Houston-Galveston Area Council (H-GAC)
Regional ITS Architecture and Website Update

SUBJECT:	H-GAC Current ITS Architecture Review Memorandum
DATE:	May 17, 2024
PREPARED BY:	Kimley-Horn and Associates, Inc.

1 INTRODUCTION

The memorandum documents the review of the of the National ITS Architecture, the Atlanta Regional ITS Architecture, Los Angeles County CONNECT-IT Regional ITS Architecture, and the North Central Texas Council of Government (NCTCOG) Regional ITS Architecture. The purpose of this review was to identify tools and features from these regional ITS architectures that could be incorporated into the H-GAC ITS Architecture Update, enhancing its functionality and capabilities.

To view each architecture's website, please click the links below:

- National ITS Architecture
- Atlanta Regional ITS Architecture
- Los Angeles County CONNECT-IT Regional ITS Architecture
- North Central Texas Regional ITS Architecture

Additionally, the project team scanned several other regional ITS architectures to gather information on additional features they provided, including regional ITS architectures from El Paso and San Diego Association of Governments (SANDAG). The tools and features that were identified for the H-GAC Region to consider implementing in the H-GAC ITS Architecture Update are described in the subsequent sections of this memorandum.

2 STAKEHOLDER OWNED ITS SERVICE PACKAGES

The National ITS Architecture identifies over one hundred different ITS services that ITS can provide within a region. Known as ITS service package, they cover a wide area including such services as Infrastructure-Based Traffic Surveillance, Traffic Signal Control, Traffic Incident Management, and Transit Signal Preemption. The ITS service packages can be identified for general groups (municipal, county, etc.) or called out and customized at an agency level (TxDOT Houston District, City of Houston, City of Sugar Land, etc.) Some regional ITS architectures choose to do both, calling out ITS service packages by name for larger stakeholders (for example cities over 50,000 in population that manage their own traffic signals) while also creating more generic ITS service packages to represent all cities under 50,000 in population.

The three regional ITS architectures that were reviewed as part of this review each took a different approach.

In the Atlanta Region, all cities within their region had customized ITS service packages developed, regardless of population. This means that even cities with populations as low as 6,500 had customized ITS service packages identified and elements mapped to them in the ITS architecture.

In the Los Angeles County CONNECT-IT ITS architecture, ITS service packages were created for Los Angeles County, Los Angeles Department of Transportation (LADOT), and Local Agency (Local Agency represented any city in Los Angeles County other than Los Angeles.) Other than Los Angeles, no other cities had specific ITS service packages created for them.

In the NCTCOG region, all ITS service packages were created to generically represent all stakeholders. So rather than have an ITS service package for Traffic Signal Control created specifically for the TxDOT Dallas District, the City of Dallas, the City of Arlington, etc., there was only a single ITS service package created for Traffic Signal Control. Within that ITS service package, the cities of Dallas, Fort Worth, Plano, and Arlington were called out along with the TxDOT Dallas and TxDOT Fort Worth Districts. No other cities were identified. NCTCOG used this general approach for all ITS service packages.

3 PROJECT FOCUSED

Many regional ITS architectures identify planned and potential future projects that may be deployed in a region. These projects are often tied to specific ITS service packages that stakeholders identify as needed. Some regional ITS architectures attempt to identify all ITS projects that are needed for every agency, while others focus on larger regional projects that require coordination from two or more agencies. Of the three regional ITS architectures reviewed as part of this effort, Los Angeles County was the only architecture that identified specific projects and initiatives within the plan. The Los Angeles County CONNECT-IT ITS Architecture focused on larger regional efforts. The San Diego Regional ITS Architecture, which was reviewed in addition to the initial three architectures identified, used a similar approach as Los Angeles but limited the projects to five significant efforts identified for that region.

In Los Angeles County, 16 regional initiatives were identified. These initiatives include various projects and programs and are categorized by type rather than by name, allowing for similar system features and functionality to be applied to each project type. Los Angeles County provided descriptions, identified lead and associated agencies, and specified ITS service packages for each initiative, as shown in **Figure 1**. Example of regional initiatives include: Integrated Corridor Management, Countywide Signal Priority, Los Angeles County Exchange Network, Metro Express Lanes, and the Transit Access Pass Program. The full list of projects and programs can be found on the Los Angeles County CONNECT-IT ITS Projects page.

