FDOT District 5
Regional ITS Architecture Update Reference Guide

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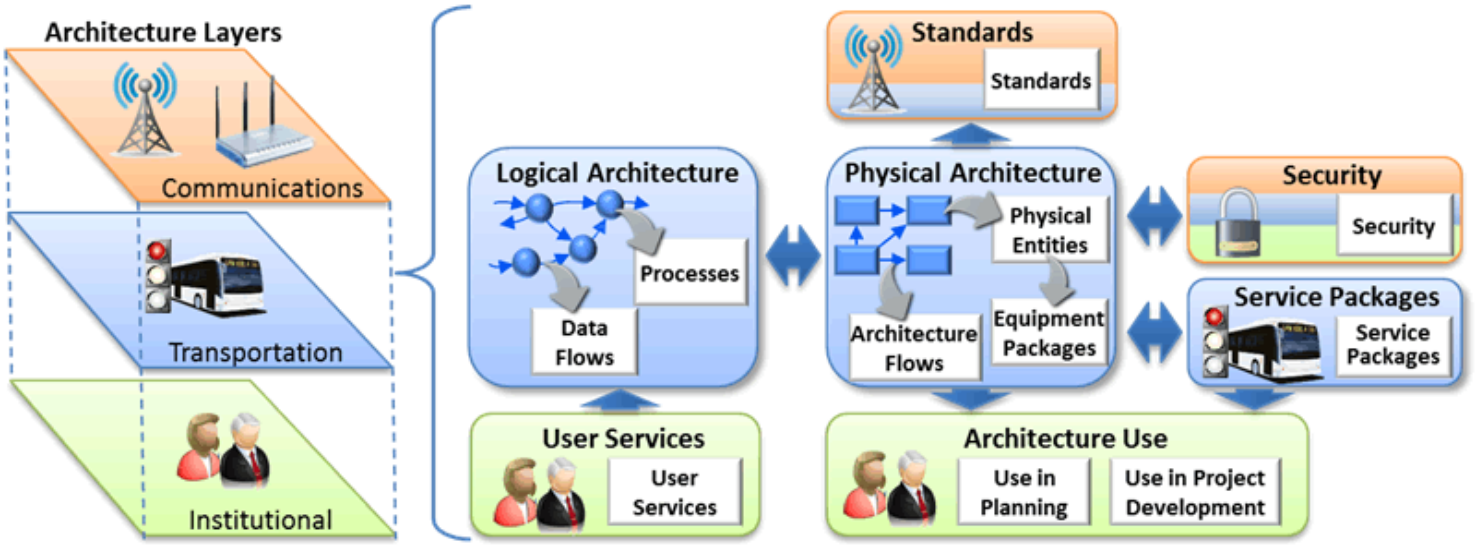
Section 1

Architecture Overview

The Architecture View

[1]The architecture view is an interconnected presentation of all of the components of the National ITS Architecture. A variety of entry points allow you to start with any of these components. Once in, you can easily navigate from component to component to find what you need. This view of the architecture is possible because of the traceability that is maintained between each of the architecture components.



The National ITS Architecture is comprised of three Layers. The Institutional Layer includes the institutions, policies, funding mechanisms, and processes that are required for effective implementation, operation, and maintenance of an intelligent transportation system. The Institutional Layer is shown as the bottom layer because solid institutional support and effective decisions are prerequisite to an effective ITS program. The Transportation Layer is where the transportation services are defined in terms of the subsystems and interfaces and the underlying functionality and data definitions that are required for each transportation service. This is the heart of the National ITS Architecture. The National ITS Architecture focuses on system integration and system integration requires effective communications. A general description of the communications services and technologies that support ITS is defined in the Communications Layer.

User Services describe what the system will do from the user's perspective. To date, thirty-three User Services have been jointly developed by US DOT and ITS America with substantial stakeholder input. A set of requirements covering each of these User Services are the basis for the National ITS Architecture definition. The User Services entry point leads you to the full set of user service requirements and allows easy traversal between the user service requirements and the components of the architecture that satisfy these requirements. Like other requirements, the user service requirements originate in the Institutional Layer.

The Logical Architecture defines the Processes (the activities or functions) that are required to satisfy the User Services. Many different Processes must work together and share information to provide a User Service. Data Flows identify the information that is shared by the Processes. These Logical Architecture entry points lead to ordered lists of processes and data flows and also allow access to data flow diagrams that provide a graphical view of how the processes and data flows fit together.

