Operations Task Force
November 4, 2015 at 9:30am
H-GAC – 2nd Floor Conference Room D

Present:
Ugonna Ughanze, Scott Elmer, Jason Vaughn, Jack Whaley, Gerald Wilson, David Fink, Charlie Stevens, Roma Stevens, Brannon Hicks, Tony Voigt, Michael Leech, Chelsea St. Louis, Jeff Kaufman

Minutes Review
Ugonna Ughanze Move/Scott Elmer 2nd
Approved.

Proposed Plan of Action from CMM workshop/Section 940 Compliance
Tony Voigt and Charlie Stevens went over the TTI proposal for adherence to Section 940, including ITS Architecture update, development of Systems Engineering templates, maintenance of operating agreements, and the development of a database of implementations.

- There are concerns being expressed by FHWA about compliance with Section 940 throughout Texas.
- The Houston-Galveston Area's Architecture has been deemed not exactly how an architecture is supposed to look.
- Systems engineering on federally-funded projects is nearly non-existent, and it's a problem throughout the state.
- There was concern expressed about how some of these changes might impact innovation, especially if it stretches the bounds of the ITS Architecture
- There will need to be some level of flexibility with the Architecture to allow for innovation to occur.
- The development of Systems engineering templates could reduce costs for communities for standard projects. Technically, even a standard DMS implementation requires systems engineering. The question is how to meet federal standards without excessive time and cost requirement
- TTI is looking at California's approach with systems engineering, which is based on the level of risk.
- A question came up regarding the use of PL funds for Systems Engineering for large-scale projects since it's more of a planning assessment than an actual engineering document
- Steve will check with Jose to see if Systems Engineering qualifies as Planning

Jeff Kaufman asked the Committee to allow him to move forward with the TTI proposal to address these issues. David Fink Move/Jack Whaley Second; Approved

Other Business
None

Adjourned at 10:50am

Facilitation and Evaluation of an Enhanced TSM&O Clearinghouse
for the Houston-Galveston Area Council (H-GAC)
Scope of Work (draft 1/11/2016)

With the completion of the most recent FHWA Capability Maturity Model (CMM) workshop with stakeholders at Houston TranStar in June 2015, it was very clear that regional partners and operating agencies aim to continue improving and enhance already effective Transportation Systems Management and Operations (TSM&O) practices. Based on observations from the workshop, a review of the resulting CMM materials, and discussions with the FHWA and H-GAC, the following six tasks are recommended to create the region's first TSM&O clearinghouse program. The TSM&O clearinghouse program will facilitate the development of critical processes with the goal of bringing the region into full compliance with FHWA Rule 940 requirements, while also enabling stakeholders to do so in the most efficient, cost-effective manner possible. This program would consist of:

- Creating a roadmap for an appropriate level of capability maturity in the area of TSM&O, enabling H-GAC and stakeholders to set priorities for future investment;
- Transitioning the Regional Intelligent Transportation Systems (ITS) Architecture to a "living" document;
- Developing and assisting in the application of a risk-based systems engineering evaluation and templates to "right-size" systems engineering efforts by project;
- Determining the requirements for, and developing an initial regional TSM&O documentation repository;
- Performing stakeholder/user surveys at regular intervals to modify the CMM priorities and goals; and
- Inventorying regional communications infrastructure and housing that information in a secured electronic format.

Currently, all ITS projects using federal funds are required to complete a systems evaluation process to meet FHWA Rule 940 and the FTA National ITS Architecture Policy (for Federal Funding). In addition to the completion of the CMM workshop, it is understood by regional implementers (through discussion with the Texas Division of FHWA) to expect an increase in compliance efforts on these regulations that require a systems engineering evaluation process to adhere with the current rules. Completing the above program of tasks will not only assist in system capability maturity but build the proper foundation (using local input) to maintain compliance with federal rules and policies.

As part of this effort, documents and procedures generated will be incorporated into an internet-based format that could be handed over to H-GAC for future enhancement and management.

