



## **Intelligent Transportation Systems (ITS) Policy**

In accordance with 23 CFR Parts 655 and 940, the Federal Transit Administration (FTA)'s annual "Certifications and Assurances," and the National ITS Architecture, it is Caltrans' policy that all requests for ITS projects by an awarding agency must have an ITS Plan. All ITS projects shall conform to the National ITS Architecture and standards in accordance with the requirements. Conformance with the National ITS Architecture means the use of the National ITS Architecture to develop a regional ITS architecture in support of integration and the subsequent adherence of all ITS projects to that regional ITS architecture. Development of the regional ITS architecture should be consistent with the transportation planning process for Statewide and Metropolitan Transportation Planning and Regional Transportation Planning. (49 CFR Parts 613 and 621).

All FTA grant applicants requesting funds for ITS project must complete the ITS compliance form and have DMT approval prior to grant award. If any federally funded ITS project is found to be non-compliant Federal funds may be withheld for future projects and the subrecipient could be liable for returning previously awarded funds.

## **Definitions**

***Intelligent Transportation Systems (ITS)*** means electronics, communications or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

***ITS Project*** means any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture.

***National ITS Architecture*** (also national architecture) means a common framework for ITS interoperability. The National ITS Architecture comprises the logical architecture and physical architecture which satisfy a defined set of user services. The National ITS Architecture is maintained by the United States Department of Transportation (U.S. DOT).

***Regional ITS Architecture*** means a regional framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects.

***Systems Engineering*** is a structured process for arriving at a final design of a system. The final design is selected from a number of alternatives that would accomplish the same objectives and considers the total life-cycle of the project including not only the technical merits of potential solutions but also the costs and relative value of alternatives.

## **ITS Function**

ITS are techniques and methods for relieving congestion, improving road and transit safety, and increasing economic productivity. ITS technologies refer to electronic sensing technologies that continuously monitor the system's operations, computer systems that process system performance data,



electronic devices that can deliver critical information to travelers and communication networks that carry data flows between the field processing points. ITS, therefore, emphasizes system operations in an efficient and safe manner through integrated management of various components of the transportation system and its services.

An ITS project is any project that may provide an opportunity for regional integration at any point during its life. Some examples of major ITS projects include: transportation operations centers such as a traffic management center or transit management center; a major new integrated traffic signal system; an automated vehicle location system for a large transit fleet; a traveler information service; or a freeway surveillance and control system. Common examples of rural transit ITS projects include: automatic vehicle locators (AVL), global positioning systems (GPS), automated passenger counter (APC), automated stop announcement, computer hardware, accounting software, demand-response management software, fixed-route management software, maintenance software, mobile data terminal (MDT), electronic fareboxes, computer-aided dispatch (CAD), electronic fare payment (Smart Card), security surveillance cameras, transit traveler information, and vehicle maintenance systems.

If the project includes one or more ITS components that implement any of the ITS User Services as defined in the National ITS Architecture, it is considered an ITS Project. There are over 30 User Services, organized in approximately seven User Services Bundles, represented within the National ITS Architecture. There are 11 Transit ITS Service Packages:

- |        |                                    |        |                                   |
|--------|------------------------------------|--------|-----------------------------------|
| APTS01 | Transit Vehicle Tracking           | APTS07 | Multi-modal Coordination          |
| APTS02 | Transit Fixed-Route Operations     | APTS08 | Transit Traveler Information      |
| APTS03 | Demand Response Transit Operations | APTS09 | Transit Signal Priority           |
| APTS04 | Transit Fare Collection Management | APTS10 | Transit Passenger Counting        |
| APTS05 | Transit Security                   | APTS11 | Multi-modal Connection Protection |
| APTS06 | Transit Fleet Management           |        |                                   |

By looking at the list of User Services, an agency can usually see which ones address their needs. For example, if an agency wants to improve on-time performance, it may require APTS01 and APTS02. If the agency wants to provide real-time vehicle location information to customers, it may require APTS 01 and APTS08.

The systems engineering process must be applied to all ITS projects or projects with ITS elements. Commercial off-the-shelf (COTS) projects including computer software, hardware, technology, or computer products that are ready made and available for sale, lease, or licensed to the general public must also be included in the regional ITS architecture (plan) and must follow a systems engineering analysis approach if they are to be funded with Federal funds. The systems engineering analysis process is intended to reduce the risk of schedule and cost overruns and increase the likelihood that the implementation of the ITS project will successfully meet the user's needs. Until a region has a regional ITS architecture (plan) in place, any major ITS projects that are advanced in that region require the development of a project specific architecture also known as a project level architecture. A project level architecture focuses on the possible information exchanges between the ITS system(s) being planned as



part of the project with other known existing or planned systems in the region. The development of the regional ITS architecture (plan) is not meant to compete with the formal transportation planning process. They must work together to provide the best “plan” for the region. The regional ITS architecture (plan) should be tailored to local needs and problems, as it should be a natural extension of the existing transportation planning process.

### **Roles and Responsibilities**

Applicants and Subrecipients:

- Participate in regional ITS architecture development process
- Submitting affirmation to ITS compliance on the Annual certifications and Assurances
- Complete the ITS Compliance form and obtain DMT approval prior to grant award
- Maintain and have on file a regional ITS architecture plan

Caltrans DMT:

- Provide guidance and technical assistance to applicants and subrecipients on ITS project compliance
- Review ITS Compliance form for project conformance to National ITS Architecture

### **ITS Compliance Review Process**

1. Read the California ITS Rural/Non-Urban Transit Statewide Plan (ITS Statewide Plan). This document will provide you with the framework for which to begin your ITS compliance review.
2. Using the ITS Architecture Process Flowchart for Transit Providers follow each of the 11 steps to determine whether an ITS project complies with a regional architecture or if a project specific architecture is required. The ITS Implementation Checklist provides a detailed description of each step and reference to the applicable section in the ITS Statewide Plan.
3. The color coded map of California indicates ITS Architecture Plans. This map delineated by Caltrans district boundaries, identifies existing regional ITS architecture plans. If a regional ITS architecture exist, contact the ITS architecture team to verify project inclusion or initiate project integration into the ITS Architecture planning and development process. Contact information on each ITS architecture plan is located on Table 4, Page 22 of the ITS Statewide Plan.
4. The ITS Architecture Checklist is a reference tool for grant applicants, subrecipients or transportation planning agencies to evaluate a specific regional ITS Architecture to determine if it conforms to the requirements of the National ITS Architecture and Standards. The review and determination process should be documented for future reference and audit purposes.
5. Implementing Rural/Non-Urban ITS: What You Need to Know. The slide presentation including notes provides an overview of ITS requirements and detailed steps to become compliant to meet program responsibility.