The Physical Architecture forms a high-level structure around the processes and data flows in the Logical Architecture. The physical architecture defines the Physical Entities (Subsystems and Terminators) that make up an intelligent transportation system. It defines the Architecture Flows that connect the various Subsystems and Terminators into an integrated system. The subsystems generally provide a rich set of capabilities, more than would be implemented at any one place or time. Equipment Packages break up the subsystems into deployment-sized pieces. Behind these entry points are the complete definition of the Physical Architecture. By following the links, you can traverse between the physical architecture structure and the related process and data flow requirements in the logical architecture.

[1] Documentation cited from http://www.iteris.com/itsarch/html/menu/hypertext.htm.

Security is an intrinsic part of the National ITS Architecture. Services are provided that improve the security of the surface transportation system. The ITS components must also be secured so that ITS applications are reliable and available when needed.

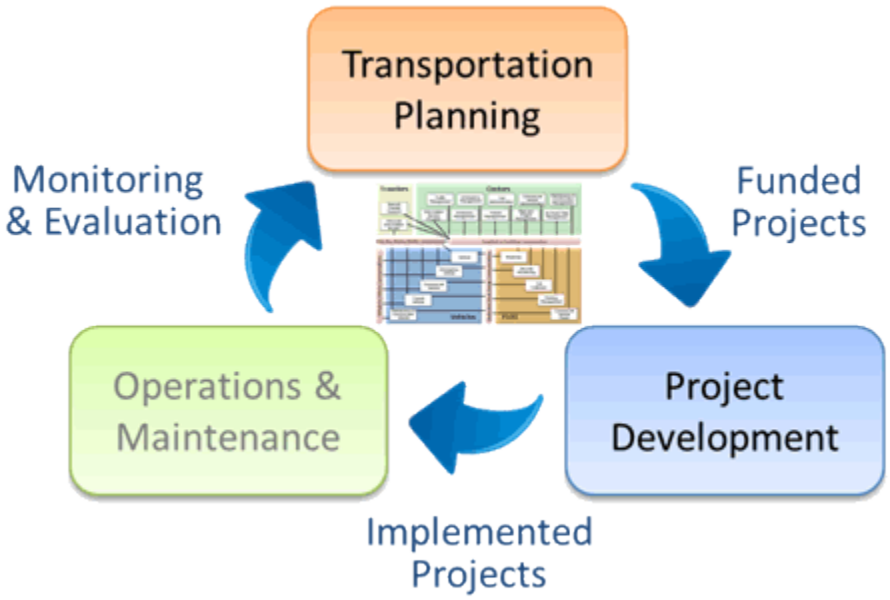
Service Packages represent slices of the Physical Architecture that address specific services like traffic signal control. A service package collects together several different subsystems, equipment packages, terminators, and architecture flows that provide the desired service. The Service Packages entry point leads to a menu of service packages with underlying graphics and definitions. By following the links, you can traverse to the physical and logical architecture components that are associated with each service package. A theory of operations for each service package provides a narrative description of how each of the components support the service.

Standards: The National ITS Architecture is a reference framework for the development of Standards. The Logical and Physical Architecture provide a starting point for ITS standards development activities by identifying the applicable architecture flows and data flows to be standardized in the National ITS Architecture and the way in which the information is exchanged across those interfaces. The Standards entry point leads to an overview of the ITS standards activities and their relationship to the National ITS Architecture. Application Areas represent deployment-oriented categories of ITS Standards and are useful to deployers who wish to select only those ITS standards relevant to the services or systems they plan to deploy.

Architecture Use

The National ITS Architecture is used to develop regional ITS architectures that define a framework for integration for a specific state, metropolitan area, or other region of interest. The National ITS Architecture includes a broad menu of options that can be selectively tailored and applied to a region. The National ITS Architecture makes it easier to develop regional ITS architectures that include all of the necessary elements in a consistent way. Basing each regional architecture on the National ITS Architecture also aids the private sector because consultants can develop expertise in the National ITS Architecture that transports from region to region.

