Statewide ITS Architecture Assessment and Support

White Paper:
Federal Policy, Rule Making and Guidelines Related to ITS Architecture Activities

Caltrans®

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Statewide ITS Architecture Assessment and Support

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1. Introduction

Federal transportation legislation recognized the importance of ITS in 1991 by providing funding, at that time largely focused on research and development and operational tests of technologies. A key part of the program was the development of the National ITS Architecture. To encourage and enable coordination between organizations, the USDOT since then has been managing the development and update of the National ITS Architecture and related tools to help identify and exploit these opportunities for cost effective cooperation. Additional transportation legislation has occurred over the last 20+ years to accelerate the rate at which ITS is incorporated into the national surface transportation network. Policies and procedures have been implemented to direct developments and to improve regional cooperation and operations planning for effective ITS deployment.

This White Paper will first provide a definitive understanding of the maturity of the National ITS Architecture and the software tools to make it more useful. With that understanding, relationship will be explained to each Federal legislative directive that has occurred over the years, the ITS industry specific regulations that support the requirements of the legislation, and the USDOT agency guidance that gives assurance that the regulations are being carried out.

2. Background - National ITS Architecture

Rapid advances in information processing and communications technology have created new opportunities for transportation professionals to deliver safer and more efficient transportation services, and to respond proactively to increasing demand for transportation services in many areas and mounting customer expectations from coast to coast. However, many of these new opportunities are predicated upon effective coordination between organizations - at both an institutional and technical level.

The National ITS Architecture provides a definitive and consistent framework to guide the planning, defining, and integrating of Intelligent Transportation Systems. The Architecture was developed and has evolved with stakeholder input, using a consensus-building methodology in accordance with legislative direction. The program facilitates the ability of jurisdictions to operate collaboratively and to harness the benefits of a regional approach to transportation challenges. It is a mature product that reflects the contributions of a broad cross-section of the ITS community - transportation practitioners, systems engineers, system developers, technology specialists, consultants, and others.

The National ITS Architecture, because it aids in the development of a high-level conceptual view (see Figure 1) of a future system, can assist state and local governments in identifying applications that will support their future transportation needs. From an institutional coordination perspective, the National ITS Architecture helps local transportation planners to identify other stakeholders who may need to be involved and to identify potential integration opportunities. From a technical interoperability perspective, the National ITS Architecture provides a logical and physical architecture and process specifications to guide the design of a system.

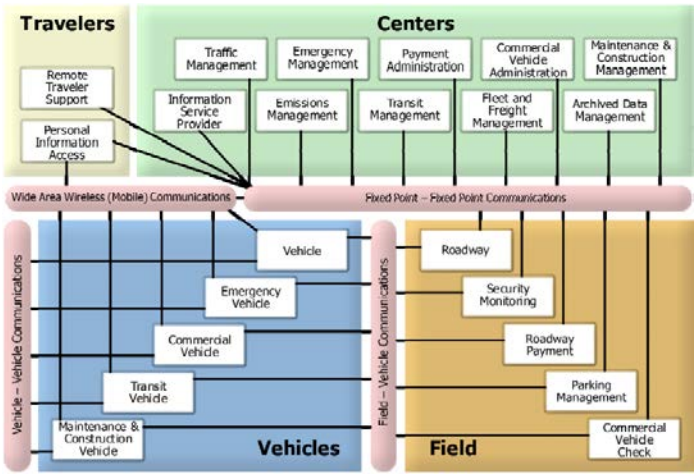


Figure 1: High Level Architecture Diagram

The National ITS Architecture also identifies interfaces where standards may apply, further supporting interoperability. It is a reference framework that spans all of the ITS standards activities and provides a means of detecting gaps, overlaps, and inconsistencies between the standards. The Architecture provides a starting point for the standards development activities by identifying the applicable information that flows between system elements to be standardized, and the way in which the information is exchanged across those interfaces.

Today the vision for the National ITS Architecture program is to continue the evolution of the architecture to incorporate technological developments and evolving user needs with a particular focus on connected vehicle requirements. The program will also continue to provide deployment support for public agencies to assist with development, maintenance, and improvement of their regional ITS architectures along with compliance with applicable FHWA regulations.

