

ST. LOUIS REGIONAL ITS ARCHITECTURE USE AND MAINTENANCE PLAN

Submitted to

East-West Gateway Council of Governments

Submitted by



In association with



May 18, 2015



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1. Architecture Use

The St. Louis Regional Intelligent Transportation System (ITS) Architecture is a valuable tool for Stakeholders to use in developing consistent, interoperable and effective ITS. The success of the St. Louis Regional ITS Architecture is dependent upon its proper use. This Plan provides a strategy for both the use and maintenance of the Regional ITS Architecture.

There are three key use cases for the Regional ITS Architecture:

- Planning The Architecture should be used to assist in the traditional transportation planning process for all St. Louis region stakeholders. The planning process defines projects that include ITS elements. The Architecture can be used to determine the sequence of ITS deployment and provide high-level descriptions that complement the Region's other transportation planning efforts, such as updates to the Connected 2045 Metropolitan Transportation Plan (MTP), local agency ITS deployment plans and the 2013 Congestion Management Plan.
- Design The Architecture should be followed during the design of ITS projects in order to ensure that the ITS elements will be interoperable and able to communicate with other systems in the region. In addition, the Architecture can be used in design to verify that the desired functions will be provided by the project's ITS elements.
- 3. **Implementation** During implementation, the Architecture can provide information to support the procurement and testing of ITS. These include the functional requirements that define what the ITS should do, and the information exchange standards, which define open, non-proprietary protocols and formats for data exchange with other systems.

To help maximize the Architecture's value for the Region, this document provides a strategy for how the St. Louis Regional ITS Architecture will be maintained to support those processes in the future.

1.1 Architecture Use in Planning

The goal of the regional transportation planning process is to make informed decisions on the investment of public funds for regional transportation systems and services. The Regional ITS Architecture should be an evolving document that serves as the authoritative resource for the region's ITS. The Architecture provides a high-level summary of all existing and planned ITS in the region. It should be maintained and updated alongside the MTP and CMP in order to stay consistent with them.

The ITS Architecture should also be readily available to all agencies participating in regional planning so they may reference it while considering how to address regional transportation needs, and how to incorporate ITS into transportation projects. If all regional partners use the same document, deployments can occur in an economical and efficient manner according to funding, regional capabilities, technology, and other regional priorities.

Use of the Architecture in planning requires that stakeholders are aware of its use and consult the document during planning. To that extent, the St. Louis Region should incorporate a review of the Architecture into the project funding process.





Section 3 of this Plan provides step-by-step instruction on how the region's stakeholders should use the Architecture to verify their project planning and design is consistent with its elements.

1.2 Architecture Use in Design

The St. Louis Regional ITS Architecture is a key element in the systems engineering process¹ that is required for ITS project development using federal funds. The Architecture represents the left-hand portion of the Systems Engineering Vee diagram, as shown in **Figure 1**. The Architecture provides a high-level project idea and system functionality that leads into more detailed project-specific processes, such as a project's Concept of Operation and detailed system requirements.



Figure 1: Systems Engineering Vee Diagram

The St. Louis Regional ITS Architecture provides a framework for multiple ITS deployments to be developed, deployed and operated in a consistent manner. It also defines high-level requirements for each specific project. Because Stakeholder consensus is a critical part of Regional ITS Architecture development, the Architecture serves as a source for defining the Region's projects at a high level that has been agreed upon by the Stakeholders.

In the design phase of project development, the Regional ITS Architecture can be used as a valuable resource to extract various outputs including:

- Project Stakeholders and required agreements.
- Operational concept.
- User services and functions.

Project Stakeholders and Required Agreements

¹ <u>http://ops.fhwa.dot.gov/int_its_deployment/sys_eng.htm</u>





Each project in the Architecture identifies the Stakeholders who will participate. The Architecture also identifies the types of agreements that each project will require among the Stakeholders. The agreements include those for planning, funding and operating ITS.

Operational Concept

The Architecture also defines the ITS operational concept, or Stakeholder roles and responsibilities. These roles and responsibilities may serve as the basis for agreements to ensure that each Stakeholder understands their role and what is expected for the project to succeed. The roles and responsibilities can be also used by the Stakeholders during the development of a Concept of Operations to identify the needed technical and staffing resources to successfully deploy, operate and maintain ITS.