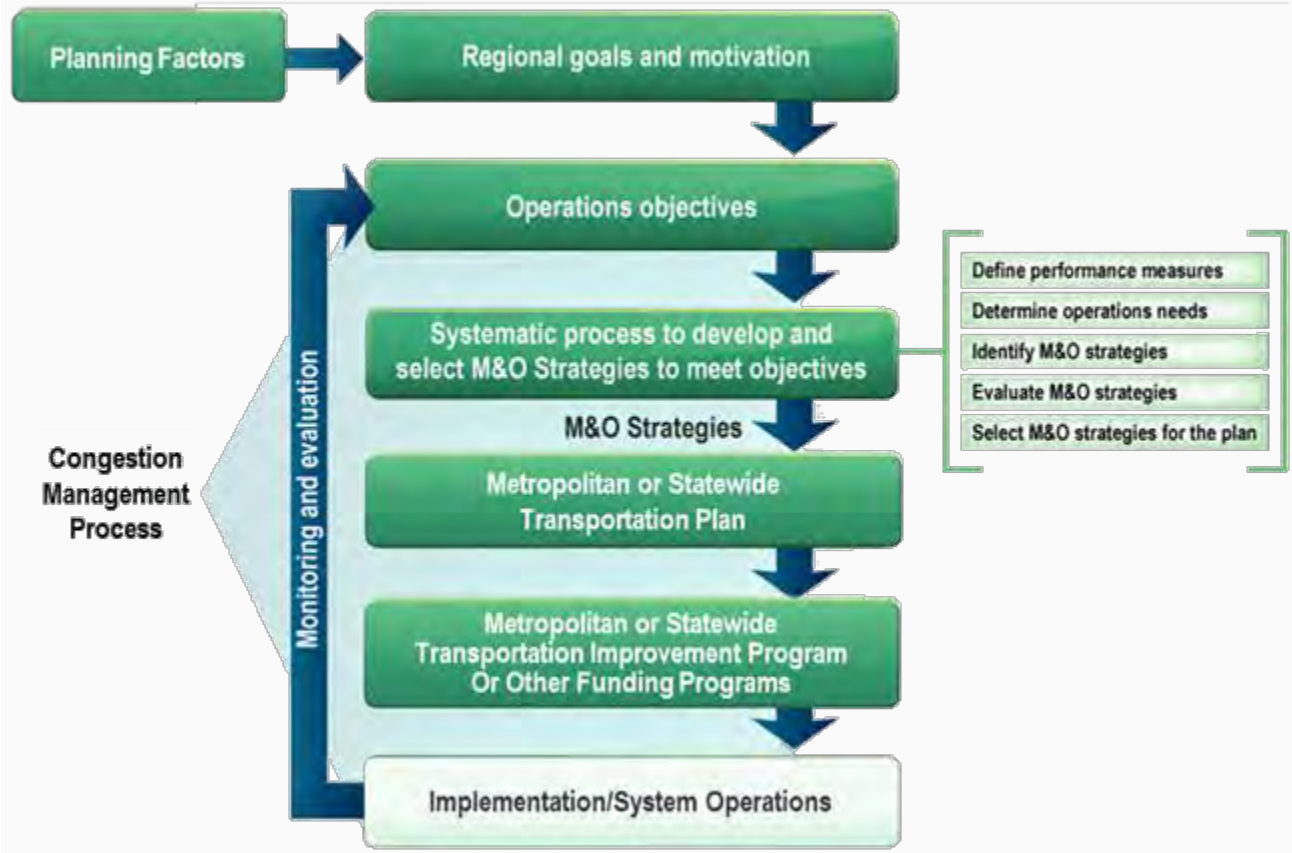
A regional ITS architecture can effectively bridge the gap between strategic planning for an integrated surface transportation system and the ITS projects that support that strategic vision. The principal value of a regional ITS architecture is that it provides a context for projects that include ITS so that each project can build a piece of a larger system. The regional ITS architecture is a tool that can be used to visualize and articulate the overall ITS system for the region so that all the stakeholders in a region spend their money compatibly instead of competitively. A regional ITS architecture is useful during transportation planning and the initial phases of development of an ITS project.



Transportation Planning. A regional ITS architecture can be used as a tool to support metropolitan and statewide transportation planning. A regional architecture provides a means by which peer agencies can jointly define their vision for ITS development based on regional goals and objectives. Using the regional ITS architecture, a region can plan for technology application and integration to support more effective planning for operations.

Project Development. By using the regional ITS architecture, the steps taken by each project will be on the path to fulfilling the larger objectives set forth in the long range transportation plan. A well-maintained regional architecture that is created and maintained using Turbo Architecture can provide a tool for making a strong initial start at the systems engineering for a project. Consult the Regional ITS Architecture Guidance Document for additional guidance on architecture use.

