



New National ITS Architecture's V7 – What's New and How to Use It!

July 10, 2012



U.S. Department of Transportation
Research and Innovative Technology Administration



U.S. Department of Transportation
Federal Highway Administration



Agenda

- National ITS Architecture
 - Overview
 - Version 7.0 update
 - Example Use of Version 7.0
- Turbo Architecture version 7.0



T3
Webinar

Personal
Information
Access

Transit
Management

Traffic
Management

Fixed Point-to-Fixed Point Communication

New National ITS Architecture's V7 – What's New and How to Use It!

Overview of National Architecture



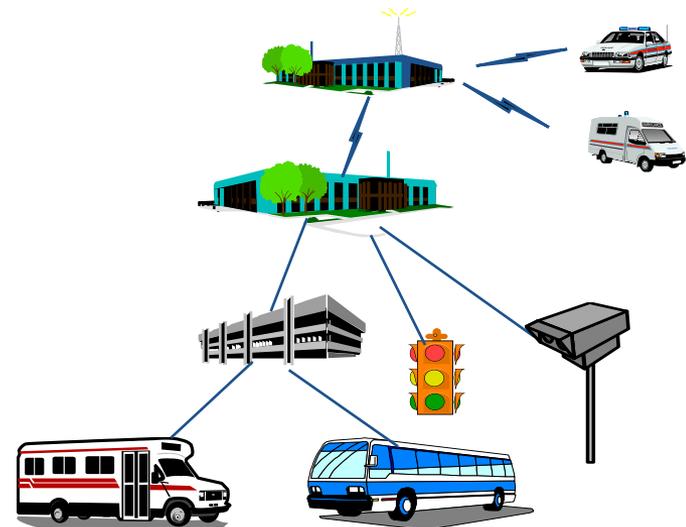
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Federal Highway Administration

What is ITS?

- Intelligent Transportation Systems (ITS) include the electronics, communications or information processing used singly or integrated to improve the efficiency or safety of surface transportation
- Examples:
 - Traffic signal controllers
 - Traffic Management Centers
 - 511 (traveler information)
 - Electronic toll-tagging

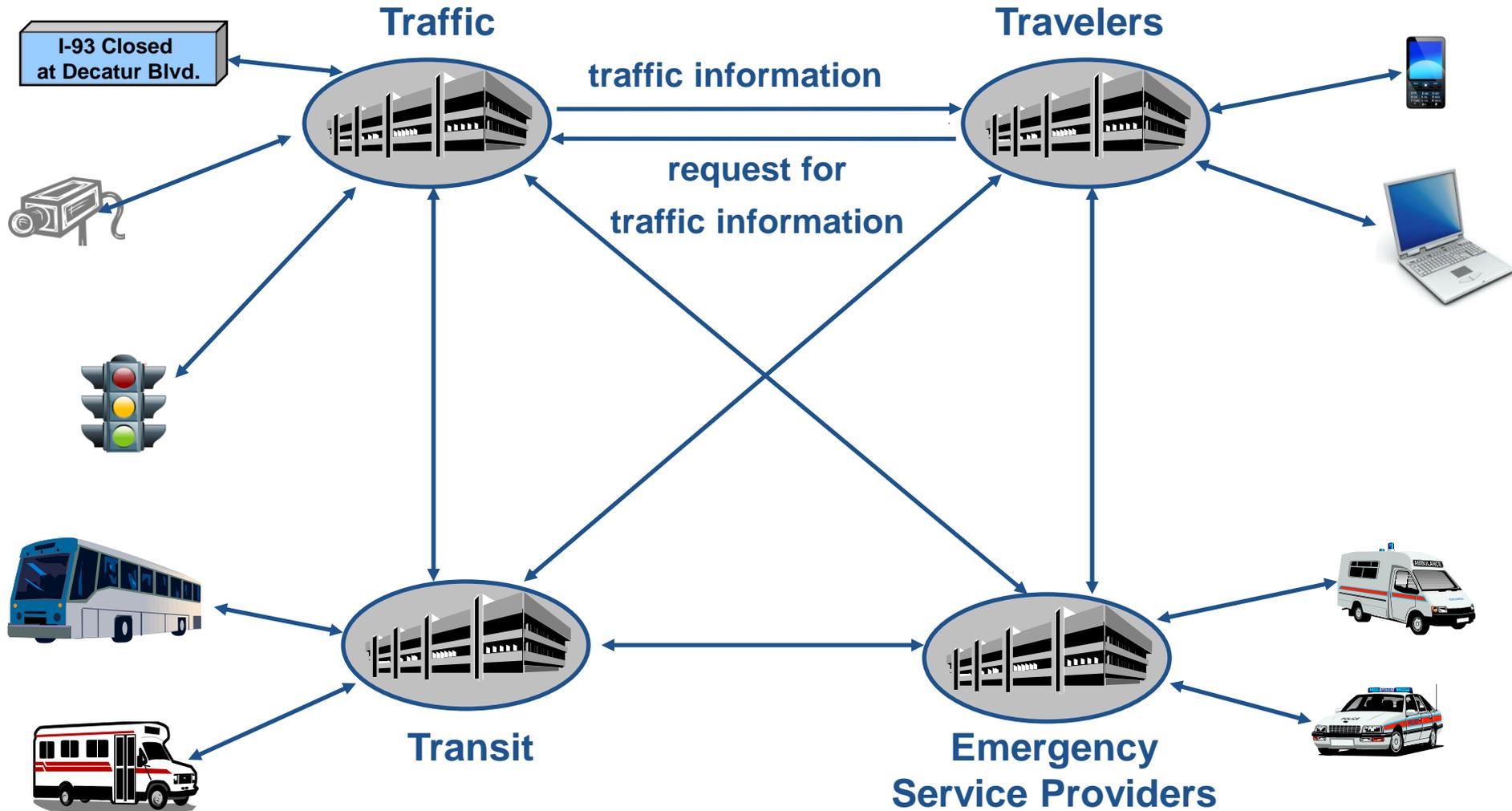


What is an ITS Architecture?

- Framework for developing integrated transportation systems
- Identifies:
 - Organizations
 - Systems operated
 - Functions performed
 - Communications
 - Information exchanged



ITS Architectures Provide a Framework for Integration



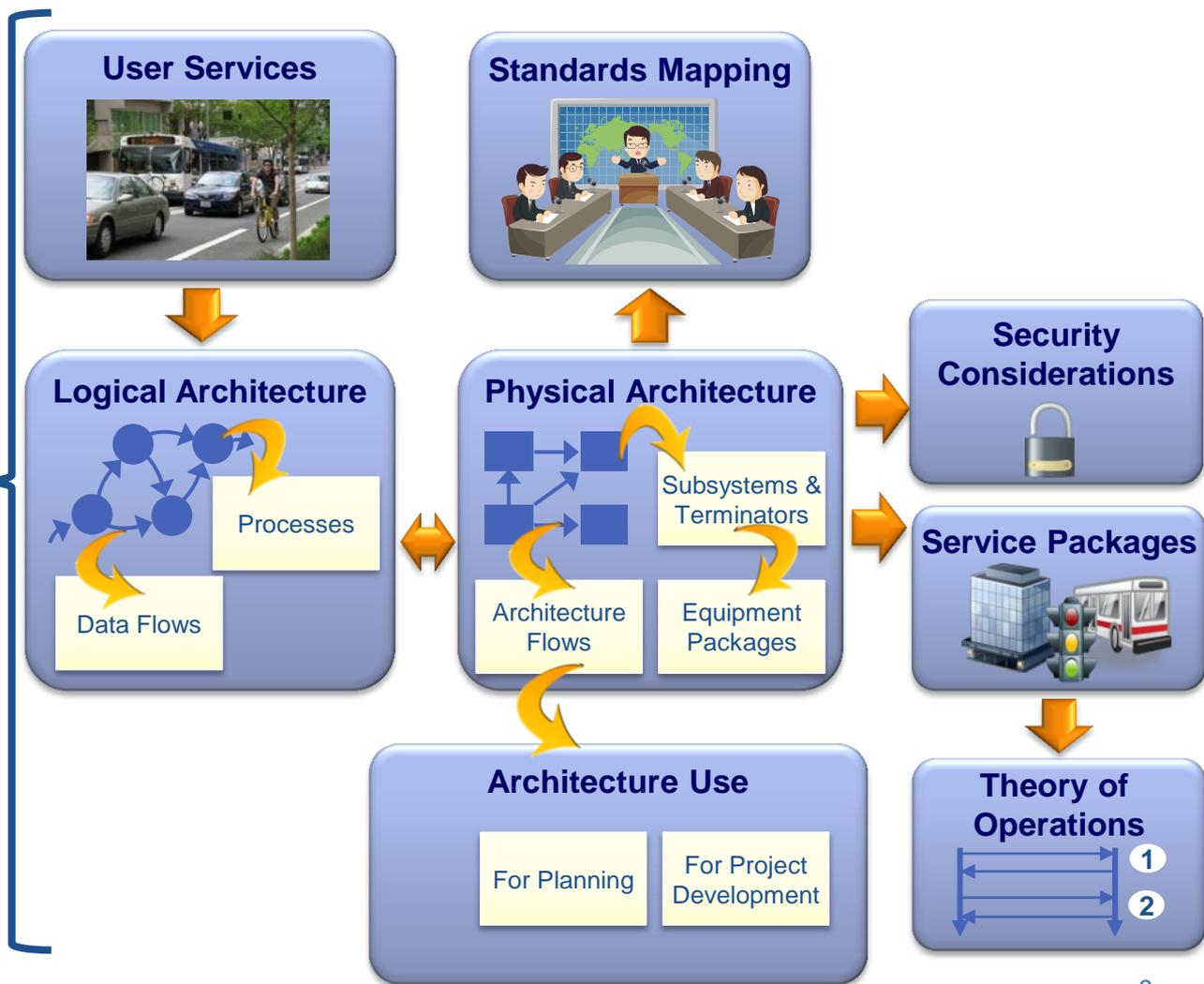
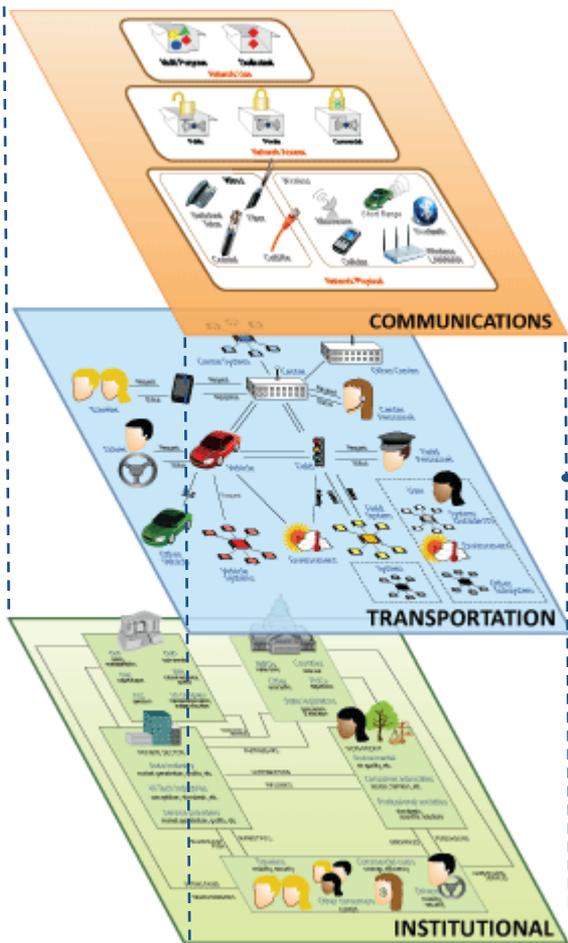


What is the National ITS Architecture?

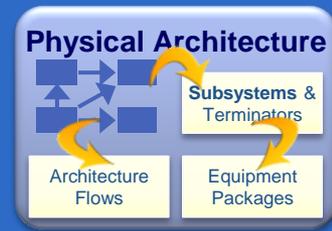
- High-level national framework, “blueprint”, used to help guide ITS deployment and transportation planning
- Based on 33 transportation related ITS User Services
- Used as a template to create regional and project architectures

National Architecture Products

Architecture Layers



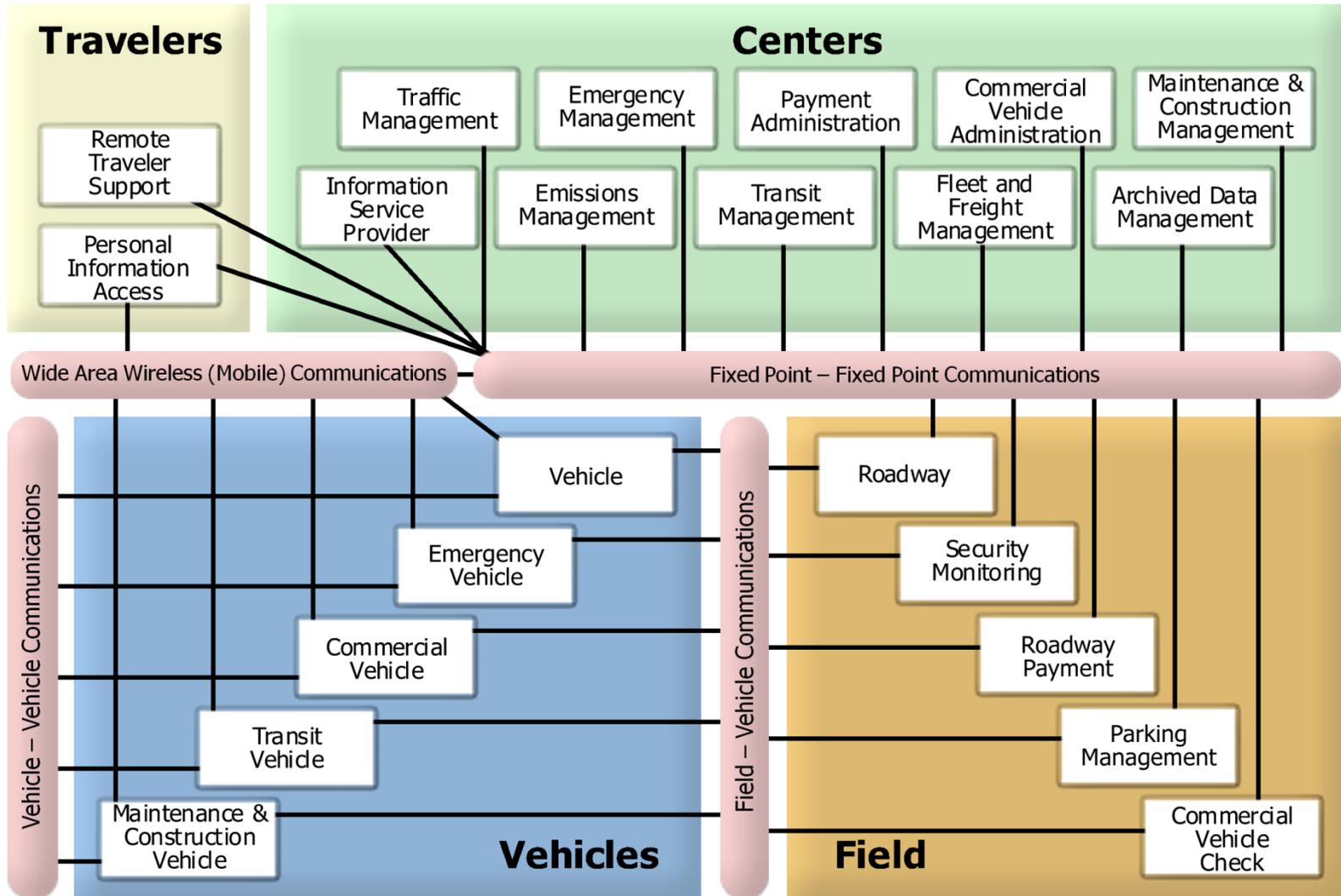
Physical Entities - Subsystems



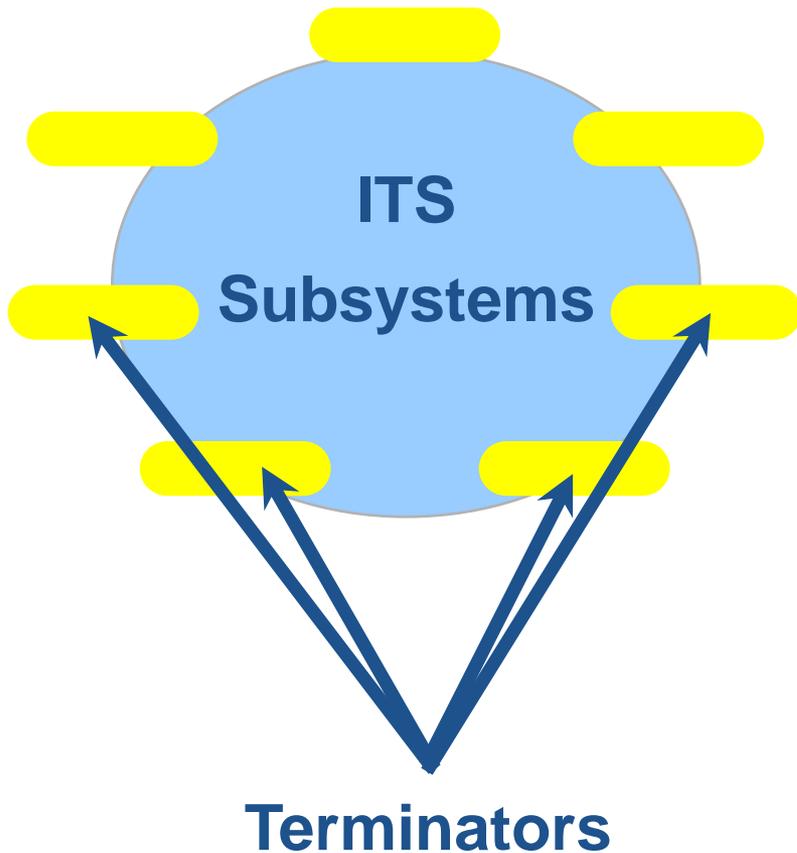
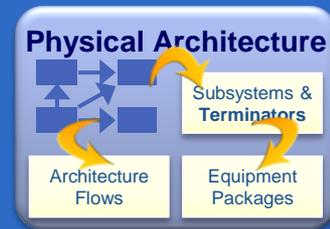
- Part of the overall Intelligent Transportation System
- Identify major systems, functionality
- Identify major interfaces
- Define key standardization points
- 4 Categories
 - Centers
 - Field
 - Vehicles
 - Travelers