ITS Services and Functions

The ITS Services and functional requirements for each project in the Regional ITS Architecture can be used as the basis for developing detailed project system requirements. This process builds detail specific to the Stakeholders based upon the Architecture. By using the Architecture as the basis for requirements, the project will be consistent with both the Regional and National ITS Architectures.

It is recommended that Stakeholders are aware of, and require their project consultants and contractors to design projects consistent with the St. Louis Regional ITS Architecture. Where project design deviates from the Architecture, the Stakeholder should identify the changes through the process defined in this Plan.

1.3 Architecture Use in Implementation

The St. Louis Regional ITS Architecture defines subsystems and functionality that comprise the Region's existing and planned ITS. The Architecture also defines the information flows that connect subsystems into integrated systems. Equipment packages break the subsystems into components that can be procured either independently or in groups as part of a project implementation.

Equipment packages are the most detailed elements of the physical architecture and are tied to specific service packages. They provide a common means to understand ITS and are used to derive the functional requirements.

The functional requirements are valuable for helping regional agencies define the functionality they desire from ITS. As previously discussed, functional requirements also provide a basis for developing more detailed project system requirements. These may be used in the procurement process to describe to vendors what capabilities are expected of new ITS.

By definition, the functional requirements and the system requirements derived from them are testable, and can be used as the basis for acceptance testing ITS. The requirements can be used to develop testing strategies to verify that implemented systems deliver the functionality desired by the Stakeholders.





Once a project is included in the St. Louis Regional ITS Architecture, there are many reports and diagrams that can be generated from Turbo Architecture that are helpful in the procurement process. They include:

- Interconnect and information flow diagrams that describe the expected communications for new ITS.
- Standards reports that identify the availability of national standards for the information flows, allowing Stakeholders to procure devices and systems that will be interoperable.
- Inventory reports that define the status and ownership of each subsystem in a project.





2. St. Louis Regional ITS Architecture Maintenance

The St. Louis Regional ITS Architecture is a living document and will modified as the Region's plans and priorities change, ITS projects are implemented, and the Region's ITS needs and services evolve. The Architecture was developed with a ten-year time horizon, as reflected by the project time frames:

- near- (zero to three years).
- medium- (three to five years).
- long-term (five to ten years).

The goal of maintaining the Architecture is to keep the St. Louis Regional ITS Architecture accurate, accessible and easy to use for ITS planning, design and implementation. If the Architecture's information is not consistent with the MTP, CMP and other Regional transportation plans, it is less likely to be used by the Region's Stakeholders.

The key aspects of the Architecture maintenance process are:

- Architecture ownership
- Maintenance responsibility and staffing
- Maintenance skills and training
- Maintenance elements
- Maintenance schedule
- Identifying needed Architecture changes
- Change Management Process

2.1 Ownership of the Architecture

The Architecture should be accessible to all Stakeholders in the Region. All Stakeholders should also be able to suggest potential changes to the Architecture. However, it is critical for the sake of consistency that the Architecture has only one entity responsible for ownership and for physically maintaining it.

The East-West Gateway Council of Governments (EWG) owns the previous St. Louis Regional ITS Architecture from 2005. EWG has also led this update to the Architecture. In addition, the EWG has an existing relationship with virtually all of the region's transportation Stakeholders in both Illinois and Missouri. It is recommended that EWG continue to own the Regional ITS Architecture and be responsible for its maintenance.

As owner, EWG's responsibility will be to follow this Maintenance Plan to ensure the Architecture remains current and accurately reflects the ITS activities of the region's Stakeholders. Ownership will require a commitment by EWG to develop Architecture maintenance skills through training, and to work with the region's Stakeholders to identify and enact updates to the Architecture.





Use and Maintenance Plan

2.2 Responsibility for Maintaining the Regional ITS Architecture

As the owner of the St. Louis Regional ITS Architecture, EWG shall be responsible for its maintenance. This section discusses EWG's role in leading the maintenance activities, and the level of effort required for tEWG and the Stakeholders.

2.2.1 Leadership

EWG will be responsible for leading the Architecture maintenance process in the region. The leadership responsibilities will be:

- To have an appropriate understanding of the use and maintenance of ITS Architecture.
- To have practical skills using the <u>Turbo Architecture software application</u>.
- To provide local ITS Architecture expertise.
- To facilitate and lead Maintenance Team meetings.
- To document all change requests and the results.
- To make physical changes to the St. Louis Regional ITS Architecture using Turbo Architecture.