Use In Transportation Planning



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 three 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
- Applying a Regional ITS Architecture to Support Planning for Operations: A Primer

An objectives-driven, performance-based approach is recommended so that operations needs are addressed in

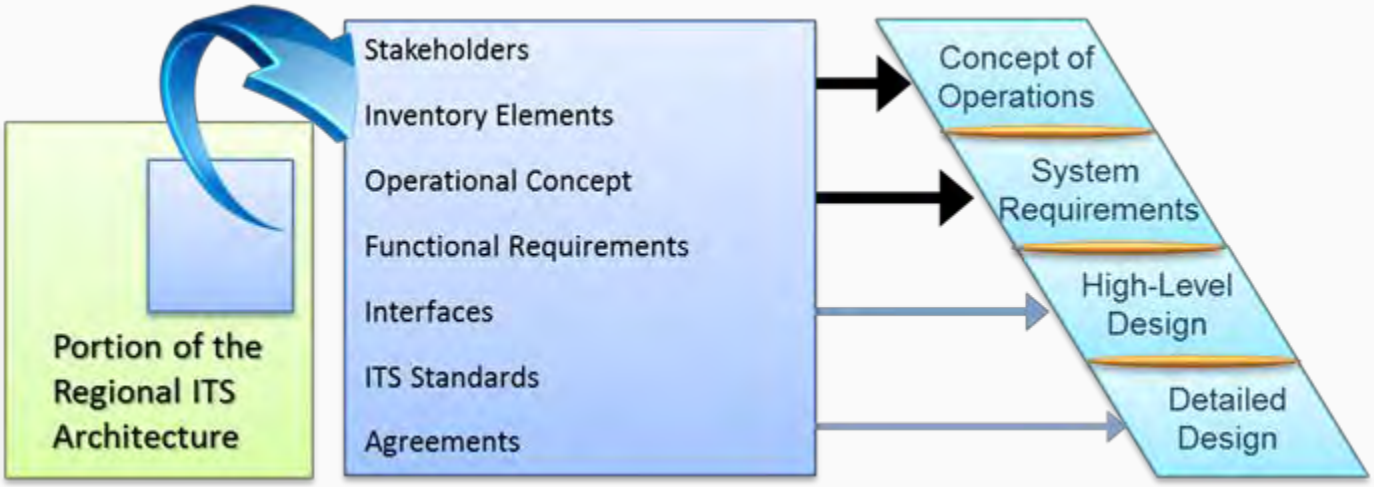
regional planning and investment decisions in a systematic, measurable way. Many of the management and operations strategies that are defined through this process rely on technology and system integration, and this is where an ITS architecture can be an effective tool to support planning for operations.

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 staring point; users should do their own analysis to identify the best service packages for their region.

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.

Section 2

Architecture Flows Description

Architecture Flows Description

Architecture Flow	Architecture Flow Description
accident report	Report of commercial vehicle safety accident. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
account information_ud	Information about valid accounts on the system.
air quality information	Aggregated region-wide measured air quality data and possible pollution incident information.
air quality information_ud	Aggregated region-wide measured air quality data and possible pollution incident information.
alarm	Information about a Commercial Vehicle or Freight Equipment breach, non-permitted security sensitive hazmat detected at the roadside, route deviation, or Commercial Vehicle Driver / Commercial Vehicle / Freight Equipment assignment mismatches which includes the location of the Commercial Vehicle and appropriate identities.
alarm acknowledge	Confirmation that alarm was received, instructions and additional information for the alarm initiator, and requests for additional information.
alarm notification	Notification of activation of an audible or silent alarm by a traveler in a public area or by a transit vehicle operator using an on-board device.
alert notification	Notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The flow identifies the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This flow may also identify specific information that should not be released to the public.
alert notification coordination	Coordination of emergency alerts to be distributed to the public. This includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public and status of the public notification.
alert notification_ud	Notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The flow identifies the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This flow may also identify specific information that should not be released to the public.
alert status	Information indicating the current status of the emergency alert including identification of the traveler and driver information systems that are being used to provide the alert.
alert status_ud	Information indicating the current status of the emergency alert

	including identification of the traveler and driver information systems that are being used to provide the alert. e.g., Amber alerts.
amber alert confirmation_ud	Confirmation that the amber alert system commands have been received. Confirmation may include the messages that was activated and displayed.
amber alert_ud	Command to activate the amber alert system. Command includes information regarding the emergency and data to be displayed.
archive coordination	Catalog data, meta data, published data, and other information exchanged between archives to support data synchronization and satisfy user data requests.
archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
archived data product requests	A user-specified request for archived data products (i.e. data, meta data, or data catalogs). The request also includes information that is used to identify and authenticate the user and support electronic payment requirements, if any.
archived data products	Raw or processed data, meta data, data catalogs and other data products provided to a user system upon request. The response may also include any associated transaction information.
area pollution data	Measured air quality data, including measured levels of atmospheric pollutants including ozone, particulate matter, carbon monoxide, and nitrogen oxides, and operational status of the sensors.
arriving train information	Information for a train approaching a highway-rail intersection that may include direction and allow calculation of approximate arrival time and closure duration.
asset inventory	Information on pavement, bridges, signs and other assets. This includes asset location, installation information, materials information, vendor/contractor information, current maintenance status, and a variety of other information (e.g., video logs) that define the transportation infrastructure.
asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard height, width, and weight restrictions by facility as well as special restrictions such as spring weight restrictions and temporary bridge weight restrictions.
asset status update	Changes to status of pavement, bridges, signs and other assets resulting from maintenance or construction activities or infrastructure monitoring. The updates may include changes in

