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

SUBJECT:	2025 H-GAC ITS Architecture Plan Update - Additions White Paper
DATE:	April 10, 2025
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1 INTRODUCTION

This white paper documents the additions and changes made to the H-GAC ITS Architecture Plan. All additions and changes were presented to the H-GAC TSMO Subcommittee on April 3, 2025.

2 ITS SERVICE PACKAGES

The National ITS Architecture identifies over one hundred different ITS service packages, which cover a wide range of services. Examples include Infrastructure-Based Traffic Surveillance, Traffic Signal Control, Traffic Incident Management, and Transit Signal Preemption. 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 Sugar Land, Houston METRO, 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 smaller stakeholders that have less ITS deployed (for example all cities under 50,000 in population.)

In the 2017 H-GAC ITS Architecture Plan, most ITS service packages were not customized for multiple stakeholders. The exception was TM01 - Network Surveillance and TM03 - Traffic Signal Control, which both had customized versions developed for the following agencies: TxDOT (no distinction between the TxDOT Houston and TxDOT Beaumont Districts), Harris County, City of Houston, Houston METRO, and Local Agency. The 2017 H-GAC ITS Architecture contained 52 different ITS service packages. When accounting for the customized versions called out for different agencies in TM01 and TM03, a total of 61 ITS service packages were included.

The 2025 update of the H-GAC ITS Architecture Plan includes customized ITS service packages for specific agencies within the Region, including customized versions for the following agencies: TxDOT Houston, TxDOT Beaumont, Harris County, City of Houston, Houston METRO, Harris County Transit, Fort Bend County Transit, and the Woodlands Regional Transit Authority. Versions of ITS service packages are also called out for Local Agencies, which represent all cities and counties not specifically called out. In cases where there are unique ITS service packages specific to just one agency, such as HCTRA or Port Houston, versions of an ITS service package may also be called out for just these agencies. The 2025 H-GAC ITS Architecture includes 58 ITS service packages. When accounting for the customized versions called out for all agencies, a total of 199 ITS service packages were included.

The ITS service packages added to the 2025 H-GAC ITS Architecture Plan are shown in **Table 1.**

Table 1: Added ITS Service Packages to the 2025 H-GAC ITS Architecture

Service Area	Added ITS Service Package in the 2025 Version
Commercial Vehicle Operations	CVO05 Commercial Vehicle Parking CVO06 Freight Signal Priority
Data Management	DM02 Performance Monitoring
Maintenance and Construction	MC02 Maintenance and Construction Vehicle Maintenance
Parking Management	PM02 Smart Park and Ride System PM04 Regional Parking Management PM06 Loading Zone Management
Sustainable Travel	ST06 HOV/HOT Lane Management
Traffic Management	TM04 Connected Vehicle Traffic Signal System TM20 Variable Speed Limits TM24 Tunnel Management TM25 Wrong Way Vehicle Detection
Traveler Information and Personal Mobility	TI07 In-Vehicle Signage
Vehicle Safety	VS07 Road Weather Motorist Alert and Warning VS08 Queue Warning VS09 Reduced Speed Zone Warning / Lane Closure VS17 Automated Vehicle Operations

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 a need. 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.

In the 2025 H-GAC ITS Architecture Plan, eight projects and programs are recommended. The projects and programs should be implemented to achieve the desired functionality outlined in the ITS Architecture Plan. Stakeholder input was gathered through a review of existing ITS inventory and deployments, stakeholder interviews, and stakeholder workshops. The regional needs identified in the ITS Architecture Plan, as well as the prioritized list of ITS service packages, also contributed to the recommendations. The following eight projects and programs were recommended for the 2025 H-GAC ITS Architecture Plan:

1. Expand CCTV Camera DMS Coverage on Freeways and Arterials
2. Develop Regional CCTV Camera Video Sharing System
3. Deploy Regional Railroad Crossing Detection and Notification Systems
4. Expand Regional Transit Rider Application
5. Expand Fiber Optic Communication Network
6. Improve Signal Timing on Arterials and Across Jurisdictional Boundaries