The most recent published version of the National ITS Architecture (7.1) incorporates functionality and interfaces to align with the Connected Vehicle (CV) Environment, Advanced Travel Demand Management (ATDM) strategies, Electronic Freight Manifest, and Integrated Corridor Management as well as other updates including ITS standards alignment. This version also incorporates enhancements to support expanded Commercial Vehicle Information Systems and Networks (CVISN) applications including the Smart Roadside Initiative.

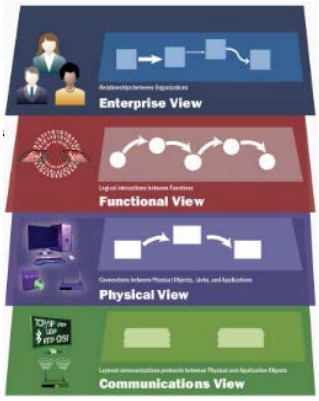


Figure 2: CVRIA Perspective

The most significant changes today relate to the Connected Vehicle program. The CV program is a large set of research activities centered on a vehicle or a mobile device that is equipped with communications and processing allowing those equipped platforms to be aware of their location and their status and to communicate with each other and with the surrounding infrastructure. New linkages have been established with the connected vehicle applications defined in the Connected Vehicle Reference Implementation Architecture (CVRIA). The CV architecture provides a consistent framework to guide the planning and

deployment of CV technologies. It identifies options for interoperable deployment of technologies from enterprise, physical, functional and communications perspectives. The CV architecture facilitates the ability of jurisdictions to operate collaboratively and to harness the benefits of a regional approach to transportation challenges. Evolution of the CVRIA will lead to migration into the National ITS Architecture as well as internationally cooperative efforts to provide detailed standards recommendations across CV architectures.

Turbo Architecture is an interactive software application that assists transportation planners and system integrators, both in the public and private sectors, in the development of regional and project architectures using the National ITS Architecture as a starting point. The latest version (7.1) supports National ITS Architecture Version 7.1, and includes a host of new features and capabilities. The software tool includes features that make it easy to produce user-friendly documentation and web pages. Turbo Architecture is available on-line as a free download from the National ITS Architecture web site http://www.iteris.com/itsarch/index.htm.

3. Legislation and Regulation

In the late 1980's an informal group of academics, federal and state transportation officials, and representatives of the private sector met to discuss the future of the surface transportation system in the United States. These meetings were motivated by several key factors. First the group was looking ahead to future federal transportation legislation to be enacted. This new legislation was envisioned to be the first one in the post-Interstate era. A new vision for the transportation system in the United States needed to be developed. Other factors included increasing congestion, safety, national productivity, and environmental and energy issues.

As was envisioned, the ***Intermodal Surface Transportation Efficiency Act of 1991*** **(ISTEA)**, Public Law 102–240, 105 Stat. 1914, initiated Federal funding for the ITS program. The program at that time was largely focused on research and development and operational tests of technologies. A key part of the program was the development of the National ITS Architecture.

ISTEA is "the most important transportation bill since President Eisenhower started the Interstate System 35 years ago." (Source: President Bush, 1991)

Congress enacted the ***Transportation Equity Act for the 21st Century (TEA-21)***, Public Law 105–178, 112 Stat. 457 on June 9, 1998. Section 5206(e) of TEA-21 required Intelligent Transportation System (ITS) projects funded through the highway trust fund to conform to the National ITS Architecture and applicable standards. One of the findings of Congress in section 5202 of the TEA–21 was that continued investment in systems integration was needed to accelerate the rate at which ITS is incorporated into the national surface transportation network. Two of the purposes of the ITS program, noted in section 5203(b) of the TEA–21, are to expedite the deployment and integration of ITS, and to improve regional cooperation and operations planning for effective ITS deployment.