Subsystem Diagram

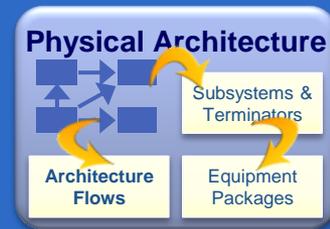


Physical Entities - Terminators

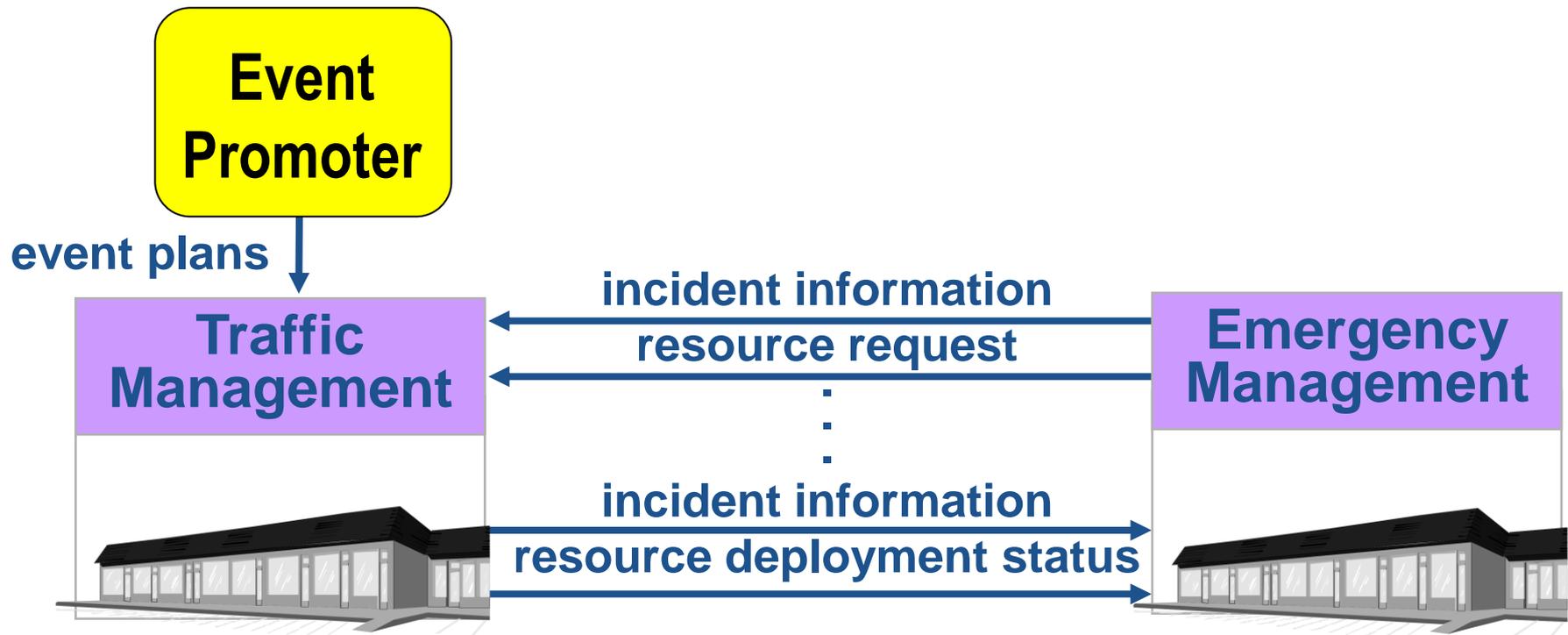


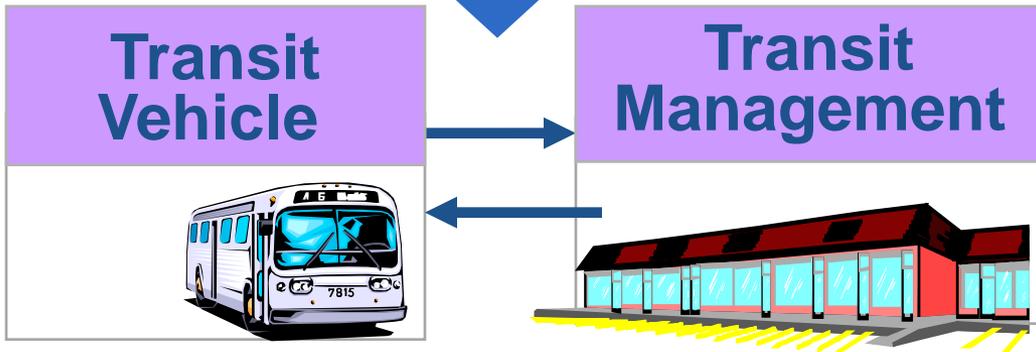
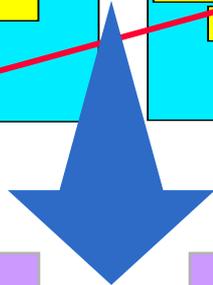
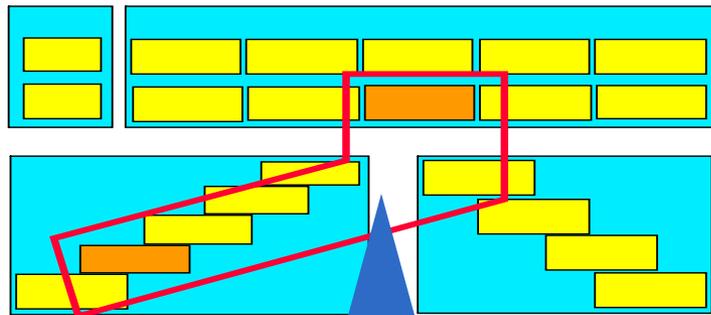
- Entities outside of ITS
- Define the ITS boundary
- Define interfaces but not functionality
- Four types of Terminators
 - Environment
 - Human
 - System
 - Other System

Architecture Flows



- Define information exchanged
- Also known as “information flows”
- ITS standards are mapped to architecture flows





Architecture

Framework
spanning all of ITS

Service Packages

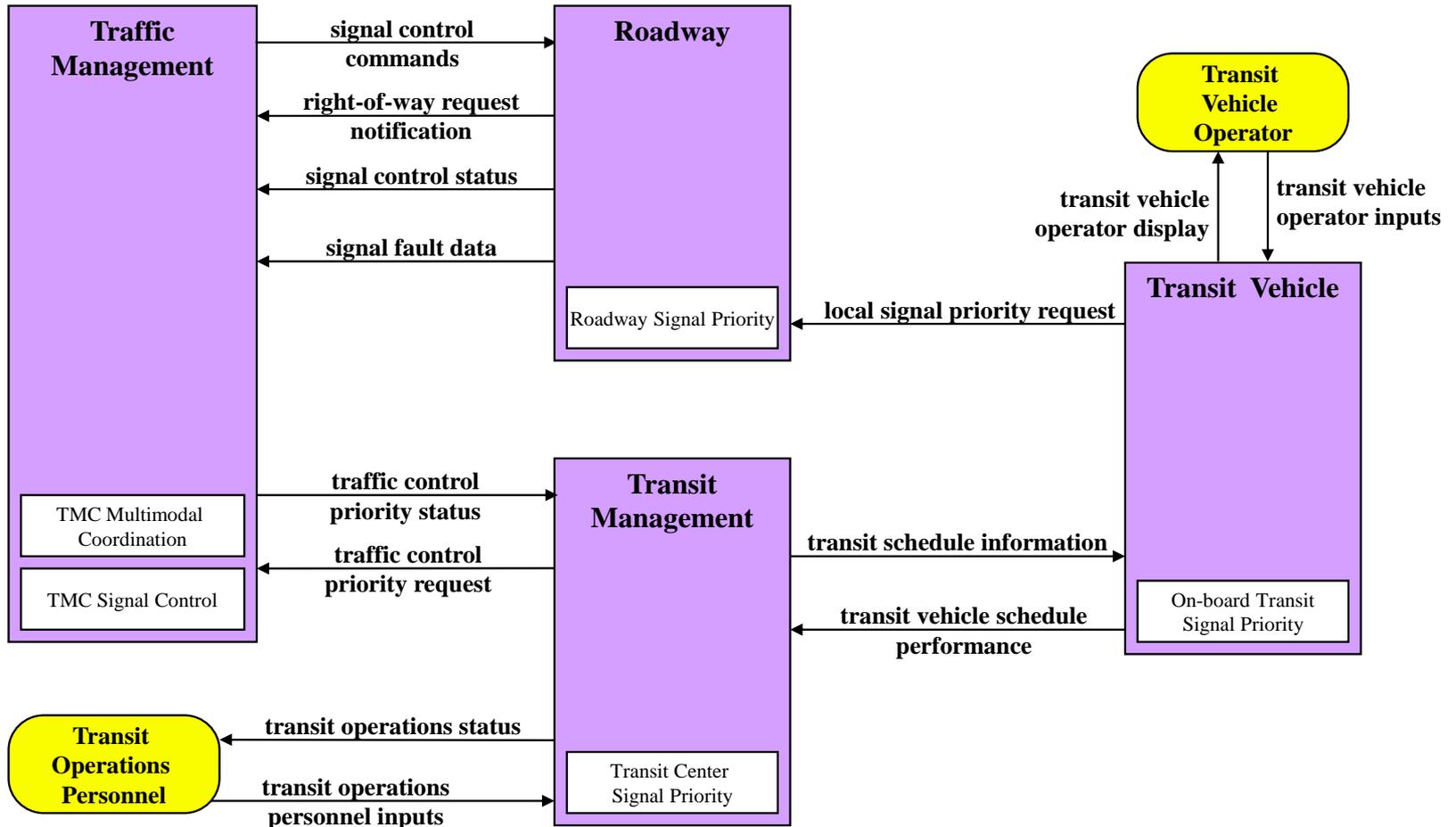
Contain pieces of
the architecture that
provide a particular
ITS service



- Represent ITS services in the National ITS Architecture
- Formerly known as market packages
- Examples:
 - Traffic Incident Management System
 - Broadcast Traveler Information
 - Surface Street Control
 - Transit Vehicle Tracking



APTS09: Transit Signal Priority Service Package



Service Package Groups

Traffic Management



Traveler Information



Transit Management



Emergency Management



Commercial Vehicle Operations



Maintenance and Construction



Archived Data



Vehicle Safety





New National ITS Architecture's V7 – What's New and How to Use It!

National Architecture Version 7.0 Update



U.S. Department of Transportation
Research and Innovative Technology Administration

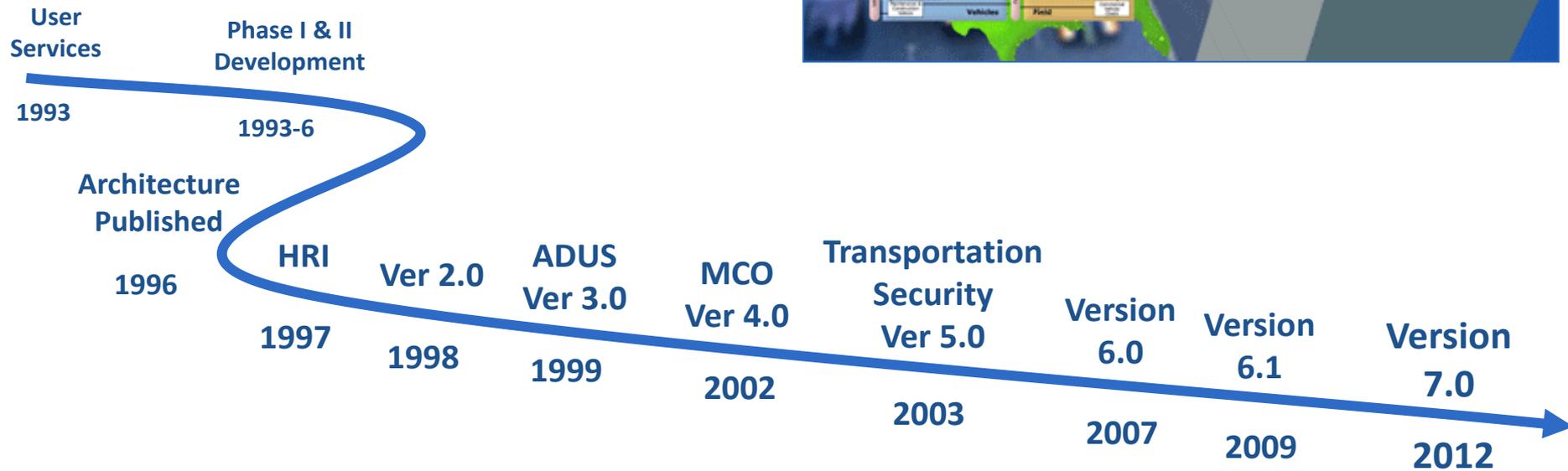
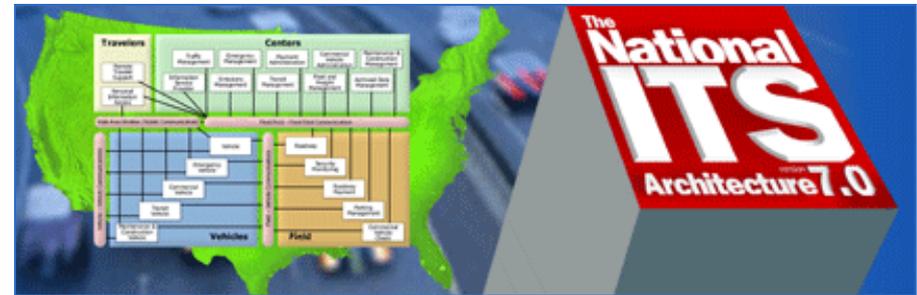


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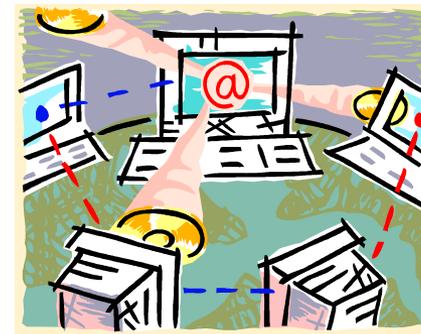
National ITS Architecture is a “Living Document”

- Continuing evolution over 16 years



Architecture Evolution in Step with Industry

- Research and Federal Programs
 - DOT Initiatives
 - Commercial Vehicle Information and System Networks (CVISN)
 - Connected Vehicles Program
- ITS Standards
- Deployment Lessons Learned



Version 7.0 Availability

<http://www.its.dot.gov/arch/index.htm>

RITA U.S. Department of Transportation
Research and Innovative Technology Administration

Intelligent Transportation Systems
Joint Program Office

The National ITS Architecture 7.0

ARCHITECTURE ARCHITECTURE USE ARCHITECTURE PRODUCTS TRAINING/WORKSHOPS TURBO ARCHITECTURE GLOSSARY

Architecture Layers Base Services Logical Architecture Physical Architecture Service Packages Standards Security

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National ITS Architecture

The National ITS Architecture provides a common framework for planning, defining, and integrating intelligent transportation systems. 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, etc.).