The leadership role does not require a full-time position. For the St. Louis Region, it is estimated to require approximately 60 to 80 hours per year for meetings and to address potential Architecture changes. It should be noted, however, that the required effort may be higher in the first year as staff develops expertise to maintain the Architecture.

EWG will identify and train at least one, but preferably two, qualified individuals from its staff to gain the knowledge and technical skills to maintain the Regional ITS Architecture. Training two staff members is preferable to help prevent the region from losing Architecture expertise if one employee leaves the agency.

An alternative approach to using EWG staff is to hire a consultant that already possesses ITS Architecture expertise to maintain the St. Louis Regional ITS Architecture. The consultant should have an appropriate knowledge of the Region and its Stakeholders, and proven expertise with Architecture development and maintenance. It is generally preferable for the Architecture owner to perform the maintenance. However, this option may be considered in the future if maintaining the Architecture in-house is not a viable option for EWG.

2.2.2 Maintenance Team

EWG will assemble and work with a group of Regional Stakeholders for the ongoing maintenance. Changes can arise from many sources in the Region, and it is possible that some may come from sources outside the technical expertise of the Region's Stakeholders. For that reason, a group of the Region's transportation professionals who represent a range of areas and technological expertise will be involved in the Architecture maintenance. The St. Louis Regional ITS Architecture Maintenance Team should have members who represent, at a minimum:





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- East-West Gateway Council of Governments
- Illinois Department of Transportation
- Metro Transit
- Missouri Department of Transportation
- St. Charles County
- City of St. Louis
- St. Louis County

The Maintenance Team members do not need to be able to physically maintain the Architecture, but they should be knowledgeable about the Architecture and its importance.

The responsibility of the Maintenance Team will be to identify changes in the Region in their areas of expertise, and to make decisions by consensus with input from other Regional Stakeholders on how those changes should be reflected in the Architecture.

The Maintenance Team may only need to meet once a year while exchanging e-mails or holding conference calls more frequently. At the discretion of EWG, meetings may occur more often during periods of higher ITS activity, such as during major ITS project activities.

2.3 Maintenance Skills and Training

As owner and maintainer of the St. Louis Regional ITS Architecture, EWG staff will complete basic architecture training. The training will provide the skills to understand how to use the Architecture and how to maintain it within the Turbo Architecture software tool.

This training can be done in person or via the web through the United States Department of Transportation (U.S. DOT). More information about training is available at the <u>National ITS</u> <u>Architecture web site</u>. Specifically, the following two online courses are available to staff of regional partner agencies at any time:

- <u>Turbo Training</u> provides a hands-on experience using the Turbo software. Participants will work with simulated examples and practice exercises to create, maintain, and use regional and project ITS architectures.
- <u>Use and Maintenance Training</u> prepares ITS professionals to effectively use and maintain their regional ITS architecture.

EWG staff should also be knowledgeable in <u>Systems Engineering for ITS</u>. EWG staff should also keep current with the status and changes that occur to the National ITS Architecture in order to ensure the Regional ITS Architecture remains consistent with national changes.

It is noted that the emerging USDOT Connected Vehicle Reference Implementation Architecture (CVRIA), which derives several functions from the National ITS Architecture, will in turn lead to expansion of the National Architecture. This expansion will entail further emphasis on wireless communications and additional data exchange between vehicles and the roadside as well as with





other vehicles and with information service providers, operations centers, etc. It will be important for EWG as well as other stakeholders to learn more about CVRIA, and also how such activities may build upon the Regional ITS Architecture. As Connected Vehicle activities expand on a national level, the next iteration of the Regional ITS Architecture will likely incorporate such functions.

2.4 Elements of the Architecture to Maintain

The elements of the Regional ITS Architecture to be maintained are referred to as the "baseline" Architecture. This section describes the baseline.

Description of Region – This description includes the geographic scope, functional scope and timeframe. Geographic scope defines the boundaries that define what ITS elements are in the region, although additional ITS elements outside the region may be necessary to describe if they communicate ITS information to elements inside the region. Functional scope defines the services that are included in a Regional ITS Architecture. Architecture timeframe is the duration (in years) into the future that the Regional ITS Architecture has planned for.