SCOPE OF WORK

Task 1: Regional Capability Maturity Roadmap

A capability maturity roadmap document will be created and will incorporate the recommended actions and desired outcomes developed by the FHWA after the conclusion of the June 4, 2015 CMM workshop. The roadmap document will support a visual roadmap similar to the conceptual roadmap presented in Figure 1. The roadmap will incorporate CMM Dimensions and levels and include those recommended actions and/or outcomes necessary to reach the corresponding level of the CMM. It will outline the steps needed by the regional partners to achieve the desired capability levels as defined by stakeholders. Not all areas should have "optimized" capability – as it is not always feasible to do so (as discussed in the CMM workshop). However, regional partners (via stakeholders) will be asked to define an acceptable level of capability maturity for each of the six areas of CMM coverage.

	Performed	Managed	Integrated	Optimized
Business Processes			PLAN	
Systems & Technology	ACTION			ACTION
Performance Measurement				
Culture			ACTION	ACTION
Organizing and Staffing		POLICY		
Collaboration				

Figure 1. Example Conceptual Capability Maturity Roadmap

Deliverable: Roadmap Technical Memorandum (10 pages) and Graphic.

Support Services: Annual Update to Roadmap document and graphic if needed.

Potential Benefits: The roadmap can help establish strategic priorities for the region, as determined by the level of desired capability maturity. Identifying strategic priorities for capability maturity can also be incorporated into the existing Transportation Improvement Program (TIP) project call scoring system used to fund priority ITS projects.

Task 2: Regional Architecture - "Living" Document Development

The Houston-Galveston Regional ITS Architecture, which has not been formally updated since February 2006, is to undergo a thorough update, utilizing the Turbo Architecture database that TTI has developed. The document/website will be designed to allow for 1) ease of updating, and 2) ease of adherence and will provide a process for agencies to access the database and update it with project-specific details (for systems engineering purposes). The goal of the document/website is two-fold – a) to be in compliance with 940.9, but more so b) to have a resource available for regional implementers that outlines various implementations in the region to hopefully facilitate installation without excessive preliminary research.

As part of this task, TTI will create a Change Management Process (see Figure 2) to facilitate official changes to the architecture.

Figure 2. Change Management Process

It is expected that a majority of the architecture is static in nature and would work well in a web environment.

Primary Deliverables:

- TTI will complete an architecture document/website update along with turbo architecture database. The turbo file will be provided as a password-protected download but is not expected to be available as a real-time interface via the Internet.
- TTI will develop a written Change Management Process to facilitate changes to the architecture.

Support Services: TTI will work with the H-GAC Operations Task Force chairman to place a standing agenda item calling for potential changes to the architecture document and turbo architecture database. TTI will update the static portions of the web-based architecture document (contact information, etc.) as needed during the period of performance of this scope of work.

Potential Benefits: The creation of a web-based "Living" architecture will cut out the typical redundancies performed with standard paper architecture documents - reducing costs to H-GAC. The development of the "Living" architecture will also ensure the region is always in compliance in this area.

Task 3: Risk Based Systems Engineering Evaluation Process and Development of Standard Templates

Based on the recommendations of the FHWA Texas Division, a review of the Caltrans (California Department of Transportation) systems evaluation process will be completed as a point of departure. TTI will then present findings from this review for discussion through the standing H-GAC operations committee to aid in the creation of a risk based systems engineering evaluation process that best fits H-GAC stakeholders and regional ITS implementing agencies. It is expected that a systems engineering evaluation workshop will be required to facilitate and determine not only the risk-based process (to

determine level of systems engineering effort required for a particular project) but to establish those systems engineering templates that are most useful to regional implementers and cover the most common projects. After this review and workshop, a set of systems engineering templates will be developed for regional implementers and the most common ITS applications. This will: a) keep area implementers in compliance with 940.11, but more importantly, b) allow for future implementers to take advantage of the research and documentation already available and conducted to reduce time and associated costs in project development.

Primary Deliverables:

- Short presentation to the H-GAC Operations Committee on the Caltrans Process.
- Systems evaluation template workshop with regional implementers.
- Risk based systems evaluation process and standard templates and examples; develop guidance document/website.
- Maintain log of successful systems evaluation applications.

Support Services: TTI will work with H-GAC to facilitate the use of the developed templates, guidance and example projects by implementing agencies.

Potential Benefits: It is expected that with the development of the systems engineering evaluation process will create opportunities for local engineering consultants and reduce the typical costs of systems evaluation for exempt and low risk systems (to regional implementers as well as H-GAC). This risk based process developed specifically for our region will not only allow H-GAC and partners to establish their own process but maintain compliance needed for federal funding approvals for ITS projects.