The architecture 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 field or the vehicle).
- The information flows and data flows that connect these functions and physical subsystems together into an integrated system.

If you would prefer a summary document that you can print and read over coffee, a brief document is available that presents the [key architecture concepts](#).

National ITS Architecture News

February 14, 2012
Turbo Architecture Version 7.0 Released

January, 2012
National ITS Architecture Version 7.0 Released

What's New in Version 7.0

Version 7.0 of the National ITS Architecture includes a host of [new features](#) that enhance the architecture definition and make it easier for you to access the information that you need. The architecture will continue to evolve as new user services are developed, standards activities progress, and more and more ITS implementations put the architecture into action.

The National ITS Architecture is now on LinkedIn

If you have comments or additions to the National ITS Architecture, please complete and submit the [feedback form](#).

RITA U.S. Department of Transportation
Last Updated 3/28/2012

United States Department of Transportation

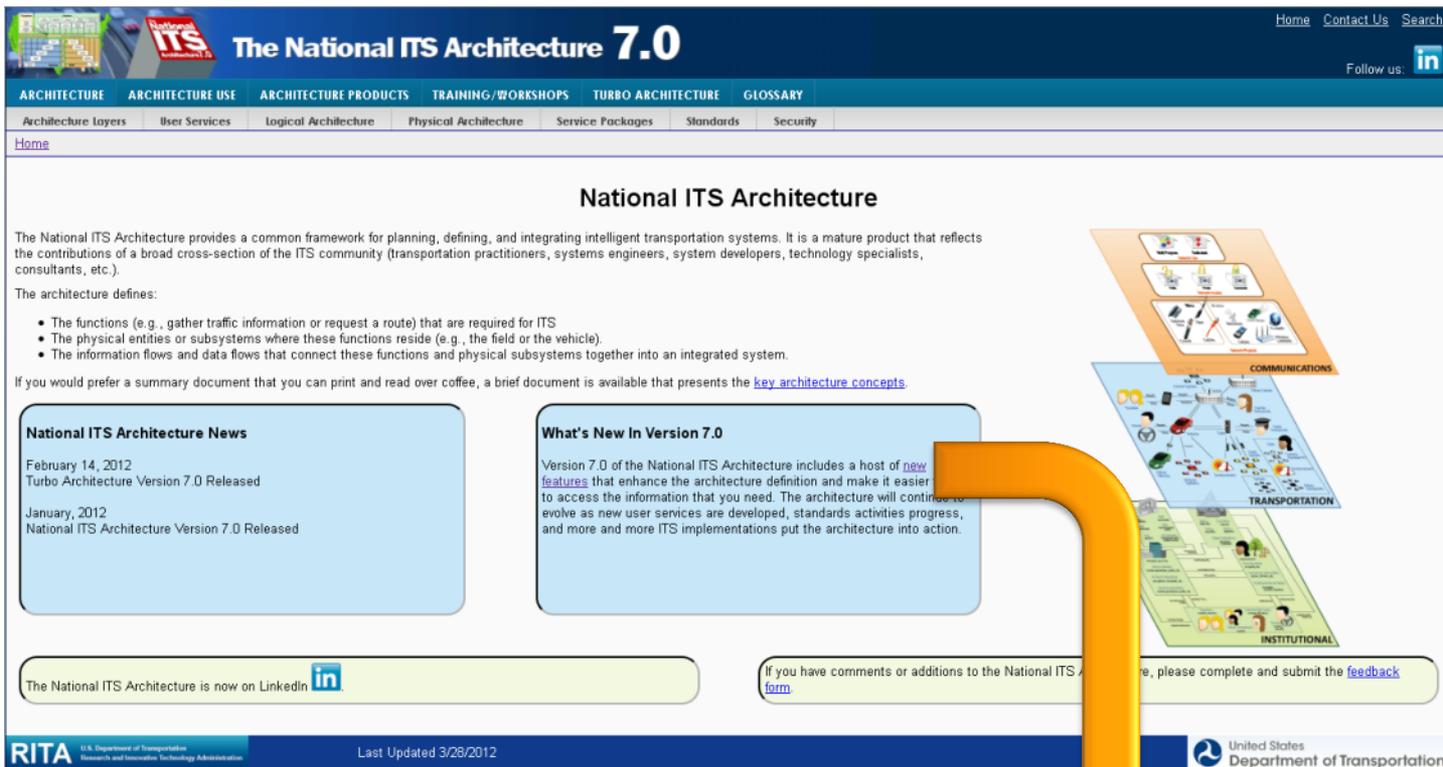
Cross-Cutting Research Support

National ITS Architecture Technical Background

Current Version: National ITS Architecture

The National ITS Architecture website has been updated with new features that enhance the architecture definition and support how the architecture is used in transportation planning. The principal changes are to provide better access to all of the architecture planning view of the architecture, and support new initiatives like Active Traffic Management (ATM), and Road User Pricing. Version 7.0 is also synchronously updated.

What's New in V7.0



The screenshot shows the homepage of the National ITS Architecture 7.0 website. The header includes navigation links for Home, Contact Us, and Search, along with a LinkedIn follow button. A menu bar lists categories such as ARCHITECTURE, ARCHITECTURE USE, ARCHITECTURE PRODUCTS, TRAINING/WORKSHOPS, TURBO ARCHITECTURE, and GLOSSARY. Below the menu, there are sub-links for Architecture Layers, User Services, Logical Architecture, Physical Architecture, Service Packages, Standards, and Security. The main content area features a 'National ITS Architecture' section with a descriptive paragraph and a list of defining elements. A 'What's New in Version 7.0' box highlights new features. A large orange arrow points from this box to two buttons at the bottom: 'High Level Changes' and 'Detailed Change Log'. The footer contains logos for RITA (U.S. Department of Transportation Research and Innovative Technology Administration) and the United States Department of Transportation, along with the date 'Last Updated 3/28/2012'.

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High Level Changes **Detailed Change Log**



What's New in V7.0

- Updated institutional layer
- Planning view of the architecture
- Synchronization with other initiatives
 - FMCSA Commercial Vehicle Information Systems and Networks (CVISN)
 - Canadian Architecture
- Reflect current ITS standards



What's New in V7.0 (cont.)

- Represent ITS advancements
 - Active Traffic Management (ATM)
 - Connected Vehicle Program
 - Road User Pricing
- Enhanced website



Planning View

- Provides an entry point to the architecture that is oriented to the transportation planning process
 - Can enter view planning factors, goals or objectives
- Provide support for planning of ITS programs & projects
- Each service package linked to planning items

Planning View

- Planning4Operations

- ITS Knowledge Resources



Knowledge Resources

Benefits	Costs	Lessons Learned	Deployment Stats	Applications
<ul style="list-style-type: none"> > Applications 				
Intelligent Infrastructure				
 Arterial Management		 Freeway Management		
 Crash Prevention and Safety		 Road Weather Management		
 Roadway Operations &		 Transit Management		
 Transportation Management		 Traffic Incident Management		



Synchronization with CVISN

- Addition of several architecture flows to support exchange of credentials information to support citations and sharing of border clearance status
- Adds support for Wireless Roadside Inspection (WRI) functions and interfaces



Synchronization with Canadian Architecture

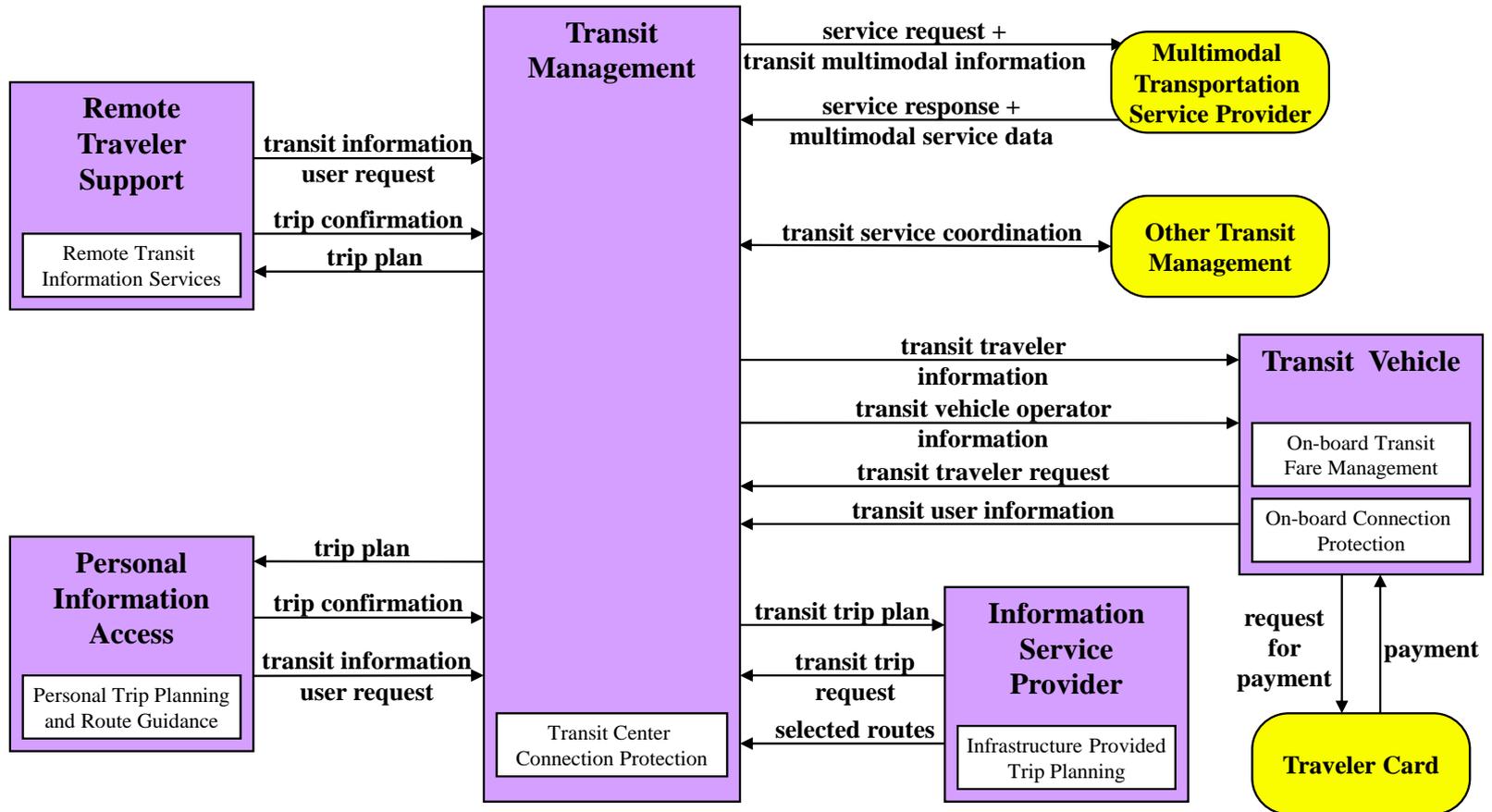
Transport Canada



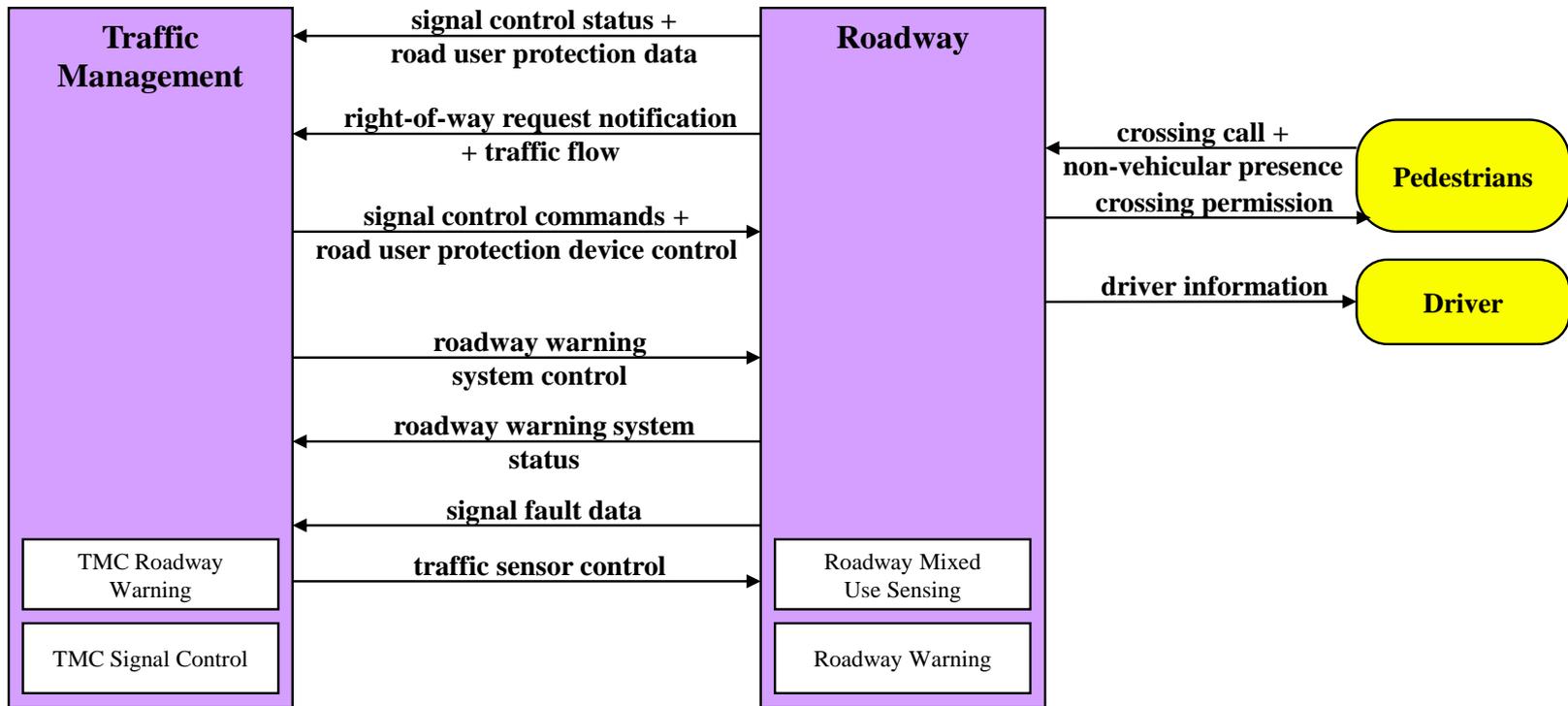
- Replacement of the term "market package" with "service package"
- Adjustment of architecture flows
- Two new service packages
 - APTS11: Multimodal Connection Protection
 - ATMS26: Mixed User Warning Systems



APTS11: Multimodal Connection Protection

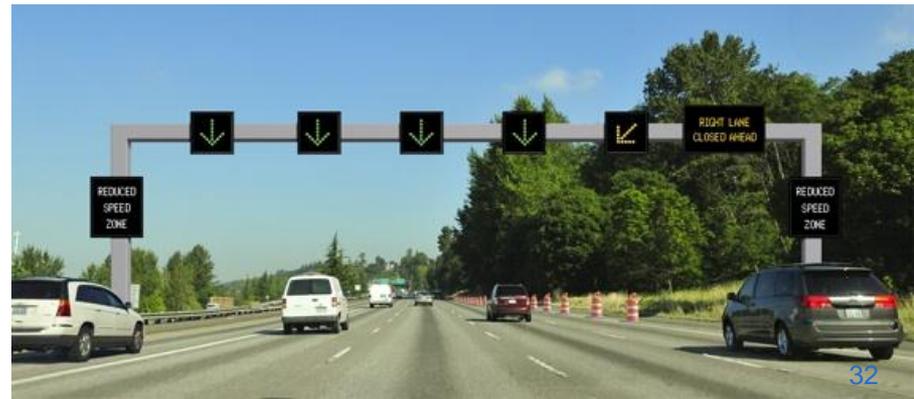


ATMS26: Mixed User Warning Systems



ITS Advancements: Active Traffic Management (ATM)

