



**LAWRENCE-DOUGLAS COUNTY REGIONAL ITS ARCHITECTURE
USE AND MAINTENANCE PLAN**

DRAFT

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GLOSSARY

Acronym	Description
ADA	Americans with Disabilities Act
ADMS	Archival Data Management System – refers to technologies designed to collect and store roadway related data for planning and/or for sharing with other agencies.
ATIS	Advanced Traveler Information Systems – provide travelers with information from various sources through one user interface such as the phone (511) or the Internet.
ATMS	Advanced Traffic Management Systems - to enhance mobility on roadways by incorporating the latest technological advancements such as Variable Message Signs (VMS)
AVL	Automatic Vehicle Location – used for real time tracking of emergency vehicles, transit vehicles and school buses.
BNSF	Burlington Northern Santa Fe Railroad
CAD	Computer Aided Dispatching – used for emergency and fleet dispatching.
CCTV	Closed Circuit Television - cameras placed to observe traffic conditions. These are only used for observation and have no automatic speed enforcement capabilities.
CVAS	Commercial Vehicle Administrative Systems – a subpart of the Commercial Vehicle Information System, see CVISN.
DMS	Dynamic Message Signs – electronic message signs used to provide real-time traffic warnings and Amber Alert messages. Other names are Variable Message Signs (VMS) and Changeable Message Signs (CMS).
EM	Emergency Management, or Emergency Managers – Douglas County has an emergency management agency.
EOC	Emergency Operations Center
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information System – used to provide information tied to specific physical locations, such as road segments.
HRI	Highway-Rail Intersection – refers to technologies designed to make at-grade highway/rail crossings safer.
ISP	Information Service Provider – usually the radio or television or other private organization that provides road conditions or other information for travelers.
ITS	Intelligent Transportation Systems



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Acronym	Description
KANROAD	KDOT GIS-based traveler information system.
KDOT	Kansas Department of Transportation
KHP	Kansas Highway Patrol
KTA	Kansas Turnpike Authority
L-DC FM	Lawrence-Douglas County Fire-Medical
L-DC MPO	Lawrence-Douglas County Metropolitan Planning Organization
LPD	Lawrence Police Department
MCO	Maintenance and Construction Operations – refers to ITS solutions designed to make highway maintenance and construction safer for travelers and more efficient for highway agencies.
MDT	Mobile Data Terminal
MPA	Metropolitan Planning Area
MTP	Metropolitan Transportation Plan – The L-DC MPO's current MTP is the Transportation 2040 (T-2040) Plan.
NWS	National Weather Service
OS/OW	Oversize, Overweight pertaining to commercial vehicles using public highways.
PD	Police Department
PW	Public Works
RWIS	Road-Weather Information Systems, also called environmental sensors. Used to measure pavement temperature (potential for icing), wind, and other weather-related conditions. RWIS is also used to support highly accurate weather forecasting systems.
SDP	Strategic Deployment Plan
TMC	Traffic Management Center
TOC	Traffic Operations Center
TOMC	Traffic Operations and Management Center
UPRR	Union Pacific Railroad



1. Architecture Use

The Lawrence-Douglas County (L-DC) 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 L-DC 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 times that the Regional ITS Architecture can be used:

1. Planning – The Architecture should be used to assist in the traditional transportation planning process for all L-DC 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 Metropolitan Transportation Plan (MTP) by the L-DC Metropolitan Planning Organization (MPO).
2. 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. Architecture elements of use 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 L-DC 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 outputs of the recurring transportation planning process are:

- The Region’s Metropolitan Transportation Plan (MTP), currently known as the Transportation 2040 Plan (T-2040 Plan) which was approved in 2013 and has a horizon of 27 years to 2040. That plan must be updated every five years and will expire in early 2018.
- A Transportation Improvement Program (TIP) for the Lawrence-Douglas County Region that defines a short-term funding program for regionally significant and/or federally funded projects. It is updated quarterly. Projects must be referenced specifically or addressed generally in the MTP and be listed in the TIP in order to receive federal funding.



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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 reviewed and maintained and updated alongside the MTP and TIP 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 their 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 L-DC 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 the Regional ITS Architecture elements.