A notice of proposed rulemaking (NPRM) concerning a proposed rule/policy was published in the Federal Register at 65 FR 33994 on May 25, 2000. In the NPRM on this rule, the FHWA had proposed that a regional ITS architecture follow from the ITS integration strategy proposed in another NPRM

entitled "Statewide Transportation Planning; Metropolitan Transportation Planning" published at 65 FR 33922 on May 25, 2000. Proposed revisions within the planning regulation (23 CFR 1410) had a relationship to ITS and operations in general and specifically relating to regulation 23 CFR 940. Proposed section §1410.322 (b)(11) stated *"Include an ITS integration strategy for the purposes of guiding and coordinating the management and funding of ITS investments supported with highway trust fund dollars to achieve an integrated regional system. The scope of the integration strategy shall be appropriate to the scale of investment anticipated for ITS during the life of the plan and shall address there source commitments and staging of planned investments..."*

The proposed section also required an agreement among agencies planning and implementing ITS projects and was intended to ensure that the planning and operating agencies specifically agree on an approach to integrated ITS implementation consistent with the options provided in the National ITS Architecture. This provision would have directed that this relationship should be covered by agreement within the metropolitan planning area and address the policy and operational issues affecting ITS implementation. Proposed Section §1410.310 (g) stated *"Where the planning process develops an ITS Integration Strategy under the provisions of §1410.322(b)(11), there shall be an agreement among the MPO, the State DOT, the transit operator and other agencies as described in the ITS Integration Strategy. This agreement shall address policy and operational issues that will affect the successful implementation of the ITS Integration Strategy ..."*

Revisions to the FHWA transportation planning regulation were never implemented. FHWA and FTA chose to go forward with policies that were developed cooperatively to implement the National ITS Architecture conformance process (23 CFR 940). Any references to an integration strategy were removed.

In January 2001, to address the need to begin to work toward regionally integrated transportation systems, USDOT published ***Federal Highway Administration (FHWA) 23 CFR Parts 655 and 940 Intelligent Transportation System Architecture and Standards, Final Rule*** and ***Federal Transit Administration (FTA) National ITS Architecture Policy on Transit Projects; Notice*** to implement section 5206(e) of TEA-21. Conformance with the National ITS Architecture is defined in the final Rule/Policy as using the National ITS Architecture to develop a regional ITS architecture that would be tailored to address the local situation and ITS investment needs, and the subsequent adherence of ITS projects to the regional ITS architecture. This FHWA Final Rule and the parallel FTA Policy were developed without reference to the proposed changes to the transportation planning process, including no mention of the development of an integration strategy. However, it is still the intent of the rule that regional ITS architectures be based on established, collaborative transportation planning processes.

This ITS Architecture and Standards Rule/Policy continued under the ***Safe, Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users*** **(SAFETEA-LU)** enacted on August 10, 2005. SAFETEA-LU emphasized, among other things, congestion mitigation, real-time system management information systems, and planning and approaching transportation operations from a regional perspective.

Under this new program, the Secretary would establish a Real-Time System Management Information Program to provide, in all States, the capability to monitor, in real-time, the traffic and travel conditions of the major highways of the U.S. and to share that information to improve the security of the

transportation system, address congestion problems, support improved response to weather events and surface transportation incidents, and facilitate national and regional highway traveler information. Section 1201.c of the SAFETEA-LU legislation states that, as States and local governments develop or update regional ITS architectures as described in 23 CFR 940.9, they shall explicitly address real-time highway and transit information needs and the systems needed to meet those needs.

States were also expected to incorporate the data exchange formats established by the Secretary. Data exchange formats will ensure that data may readily be exchanged with State and local governments and the traveling public. States may use NHS, STP, and CMAQ funds for planning and deployment of real-time monitoring elements. States will be able to use their State Planning and Research funds for planning of real-time monitoring elements.

In addition, Section 6001 of SAFETEA-LU mandated that large metropolitan areas (population greater than 200,000) establish a congestion management process (CMP) that provides for effective management and operation of the transportation system within the region. The CMP can be greatly enhanced by receiving archived ITS travel data, among other data points, generated by a deployed ITS network. During the stakeholder identification process, the ITS architecture addresses this planning need for ITS data from throughout the region. ITS architectures provide support in these areas as stakeholders analyze their implementation.