- “Practice of dynamically managing recurrent and nonrecurrent congestion based on prevailing traffic conditions”
- “Use of integrated systems with new technology, including the automation of dynamic deployment to optimize performance quickly”



ITS Advancements: Active Traffic Management (ATM)

- Strategies:
 - Speed Harmonization
 - Hard Shoulder Running
 - Queue Warning
 - Dynamic Merge Control
 - Dynamic Truck Restriction
 - Dynamic Rerouting and Traveler Info
 - Dynamic Lane Markings
 - Automated Enforcement





ITS Advancements: Active Traffic Management (ATM)

- New service packages
 - ATMS22: Variable Speed Limits
 - ATMS23: Dynamic Lane Management and Shoulder Use
 - ATMS24: Dynamic Roadway Warning
- ATM strategies were removed from
 - ATMS04: Freeway Control → Traffic Metering



ITS Advancements: Connected Vehicle Program

- Continue updates in Version 6.0 and 6.1
- Only minor changes were required to update terminology to match the connected vehicle program

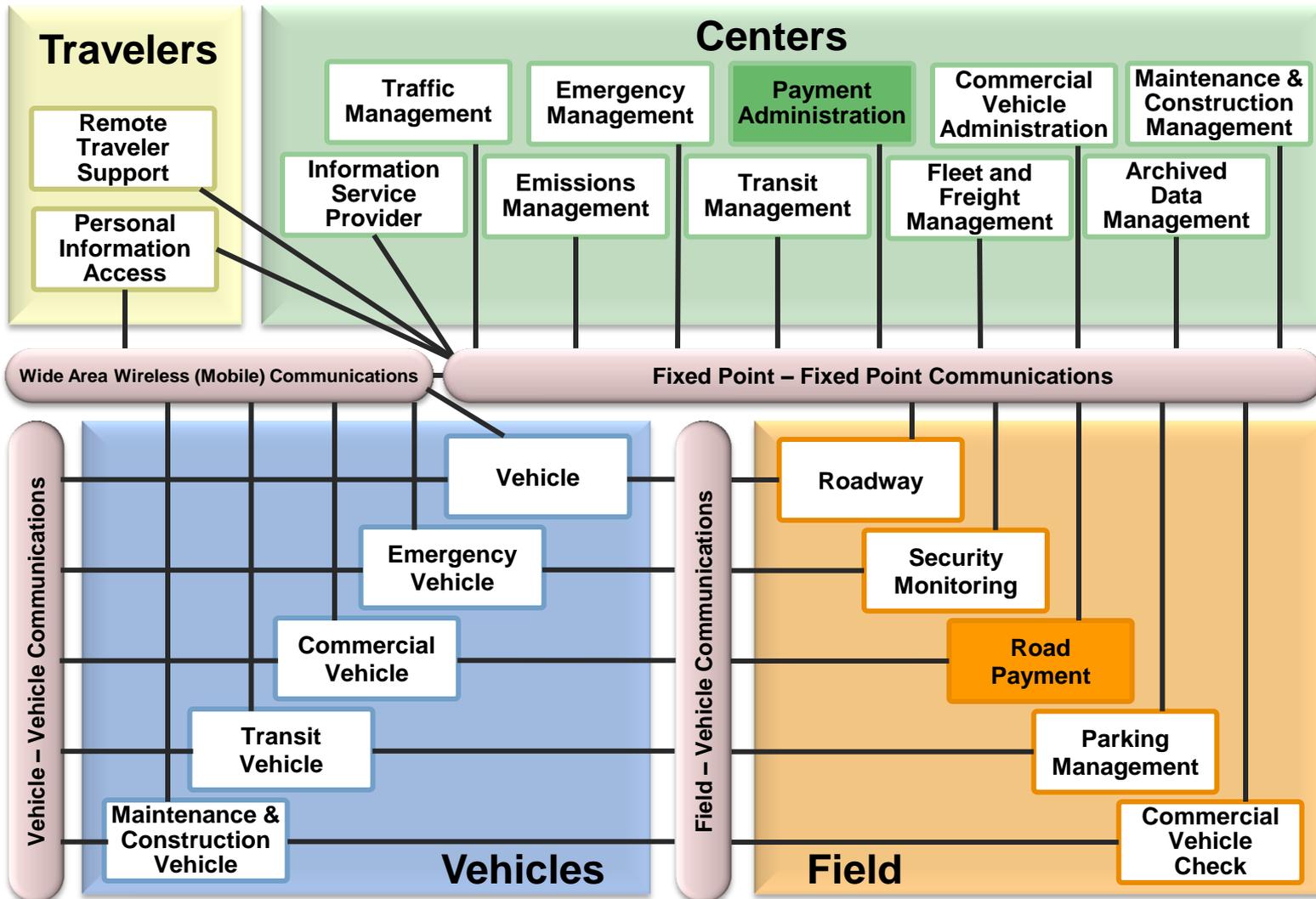


ITS Advancements: Road User Pricing

- Support for alternative pricing of roadways including road use or vehicle miles traveled (VMT) fee-based systems
- New service package
 - ATMS25: VMT Road User Payment
- Changes to subsystems for methods besides traditional toll collection
 - Toll Collection Administration → Payment Administration
 - Toll Collection → Roadway Payment

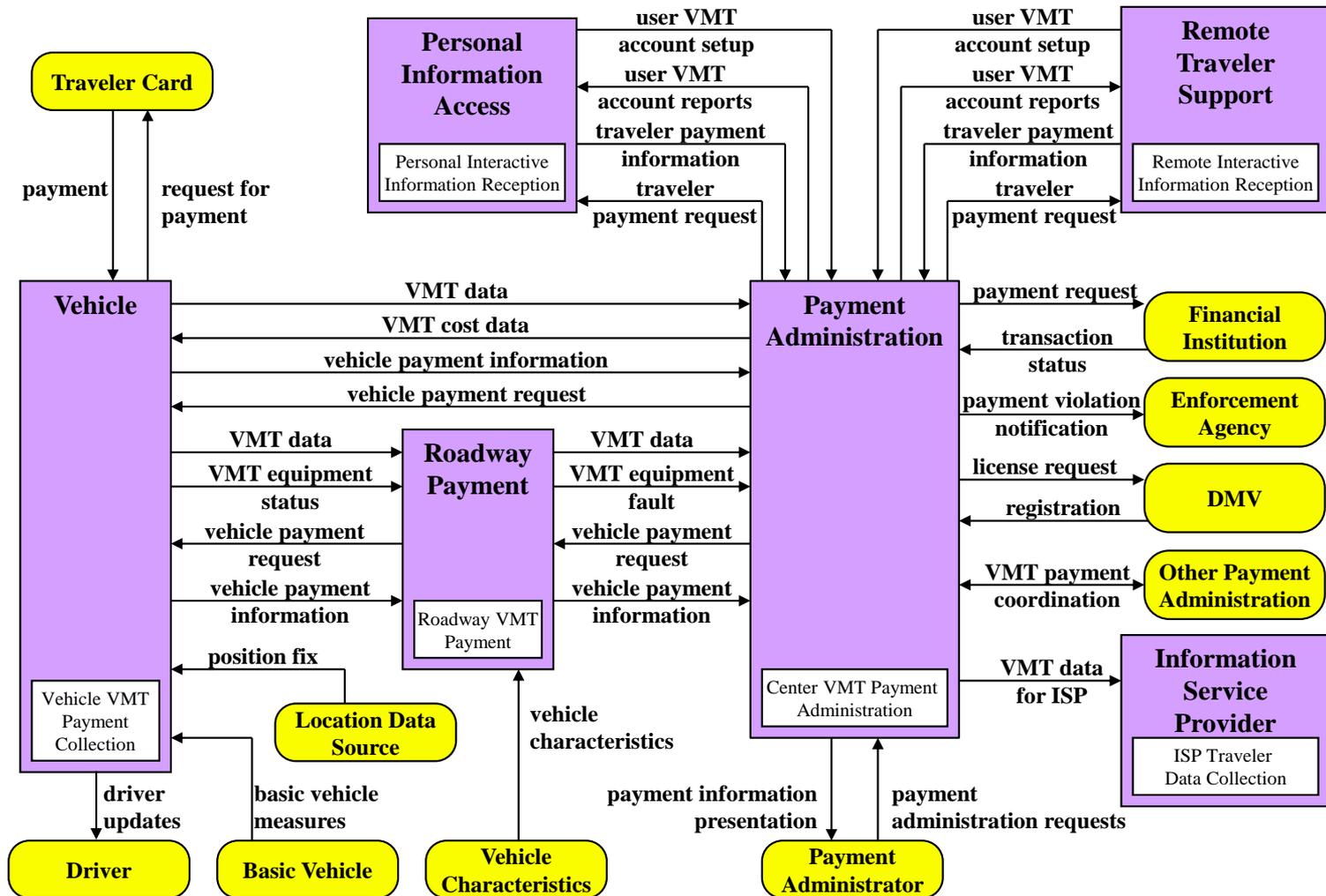


Road User Pricing Subsystem Changes





ATMS25: VMT Road User Payment





Poll Question

1. **What ITS advancements of Version 7 of the National ITS Architecture are or will become relevant to your region? (*You may choose more than one.*)**
 - a) **Active Traffic Management (ATM)**
 - b) **Connected Vehicle Program**
 - c) **Road User Pricing**



Poll Question

2. When do you plan to update your regional/statewide architecture?

- a) Within 6 months**
- b) 6-12 months**
- c) 1 year**
- d) 2+ years**
- e) I don't know**

Website Enhancements

National ITS Architecture
Version 6.1
U.S. Department of Transportation

- Home
- Search
- What's New
- Hypertext View
- Document View
- Database View
- User Services
- Logical Architecture
- Physical Architecture
- Market Packages
- Standards
- Security
- Training
- Turbo Architecture
- Glossary
- Acronyms
- CD Orders
- Contact Us

Last updated 1/7/2009

National ITS Architecture Version 6.1

What's New

Version 6.1 of the National ITS Architecture includes a host of [new features](#) that enhance the architecture definition and make it easier for you to access the information that you need. The architecture will continue to evolve as new user services are developed and implemented.

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Where to Start

There are three ways to get started:

1. The [hypertext](#) elements of the architecture.
2. The [document](#) elements of the architecture that exist in print.
3. The [database](#) elements of the architecture.

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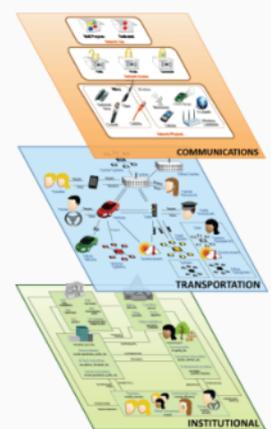
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Website Enhancements

- Menu structure
- Architecture Use pages
- Hyperlinked service package diagrams and physical architecture diagrams
- Download website options
 - CD-ROM Image
 - ZIP File





Website Demo

- Menu structure
- Institutional Layer
- Architecture Use pages
 - Use in planning (Planning View entry points)
 - Use in project development
- Service Package pages
- Download website options
 - CD-ROM Image
 - ZIP File



Website Demo – Menu Structure



- Architecture
 - Architecture Layers
 - User Services
 - Logical Architecture
 - Physical Architecture
 - Service Packages
 - Standards
 - Security
- Architecture Use
 - Planning
 - Project Development
- Architecture Products
 - Documents
 - Databases
 - Website Archives
- Training/Workshops
- Turbo Architecture
- Glossary
 - Glossary
 - Acronyms

Website Demo – Institutional Layer

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The National ITS Architecture 7.0

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Architecture Layers	User Services	Logical Architecture	Physical Architecture	Service Packages	Standards	Security

[Home](#) > [Architecture](#) > [Architecture Layers](#) > Institutional Layer

Institutional Layer*

The Institutional Layer considers the policies, funding incentives, working arrangements, and jurisdictional structure that support the technical layers of the architecture. The Institutional Layer provides the basis for understanding who the implementers will be and the roles these implementers could take in implementing architecture-based ITS systems.

The Institutional Layer is the source for objectives and requirements for the surface transportation system, including the [User Services](#) that are the driving requirements for the National ITS Architecture. The Institutional Layer also includes the policies and processes for [architecture use](#) to support transportation planning and project development.

A host of actors from the public sector and the private sector, make up the Institutional Layer. Within the realm of public sector investment, the relationships between the actors have become rather established. This is in large part because ITS deployment decisions can be considered part-and parcel of the larger transportation investment decision-making process. This process has matured over the last 50 years of major infrastructure development (e.g., the interstate highway system). A cornerstone of this process is the strong legislative underpinning stemming from Title 23 of the United States Code (USC), the most recent reauthorization of which was the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). From the vantage of the private sector, both the automotive and communications industries have been major participants in developing various consumer products and services related to ITS. The actors described in the following paragraphs have [defined relationships](#) to the subsystems included in the National ITS Architecture.

Federal Government

In general, Congress sets the overall policy direction for the country (such as through the ISTEA, TEA-21, and SAFETEA-LU transportation acts), determining the level of funding for transportation, programs to be emphasized, and mandates to be met. The U.S. Department of Transportation influences, interprets, and implements the legislation.

State/Local Government

The state legislature and state departments of transportation perform similar functions for each state. In some states, transportation policy and funding is also shaped by voter initiatives, which can affect the level of revenue (e.g. through bonds), and the use thereof (e.g. for transit). There are also a host of related agencies (e.g. state level air resource boards) that can provide a regulatory framework for transportation (and hence ITS) deployment. Metropolitan planning organizations (MPOs) develop regional transportation plans and programs, playing a crucial role in developing regional system designs and public funding priorities for ITS. The state, county, and local government agencies are the primary transportation system operators and implementers of ITS. The nation's cities are hubs for jobs and traffic, and are responsible for managing the largest transit and rail systems. The state DOT's are primarily responsible for the freeway systems and state arteries which handle most of the long distance and high volume traffic.

Non-Profit/Advisory

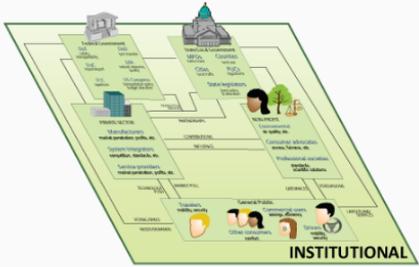
The non-profit sector plays a key role in advising the public sector, and integrating public and private sector needs. This sector includes advisory organizations (such as ITS America), standard setting bodies (such as IEEE), advocacy groups (such as environmental and consumer groups), and educational organizations.

Private Sector

Private sector expertise is necessary to develop ITS technologies and to help ensure that new transportation system infrastructure is properly operated and maintained. While legislation and documented practices aid in characterizing public sector decision-making relative to ITS, private sector decision-making is even more diffuse. ITS has a variety of private sector participants, from automobile manufacturers (OEMs), to telecommunications companies, to product entrepreneurs, to major trucking companies. The private sector has established expertise in many areas including technology, traffic engineering, marketing, finance, research, and operations. It is driven to expand these areas by reinvesting revenue from product and service sales back into its business area.

General Public

Ultimately, ITS enhances the transportation services that are provided to the general public. A range of travelers are intended beneficiaries, including drivers, transit users, bicyclists, and pedestrians. Commercial users are vital stakeholders since they represent key early beneficiaries and adopters of ITS technologies. The general public also includes the public at large since many ITS services provide broad system benefits that are "used" by the public at large. Ultimately, the General Public pays for everything -- either directly through user fees and direct purchase of on-board or on-site equipment, or through taxes.



INSTITUTIONAL


U.S. Department of Transportation
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Last Updated 3/28/2012


United States
Department of Transportation



Website Demo – Institutional Layer

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The National ITS Architecture 7.0

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User Services
Logical Architecture
Physical Architecture
Service Packages
Standards
Security

[Home](#) > [Architecture](#) > [Architecture Layers](#) > Institutional Roles

Institutional Roles

The following table presents the roles the actors defined in the Institutional Layer typically take in the development, operations, and maintenance of ITS systems (as defined here by the 22 subsystems of the Transportation Layer of the physical architecture). Many of the National ITS Architecture subsystems are developed, operated, and maintained by public sector agencies (e.g. state agencies). However, in most cases the development (and sometimes the operations and maintenance) are actually carried out by private sector groups under contract to the public sector agency. An example of this would be Roadway Subsystem devices developed for a state DOT by a manufacturer, and then integrated with a Traffic Management Subsystem by a systems integrator.