Figure 1: Los Angeles County ITS Project

Similarly, the San Diego Regional ITS Architecture also adopted a project-focused approach. The San Diego Region has identified "5 Big Moves" that serve as an overall framework for how anticipated projects will integrate with each other and with existing systems. By focusing on large-scale projects and programs that are important to the region, both Los Angeles and San Diego were able to prioritize and plan for the development and implementation of ITS initiatives that will have a significant impact on their respective areas. The 5 Big Moves include the following: Complete Corridors, Transit Leap, Mobility Hubs, Flexible Fleets, and Next Operating System (OS). Additional detail about each can be found on the SANDAG ITS Architecture's 5 Big Moves page.

4 ITS ARCHITECTURE TRAINING

The North Central Texas Regional ITS Architecture provides users with a learning center shown in **Figure 2**. This learning center serves offers users access to educational materials and tools. One notable feature of the learning center is the inclusion of links to YouTube videos created by the NCTCOG, which serve as step-by-step guides on how to effectively use the architecture, ensure project consistency with the architecture, and maintain the functionality of the ITS architecture. By providing these video resources, the North Central Texas Regional ITS Architecture aims to assist users who may have limited familiarity with ITS or ITS architectures and allow them to learn about the ITS architecture at any time, not just while the architecture was being developed. This approach not only promotes a better understanding of the architecture but also fosters consistency and efficiency in project development and maintenance. Additional information, including the video links, can be found on the NCTCOG's Learning Center page.

Figure 2: North Central Texas ITS Architecture Training

5 USE AND FEEDBACK

The Los Angeles County CONNECT-IT and Atlanta Regional ITS Architectures both prioritize user support by offering dedicated pages that explain how to navigate their respective websites and understand the architecture.

The Atlanta Region provides a simple explanation regarding how to the use the website as shown in **Figure 3**. Feedback from users is also encouraged through a Feedback link located on every page. Additional information can be viewed at the Atlanta Regional ITS Architecture How To Use This Website page.

Figure 3: Los Angeles County "How to Use" Website Page

The Los Angeles County CONNECT-IT Architecture provides users with a detailed walkthrough of the ITS architecture website. This step-by-step guide assists users in familiarizing themselves with the website's layout and features. Additionally, the Los Angeles County Architecture page offers an explanation of what the ITS architecture is, ensuring that users have a solid understanding of its purpose and benefits. The page also provides access to various resources, allowing users to further explore and utilize the ITS architecture effectively. Additional information can be viewed at the How to Use CONNECT-IT page.

The Los Angele County CONNECT-IT site also provides users the ability request or send in information regarding changes to the Regional ITS Architecture. This page is included in **Figure 4**. Changes can include a stakeholder name, revising a data flow, or requesting the addition of an ITS service package. More information can be found at the CONNECT-IT Technical Support/Send Updates page. Los Angeles County has also established a maintenance committee that will oversee changes to ITS projects in the region. This ensures that the ITS architecture remains up to date and reflective of the evolving needs and requirements.

