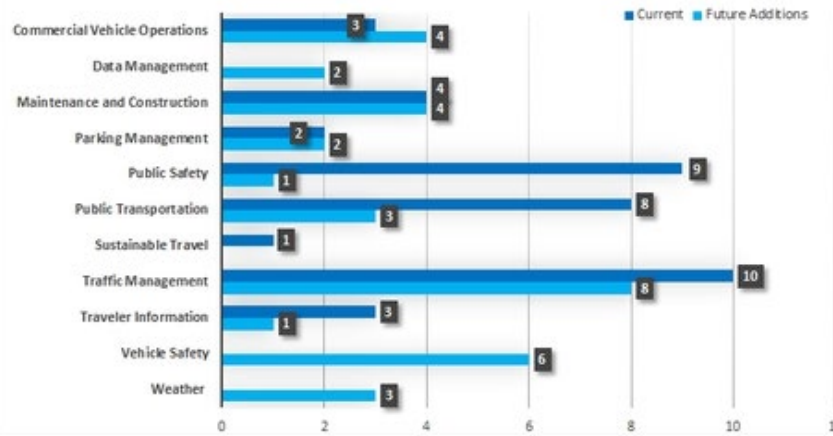5. Total ITS Projects by Implementation Timeline
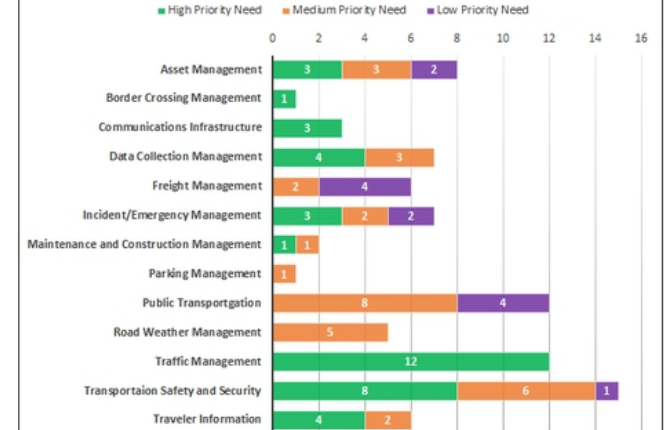
Other - El Paso MPO ITS Architecture
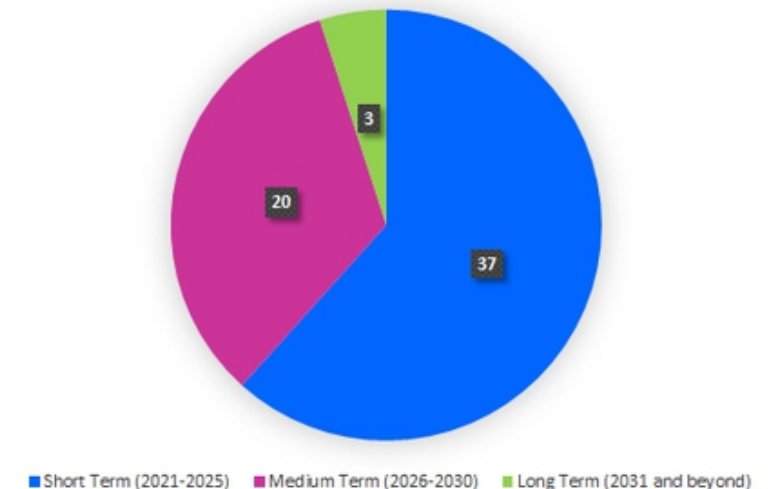
Next Steps

- Complete Tech Memo on ITS Architecture Scan

- Complete Stakeholder Outreach Interviews and Develop Summary Report

- Conduct Communications Scan

Contacts

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Thank You

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