Task 4: Regional TSM&O Documentation Database

A shared database and repository of TSM&O documentation, including shared asset agreements, operational guidance, systems engineering documentation, succession plans, and other related documents for the region will be developed. This database would be updated on a quarterly basis as facilitated through the H-GAC user group meetings. In addition to the creation of the data base (and when appropriate), TTI will conduct compliance reviews to ensure that regional implementers are complaint with 940.9 per federal funding regulations.

Primary Deliverable(s):

1. Create a secure documentation database and information repository in web form for easy access by regional implementers and updates by H-GAC or others.
2. Develop a 940 compliance worksheet and complete compliance reviews (when appropriate).

Support Services: TTI will work with the H-GAC Operations Task Force chairman to place a standing agenda item calling for potential additions/revisions to the documentation database.

Potential Benefits: This task will provide a single point resource for regional implementers of all regional documents. These documents can be used to assist with the planning and execution of ongoing and future projects. Access to this information also has the potential to reduce costs by idea sharing, preventing redundant efforts and establishing an understanding for system connections at agency boundaries.

Task 5: Formal User Needs/Priorities Survey Schedule

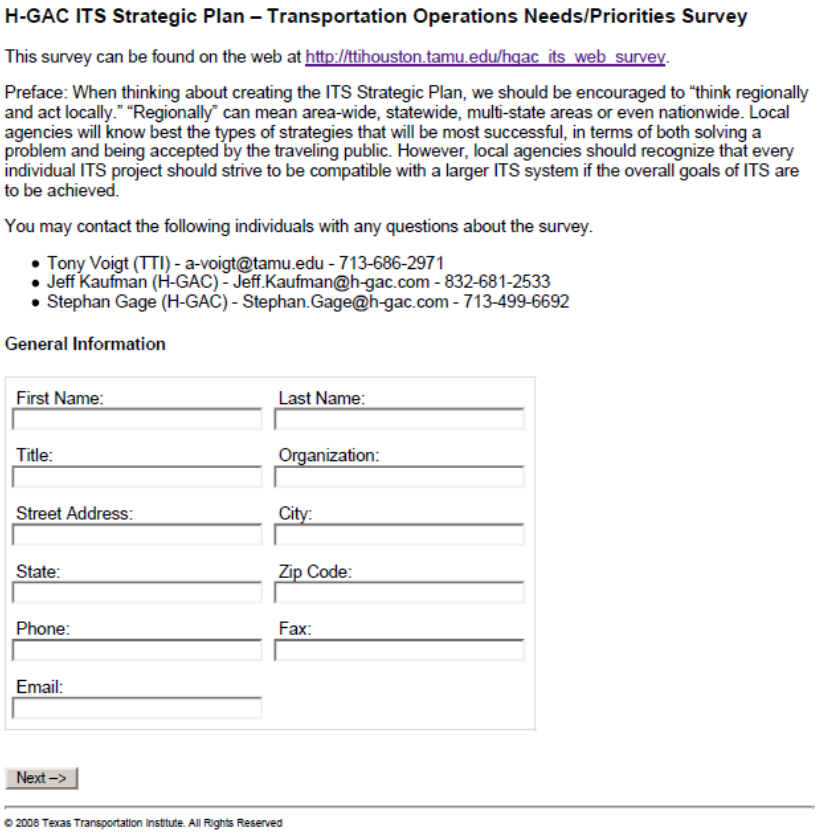
TTI will conduct a new user survey on regional TSM&O activities and priorities, with follow-up user surveys to be conducted on a two-year schedule. This will provide input to the development and update of the CMM (Task 1).

Primary Deliverables:

- Revise the 2008 web survey (see Figure 3).
- Conduct and evaluate responses to updated web survey and prepare technical memorandum detailing findings.

Support Services: Revise, conduct survey and prepare technical memorandum on a two year basis.

Potential Benefits: The main benefit of a user survey is current understanding of regional implementers' needs and priorities. The survey will also work with both the ITS architecture and TSM&O Roadmap to help identify priority projects for funding.



H-GAC ITS Strategic Plan – Transportation Operations Needs/Priorities Survey

This survey can be found on the web at http://ttihouston.tamu.edu/hgac_its_web_survey.

