

Appendix A

New York State ITS Standards Specification Development Guide

Overview of FHWA Rule 940/FTA Policy on Regional ITS Architecture and Systems Engineering Analysis

Prepared for

New York State Department of Transportation

Prepared by

Consensus Systems Technologies Corp.

November 22, 2006

Table of Contents

1 Introduction..... 1

2 National ITS Architecture..... 2

3 Regional ITS Architecture 3

4 Systems Engineering Analysis (SEA) 4

Revision History

Filename	Version	Date	Author	Comment
NYStateSpecDevGuide – Ap A.doc	0.3	11/22/06	M. Insignares	Initial Draft

1 Introduction

In 1997, Congress passed the Transportation Equity Act for the 21st Century (TEA-21) to address the need to begin working toward regionally integrated transportation systems. To implement Section 5206(e) of TEA-21, which requires ITS projects to conform to the National ITS Architecture (NITSA) and Standards, the Federal Highway Administration (FHWA) issued 23 Code of Federal Regulations (CFR) Parts 655 and 940, entitled “Intelligent Transportation Systems (ITS) Architecture and Standards” on January 8, 2001. The rule became effective on April 8, 2001. Concurrently, the Federal Transit Administration (FTA) issued a Final Policy entitled “National ITS Architecture Policy on Transit Projects”. The intent of the FHWA Final Rule (commonly referred to as Rule 940) and Final FTA Policy is to provide policies and procedures by which to implement ITS projects in an efficient manner and to conform to the National ITS Architecture.

The purpose of the Final Rule/Final Policy is to accelerate the deployment of integrated Intelligent Transportation Systems (ITS) by requiring:

- (a) the development of a local implementation of the National ITS Architecture, referred to as a regional ITS architecture.
- (b) that all ITS projects be developed using a systems engineering analysis.

2 National ITS Architecture

The National ITS Architecture provides a common framework for planning, defining, and integrating intelligent transportation systems and defines:

- The functions (e.g., gather traffic information or request a route) that are required for ITS.
- The physical entities or subsystems where these functions reside (e.g., the roadside or the vehicle).
- The information flows and data flows that connect these functions and physical subsystems together into an integrated system.

The National ITS Architecture also introduces the concept of Market Packages. Market packages define potential ITS deployments in both narrative and diagrammatic form. Market package diagrams show which ITS systems are required to work together (across different operators, whether public or private) to deliver a given transportation service. Market packages are designed to address specific transportation problems and needs and relate back to the ITS services and their more detailed requirements.

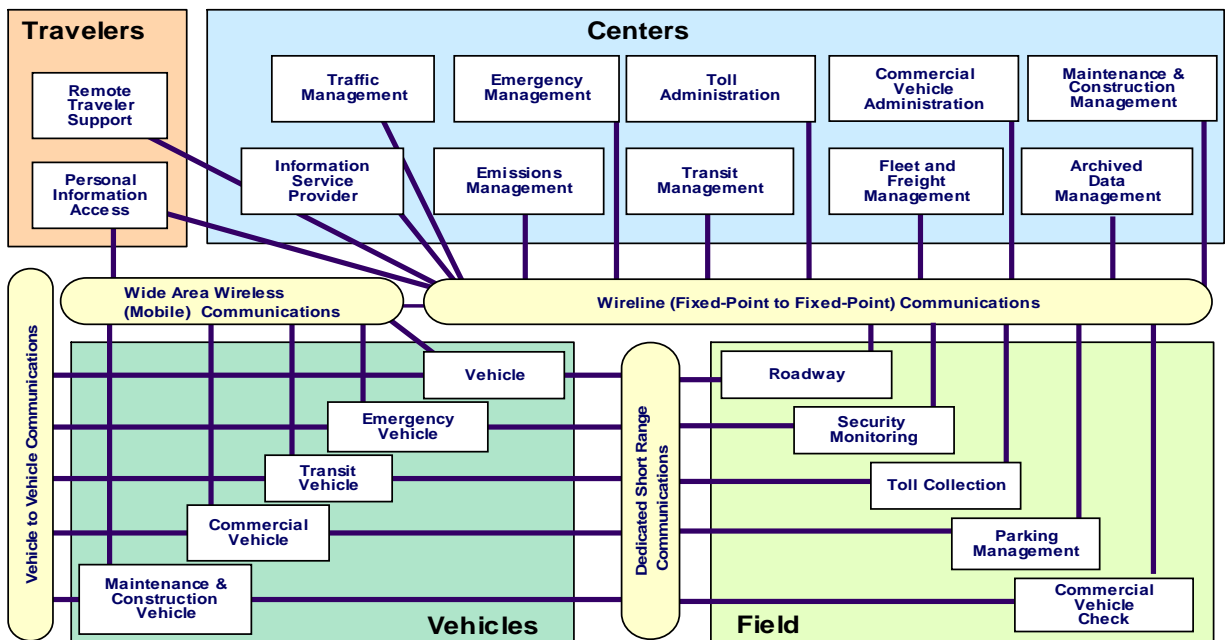


Figure 2-1. National ITS Architecture Version 5.0 Sausage Diagram

3 Regional ITS Architecture

The regional ITS architecture, which is based on the National ITS Architecture but customized to meet a region's (or a state's) particular needs, provides a plan by which a region can efficiently deploy ITS systems in a manner allowing for integration of these systems.

The Final Rule/Final Policy defines 9 required components that make up a regional ITS architecture. These components are:

1. Description of the region
2. Identification of participating agencies and other stakeholders
3. Operational concept
4. Agreements required for implementation
5. System functional requirements
6. Interface requirements
7. Identification of ITS standards
8. Sequence of projects required for implementation
9. Process for maintaining your Regional ITS Architecture

4 Systems Engineering Analysis (SEA)

Systems engineering can be defined as 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.

The Project Systems Engineering Analysis (SEA) is a set of requirements from FHWA Rule 940/FTA Policy for project implementation. The requirements state:

- (a) All ITS projects funded with highway trust funds shall be based on a systems engineering analysis.
- (b) The analysis should be on a scale commensurate with the project scope.
- (c) The systems engineering analysis shall include, at a minimum:
 - 1. Portions of the Regional ITS Architecture Being Implemented
 - 2. Participating Agencies Roles and Responsibilities
 - 3. Requirements Definitions
 - 4. Analysis of Alternative System Configuration and Technology Options
 - 5. Procurement Options
 - 6. Applicable ITS Standards and Testing Procedures
 - 7. Procedures and Resources Necessary for Operations and Management of the System

All ITS projects are required to conform to the systems engineering requirements listed above. The requirement is that project development of ITS projects are to be based on the relevant parts of the regional ITS architecture that the project implements. ITS projects are also required to use applicable ITS standards and interoperability tests that have been officially adopted by U.S. DOT. However, as of the date of this report, no ITS standard or interoperability test has been officially adopted.