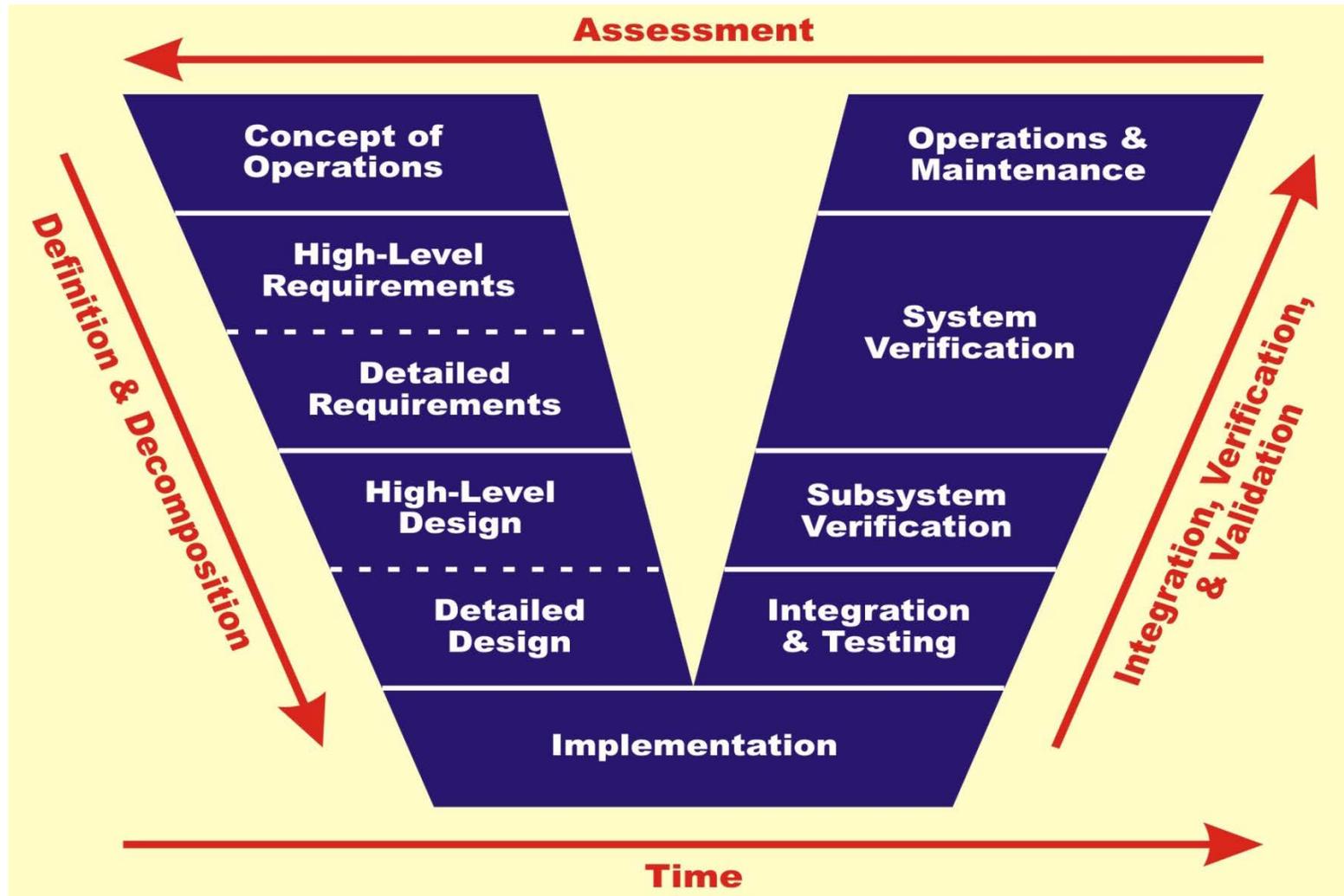
1.2 Architecture Use in Design

The L-DC 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 high-level concept of operations and functionality that leads into more detailed project-specific processes, such as a detailed system requirements and design.

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



Figure 1: Systems Engineering Vee Diagram





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The 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:

- Project Stakeholders and Required Agreements.
- Operational Concept.
- User Services and Functions.

Project Stakeholders and Required Agreements

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 the ITS infrastructure, data and process that is deployed.

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 also be 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 the ITS.

User Services and Functions

The User 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 details 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 L-DC Regional ITS Architecture. Where project design deviates from the Architecture, the Stakeholder should identify the changes using the process defined in this Plan.

1.3 Architecture Use in Implementation

The L-DC 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



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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 the Region's 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 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. L-DC Regional ITS Architecture Maintenance

The L-DC Regional ITS Architecture is a living document and will be 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 six years).
- long-term (six to ten years).

The goal of maintaining the Architecture is to keep the L-DC 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 and TIP, 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 L-DC MPO owns the L-DC Regional ITS Architecture developed in 2008. The L-DC MPO has also led this update to the Architecture. In addition, the L-DC MPO has an existing relationship with virtually all of the Region’s Transportation Stakeholders. It is recommended that the L-DC MPO continue to own the Regional ITS Architecture and be responsible for its maintenance.