Preface: When thinking about creating the ITS Strategic Plan, we should be encouraged to "think regionally and act locally." "Regionally" can mean area-wide, statewide, multi-state areas or even nationwide. Local agencies will know best the types of strategies that will be most successful, in terms of both solving a problem and being accepted by the traveling public. However, local agencies should recognize that every individual ITS project should strive to be compatible with a larger ITS system if the overall goals of ITS are to be achieved.

You may contact the following individuals with any questions about the survey.

- Tony Voigt (TTI) - a-voigt@tamu.edu - 713-686-2971
- Jeff Kaufman (H-GAC) - Jeff.Kaufman@h-gac.com - 832-681-2533
- Stephan Gage (H-GAC) - Stephan.Gage@h-gac.com - 713-499-6692

General Information

First Name: Last Name:

Title: Organization:

Street Address: City:

State: Zip Code:

Phone: Fax:

Email:

Next –>

Figure 3. 2008 Transportation Operations Needs/Priorities Web Survey Landing Page

Task 6: Communications Inventory

TTI will perform an inventory of the region's ITS communications capacity to determine available infrastructure, regional and local needs, and opportunities for enhancing redundancy. This effort can also be used to identify new fiber-sharing agreements or other operating agreements.

Primary Deliverable: Password-protected, GIS-based communications inventory map with attributes.

Support Services: TTI will work with the H-GAC Operations Task Force chairman to place a standing agenda item calling for potential additions/revisions to the communications map to regional stakeholders.

Potential Benefits: This development of a communication map will allow for the identification of communication priorities in the region. Once identified these priorities will be included on the TSM&O Roadmap and established as potential projects for future funding.

SCHEDULE

It is anticipated that all six tasks will complement each other and although independent, some tasks will require the completion of other tasks for maximum impact. The task order as presented is not done so in a chronological fashion and it is expected that many tasks will be underway at the same time. Work efforts are divided into 'Primary Deliverable(s)' and 'Support Services'. 'Primary Deliverable(s)' will include the initial effort, while 'Support Service' will provide ongoing support of the primary deliverable. An example of this would include the ITS Turbo Architecture: the primary deliverable being an updated turbo architecture file, while support services will consist of updating the file based on the change management process.

TTI anticipates that all 'Primary Work' will be complete within 18 months of contract execution, with ongoing 'Support Services' throughout the duration of the three year contract.

Due to its involvement in the region, not just as a research arm but also as implementers to some degree, it is recommended that TTI play the lead in coordinating these activities. This will require far less of a learning curve because TTI has played a role in the development of many of the region's systems.

2015 TIP CALL FOR PROJECTS

ITS/Operations Projects

PLANNING FACTORS

The following questions are to be answered YES or NO with an explanation of how the proposed system complies with the question.

Congestion/Safety			
30			**Incident/Event Management**
	5		• Will the system be an integral part to an incident management system?
	5		• Is the system on the National Highway System or other component of H-GAC's congestion mitigation process (CMP) network?
	5		• Will the system provide notification of a potential problem to facility users? (e.g. dynamic message signs, mobile device alerts, etc.)
	5		• Will the system give priority to emergency vehicles?
	5		Will the system give priority to transit or high-occupancy vehicles?
	5		• Will the system utilize dynamic management of the facility to enhance travel time reliability? (e.g. ramp metering, variable speed limits, variable pricing, etc.)
Coordination			
40			**System Migration/Expandability**
	10		• Can the system expand the regional communications network?
	5		• Will the system NOT utilize proprietary systems that will not integrate with other systems in the region?
	15		**Integration and Information Sharing**
		5	• Will the system tie into a centralized operations center?
		10	• Will the system tie into another agency's systems to allow for the sharing of data?
		15	• Will the system allow for potential control by another agency in the event of a primary agency's loss of system control?
	5		• Will the system collect and provide data available for traveler information access?
	5		• Will the system allow for collection of data to address performance measures?
Asset Mgmt/Efficient Operations			
30			**Continuity of Operations**
	10		• Will the proposed system enhance continuity of operations in the event of a disruption?
	5		• Will the system allow for interagency redundancy?
			System Lifecycle/Maintenance Issues
	screen		• Is the projected lifespan of the system being installed five (5) years or greater?
	10		• Do you have a funded operations and routine maintenance program in place? (please provide a 5-year budget as described in the financial plan worksheet)
	5		• Does the project improve the efficiency of operations/maintenance expenses? (e.g. real-time system health/equipment condition, malfunction detection/diagnosis, etc.)