FHWA released ***Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule*** on February 14, 2007 related to its interpretation of SAFETEA-LU. This Final Rule revises the regulations 23 CFR Parts 450 and 500 governing the development of metropolitan transportation plans and programs for urbanized areas, State transportation plans and programs and the regulations for Congestion Management Systems. The revision resulted from the passage of SAFETEA-LU, also incorporates changes initiated in its predecessor legislation TEA-21, and generally made the regulations consistent with statutory requirements. While the FHWA and FTA agree that current, good quality data can improve effective transportation decisions and is key to effective operation and management strategies, they recognize each State's need to determine their appropriate statewide coordinated data collection program to support their individual planning process. FHWA and FTA encourages the States to consider including real-time data, provided by the Real Time System Management Information Program, but did not included a requirement in this rule.

The Final Rule noted that the metropolitan transportation planning process should be consistent with the Strategic Highway Safety Plan, and other transit safety and security planning and review processes, plans, and programs, as appropriate. Effective March 16, 2007, under federal law, MPOs are now tasked with addressing elements of security in their transportation plans and encouraged to take a regional role in their jurisdiction.

The ***Moving Ahead for Progress in the 21st Century Act (MAP-21)*** is a funding and authorization bill enacted on July 6, 2012 to govern United States federal surface transportation spending. MAP-21 establishes a performance basis for maintaining and improving the NHS. MAP-21 creates a streamlined and performance-based surface transportation program and builds on many of the highway, transit, bike, and pedestrian programs and policies established in 1991. The Secretary will establish performance measures for Interstate and NHS system performance. States will establish targets for these measures, to be periodically updated.

In support of MAP-21, FHWA is currently working with states and planning organizations to transition toward and implement a performance based approach to carrying out the Federal Highway Program known as Transportation Performance Management (TPM). Transportation Performance Management is a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. TPM represents the opportunity to prioritize needs, and align resources for optimizing system performance in a collaborative manner. The most recent published version of the National ITS Architecture (7.1) includes updated mappings to *Moving Ahead for Progress in the 21st Century Act (MAP-21)* goals, objectives, and performance measures.

On December 4, 2015, President Obama signed into law Public Law 114-94, the ***Fixing America's Surface Transportation Act (FAST Act)***. The FAST Act funds surface transportation programs—including, but not limited to, Federal-aid highways—at over $305 billion for fiscal years (FY) 2016 through 2020. It is the first long-term surface transportation authorization enacted in a decade that provides long-term funding certainty for surface transportation. The FAST Act maintains focus on safety, keeps intact the established structure of the various highway-related programs, continues efforts to streamline project delivery and, for the first time, provides a dedicated source of federal dollars for freight projects.

The FAST Act continues the ITS program, which provides for the research, development, and operational testing of Intelligent Transportation Systems (ITS) aimed at solving congestion and safety problems, improving operating efficiencies in transit and commercial vehicles, and reducing the environmental impact of growing travel demand. The program is currently focused on significantly reducing crashes through advanced safety systems based on interoperable wireless communications among surface transportation vehicles of all types, traffic signals, other infrastructure systems, pedestrians, wireless devices, and automated vehicle systems.

On April 22, 2016, the Federal Highway Administration (FHWA) posted a NPRM in the Federal Register to propose national performance management measure regulations to assess the performance of the NHS, Freight Movement on the Interstate System, and the CMAQ Improvement Program, as required by the MAP-21 and the FAST Act. Comments are due on August 20, 2016.

On May 27, 2016, FHWA and FTA published the ***Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning: Final Rule*** in the Federal Register to implement the changes to the planning process established by MAP-21 and the FAST Act. The changes make the regulations consistent with current statutory requirements and implement the following: a new mandate for State departments of transportation (SDOT) and metropolitan planning organizations (MPO) to take a performance-based approach to planning and programming; a new emphasis on the nonmetropolitan transportation planning process, by requiring SDOT's to have a higher level of involvement with nonmetropolitan local officials and providing a process for the creation of regional transportation planning organizations (RTPO); and other changes to membership and authority.