List of Stakeholders – Stakeholders are critical to the definition of the Architecture. Within a region, the Stakeholders may consolidate or separate into multiple distinct Stakeholders. Such changes should be reflected in the Architecture. In addition, Stakeholders that have not been engaged in previous Architecture efforts might be approached through outreach to ensure that the Regional ITS Architecture represents their ITS needs.

Operational Concept – It is crucial that the operational concept (which is represented as roles and responsibilities) in the Regional ITS Architecture accurately represent the consensus vision of how the Stakeholders will operate ITS for the benefit of surface transportation users. The Operational Concept should be reviewed and, if necessary, changed to represent the deployed ITS and its impact on Stakeholders' operations.

ITS Inventory – Changes in Stakeholders as well as the Operational Concept may impact the inventory. Specifically, ownership of inventory may change, and as a Stakeholder's role changes, so may the specific functions of an ITS device. Furthermore, recent implementation of ITS elements may change their individual status (e.g. from planned to existing).

<u>List of Agreements</u> – One of the most valuable benefits of a Regional ITS Architecture is identifying where information crosses agency boundaries. Information sharing may indicate a need for interagency agreements. An update to the list of agreements can follow an update to the Operational Concepts and/or interfaces between elements.

<u>Interfaces between Elements (interconnects and information flows)</u> – Interfaces between elements describe how various ITS elements are or will be integrated over the timeframe of the Architecture. These details are contained in the Turbo database. They are a fundamental part of the Architecture baseline, and one that will likely see the greatest amount of change during the maintenance process.





<u>Functional Requirements</u> – High-level functions are allocated to ITS elements as part of the Regional ITS Architecture. These can serve as a starting point for the functional definition of projects that map to portions of the Regional ITS Architecture. Functional requirements may need to be updated when projects change status, scope, or when existing systems are interfaced with new systems.

<u>Applicable ITS Standards</u> – The selection of standards depends on the information exchange requirements. The maintenance process should consider how ITS standards may have evolved and matured since the last update, and consider how any change in the national standards development process may impact previous regional standards choices (especially where competing standards exist). For example, if eXtensible Markup Language (XML) based Center-to-Center standards reach a high level of maturity, reliability and cost-effectiveness, then a regional standards technology decision may be made to transition away from another standard to an XML-based one.

Project Sequencing – While project sequencing is partially determined by functional dependencies (e.g. "surveillance" is a precursor to "traffic management"), the reality is that project sequences are often the result of local policy decisions. Project sequences should be reviewed to make sure that they are in line with current policy decisions. Furthermore, policy makers should be informed of the sequences, and their input should be sought to ensure the project sequencing is in line with their expectations.

2.5 Maintenance Schedule

EWG will accept and document proposed changes to the Architecture submitted through discussion and review of other Regional plans. Changes may be proposed by any Stakeholder at any time during the year. TEWG will document each change proposal it receives as described later in this Maintenance Plan.

At the discretion of EWG, very minor changes, such as to stakeholder descriptions or names, or those that impact only a single project may be made at the time they are identified. However, changes that impact more than one stakeholder, multiple projects or introduce new elements and services, should be reviewed by the Maintenance Team.

As previously discussed, suggested changes to the Architecture may only need to be reviewed by the Maintenance Team once a year to determine whether to incorporate them into the Architecture. Depending upon ITS activity in the Region, the Architecture can be modified more frequently than once a year at the discretion of EWG.

The Regional ITS Architecture will be referenced in the MTP and CMP. EWG will provide further integration of the Architecture into the MTP as part of future updates. As the MTP and CMP undergo formal updates on regular cycles, the Architecture should undergo simultaneous review and major modifications. This effort should include reviewing every aspect of the Architecture and working with the Stakeholders to reprioritize the region's needs. This should be a natural result of the Architecture





being mainstreamed into the regional planning process and ensures that the Architecture continues to accurately represent the region.

2.6 Identifying Needed Architecture Changes

The St. Louis Regional ITS Architecture has been created as a consensus view of the ITS elements currently implemented and the systems planned for the future. The Architecture needs to be updated to reflect changes resulting from project implementation or resulting from the planning process itself. There are many actions that may cause a need to update the Architecture. They include:

<u>Changes in Project Definition</u> – When formally defined during procurement and deployment, a project may add, subtract or modify elements, interfaces, or information flows from the Architecture. Because the Architecture is meant to describe not only ITS planned for the region, but also the current ITS implementations, it should be updated to correctly reflect projects as they are deployed.