7. Automate Operations Capabilities (Includes Data Sharing)
8. Increase Staffing for ITS

4 ITS ARCHITECTURE TRAINING

The 2025 H-GAC ITS Architecture Plan provides users with a series of training videos. These training videos serve as step-by-step guides on what an ITS architecture is, how to effectively use the ITS architecture, ensure project consistency with the ITS architecture, and maintain the functionality of the ITS architecture. By providing these training videos, the H-GAC ITS Architecture Plan aims to assist users who may have limited familiarity with ITS.. This approach promotes a better understanding of the ITS architecture and fosters consistency and efficiency in project development and maintenance. The following training videos were created for the H-GAC ITS Architecture:

1. Introduction to the ITS Architecture and RAD-IT
2. How to Edit Elements, Flows, and ITS Service Packages
3. How to Create a New ITS Service Package
4. How to Duplicate Local Agency ITS Service Packages
5. How to Print ITS Service Package Diagrams

5 INTERACTIVE ITS ARCHITECTURE

The 2025 H-GAC ITS Architecture Plan includes an Interactive ITS Architecture that will be linked on the H-GAC website. The Interactive ITS Architecture includes the full inventory of existing, planned, and future systems, ITS service packages, roles and responsibilities for stakeholders, and associated national standards. **Figure 1** displays the 2025 H-GAC Interactive ITS Architecture.

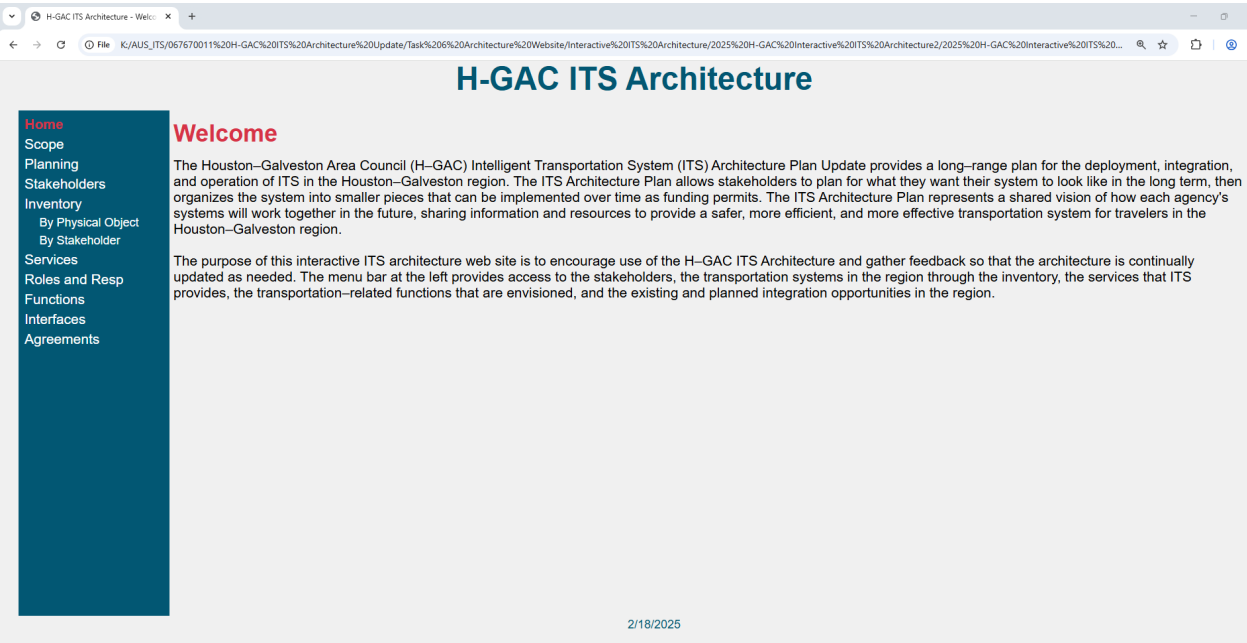

Figure 1: H-GAC Interactive ITS Architecture

6 TSMO SUBCOMMITTEE MEETING

All additions were incorporated into the 2025 H-GAC ITS Architecture Plan. The project consultant team from Kimley-Horn presented a summary of the additions to the H-GAC ITS Architecture Plan to the TSMO Subcommittee on Thursday April 3, 2025.