Subsystem	Public Sector				Non-Profit / Advisory	Private Sector				General Public
	Federal Agencies	State Agencies	Regional Authorities	Local Authorities	Educational	Manufacturer / Supplier	System Integrator	Service Provider	Freight Companies	Drivers / Travelers
Archived Data Management	D, O, M	D, O, M	D, O, M	D, O, M	D, O, M		D*			
Commercial Vehicle Administration	D, O, M	D, O, M				D*	D*	O, M*		
Commercial Vehicle Check	D, O, M	D, O, M				D*	D*	O, M*		
Commercial Vehicle						D			O, M	O
Emergency Management		D, O, M	D, O, M	D, O, M		D*	D*	O, M*		
Emergency Vehicle		O, M	O, M	O, M		D*				
Emissions Management		D, O, M	D, O, M	D, O, M		D*	D*	O, M*		
Fleet and Freight Management						D	D		D, O, M	
Information Service Provider		D, O, M	D, O, M	D, O, M		D*	D*	O, M*		
Maintenance and Construction Management		D, O, M		D, O, M		D*	D*	O, M*		
Maintenance and Construction Vehicle		D, O, M	D, O, M			D*				
Parking Management				D, O, M		D*	D*	O, M*	O, M	
Payment Administration		D, O, M	D, O, M	D, O, M		D*	D*	O, M*		
Personal Information Access						D, M				O, M
Remote Traveler Support		D, O, M	D, O, M	D, O, M		D*	D*			O
Roadway		D, O, M		D, O, M		D*	D*	O, M*		
Roadway Payment		D, O, M	D, O, M	D, O, M		D*	D*	O, M*		
Security Monitoring		D, O, M	D, O, M			D*	D*	O, M*		
Traffic Management		D, O, M	D, O, M	D, O, M		D*	D*	O, M*		
Transit Management			D, O, M	D, O, M		D*	D*	O, M*		
Transit Vehicle			D, O, M	D, O, M		D*	D*			
Vehicle						D, M				O, M

Legend
 D - Develop
 O - Operate
 M - Maintain
 * - Private sector group develops, operates, or maintains under contract from the public sector (usually)

Website Demo – Architecture Use Pages

■ Use in Planning



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ARCHITECTURE
ARCHITECTURE USE
ARCHITECTURE PRODUCTS
TRAINING/WORKSHOPS
TURBO ARCHITECTURE
GLOSSARY

Planning
Project Development

[Home](#) > [Architecture Use](#) > Use In Transportation Planning

Use In Transportation Planning



The flowchart illustrates the 'Use In Transportation Planning' process. It begins with 'Planning Factors' leading to 'Regional goals and motivation'. This leads to 'Operations objectives', which then leads to 'Systematic process to develop and select M&O Strategies to meet objectives'. This step is supported by a 'Congestion Management Process' box on the left and a 'Monitoring and evaluation' box on the right. The process continues through 'M&O Strategies', 'Metropolitan or Statewide Transportation Plan', and 'Metropolitan or Statewide Transportation Improvement Program Or Other Funding Programs', finally leading to 'Implementation/System Operations'. A detailed box on the right lists the steps: 'Define performance measures', 'Determine operations needs', 'Identify M&O strategies', 'Evaluate M&O strategies', and 'Select M&O strategies for the plan'.

Technology-based systems can pose real challenges for transportation planning. No one can accurately forecast progressive technology advances over a 20-year timeframe, but we know that technology advances will occur. We also know that individual systems will become increasingly integrated over time, but this can be even more difficult to plan with institutional challenges adding to technology uncertainty. The National ITS Architecture was developed specifically to address these challenges and support planning for progressive integration and technology advances to improve the surface transportation system over time.

Most states and metropolitan areas have already developed a [regional ITS architecture](#) based on the National ITS Architecture that represents the future integrated surface transportation system in the region. Using the regional ITS architecture, a region can plan for technology application and integration to support more effective planning for operations. The regional ITS architecture provides context for ITS projects so that each project can build a piece of the envisioned transportation system. By using the architecture as a planning tool, the steps taken by each project will be on the path to fulfilling the larger objectives set forth in the long range transportation plan. The details of how the regional ITS architecture can be used as a tool to support metropolitan and statewide transportation planning is defined in this planning view.

Planning for Operations ([plan4operations.dot.gov](#)) seeks to integrate operations into the metropolitan and statewide transportation planning processes. The Planning for Operations Web Site includes a wealth of resources including two that are primary sources for the content presented in this view:

- [The Building Blocks of a Model Transportation Plan Incorporating Operations - A Desk Reference](#)
- [An Objectives-Driven, Performance-Based Approach — A Guidebook](#)

An objectives-driven, performance-based approach is recommended so that operations needs are addressed in regional planning and investment decisions in a systematic, measurable way. Many of the management and operations strategies that are defined through this process rely on technology and system integration, and this is where an ITS architecture can be an effective tool to support planning for operations. A new **Primer for Applying the Regional ITS Architecture to Support Planning for Operations** will be available on the Planning for Operations web site soon.

Select the steps in the objectives-driven, performance-based approach to planning for operations (in the diagram above) to explore sample planning outputs and their connection to the ITS Architecture.

The mapping between goals, objectives, and service packages that is included in the Use in Planning Web Pages can be used to support an analysis of the service packages that are most relevant for your region. The mappings included on this site should only be used as a starting point; users should do their own analysis to identify the best service packages for their region.



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Website Demo – Architecture Use Pages

Goals*

Transportation planning and investment decisions are based on the public's desired outcomes for the transportation system. Transportation planning begins with a set of broad goals that reflect the desired outcomes and the transportation vision for the region. The goals identified in the table below are representative of the goals that are included in metropolitan and statewide transportation plans. As shown in the table, the representative goals included in the National ITS Architecture are closely tied to the planning factors required by 23 CFR 450. Select any of the goals to traverse to more specific objectives that support the goals, performance measures that can be used to measure the progress towards the objectives, and ultimately the service packages in the National ITS Architecture that support each objective.

Planning Factor	Goal
A. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;	Support regional economic productivity and development
B. Increase the safety of the transportation system for motorized and nonmotorized users;	Improve the safety of the transportation system
C. Increase the security of the transportation system for motorized and nonmotorized users;	Improve the security of the transportation system
D. Increase the accessibility and mobility of people and for freight;	Enhance mobility, convenience, and comfort for transportation system users
E. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;	Reduce environmental impacts
F. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;	Enhance the integration and connectivity of the transportation system
G. Promote efficient system management and operation;	Increase operational efficiency and reliability of the transportation system
H. Emphasize the preservation of the existing transportation system.	Preserve the transportation system

Architecture Use

The regional ITS architecture must be consistent with the goals established in the relevant transportation plan(s) to facilitate use of the architecture in transportation planning. When this connection is established, the regional ITS architecture can help regions realize their goals by defining the integrated framework for ITS components that support the goals. If your regional ITS architecture does not include this connection, the links between the representative goals and the National ITS Architecture defined in this planning view may be used as a starting point.



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[Home](#) > [Architecture Use](#) > [Use In Transportation Planning](#) > [Goals](#) > Improve the safety of the transportation system

Improve the safety of the transportation system (Goal*)

Each of the goals in a metropolitan or statewide transportation plan is supported by one or more 'objectives' that define what needs to occur to accomplish the goal. The objectives define what a region plans to achieve and help to determine the strategies and investments that will be included in the transportation plan. In practice, objectives range from high-level regional statements to specific, measurable, time-bound "SMART" objectives. A range of objectives are included in the National ITS Architecture, gathered from a variety of references and recent transportation plans, that reflect the spectrum of objectives that are used in current practice. The objectives identified below support the identified goal. Select an objective to identify its source, associated performance measures, and the service packages that support the objective.

Objective Category	Objective
Emergency/Incident Management: Evacuation Times	Reduce the per capita time to evacuate Z persons in the region by X percent over Y years.
Emergency/Incident Management: Incident Duration	Reduce mean incident clearance time per incident by X percent over Y years. (Defined as the time between awareness of an incident and the time the last responder has left the scene.)
Emergency/Incident Management: Incident Duration	Reduce mean incident notification time (defined as the time between the first agency's awareness of an incident and the time to notify needed response agencies) by X percent over Y years (i.e., through "Motorist Assist" roving patrol programs, reduction of inaccurate verifications, etc.).
Emergency/Incident Management: Incident Duration	Reduce mean roadway clearance time per incident by X percent over Y years. (Defined as the time between awareness of an incident and restoration of lanes to full operational status.)
Emergency/Incident Management: Incident Duration	Reduce mean time for needed responders to arrive on-scene after notification by X percent over Y years.
Emergency/Incident Management: Incident Duration	Reduce mean time of incident duration (from awareness of incident to resumed traffic flow) on transit services and arterial and expressway facilities by X percent in Y years.
Emergency/Incident Management: Training	By Y (year), X percent of staff in region with incident management responsibilities will have completed the National Incident Management System (NIMS) Training and at least X percent of transportation responders in the region are familiar with the incident command structure (ICS).
Emergency/Incident Management: Use of Technology	Increase number of ITS-related assets (e.g., roadside cameras, dynamic message signs, vehicle speed detectors) in use for incident and emergency detection by X in Y years.
Emergency/Incident Management: Use of Technology	Increase number of regional road miles covered by ITS-related assets (e.g., roadside cameras, dynamic message signs, vehicle speed detectors) in use for incident detection by X percent in Y years.
Emergency/Incident Management: Use of Technology	Increase number of traffic signals equipped with emergency vehicle preemption by X percent in Y years.
Safety: Vehicle Crashes and Fatalities	Reduce crashes at intersections
Safety: Vehicle Crashes and Fatalities	Reduce crashes at railroad crossings
Safety: Vehicle Crashes and Fatalities	Reduce crashes due to driver errors and limitations
Safety: Vehicle Crashes and Fatalities	Reduce crashes due to red-light running
Safety: Vehicle Crashes and Fatalities	Reduce crashes due to road weather conditions
Safety: Vehicle Crashes and Fatalities	Reduce crashes due to unexpected congestion
Safety: Vehicle Crashes and Fatalities	Reduce crashes due to unsafe drivers, vehicles and cargo on the transportation system
Safety: Vehicle Crashes and Fatalities	Reduce lane departure crashes
Safety: Vehicle Crashes and Fatalities	Reduce secondary crashes
Safety: Vehicle Crashes and Fatalities	Reduce speed differential
Safety: Vehicle Crashes and Fatalities	Reduce the total number of crashes in the region by X percent by year Y.
Safety: Vehicle Crashes and Fatalities	Reduce the total number of crashes involving bicyclists and pedestrians in the region by X percent by year Y.
Safety: Vehicle Crashes and Fatalities	Reduce the total number of fatalities and severe injuries in the region by X percent by year Y.



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[Home](#) > [Architecture Use](#) > [Use In Transportation Planning](#) > [Objectives](#) > Reduce mean incident clearance time per incident by X percent over Y years. (Defined as the time between awareness of an incident and the time the last responder has left the scene.)

Reduce mean incident clearance time per incident by X percent over Y years. (Defined as the time between awareness of an incident and the time the last responder has left the scene.) ([Objective*](#))

Associated Performance Measures

[Mean incident clearance time per incident.](#)

Service Packages that Support the Objective

[ATMS08-Traffic Incident Management System](#)
[EM01-Emergency Call-Taking and Dispatch](#)
[EM02-Emergency Routing](#)
[EM03-Mayday and Alarms Support](#)
[EM04-Roadway Service Patrols](#)

Associated Goals

[Improve the safety of the transportation system](#)
[Improve the security of the transportation system](#)

Planning Factors

B. Increase the safety of the transportation system for motorized and nonmotorized users;
C. Increase the security of the transportation system for motorized and nonmotorized users;

Source

[Planning for Operations Desk Reference](#)

Since the mapping between objectives and service packages is not always straight-forward and often situation-dependent, these mappings should only be used as a starting point. Users should do their own analysis to identify the best service packages for their region.

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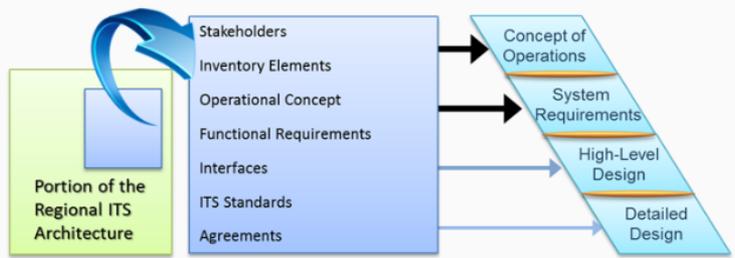
Use in Project Development

The [regional ITS architecture](#) provides context for ITS projects. By using the regional ITS architecture, the steps taken by each project will be on the path to the larger objectives set forth in the long range transportation plan.

Architecture Use

A well-maintained regional architecture can provide a tool for making a strong initial start in doing the systems engineering for a project. Regional ITS architecture content such as the stakeholders, their roles and responsibilities (included in the operational concept), and the list of agreements supports the project concept of operations. The functional requirements are high-level requirements that can support system requirements development, and the interfaces and ITS standards support project design. In addition to assisting project implementers in the preliminary engineering stage, planners may also benefit from participating in the conceptual development of projects and strategies prior to the start of the formal project development. These components can inform creation of project documents, including RFPs, and architectural details can inform the project's scope of work.

The items from the regional ITS architecture that are used to jumpstart the systems engineering process are derived from the National ITS Architecture using the Turbo Architecture software. The subsystems and terminators used to define the inventory elements, equipment packages and functional requirements, architecture flows used to define the interfaces, and related ITS standards are all derived from the National ITS Architecture definition. More information on how the regional ITS architecture can be used to support systems engineering is included in the [Systems Engineering for ITS Handbook](#), and the [Systems Engineering Guidebook for ITS](#).




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Website Demo – Service Package Pages



The screenshot shows the website header for 'The National ITS Architecture 7.0'. The navigation menu includes: ARCHITECTURE, ARCHITECTURE USE, ARCHITECTURE PRODUCTS, TRAINING/WORKSHOPS, TURBO ARCHITECTURE, and GLOSSARY. A secondary menu lists: Architecture Layers, User Services, Logical Architecture, Physical Architecture, Service Packages, Standards, and Security. The breadcrumb trail is: Home > Architecture > Service Packages > APTS09 - Transit Signal Priority. The page title is 'APTS09-Transit Signal Priority (Service Package*)'. Under the 'Description' section, it states: 'This service package determines the need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations. The signal priority may result from limited local coordination between the transit vehicle and the individual intersection for signal priority or may result from coordination between transit management and traffic management centers. Coordination between traffic and transit management is intended to improve on-time performance of the transit system to the extent that this can be accommodated without degrading overall performance of the traffic network.' Below the description is a tabbed interface with tabs for: Graphic, Equipment Packages, Flows, Goals and Objectives, ITS Applications, User Services, and Transaction Set. Two orange arrows point from the 'Goals and Objectives' and 'ITS Applications' tabs down to the bulleted list below.

- Planning factors/goals
- Objectives
- Performance measures
- Link to costs, benefits & lessons learned



Website Demo – Service Package Pages

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[Home](#) > [Architecture](#) > [Service Packages](#) > [ATMS08 - Traffic Incident Management System](#)

ATMS08-Traffic Incident Management System ([Service Package*](#))

Description

This service package manages both unexpected incidents and planned events so that the impact to the transportation network and traveler safety is minimized. The service package includes incident detection capabilities through roadside surveillance devices (e.g. CCTV) and through regional coordination with other traffic management, maintenance and construction management and emergency management centers as well as rail operations and event promoters. Information from these diverse sources is collected and correlated by this service package to detect and verify incidents and implement an appropriate response. This service package supports traffic operations personnel in developing an appropriate response in coordination with emergency management, maintenance and construction management, and other incident response personnel to confirmed incidents. The response may include traffic control strategy modifications or resource coordination between center subsystems. Incident response also includes presentation of information to affected travelers using the Traffic Information Dissemination service package and dissemination of incident information to travelers through the Broadcast Traveler Information or Interactive Traveler Information service packages. The roadside equipment used to detect and verify incidents also allows the operator to monitor incident status as the response unfolds. The coordination with emergency management might be through a CAD system or through other communication with emergency field personnel. The coordination can also extend to tow trucks and other allied response agencies and field service personnel.