<u>Changes Resulting from Project Addition/Deletion</u> – Occasionally a project will be added or deleted during the planning process. When this occurs, the aspects of the Architecture associated with the project must correspond. Because the Regional ITS Architecture is technology neutral, the changes will refer to changes in data flows, functional systems and interoperability. Changes will not be required if the technology to achieve a function changes because the Regional ITS Architecture is technology-neutral.

<u>Changes in Project Status</u> – As projects are deployed, the status of the Architecture elements, services, requirements, roles and responsibilities and information flows that are part of the project must be changed from planned to existing. Elements, services, and flows are considered to change to "existing" status when they are substantially complete in that they have been installed, tested and are being used.

<u>Changes in Project Sequencing</u> – Due to funding constraints, technological changes and other considerations, a project planned in the region may be delayed or accelerated. Such changes need to be reflected in the Architecture.

<u>Stakeholder Changes</u> – Stakeholder additions, deletions and changes will need to be documented in the Architecture, along with any ITS inventory associated with the changing Stakeholders. A change may be as minor as a Stakeholder changing its organization name.

<u>Changes in Regional Needs</u> - Over time, the needs in the region can change and the corresponding aspects of the St. Louis Regional ITS Architecture will have to be updated. While the Architecture has been developed with input from many ITS Stakeholders in the region, not all identified Stakeholders participated in its development. As ITS deployment increases and benefits of integration are realized, additional Stakeholders may become interested in ITS, and the Architecture should be updated to reflect their place in the regional view of ITS.





<u>Changes in Other Architectures</u> – The St. Louis Regional ITS Architecture covers its Region and interfaces to elements in other architectures in Illinois and Missouri. Changes in these other architectures may necessitate changes in the St. Louis Regional ITS Architecture to maintain consistency where the two architectures may overlap.

Additionally, the National ITS Architecture itself is a living resource of information. In order to keep a 20-year horizon on the National ITS Architecture, FHWA updates it to refine existing services or add new user services. The St. Louis Regional ITS Architecture has been developed using Version 7 of the National ITS Architecture, however, there may be a Version 8 within this Architecture's lifespan that includes significant new functionality. Each revision may add new ITS Services that may be applicable to the region.

With any new user service there is the potential for new subsystems, terminators, interconnects, flows, and equipment packages. It is recommended that the Maintenance Team reviews changes in the National ITS Architecture during major updates, and determines how national changes may affect the St. Louis Regional ITS Architecture.

2.7 Change Management Process

This section recommends a process for maintaining the St. Louis Regional ITS Architecture. The process described below and illustrated graphically in **Figure 2** is based upon the more general discipline of Configuration Management. The figure illustrates a step-by-step description of how Architecture changes are identified, reviewed and implemented.









As previously discussed, EWG will maintain the Regional ITS Architecture with the support of a Maintenance Team. Once the Maintenance Team has been established, the following process can be used to update the Architecture.

<u>Identify</u> – Any of the region's Stakeholders can identify a change in the Architecture and submit a request to EWG. In turn, EWG can share the information with the Maintenance Team for review and evaluation. A simple change request form similar to the one in **Appendix A** will be available to Stakeholders through the EWG web site.

In addition, an Architecture Consistency Statement should be required from Stakeholders planning and deploying ITS in the Region. EWG will review these Statements to identify any deviations and report them to the Maintenance Team via a change request form.

Once received, the change request or Consistency Statement should be maintained in a change log (or change database) that would track each potential change with the following additional fields of information:

- Change number (a unique identifier)
- Change type (minor or significant)
- Part of baseline affected (may be check boxes for document, database, web site, and not known)
- Disposition comment
- Disposition date
- Change disposition (accepted, rejected, deferred)

Evaluate – Each significant change request needs to be evaluated to determine what impact it has upon the Architecture baseline. If the request has an impact on other Stakeholders, EWG will contact the affected entities to confirm their agreement with the modification. If the issue warrants, a Stakeholders meeting or teleconference to discuss the modification may be held. In the case of a full baseline update, the change evaluation happens through Stakeholder consensus as part of the overall Architecture update.