4. Regional ITS Architecture Guidance

4.1 Regional Planning

Transportation planning is an ongoing, iterative process, whose goal is making quality, informed decisions pertaining to the investment of public funds for regional transportation systems and services. A regional ITS architecture (created with the use of the planning information already developed) can be a powerful tool for planning the regional integration of transportation systems. Indeed the very process of creating a regional ITS architecture can enhance regional planning by bringing together a diverse array of agencies and stakeholders to discuss future transportation needs and how these needs might be met by ITS.

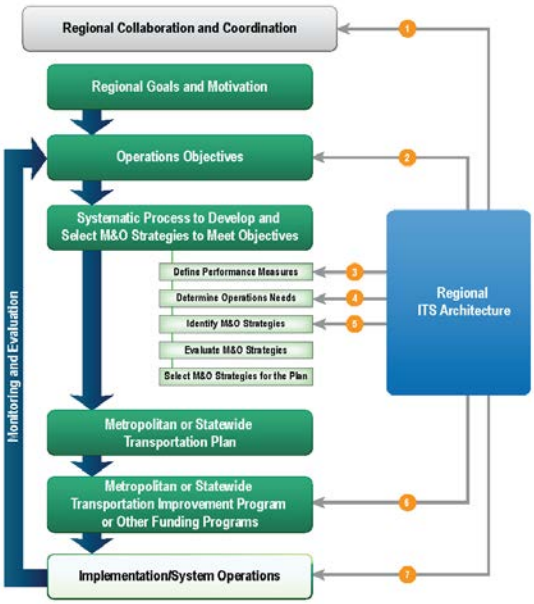
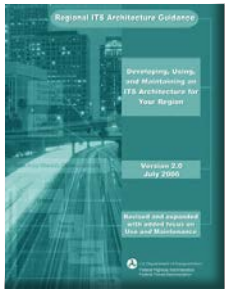


Figure 3: Opportunities for Architecture input to Planning Process

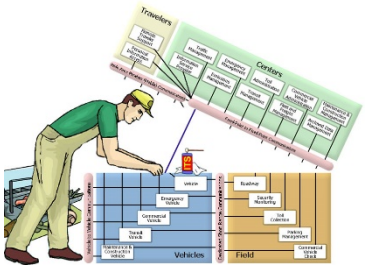
The objectives-driven, performance based approach for planning for operations and the regional ITS architecture process have complementary strengths. The architecture development process begins with an understanding of regional needs and the current state of the transportation system based on input from a broad coalition of stakeholders. It results in a planning framework (the regional ITS architecture) and a sequence of integrated projects that implement a portion of that framework. The strength of the regional ITS architecture process is its development of an integrated view of the regional transportation system based on a set of identified services or strategies. This complements the planning for operations approach, where the focus is on defining the most effective strategies for a region based on high-level goals and operational objectives. By connecting the two processes, you combine the strong basis for selecting strategies in planning for operations with the strength of the architecture development process in defining an integrated framework based on selected services. Figure 3 shows seven opportunities for the regional ITS architecture to provide input to the objectives-driven, performance-based approach to planning for operations.

Given that the 23 CFR 940 Rule/Policy does not require or reference an integration strategy, the FHWA felt a need to provide more specific guidance on the definition of a region. As such, the definition of a region was revised to indicate that the MPA should be the minimum area considered when establishing the boundaries of a region for purposes of developing a regional ITS architecture within a metropolitan area. This should not be interpreted to mean that a region must be an MPA, or no less than an MPA, but the MPA and all the agencies and jurisdictions within the MPA should be at least considered for inclusion in the process of developing a regional ITS architecture within a metropolitan area. The FHWA also acknowledged it is possible that overlapping regions could be defined and overlapping regional ITS architectures could be developed to meet the needs of the regions.

While Federal policy requires development of regional ITS architectures as the basis for Federal funding of regional ITS projects, it does not mandate a statewide architecture unless the architecture is required to incorporate key operational roles, responsibilities and functions that may occur at the regional level. However, a statewide ITS architecture may have particular statewide roles and responsibilities that require interface and coordination with regional architecture elements, including interoperability, data and video sharing, and statewide or multi-regional functions such as performance management systems, traveler information, or statewide emergency management. As such, a statewide ITS architecture needs to be compliant with the National ITS Architecture in the same way as do regional ITS architectures.