As owner, the L-DC MPO’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 the L-DC MPO to develop Architecture maintenance skills through training, and to work with the Region’s Stakeholders to identify and enact updates to the Architecture.



2.2 Responsibility for Maintaining the Regional ITS Architecture

As the owner of the Regional ITS Architecture, the L-DC MPO shall be responsible for its maintenance. This section discusses the L-DC MPO's role in leading the maintenance activities, and the level of effort required for the L-DC MPO and the Stakeholders.

2.2.1 Leadership

The L-DC MPO 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 the ITS Architecture.
- To have practical skills using the [Turbo Architecture software application](#).
- To provide local ITS Architecture expertise.
- To facilitate and lead ITS Architecture Maintenance Team meetings.
- To document all change requests and the results.
- To make physical changes to the L-DC Regional ITS Architecture using Turbo Architecture.

The leadership role does not require a full-time position. For the L-DC 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.

The L-DC MPO 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 the L-DC MPO staff is to hire a consultant that already possesses ITS Architecture expertise to maintain the L-DC 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 the L-DC MPO.

2.2.2 Maintenance Team

The L-DC MPO 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 Region. 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



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Architecture maintenance. The L-DC Regional ITS Architecture Maintenance Team should have members who represent, at a minimum:

- Freeway Management.
- Surface Street Management.
- Public Transportation.
- Commercial Vehicle Operations.
- Emergency Management.
- Maintenance and Construction.
- Information Technology.

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 the L-DC MPO, 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 Regional ITS Architecture, L-DC MPO 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 [National ITS Architecture web site](#). Specifically, the following two online courses are available to staff of Regional partner agencies at any time:

- [Turbo Training](#) - 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.
- [Use and Maintenance Training](#) - prepares ITS professionals to effectively use and maintain their Regional ITS Architecture.

The L-DC MPO staff should also be knowledgeable in [Systems Engineering for ITS](#). The L-DC MPO 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.



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 of the Regional ITS Architecture.

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).

List of Agreements - 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.

Interfaces between Elements (interconnects and information flows) - 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.

Functional Requirements - 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



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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.

Applicable ITS Standards - 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 Xtensible 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” must be 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 sequences are in line with their expectations.

2.5 Maintenance Schedule

L-DC MPO 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. The L-DC MPO will document each change proposal it receives as described later in this Maintenance Plan.

At the discretion of the L-DC MPO, 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 the L-DC MPO.

The Regional ITS Architecture will be referenced in the T-2040, the L-DC MPO’s MTP, and the TIP. The L-DC MPO will provide further integration of the Architecture into the MTP as part of future MTP updates. As the MTP and TIP 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. As projects



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including ITS elements are added to the TIP, an Architecture Consistency Statement should be completed by the Lead Stakeholder and approved by the L-DC MPO, as described in **Section 3**. If the project described in the Consistency Statement is different than how it is represented in the Architecture, this will require an Architecture update or a revision to the Architecture Consistency Statement.

2.6 Identifying Needed Architecture Changes

The L-DC 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:

Changes in Project Definition – 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.

Changes Resulting from Project Addition/Deletion – 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.

Changes in Project Status – 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 "existing" status when they are substantially complete in that they have been installed, tested and are being used.

Changes in Project Sequencing – 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.

Stakeholder Changes – 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.



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Changes in Regional Needs - Over time, the needs in the Region can change and the corresponding aspects of the L-DC 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.

Changes in Other Architectures – The L-DC Regional ITS Architecture covers its Region and interfaces to elements in other architectures in Kansas and the Kansas City Metropolitan Area. Changes in these other architectures may necessitate changes in the L-DC 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 L-DC 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 of the National Architecture may add new ITS Services that may be applicable to the Region.

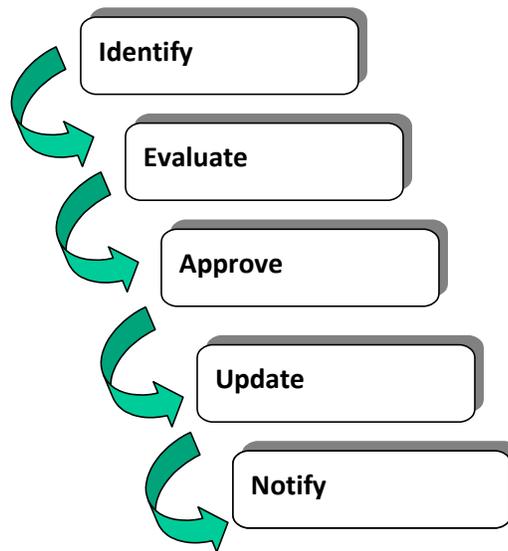
With any new user service there is the potential for new subsystems, terminators, interconnects, flows, and equipment packages. It is recommended that the Maintenance Team reviews changes in the National ITS Architecture during major updates, and determines how national changes may affect the L-DC Regional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

2.7 Change Management Process

This section recommends a process for maintaining the L-DC 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.