<u>Approval</u> – The next step is for EWG or the Maintenance Team to approve, defer, or reject the change request. This can be handled through email, conference call and/or through periodic face-to-face meetings. The method of approval may be dependent upon the complexity of the proposed change(s). If a change request is rejected or deferred, the requester will be notified with an explanation. In all cases, the result of the approval step will be communicated back to the requester.

<u>Update Baseline</u> – This activity involves updating the St. Louis Regional ITS Architecture Turbo database and documentation by EWG staff. This requires the skill and expertise described in the Maintenance Skills and Training section.

<u>Notify Stakeholders</u> – The final part of the maintenance process is to notify Stakeholders of the changes or updates to the Architecture. This can be accomplished by sending an email notification to the Stakeholder list that a change has occurred and how to access the information on the website.





If there are no change requests between Maintenance Team meetings, and no other issues to discuss, the Team may decide to postpone the meeting.

3. ITS Project Consistency

This section describes a strategy to ensure that the Region's ITS projects are consistent with the St. Louis Regional ITS Architecture. Project consistency is required by the Federal Highway Administration (FHWA) rule and Federal Transit Administration (FTA) policy² for any ITS project using federal funding.

The Project Consistency strategy requires project Stakeholders to verify that the projects planned in the Region are accurately represented by the Regional ITS Architecture. The strategy also requires EWG to take an active role in verifying project consistency. The strategy also incorporates consistency into the funding process.

The strategy requires the lead Stakeholder for each ITS project to complete an ITS Architecture Consistency Statement as part of the Region's funding process. EWG reviews each Consistency Statement to verify that the proposed ITS project is consistent with the Regional ITS Architecture.

3.1 **Project Consistency Statement**

Appendix B contains an example Project Consistency Statement. The Consistency Statement is a series of questions that project Stakeholders complete to verify that they have:

- 1. Reviewed the Regional ITS Architecture as part of their project planning process.
- 2. Confirmed that their planned ITS project is identified in the Regional ITS Architecture.
- 3. Confirmed that the Regional ITS Architecture correctly identifies the project as planned.
- 4. Identified any differences between the project and the Regional ITS Architecture that will require an Architecture update.

EWG uses each Consistency Statement to verify each project's conformance with the Regional ITS Architecture, and to identify Architecture changes that may be required in order to accurately reflect the Region's ITS.

The Project Consistency Statement documents:

- 1. The project's lead and participating Stakeholders.
- 2. The project's planned ITS systems and the existing systems with which the project will interact.
- 3. The project's planned information exchanges.
- 4. Opportunities for integration with other existing and planned ITS that are not part of the project.
- 5. The interagency agreements necessary for the project to succeed.

² FHWA Rule/FTA Policy - <u>http://ops.fhwa.dot.gov/its_arch_imp/policy.htm</u>





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- 6. The project's planned use of ITS communications standards.
- 7. The project's plans for measuring its performance.
- 8. The project's plans for continuing operations and maintenance.

3.2 Stakeholder Role in the Consistency Statement

A lead Stakeholder should be identified for each ITS project that requests funding. The lead Stakeholder will be responsible for completing the project's Consistency Statement. Through the Stakeholder process, the lead Stakeholder is encouraged to work with EWG and other stakeholders to clarify information.

The first step for the lead Stakeholder will be to review the St. Louis Regional ITS Architecture and find their planned project in it. Note that the current project may have a different name in the Architecture. Similarly, the current project may be represented in the Architecture by only part of a project, or multiple projects. This is because the Architecture is often developed in advance of detailed project planning and is intended to be inclusive of the Region's possible services, functions and information flows. If no Architecture project or projects align with the Stakeholder's planned project, the Stakeholders should make a request using the Change Request Form (**Appendix A**).

The next step for the lead Stakeholder will be to complete a Consistency Statement. Stakeholders are not required to have detailed knowledge of the Architecture; they are encouraged to work with EWG and other Stakeholders in the Consistency Statement process.

Once the lead Stakeholder has completed the Consistency Statement, they will submit it to EWG for review.

3.3 EWG Role in the Consistency Statement

EWG will have the role of verifying that ITS projects planned in the Region are consistent with the Regional ITS Architecture. That role will require review, working with Stakeholders, and identifying potential Architecture updates based on planned project information.

EWG's first step in the Consistency Statement process will be working with Stakeholders on an asneeded basis while the Stakeholders complete each planned ITS project's Consistency Statement. This step requires the EWG to have a strong understanding of the Region, the Stakeholders and the Architecture. Stakeholders may need help navigating the Architecture and identifying their planned activities within it.