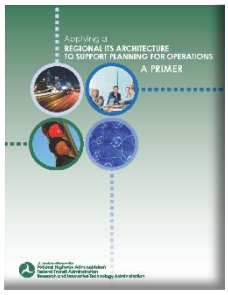


The *Regional Intelligent Transportation System (ITS) Architecture Guidance* Document is written for those involved in the development, use, or maintenance of regional ITS architectures. It describes a process for creating a regional ITS architecture with supporting examples of each product and discusses mainstreaming ITS into the planning and project development processes. It expands upon the topics of using and maintaining a regional ITS architecture.



The *Regional ITS Architecture Maintenance White Paper* is a guide for transportation professionals who are involved in the development, use and maintenance of regional ITS architectures. It supplements the Regional ITS Architecture Guidance Document dated October 2001 by providing a more detailed guide for the development of a regional ITS architecture maintenance plan and the activities involved in maintaining a regional ITS architecture.

Applying a Regional ITS Architecture to Support Planning for Operations: A Primer offers transportation planners and operations managers a menu of opportunities for applying the regional ITS architecture to enhance planning for operations. It provides specific entry points for leveraging the regional ITS architecture in integrating operations into the planning process. This primer centers on the use of an objectives-driven, performance-based approach to planning for operations; an approach that can leverage regional ITS architectures given the approach's emphasis on operational objectives and performance measures and the architecture's use of data and services to address operational needs. Additionally, the primer leads planners and operators through techniques to make a regional ITS architecture relevant and more accessible to practitioner needs in planning for operations.



4.2 Project Implementation

In 23 U.S.C. 106(c) Congress recognized the need to give the States more authority to carry out project responsibilities traditionally handled by FHWA. Congress also recognized the importance of a risk-based approach to FHWA oversight of the Federal-aid Highway Program (FAHP), establishing requirements in 23 U.S.C. 106(g). The *Caltrans / FHWA Stewardship and Oversight Agreement (2015)* sets forth the agreement between FHWA and Caltrans on the roles and responsibilities of the two

government agencies with respect to Title 23 project approvals and related responsibilities, and FAHP oversight activities.

When an ITS project is initiated, there is a natural tendency to focus on the programmatic and technical details and to lose sight of the broader regional context. Using the regional ITS architecture as a basis for project implementation provides this regional context. It provides each project sponsor with the opportunity to view their project in the context of surrounding systems. It also prompts the sponsor to think about how the project fits within the overall transportation vision for the region. Finally, it identifies the integration opportunities that should be considered and provides a good starting point for systems engineering analyses that are performed during ITS project development. It provides region-level information that can be used and expanded in project development.

The definition of systems engineering in § 940.3 has been established to be consistent with accepted practice. In order to provide consistency in the regional ITS architecture process, the systems engineering analysis detailed in §§ 940.11(a) through 940.11(c) must apply to all ITS projects regardless of size or budget. However, the analysis should be on a scale commensurate with project scope. To allow for the greatest flexibility at the State and local level, in § 940.11(c), a minimum number of elements have been clearly identified for inclusion in the systems engineering analysis. They are specified in Figure 4.

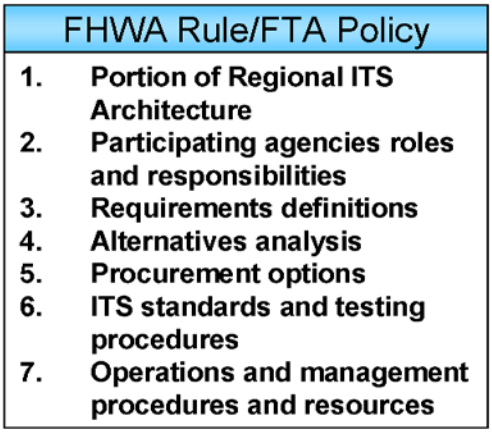


Figure 4 – FHWA Rule/FTA Policy (Section 940.11)

The Rule/Policy allows each project sponsor to use a systems engineering approach that is tailored to fit the needs of each ITS project. The systems engineering approach is actually broader than the seven specific requirements identified in the Rule/Policy. If you implement a good systems engineering process, you will meet or exceed the specific systems engineering analysis requirements identified in the Rule/Policy.