Figure 2: Architecture Maintenance Process



As previously discussed, the L-DC MPO 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.

Identify – Any of the Region’s Stakeholders can identify a change in the Architecture and submit a request to the L-DC MPO. The MPO can then 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 L-DC MPO web site.

In addition, an Architecture Consistency Statement should be required from Stakeholders planning and deploying ITS in the Region. The L-DC MPO 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)



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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, the L-DC MPO 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.

Approval - The next step is for the Maintenance Team and then the L-DC MPO 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.

Update Baseline - This activity involves updating the L-DC Regional ITS Architecture Turbo database and documentation by the L-DC MPO staff. This requires the skill and expertise described in the Maintenance Skills and Training section.

Notify Stakeholders - 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 skip its next meeting.



3. ITS Project Consistency

This section describes a strategy to ensure that the Region's ITS projects are consistent with the L-DC 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 the L-DC MPO 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. The L-DC-MPO 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.

The L-DC MPO 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 is not part of the project.
5. The interagency agreements necessary for the project to succeed.
6. The project's planned use of ITS communications standards.

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



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 will 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 the L-DC MPO and other stakeholders to clarify information.

The first step for the lead Stakeholder will be to review the 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, in the Architecture. 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 for an Architecture 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 the L-DC MPO and other Stakeholders in the Consistency Statement process.

Once the lead Stakeholder has completed the Consistency Statement, they will submit it to the L-DC MPO for review.

3.3 L-DC MPO Role in the Consistency Statement

The L-DC MPO 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.

The L-DC MPO's first step in the Consistency Statement process will be working with Stakeholders on an as-needed basis while they complete each planned ITS project's Consistency Statement. This step requires the L-DC MPO 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.

The L-DC MPO's second step will be to review each submitted Consistency Statement. This step requires the L-DC MPO 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



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Architecture should include all planned services, functions and flows in the Stakeholder's planned ITS project.

If the L-DC MPO 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 the L-DC MPO 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, the L-DC MPO and project Stakeholders should complete an Architecture Change Request Form (Appendix A). Note that an Architecture 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.

The final step for the L-DC MPO 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.



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APPENDIX A

REGIONAL ITS ARCHITECTURE CHANGE REQUEST FORM



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



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<p>Maintenance Team Action</p>	<p><input type="checkbox"/> APPROVE</p> <p><input type="checkbox"/> REJECT</p> <p><input type="checkbox"/> DEFERRED UNTIL _____</p>
<p>Additional Notes (submit additional pages if necessary)</p>	



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APPENDIX B

REGIONAL ITS ARCHITECTURE CONSISTENCY STATEMENT



L-DC Regional ITS Architecture Project Consistency Statement

Before funding agreements with Kansas Department of Transportation (KDOT) or the Lawrence-Douglas County Metropolitan Planning Organization (L-DC MPO) 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 L-DC Regional Intelligent Transportation System (ITS) Architecture. Each Statement will be reviewed by the L-DC MPO.

Please complete the following form in its entirety to document your project's consistency with the L-DC Regional ITS Architecture. Use the L-DC Regional ITS Architecture Web Site (<http://www.lawrenceks.org/mpo/its>) to view the most current version of the Regional ITS Architecture. If you have questions or need guidance in completing this Statement, please contact Todd Girdler at (785) 832-3155 or tgirdler@lawrenceks.org.

Your Name:	Your Agency:
Your phone #:	Your e-mail:
Your Project Name:	
Related Project Name in the Regional ITS Architecture: <i>(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.)</i>	
Brief Project Description:	
Project TIP Code:	



Mark the Current Project Status:

- In Planning
- In Design
- In Development or Procurement
- Deployed

1. STAKEHOLDERS

Review the L-DC 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 L-DC 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 City of Lawrence Traffic Operations Center or Douglas County Emergency Communications 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 with 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 L-DC Regional ITS Architecture web site that describes your project.)*

- b. If there are information flows listed in the L-DC 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.)*

6. STANDARDS

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 L-DC 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 with 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 with this statement, 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 L-DC MPO Thanks you for your time and diligence in completing this ITS Architecture Consistency Statement.