EWG's second step will be to review each submitted Consistency Statement. This step requires EWG to review each section of the Statement and verify that the information provided by the ITS project's lead Stakeholder is consistent with the Architecture. Note that consistency does not require that the project be exactly as defined in the Architecture, but the Architecture should include all of the Stakeholder's currently planned services, functions and flows.





If EWG confirms that the planned ITS project is consistent with the Regional ITS Architecture it should be noted and the project should be confirmed as eligible for the funding process. The Consistency Statement should be archived along with the project plans.

If EWG identifies consistency issues for the planned ITS project, the MPO should work with the project Stakeholders to resolve the issues. This may require revising the project to conform to the Architecture. However, consistency issues may also be resolved by changing the Regional ITS Architecture.

Example of issues that may require Architecture changes include a Stakeholder adding ITS services that were not identified in the Regional ITS Architecture, and the addition of information flows that were not listed in the Regional ITS Architecture.

If an Architecture change is required, EWG and project Stakeholders should complete a Change Request Form (**Appendix A**). Note that a Change Request should not disqualify a project from the funding process. An Architecture change may be made concurrent with the funding process. What is critical is that the required change is made to ensure the Architecture accurately reflects the Region's ITS. However, the project's Consistency Statement should be updated once the Regional ITS Architecture has been updated to reflect the requested change.

The final step for EWG is to archive all Consistency Statements and their status. The Statements can be used to confirm the Region's compliance with FHWA rule and FTA policy.





APPENDIX A

CHANGE REQUEST FORM





St. Louis Regional ITS Architecture Update

Use and Maintenance Plan

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Stakeholder	Name	ļ!	Title		
Dronosing	Agency				
Change	Email				
U lange	Phone No.		Fax No.		
Date					
	Title	Short Description (up to 25 characters)			
	Detailed Description	(What is to be added, deleted or modified? Attach additional documentation, including a project architecture, as necessary)			
Description of Change	Type of Change	New Project/System Deleted Project/System Modified Project/System	New/Changed Stakeholder Change in Project Status Change in Project Priority Other		
	Systems or Projects	Name of System(s) or Project(s) bein	g implemented or modified (if applicable)		
	 PROPOSED (funding not yet secured) PLANNED (funding secured) 				
Project					
Status	UNDER CONSTRUCTION (stakeholder is currently deploying system/project)				
Maintenance Team Comments					





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Maintenance Team Action	Approve Reject Deferred Until
Additional Notes (submit additional pages if necessary)	





APPENDIX B

ARCHITECTURE CONSISTENCY STATEMENT





St. Louis Regional ITS Architecture

ITS Project Consistency Statement

Before funding agreements with Missouri Department of Transportation (MoDOT), the Illinois Department of Transportation (IDOT) or the East-West Gateway Council of Governments (EWG) are developed, the Stakeholders for each project containing ITS elements must have a completed Consistency Statement that identified how the project will be consistent with the St. Louis Regional Intelligent Transportation System (ITS) Architecture. Each Statement will be reviewed by EWG.

Please complete the following form in its entirety to document your project's consistency with the Regional ITS Architecture. Use the St. Louis Regional ITS Architecture Web Site (http://...) to view the most current version of the Regional ITS Architecture. If you have questions or need guidance in completing this Statement, please contact EWG staff at (XXX) XXX-XXXX or <u>ewgstaffemail@</u>.

Your Name:	Your Agency:			
Your phone #:	Your e-mail:			
Your Project Name:				
Related Project Name in the Regional ITS Architecture:				
(Note that your project may not have the same name or scope as the projects in the ITS Architecture. Choose the project(s) in the Architecture that most closely resemble the services you plan to deploy.)				
Brief Project Description:				
Project TIP Code:				

Mark the Current Project Status:	 In Planning
	 In Design
	 In Development or Procurement
	 Deployed



1. STAKEHOLDERS

Review the St. Louis Regional ITS Architecture and your project documents to identify the stakeholders participating in this project.