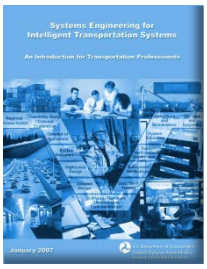
The FHWA Division and FTA Regional Offices determine how the systems engineering analysis requirements in the Rule/Policy should be applied to ITS projects in each region and how compliance should be demonstrated by each project sponsor. Federal oversight is provided based on oversight requirements defined in the stewardship agreements with each state. Several states have established checklists that prompt project sponsors to consider the systems engineering analysis requirements as

part of the project development process. The ITS specialist in each FHWA Division Office or FTA Regional Office can provide more information.

California was one of first states to establish a process to carry out the requirements of § 940.11. Several states have since patterned their own process to reflect the California guidance. A Systems Engineering Review form (SERF) must be completed by the project sponsor at project initiation. This form, referenced in the *Caltrans/FHWA Stewardship and Oversight Agreement* and included in the *Caltrans Local Assistance Procedures Manual (LAPM)*, includes one question for each of the seven systems engineering requirements in Rule 940.11. The SERF checklist is a streamlined form that is only one or two pages long, but it is enough to ensure that each project sponsor will address the systems engineering requirements of the rule.

Recognizing the change in some practices this type of analysis was going to require, the FHWA issued guidance, training, and technical support in the years since early 2001 to help stakeholders meet the requirements of the final rule.

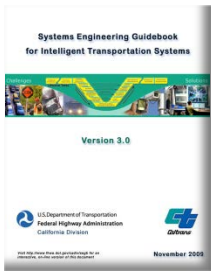
The *Regional Intelligent Transportation System (ITS) Architecture Guidance* Document mentioned in the previous section of this White Paper also gives guidance for regional ITS architecture use during project implementation. In addition, two additional products provide general guidance in systems engineering and specifically addresses regional ITS architectures.



Systems Engineering for ITS – An Introduction for Transportation Professionals (SE Handbook) is intended to introduce systems engineering and provide a basic understanding of how it can be applied to planning, designing, and implementing intelligent transportation systems (ITS) projects. This SE Handbook leads the user step by step through the project life cycle and describes the systems engineering approach at each step. It provides a general understanding of the major process tasks, intended to introduce the reader to systems engineering and provide a basic understanding of how systems engineering can be applied to planning, designing, and implementing intelligent transportation systems (ITS) projects. The Handbook is designed for ITS project managers, system owners, operators, maintainers and anyone else in need of a quick, approachable primer on the basics of systems engineering for ITS.

OBJECTIVES	▪ Define the project scope while considering the regional vision and opportunities for integration ▪ Improve consistency between ITS projects and identify more efficient incremental implementation strategies ▪ Improve continuity between planning and project development
INPUT *Sources of Information*	▪ Relevant regional ITS architecture(s) ▪ Regional/national resources supporting architecture use ▪ Other planning/programming products relevant to the project
PROCESS *Key Activities*	▪ Identify regional ITS architecture(s) that are relevant to the project ▪ Identify the portion of the regional ITS architecture that applies ▪ Verify project consistency with the regional ITS architecture and identify any necessary changes to the regional ITS architecture
OUTPUT *Process Results*	▪ List of project stakeholders and roles and responsibilities ▪ List of inventory elements included in or affected by the project ▪ List of requirements the proposed system(s) must meet ▪ List of interfaces and the information to be exchanged or shared by the system(s) ▪ Regional ITS architecture feedback as necessary
REVIEW *Proceed only if you have:*	▪ Demonstrated consistency with the regional ITS architecture and identified needed changes to the regional ITS architecture, if applicable ▪ Extracted the relevant portion of the regional ITS architecture that can be used in subsequent steps ▪ Reached consensus on the project/system scope

Figure 5: SE Handbook - Using the Regional ITS Architecture



FHWA and Caltrans jointly undertook the development of a *Systems Engineering Guidebook for ITS (SE Guidebook)* and companion SE website. This Guidebook and website were developed in response to the need for application of best practices to the development of ITS projects and the FHWA Final Rule (23 CFR 940) requiring the use of a Systems Engineering analysis to implement ITS projects. The Guidebook and companion SE website describe each step of the ITS lifecycle and the institutional issues that are important for the planning, development, implementation, operations, maintenance, upgrade, and retirement and replacement of systems. This Guidebook is designed for government and industry planners, project managers, system owners, operators, and maintainers.