[Graphic](#) [Equipment Packages](#) [Flows](#) [Goals and Objectives](#) [ITS Applications](#) [User Services](#) [Transaction Set](#)

Associated Planning Factors and Goals

Planning Factor	Goal
A. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;	Support regional economic productivity and development
B. Increase the safety of the transportation system for motorized and nonmotorized users;	Improve the safety of the transportation system
C. Increase the security of the transportation system for motorized and nonmotorized users;	Improve the security of the transportation system
D. Increase the accessibility and mobility of people and for freight;	Enhance mobility, convenience, and comfort for transportation system users
F. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;	Enhance the integration and connectivity of the transportation system
G. Promote efficient system management and operation;	Increase operational efficiency and reliability of the transportation system

Associated Objective Categories

Objective Category
Arterial Management: Reliability
Emergency/Incident Management: Customer Satisfaction
Emergency/Incident Management: Incident Duration

Associated Objectives and Performance Measures

Objective	Performance Measure
Annual rate of change in regional average commute travel time will not exceed regional rate of population growth through the year Y.	Average commute trip travel time (minutes).
By Y (year), X percent of staff in region with incident management responsibilities will have completed the National Incident Management System (NIMS) Training and at least X percent of transportation responders in the region are familiar with the incident command structure (ICS).	Percent of staff having completed NIMS training and percent of transportation responders familiar with ICS.
Decrease the average buffer index for (multiple routes or trips) by X percent over Y years.	The buffer index represents the extra time (buffer) most travelers add to their average travel time when planning trips. This is the extra time between the average travel time and near-worst case travel time (95th percentile). The buffer index is stated as a percentage of the average travel time. Average buffer index or buffer time can be calculated using the formula: Buffer Index = (95th Percentile Travel Time - Average Travel Time) / Average Travel Time.



Website Demo – Website Download Options



The screenshot shows the website for 'The National ITS Architecture 7.0'. The header includes navigation links for Home, Contact Us, and Search, along with a 'Follow us: in' link. The main navigation menu lists categories: ARCHITECTURE, ARCHITECTURE USE, ARCHITECTURE PRODUCTS, TRAINING/WORKSHOPS, TURBO ARCHITECTURE, and GLOSSARY. Below this, there are sub-sections for Documents, Databases, and Website Archives. The current page is 'Website Archives', which provides information on downloading the website content in two formats: a CD-ROM image and a ZIP file. The CD-ROM image section explains that it can be used to create a CD-ROM with the website's contents. The ZIP file section explains that it can be used to unzip the website's contents onto a hard drive. The footer includes the RITA logo (U.S. Department of Transportation Research and Innovative Technology Administration), the text 'Last Updated 3/28/2012', and the United States Department of Transportation logo.

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Website Archives

The National ITS Architecture website is compressed into two formats, a [CD-ROM image](#) and a [ZIP file](#), each containing the same content as the National ITS Architecture website but can be available to you when you are not connected to the Internet. For more information about using these archives, see the sections below.

CD-ROM Image
Download the CD-ROM ISO image to your hard drive using the above link. Use your favorite CD-ROM burning tool along with the image file you downloaded to create a CD-ROM with the contents of the National ITS Architecture website. Most CD-ROM image burning tools allow you to use an ISO image file to create a CD-ROM. Refer to your tools documentation for details on how to do this.

ZIP File
Download the ZIP file to your hard drive using the above link. Use your favorite file compression utility to unzip the file you downloaded to create the contents of the National ITS Architecture website on your hard drive. Most current operating systems have built-in zip support.

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National ITS Architecture

The National ITS Architecture provides a common framework for planning, defining, and integrating intelligent transportation systems. It is a mature product that reflects the contributions of a broad cross-section of industry, academia, and government consultants, etc.).

The architecture defines:

- The functions (e.g., gather traffic information, control traffic signals, etc.)
- The physical entities or subsystems (e.g., sensors, cameras, computers, etc.)
- The information flows and data flows (e.g., data from sensors to computers, etc.)



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National ITS Architecture News

February 14, 2012
Turbo Architecture Version 7.0 Released

January, 2012
National ITS Architecture Version 7.0 Released

Feedback Form

The National ITS Architecture Team is very interested in input that will help us improve the architecture. We encourage you to provide us with your suggestions or additions to the National ITS Architecture, by filling out the form below with your suggestions or comments. If you are sending us information about an issue with the website for the National ITS Architecture, please view the [Known Issues](#) first.

***Required fields**

*Name:

Organization:

*E-mail:

Enter your comment here



New National ITS Architecture's V7 – What's New and How to Use It!

Example Use of Version 7.0



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Example Use of Version 7



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- Site Map

Report Road Problems
1-800-FOR-ROAD
 Customer Service Center

Coming Soon

I-66 Active Traffic Management System

Improving safety and incident management from the D.C. line to Haymarket

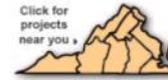
About the Project

This project will install an active traffic management system on I-66 through Arlington, Fairfax and Prince William counties from the Washington, D.C. line to Route 15 in Haymarket. The system would improve safety and incident management and include new sign gantries, shoulder and lane control signs, speed displays, incident and queue detection, and increased traffic camera coverage.

The total estimated cost is about \$32 million (\$5.4 million for preliminary engineering and \$26.9 million for construction). There is no required right of way anticipated. Planning and design begin this summer with construction starting as early as fall 2012/winter 2013.

State Project Number: 0066-96A-917 UPC: 98017

Videos



Project Photos



Project at a Glance

Cost
\$32 million

Lengths and Limits
From the D.C. line to Haymarket

District
Northern Virginia

Contact
[Kamal Suliman](#)
703-259-2231



Example Use of Version 7

ATM Project Consideration

- What ATM strategies are applicable?
- What elements are involved in the strategies?
- What are realistic goals/objectives?
- What benefits can be expect?

Example Use of Version 7

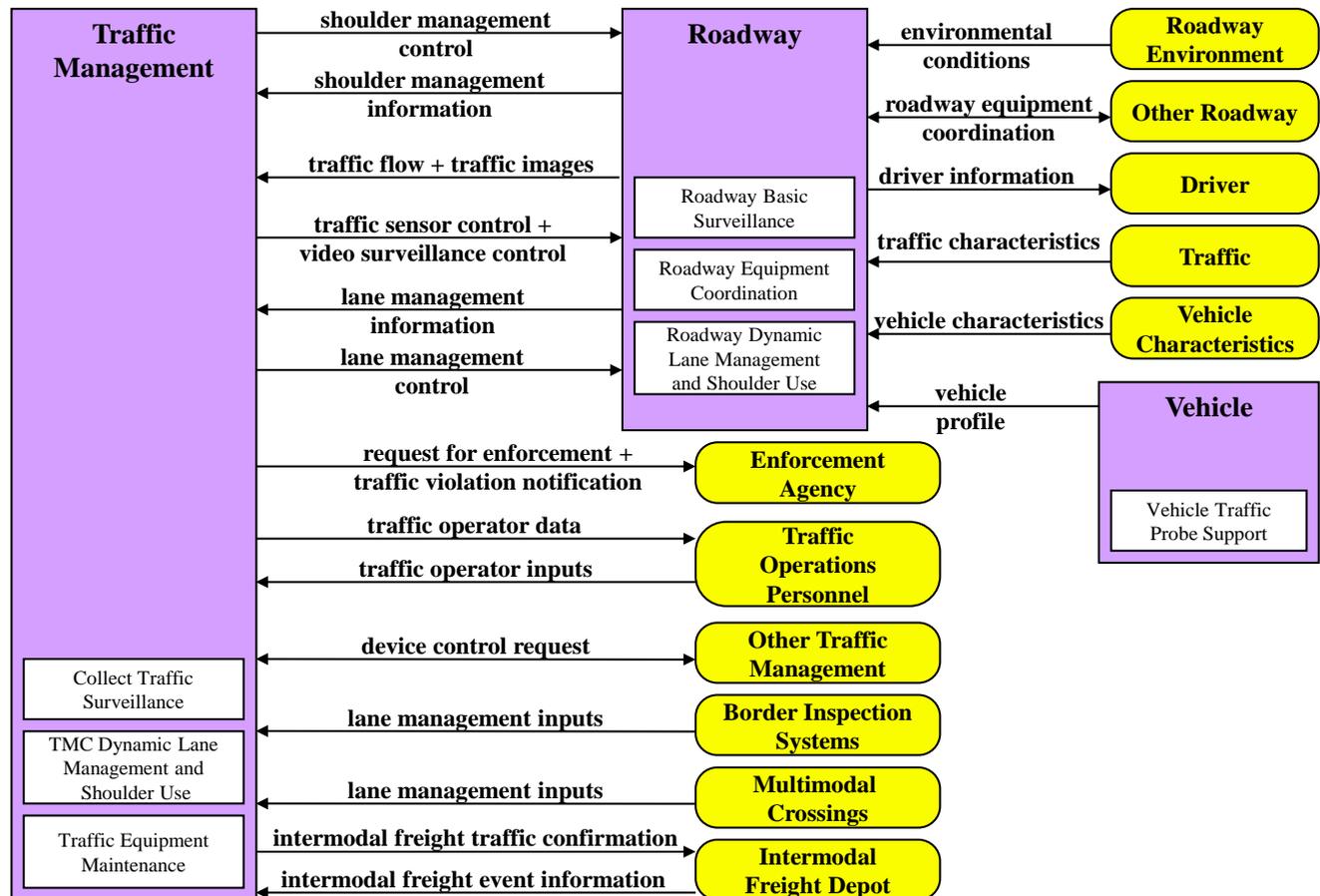
- Identify potential strategies

Service Area	Service Package	Service Package Name
TRAFFIC MANAGEMENT	ATMS01	Network Surveillance
	ATMS02	Traffic Probe Surveillance
	ATMS03	Traffic Signal Control
	ATMS04	✓ Traffic Metering
	ATMS05	HOV Lane Management
	ATMS06	Traffic Information Dissemination
	ATMS07	Regional Traffic Management
	ATMS08	Traffic Incident Management System
	ATMS09	Transportation Decision Support and Demand Management
	ATMS10	Electronic Toll Collection
	ATMS11	Emissions Monitoring and Management
	ATMS12	Roadside Lighting System Control
	ATMS13	Standard Railroad Grade Crossing
	ATMS14	Advanced Railroad Grade Crossing
	ATMS15	Railroad Operations Coordination
	ATMS16	Parking Facility Management
	ATMS17	Regional Parking Management
	ATMS18	Reversible Lane Management
	ATMS19	Speed Warning and Enforcement
	ATMS20	Drawbridge Management
	ATMS21	Roadway Closure Management
	ATMS22	✓ Variable Speed Limits
	ATMS23	✓ Dynamic Lane Management and Shoulder Use
	ATMS24	✓ Dynamic Roadway Warning
	ATMS25	VMT Road User Payment
	ATMS26	Mixed Use Warning Systems

Example Use of Version 7

- Identify elements (& their stakeholders) potentially involved

ATMS23-Dynamic Lane Management and Shoulder Use



Example Use of Version 7

- Identify goals, objectives & performance measures



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ATMS23-Dynamic Lane Management and Shoulder Use (Service Package*)

Description

This service package provides for active management of travel lanes along a roadway. The package includes the field equipment, physical overhead lane signs and associated control electronics that are used to manage and control specific lanes and/or the shoulders. This equipment can be used to change the lane configuration on the roadway according to traffic demand and lane destination along a typical roadway section or on approach to or access from a border crossing, multimodal crossing or intermodal freight depot. This package can be used to allow temporary or interim use of shoulders as travel lanes. The equipment can be used to electronically reconfigure intersections and interchanges and manage right-of-way dynamically including merges. Also, lanes can be designated for use by special vehicles only, such as buses, high occupancy vehicles (HOVs), vehicles attending a special event, etc. Prohibitions or restrictions of types of vehicles from using particular lanes can be implemented.

The lane management system can be centrally monitored and controlled by a traffic management center or it can be autonomous. This service also can include automated enforcement equipment that notifies the enforcement agency of violators of the lane controls.

Dynamic lane management and shoulder use is an **Active Management (ATM)** strategy and is typically used in conjunction with other ATM strategies (such as ATMS22-Variable Speed Limits and ATMS24-Dynamic Roadway Warning).

Graphic	Equipment Packages	Flows	Goals and Objectives	ITS Applications	User Services	Transaction Set
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Associated Planning Factors and Goals

Planning Factor	Goal
A. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;	Support regional economic productivity and development
G. Promote efficient system management and operation	

Associated Objective Categories

Objective Category	Objective	Performance Measure
Freeway Management: Efficiency	Annual rate of change in regional average commute travel time will not exceed regional rate of population growth through the year Y.	Average commute trip travel time (minutes).
Freeway Management: Managed Lanes	trips) by X percent over Y years.	extra time between the average travel time and near-worst case travel time (95th percentile). The buffer index is stated as a percentage of the average travel time. Average buffer index or buffer time can be calculated using miles traveled as a weighting factor. Buffer time = 95th percentile travel time (min) - average travel time (min).
Freeway Management: Reliability	Decrease the buffer index for (specific travel routes) by X percent over the next Y years.	The buffer index represents the extra time (buffer) most travelers add to their average travel time when planning trips. This is the extra time between the average travel time and near-worst case travel time (95th percentile). The buffer index is stated as a percentage of the average travel time. Average buffer index or buffer time can be calculated using miles traveled as a weighting factor. Buffer time = 95th percentile travel time (min) - average travel time (min).
Freight Management: Intermodal Facilities	Ensure that all managed lanes (e.g., HOV lanes, HOT lanes) carry a throughput of at least Y persons per hour.	Passenger volumes in managed lanes.
Freight Management: Travel Time Reliability	Ensure that all managed lanes (e.g., HOV lanes, HOT lanes) operate at no less than 50 mph during their hours of operation.	Average speeds in managed lanes.
Special Event Management: Entry/Exit Travel Times	Ensure that all managed lanes (e.g., HOV lanes, HOT lanes) operate with a volume of at least X vehicles per hour.	Vehicle volumes in managed lanes.
System Efficiency: Cost of Congestion	Improve average travel time during peak periods by X percent by year Y.	Average travel time during peak periods (minutes).
System Efficiency: Delay		
System Efficiency: Duration of Congestion		
System Efficiency: Extent of Congestion		
System Efficiency: Intensity of Congestion (Travel Time Index)		
System Efficiency: Travel Time		

Example Use of Version 7

- Identify benefits, costs & lessons learned



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ATMS23-Dynamic Lane Management and Shoulder Use (Service Package*)

Description

This service package provides for active management of travel lanes along a roadway. The package includes the field equipment, physical overhead lane signs and associated control electronics that are used to manage and control specific lanes and/or the shoulders. This equipment can be used to change the lane configuration on the roadway according to traffic demand and lane destination along a typical roadway section or on approach to or access from a border crossing, multimodal crossing or intermodal freight depot. This package can be used to allow temporary or interim use of shoulders as travel lanes. The equipment can be used to electronically reconfigure intersections and interchanges and manage right-of-way dynamically including merges. Also, lanes can be designated for use by special vehicles only, such as buses, high occupancy vehicles (HOVs), vehicles attending a special event, etc. Prohibitions or restrictions of types of vehicles from using particular lanes can be implemented.

The lane management system can be centrally monitored and controlled by a traffic management center or it can be autonomous. This service also can include automated enforcement equipment that notifies the enforcement agency of violators of the lane controls.

Dynamic lane management and shoulder use is an Active Traffic Management strategy and is typically used in conjunction with other ATM strategies (such as ATMS22-Variable Speed Limits and ATMS24-Dynamic Roadway Warning).