- a. Who is the lead Stakeholder for this project?
- b. Are there other project Stakeholders? If so, please list them:

c. Are there any differences in the Stakeholders listed in the ITS Architecture and in your project plans? If so, please list them. (*Examples may be additional Stakeholders, or a Stakeholder identified in the Architecture who will not participate in the project.)*



2. SYSTEM ELEMENTS

Review the St. Louis Regional ITS Architecture and project documents to identify the ITS elements to be used in this project.

a. List the types of ITS equipment developed or purchased as part of this project.

b. List the types of **existing** ITS equipment that will interface and exchange data with new equipment in this project. (*Examples are the Gateway Guide Traffic Operations Center or City of St. Louis Traffic Management Center.*)



3. SYSTEM DESIGN

Describe your agency's commitment to consider all applicable subsystems and information flows from the regional architecture in the project development process.

a. Submit documentation of all Architecture information flows for this project to this Statement, or provide a web address or addresses below where they can be viewed. (Note that this may be the page, or pages, on the St. Louis Regional ITS Architecture web site that describes your project.)

b. If there are information flows listed in the St. Louis Regional ITS Architecture for your project that you do not plan to use, please identify them and explain why. (Example reasons are that the project will only deploy a part of a project as identified in the Architecture, or that some flows will be deployed in a later project phase.)



4. FUTURE INTEGRATION

Your responses in this section should address how your project addresses potential future integration and ensures interoperability of the project's equipment with other ITS in the region.

a. List any opportunities for integration with other existing or planned ITS that are not part of this project but may benefit the Region in the future. *(Examples are sharing information collected by the current project with a maintenance center or emergency center.)*

5. INTERAGENCY AGREEMENTS

Your responses in this section should express your agency's commitment to developing operating agreements between the stakeholders to ensure the successful ongoing operation and usage of the project.

a. List the stakeholders that will participate in the **operation** phase of this project:



b. Will there be operating agreements among the stakeholders listed in 5a?

___Yes No

c. If you answered **No** to the previous question, explain why there will not be operating agreements. (*Example reasons may be that an existing agreement covers operations or that only one agency is involved in the project, so no agreements are needed.*)



Your responses in this section should provide assurance that the project will use the appropriate standards and protocols for information exchange.

a. List the standards identified in the St. Louis Regional ITS Architecture applicable for this project.



- b. Will you incorporate the standards listed in 6a into the project design and procurement documents?
 - Yes, all of them.
 - ____ Some of them.
 - ____ No, none of them.
- c. If you answered the previous question "some" or "none," list the standards for this project that will not be incorporated into the design and procurement documents, and briefly explain why each is not being used. (An example reason is that the Architecture contains multiple standards that apply to an information exchange, and only one of those standards will be used.)

7. PERFORMANCE MEASUREMENT

In this section you should provide assurance that your project has clearly defined performance measures and a plan for evaluating project progress and success.

a. Submit the Performance Reporting Plan for this project with this Statement, or provide a web address below where it can be viewed:

If you attached a Performance Reporting Plan, please skip forward to Section 8. If you did not attach a Performance Reporting Plan, complete Section 7.



b. List the performance measures you will use to evaluate the progress and performance of this project:

c. How will the project report its performance? To whom and how frequently will the performance be reported?

- d. Will the data be stored or archived by the collecting agency?
 - ____ Yes. ____ No. ____ Not Applicable.

e. Will the devices

and the data generated by the project be validated and periodically evaluated?

____ Yes. ____ No.



Not Applicable.

f. Please elaborate on how data will be validated, shared, stored and/or archived. If the project does not plan to validate, share or store data, please explain why.

8. OPERATIONS AND MAINTENANCE

Your responses in this section should provide assurance that the project has a plan for operating and maintaining the systems it deploys.

a. Submit the Operations and Maintenance Plan for this project to this Statement, or provide a web address below where it can be viewed:

If you attached an Operations and Maintenance Plan, please skip forward to Section 9. If you did not attach an Operations and Maintenance Plan, complete Section 8.

b. What is the estimated annual cost, in dollars, for the project's operation and maintenance?

\$ _____



c. Briefly describe the staffing and technical resources required for the operation and maintenance of your project.

d. Briefly describe how the project will meet its needs for resources.

9. OTHER INFORMATION

Please use this section to provide additional information and clarification regarding your project's ITS architecture compliance.

a. Submit additional documents for this project, or provide the web addresses where they can be viewed below:



b. Please provide any other comments you would like to share about your ITS project.

The EWG Thanks you for your time and diligence in completing this ITS Architecture Consistency Statement.