The SE Guidebook is detailed to a level that can be referenced directly in a contract scope of work for systems engineering tasks and can guide industry in the systems development. The Guidebook will assist management monitoring with extensive process tailoring advice, metrics, deliverable templates, suggested roles, responsibilities, and capabilities of agencies and contractors, and excellent checklists for each process task to assure that all bases are covered. The SE Guidebook is a seminal work that was the first of its kind in the transportation domain. The SE website[1] has been referenced and used internationally by academia, federal civilian and defense agencies, state and local public agencies, and private industry.

[1] http://www.fhwa.dot.gov/cadiv/segb/

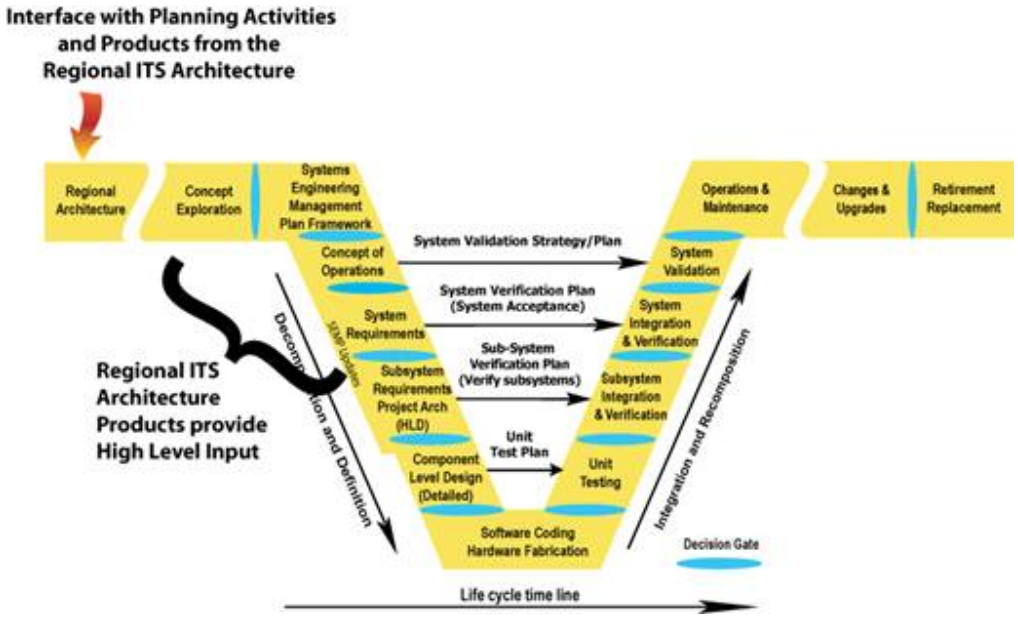


Figure 6: SE Website - Interfacing to the Regional ITS Architecture

4.3 National Program Support

Iteris, Inc. has been the Prime Contractor for the USDOT's National ITS Architecture Evolution and Support Program. This contract continues the deployment support, National ITS Architecture maintenance, training and standards support that began under the original Maintenance and Support Contract in 1996. This maintenance of the architecture includes enhancing the content of the National ITS Architecture to include new User Services and changes stemming from ITS standards development efforts and deployment experience.

Through the USDOT's evolution and support program, the Contractor provides deployment support to Federal, state and local stakeholders to assist in the interpretation of the National ITS Architecture definition and to facilitate the development of regional and project architectures. They support users of Turbo Architecture, a software tool used to develop and maintain regional ITS architectures, with a help line and website support. Deployment support includes guidance document development for Regional ITS Architectures and Systems Engineering for ITS. The Contractor also provides deployment support in the form of workshops designed to educate stakeholders in the use and maintenance of their regional ITS architectures.