Graphic
Equipment Packages
Flows
Goals and Objectives
ITS Applications
User Services
Transaction Set

Related ITS Applications of ITS Taxonomy

Classification	Category	ITS Application Area	ITS Application(s)
Intelligent Infrastructure	Arterial Management	Lane Management	Lane Control
Intelligent Infrastructure	Freeway Management	Lane Management	Lane Control
Intelligent Infrastructure	Roadway Operations & Maintenance	Work Zone Management	Lane Control



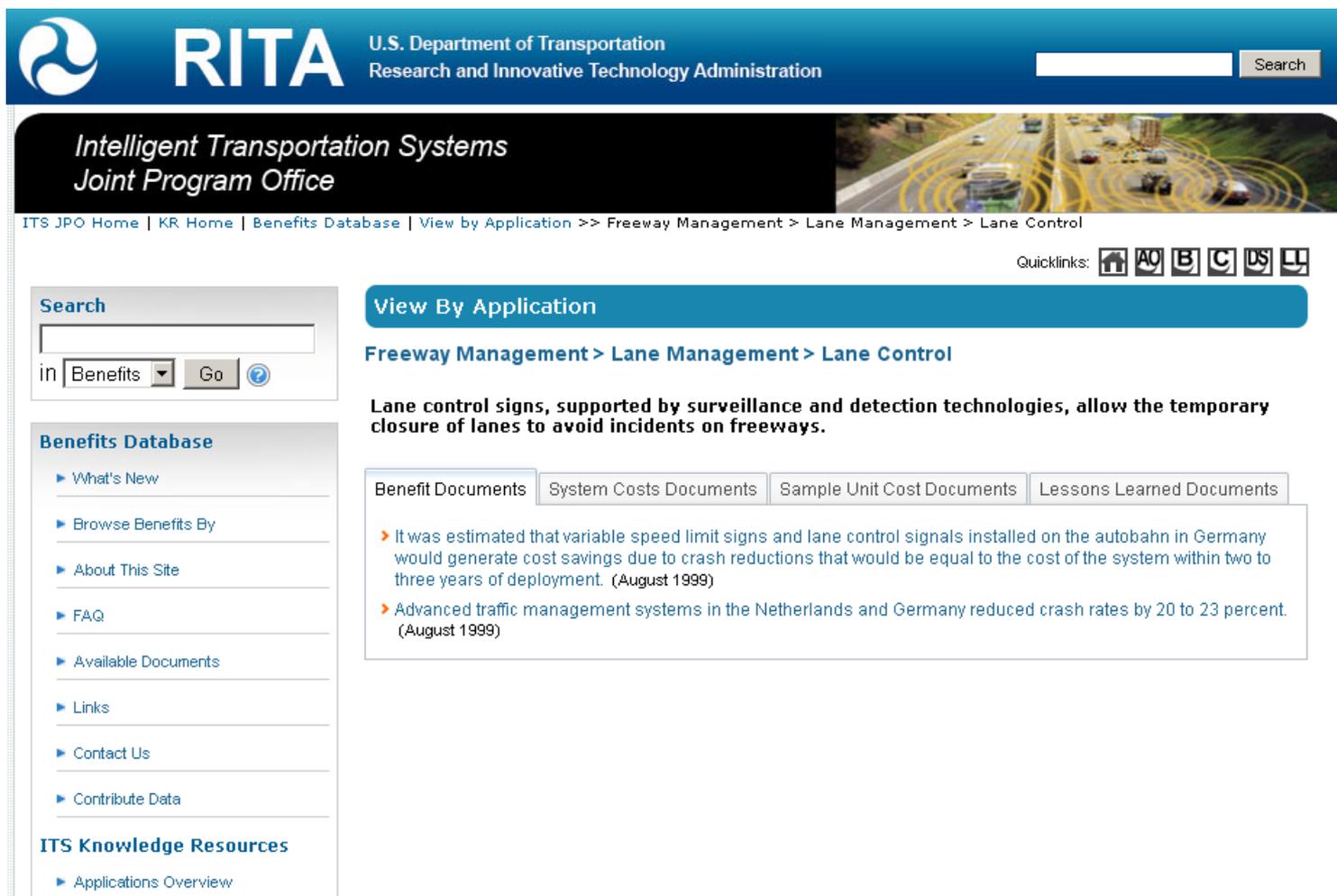
U.S. Department of Transportation
Research and Innovative Technology Administration

Last Updated 3/28/2012



Example Use of Version 7

- Identify benefits



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Research and Innovative Technology Administration

Intelligent Transportation Systems
Joint Program Office

ITS JPO Home | KR Home | Benefits Database | View by Application >> Freeway Management > Lane Management > Lane Control

Quicklinks:      

Search

in **Benefits** 

Benefits Database

- ▶ What's New
- ▶ Browse Benefits By
- ▶ About This Site
- ▶ FAQ
- ▶ Available Documents
- ▶ Links
- ▶ Contact Us
- ▶ Contribute Data

ITS Knowledge Resources

- ▶ Applications Overview

View By Application

Freeway Management > Lane Management > Lane Control

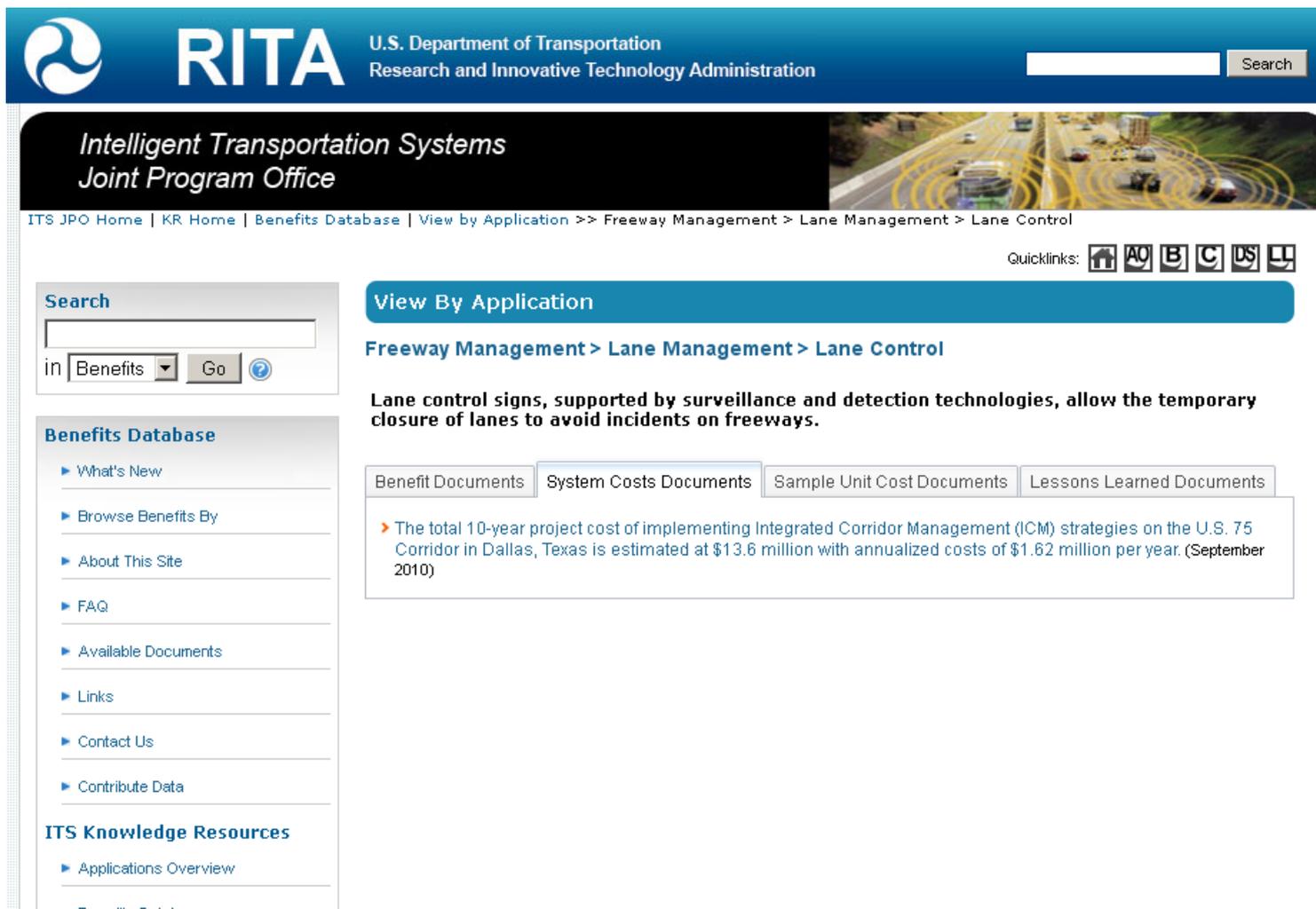
Lane control signs, supported by surveillance and detection technologies, allow the temporary closure of lanes to avoid incidents on freeways.

Benefit Documents | System Costs Documents | Sample Unit Cost Documents | Lessons Learned Documents

- ▶ It was estimated that variable speed limit signs and lane control signals installed on the autobahn in Germany would generate cost savings due to crash reductions that would be equal to the cost of the system within two to three years of deployment. (August 1999)
- ▶ Advanced traffic management systems in the Netherlands and Germany reduced crash rates by 20 to 23 percent. (August 1999)

Example Use of Version 7

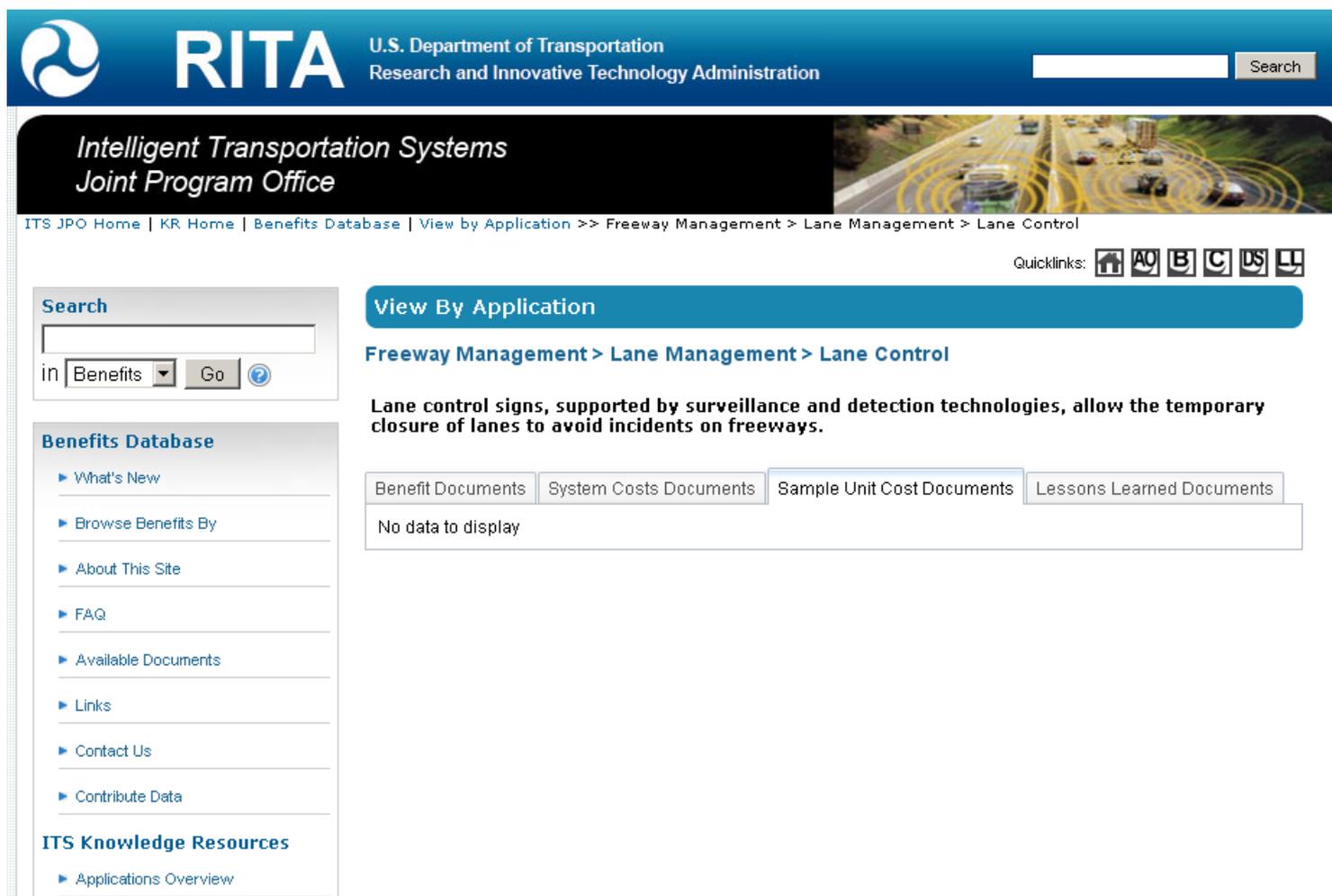
- Identify system costs



The screenshot shows the RITA (Research and Innovative Technology Administration) website. The header includes the RITA logo and the text "U.S. Department of Transportation Research and Innovative Technology Administration". A search bar is visible in the top right. Below the header is a banner for the "Intelligent Transportation Systems Joint Program Office" with a background image of a highway with traffic. Navigation links include "ITS JPO Home", "KR Home", "Benefits Database", "View by Application", "Freeway Management", "Lane Management", and "Lane Control". A "Quicklinks" section contains icons for Home, AO, B, C, US, and LL. A search box is located on the left side. The main content area features a "View By Application" button and a breadcrumb trail: "Freeway Management > Lane Management > Lane Control". A key message states: "Lane control signs, supported by surveillance and detection technologies, allow the temporary closure of lanes to avoid incidents on freeways." Below this, there are tabs for "Benefit Documents", "System Costs Documents", "Sample Unit Cost Documents", and "Lessons Learned Documents". A highlighted box under "System Costs Documents" contains the text: "The total 10-year project cost of implementing Integrated Corridor Management (ICM) strategies on the U.S. 75 Corridor in Dallas, Texas is estimated at \$13.6 million with annualized costs of \$1.62 million per year. (September 2010)". On the left sidebar, there is a "Benefits Database" section with links for "What's New", "Browse Benefits By", "About This Site", "FAQ", "Available Documents", "Links", "Contact Us", and "Contribute Data". Below that is an "ITS Knowledge Resources" section with a link for "Applications Overview".