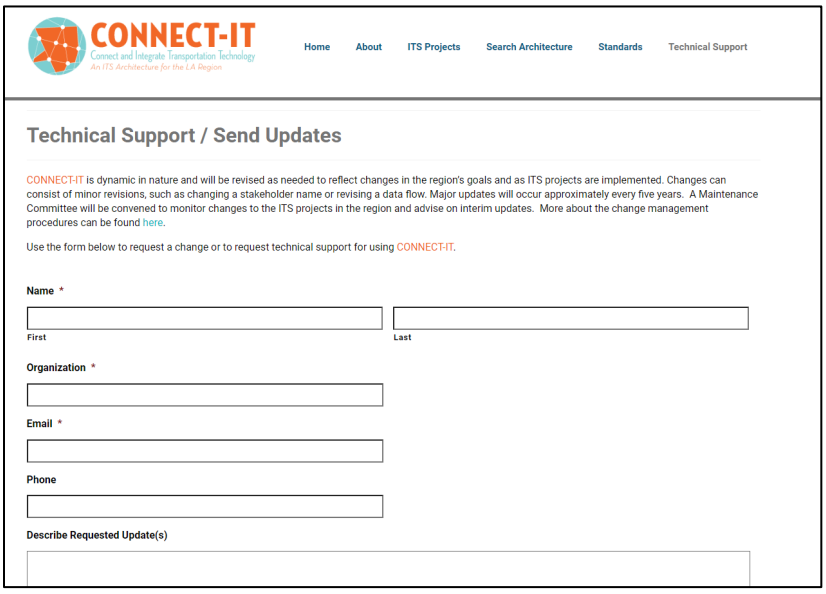

Figure 4: Los Angeles "Technical Support / Send Updates" Website Page

6 PERFORMANCE METRICS DASHBOARD

The El Paso Regional ITS Architecture implemented an ITS architecture performance metrics dashboard, shown in **Figure 5**, a feature not found in other reviewed architectures. This dashboard showcases statistics and graphs related to the number of current and future ITS service packages, the alignment of the ITS architecture with Metropolitan Transportation Plan goals, and stakeholder engagement in ITS planning. By incorporating a performance metrics dashboard into the H-GAC ITS Architecture, the users can access and track different types of information on an annual basis. The full dashboard can be found at the El Paso Regional ITS Architecture Performance Metrics Dashboard.

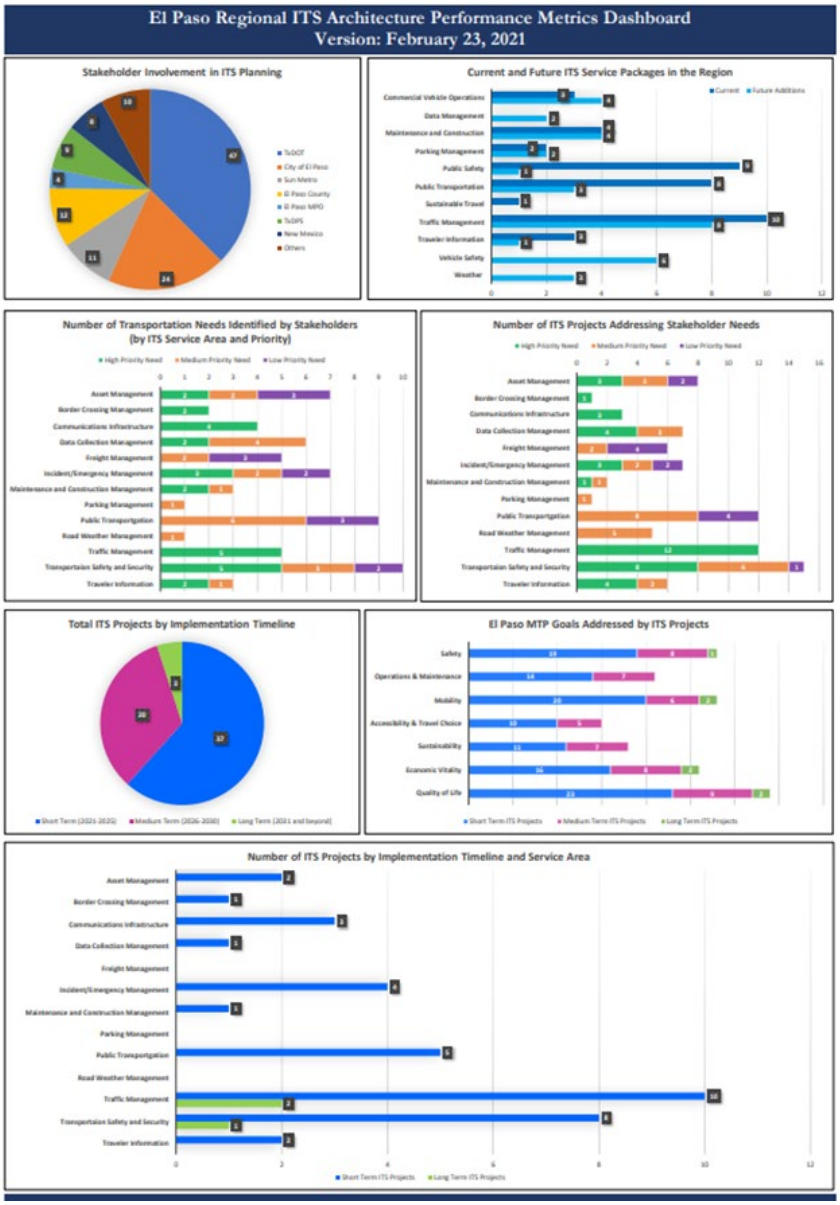

Figure 5: El Paso Regional ITS Architecture Performance Metrics Dashboard

7 TSMO SUBCOMMITTEE MEETING

The project consultant team from Kimley-Horn presented a summary of this architecture review to the TSMO Subcommittee on Thursday May 2, 2024. The current architecture review memo findings will be incorporated further into the H-GAC ITS Architecture and Website update as directed by H-GAC and the TSMO Subcommittee.