Example Use of Version 7

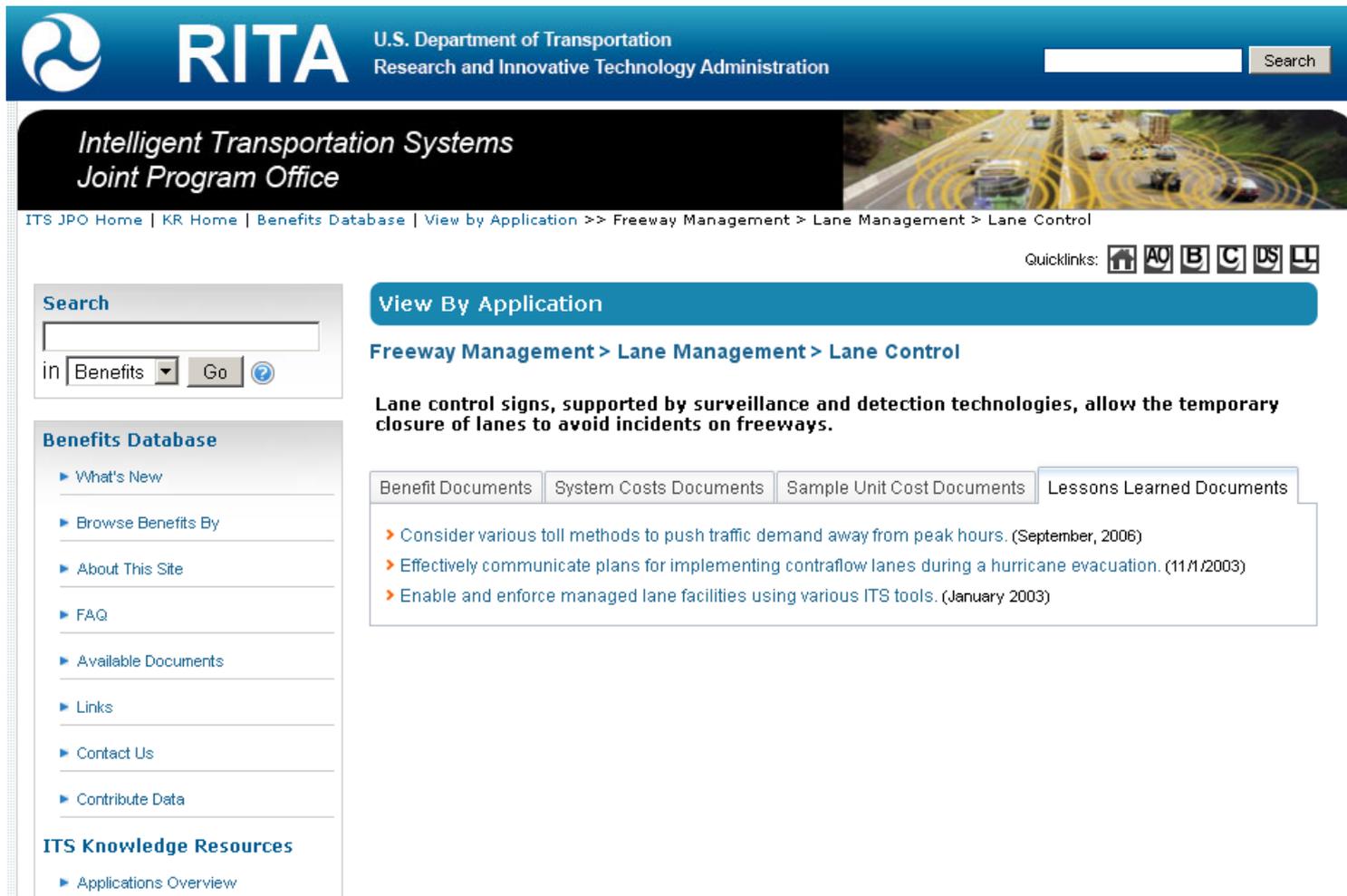
- Identify unit costs



The screenshot shows the RITA website interface. At the top, the RITA logo and name are displayed, along with the text "U.S. Department of Transportation Research and Innovative Technology Administration". A search bar is located in the top right corner. Below the header, the "Intelligent Transportation Systems Joint Program Office" banner is visible, featuring an image of a highway with lane control signs. The breadcrumb navigation path is: [ITS JPO Home](#) | [KR Home](#) | [Benefits Database](#) | [View by Application >>](#) [Freeway Management](#) > [Lane Management](#) > [Lane Control](#). Quicklinks for Home, About, Benefits, Costs, US, and LL are provided. A search box is present on the left side. The "Benefits Database" sidebar lists various navigation options. The main content area shows the "View By Application" section, with the breadcrumb path: [Freeway Management](#) > [Lane Management](#) > [Lane Control](#). A description states: "Lane control signs, supported by surveillance and detection technologies, allow the temporary closure of lanes to avoid incidents on freeways." Below this, there are four tabs: "Benefit Documents", "System Costs Documents", "Sample Unit Cost Documents", and "Lessons Learned Documents". The "Sample Unit Cost Documents" tab is selected, and the content area below it displays "No data to display".

Example Use of Version 7

- Identify related lessons learned



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Joint Program Office

ITS JPO Home | KR Home | Benefits Database | View by Application >> Freeway Management > Lane Management > Lane Control

Quicklinks:      

View By Application

Freeway Management > Lane Management > Lane Control

Lane control signs, supported by surveillance and detection technologies, allow the temporary closure of lanes to avoid incidents on freeways.

Benefit Documents | System Costs Documents | Sample Unit Cost Documents | **Lessons Learned Documents**

- Consider various toll methods to push traffic demand away from peak hours. (September, 2006)
- Effectively communicate plans for implementing contraflow lanes during a hurricane evacuation. (11/1/2003)
- Enable and enforce managed lane facilities using various ITS tools. (January 2003)

Benefits Database

- What's New
- Browse Benefits By
- About This Site
- FAQ
- Available Documents
- Links
- Contact Us
- Contribute Data

ITS Knowledge Resources

- Applications Overview



Poll Question

- 3. In the example, we saw how the National ITS Architecture supported development of an ITS project. Which use of the architecture would you find to be most useful? (Select only one.)**
- a) To identify what ITS strategies are applicable.**
 - b) To identify what elements are involved in the strategies.**
 - c) To identify realistic goals/objectives.**
 - d) To identify the benefits can be expected.**



New National ITS Architecture's V7 – What's New and How to Use It!

Turbo Architecture Version 7.0 Update



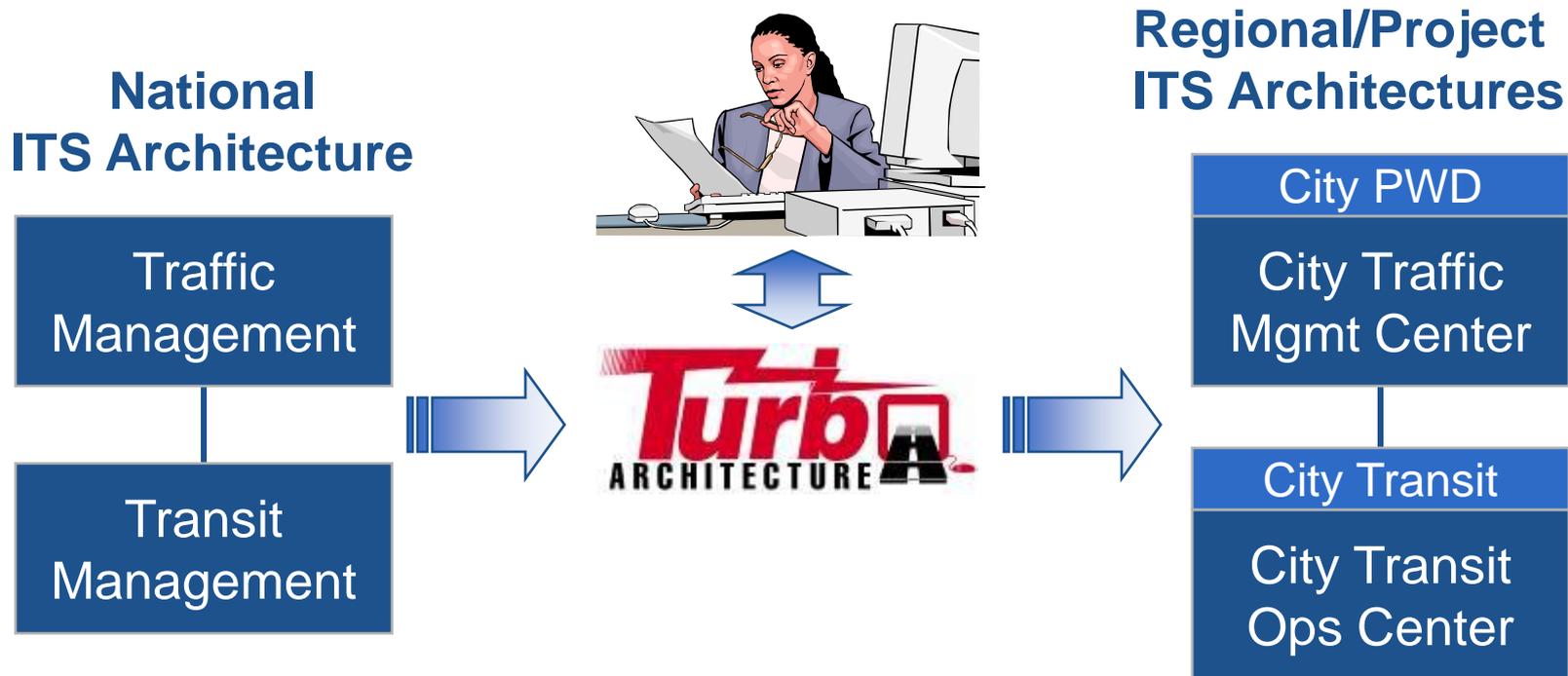
U.S. Department of Transportation
Research and Innovative Technology Administration



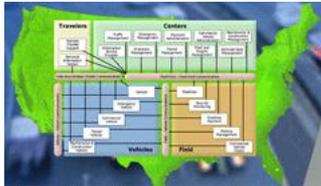
U.S. Department of Transportation
Federal Highway Administration

What is Turbo Architecture?

A software tool that automates use of the National ITS Architecture



- Released February 14, 2012



- Supports Version 7.0 of the National ITS Architecture (& align version numbers)



- Bug fixes to ensure trouble-free operation



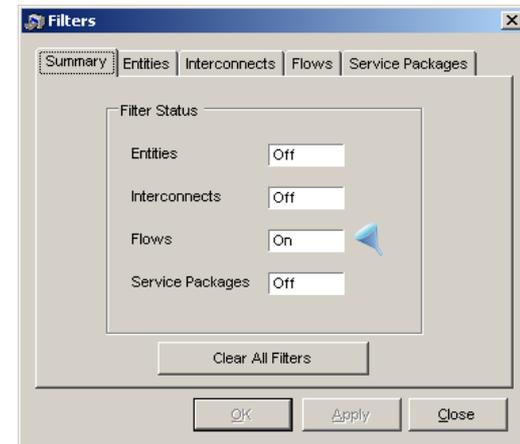
- New features and capabilities to ease use



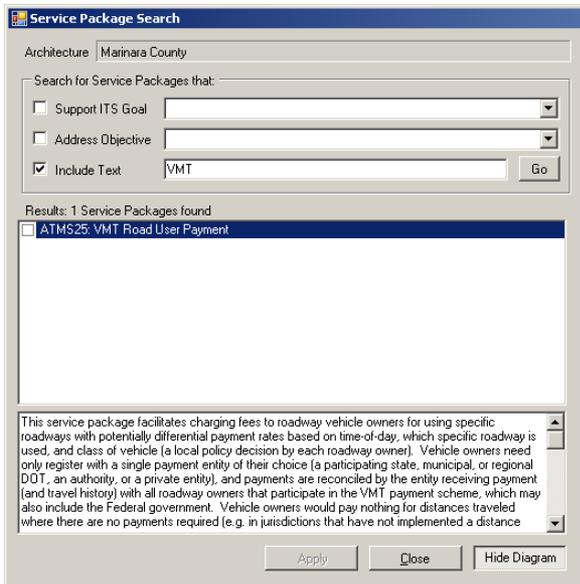
Turbo V 7 New Features & Capabilities



- Publish document for a project architecture
- Clear all filters with one click
- Context menus: right-click to undo, cut, copy, paste, select all, or spell check



- Transfer service package selections from the Planning tab to the Services tab
- Service package diagrams available in SP search



Service Package Search

Architecture: Marinara County

Search for Service Packages that:

- Support ITS Goal
- Address Objective
- Include Text: VMT

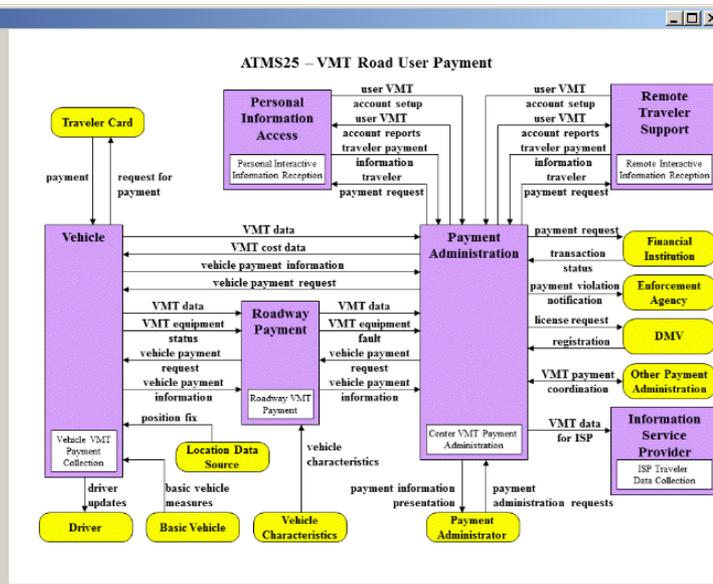
Go

Results: 1 Service Packages found

- ATMS25: VMT Road User Payment

This service package facilitates charging fees to roadway vehicle owners for using specific roadways with potentially differential payment rates based on time-of-day, which specific roadway is used, and class of vehicle (a local policy decision by each roadway owner). Vehicle owners need only register with a single payment entity of their choice (a participating state, municipal, or regional DOT, an authority, or a private entity), and payments are reconciled by the entity receiving payment (and travel history) with all roadway owners that participate in the VMT payment scheme, which may also include the Federal government. Vehicle owners would pay nothing for distances traveled where there are no payments required [e.g. in jurisdictions that have not implemented a distance

Apply Close Hide Diagram



ATMS25 - VMT Road User Payment

The diagram illustrates the data and information flow between various components:

- Vehicle** interacts with **Personal Information Access** (request for payment, payment) and **Payment Administration** (VMT data, VMT cost data, vehicle payment information, vehicle payment request).
- Personal Information Access** interacts with **Payment Administration** (user VMT account setup, user VMT account reports, traveler payment information, traveler payment request).
- Payment Administration** interacts with **Remote Traveler Support** (user VMT account setup, user VMT account reports, traveler payment information, traveler payment request) and **Financial Institution** (payment request, transaction status).
- Payment Administration** interacts with **Enforcement Agency** (payment violation notification) and **DMV** (license request, registration).
- Payment Administration** interacts with **Other Payment Administration** (VMT payment coordination) and **Information Service Provider** (VMT data for ISP, ISP Traveler Data Collection).
- Payment Administration** interacts with **Payment Administrator** (payment information presentation, payment administration requests).
- Vehicle** interacts with **Roadway Payment** (VMT data, VMT equipment status, vehicle payment request, vehicle payment information, position fix) and **Driver** (driver updates).
- Roadway Payment** interacts with **Payment Administration** (VMT data, VMT equipment status, fault vehicle payment request, vehicle payment information).
- Driver** interacts with **Basic Vehicle** (basic vehicle measures) and **Vehicle Characteristics** (vehicle characteristics).
- Basic Vehicle** interacts with **Location Data Source** (location data).
- Vehicle Characteristics** interacts with **Payment Administration** (vehicle characteristics).



Turbo Version 7.0 Availability

- Free download
- Follow links from <http://www.its.dot.gov/arch>





More on Turbo Architecture

- NHI Web-based Course (#137048)
<http://www.nhi.fhwa.dot.gov>
- T3 Webinar (from Feb. 2012)
http://www.pcb.its.dot.gov/t3/s120202_turbo.asp

The screenshot displays the RITA (Research and Innovative Technology Administration) website. The header includes the RITA logo and the text "U.S. Department of Transportation Research and Innovative Technology Administration". Below the header is a navigation bar with links for "Home", "About Us", "T3 Webinars", "ITS Peer-to-Peer", and "Resources". The main content area is titled "ITS Professional Capacity Building Program" and features a "T3 Webinar Overview" section. The webinar title is "ITS Architecture Made Easier Using Turbo Architecture: An Overview of NHI's New Web-based Turbo Architecture Course". The date is February 2, 2012, and the time is 1:00 PM - 2:30 PM ET. The cost is noted as "All T3 webinars are free of charge" and the PDH is 1.5. There is a "Recommend" button and a "Send" button. A small video player thumbnail is visible on the right side of the overview section. Below the overview is a "Description" section and a "Background" section.

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Home About Us T3 Webinars ITS Peer-to-Peer Resources

[ITS JPO Home](#) > [ITS PCB Home](#) > [T3 Webinars](#) > [T3 Archive](#)

ITS Professional Capacity Building Program

T3 Webinar Overview

ITS Architecture Made Easier Using Turbo Architecture: An Overview of NHI's New Web-based Turbo Architecture Course

Date: February 2, 2012
Time: 1:00 PM - 2:30 PM ET
Cost: All T3 webinars are free of charge
PDH: 1.5 [View PDH Policy](#)

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T3 Webinars are brought to you by the ITS Professional Capacity Building Program (ITS PCB) at the U.S. Department of Transportation's (US DOT) ITS Joint Program Office, Research and Innovative Technology Administration (RITA). Reference in this webinar to any specific commercial products, processes, or services, or the use of any trade, firm or corporation name is for the information and convenience of the public, and does not constitute endorsement, recommendation, or favoring by U.S. Department of Transportation.

Description

The purpose of this webinar is to introduce the National Highway Institute's (NHI) new [Turbo Architecture Web-based course](#) to potential users (students) in the ITS community. The webinar assumes that participants have a **general** knowledge of ITS concepts and terminology, including National ITS Architecture [terms](#).

Background

Turbo Architecture is an interactive software program that helps transportation planners and systems integrators develop and maintain regional and project architectures built on



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New National ITS Architecture's V7 – What's New and How to Use It!

Questions & Answers



U.S. Department of Transportation
Research and Innovative Technology Administration



U.S. Department of Transportation
Federal Highway Administration