	installation information, materials information, vendor/contractor information, condition, and current maintenance status. In addition to infrastructure asset updates, the information provided may also include status of the maintenance and construction support assets, including vehicle and equipment utilization and repair records.
bad tag list	List of invalid transit user tags which may have previously failed a fare payment transaction.
barrier system control	Information used to configure and control barrier systems that are represented by gates, barriers and other automated or remotely controlled systems used to manage entry to roadways.
barrier system status	Current operating status of barrier systems. Barrier systems represent gates, barriers and other automated or remotely controlled systems used to manage entry to roadways. Status of the systems includes operating condition and current operational state.
bill of laden information_ud	Bill of laden information.
border agency clearance results	Notification regarding the granting of permission for commercial freight shipment to enter the U.S.
border clearance data	Trip specific data regarding the movement of goods across international borders. Includes trip identification number. May also include results from recent border crossing screening events.
border clearance event	Reports clearance event data regarding action taken at border, including acceptance or override of system decision, and date/time stamp
border clearance status	Notification regarding the crossing status of commercial freight shipment scheduled to enter the U.S. Includes portions of border agency and transportation agency clearance results, as they become available. Recipients may include trade regulatory agencies that do not receive status information directly from U.S. Customs (e.g., other transportation agencies with trade related responsibilities, such as NHTSA, MARAD, etc.)
broadcast information	General broadcast information that contains link travel times, incidents, advisories, transit services and a myriad of other traveler information.
care facility status	Information regarding facility type and capabilities, facility status, and its ability to admit new patients.
care facility status request	Request for information regarding care facility availability and status.
citation	Report of commercial vehicle citation. The citation includes references to the statute(s) that was (were) violated. It includes information on the violator and the officer issuing the citation. A citation differs from a violation because it is adjudicated by the courts. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
commercial vehicle archive data	Information describing commercial vehicle travel and commodity flow characteristics. Content may include a catalog

	of available information, the actual information to be archived, and associated meta data that describes the archived information.
commercial vehicle breach	Information about a breach or tamper event on a Commercial Vehicle or its attached freight equipment which includes identity, type of breach, location, and time.
compliance review report	Report containing results of carrier compliance review, including concomitant out-of-service notifications, carrier warnings/notifications. The information may be provided as a response to a real-time query of proactively by the source. The query flow is not explicitly shown.
control burn permit_ud	Permit for controlled burns of forests and other woodland. Information includes controlled burn conditions, plans and schedules.
crash data_ud	Information about incidents on state, county, or city roadways.
credential application	Application for commercial vehicle credentials. Authorization for payment is included.
credential fee coordination	Jurisdiction's rates for various credentials (IRP, IFTA, etc.) that are exchanged between agencies.
credentials information	Response containing full credentials information. "Response" may be provided in reaction to a real-time query or a standing request for updated information. The query flow is not explicitly shown.
credentials status information	Credentials information such as registration, licensing, insurance, check flags, and electronic screening enrollment data. A unique identifier is included. Corresponds to the credentials portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.
crossing call	Pedestrian request to cross the roadway. This may be an overt (e.g., push button) request from a pedestrian or the physical presence of a pedestrian that can be detected by sensors or surveillance systems.
crossing permission	Signal to pedestrians indicating permission to cross roadway.
current asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.
current asset restrictions_ud	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.

CVC override mode	This flow represents the tactile or auditory interface with ITS equipment containing the manual override of automated pass/pull-in decisions generated by the Commercial Vehicle Check station.
CVO driver initialization	This flow represents the tactile or auditory interface with ITS equipment containing the commercial vehicle driver and vehicle information. This flow contains inquiries to the commercial vehicle managing system.
CVO inspector information	This flow represents the visual or auditory interface with ITS equipment containing credential, safety, and preclearance information and instructions to the commercial vehicle inspector.
CVO pass/pull-in message	This flow represents the visual or auditory interface with ITS equipment containing a message sent to commercial vehicle driver indicating whether to bypass or requesting pull in to inspection/verification stop along with inspection results (e. g., LED indicator on transponder or variable message sign).
daily site activity data	Record of daily activities at commercial vehicle check stations including summaries of screening events and inspections.
data collection and monitoring control	Information used to configure and control data collection and monitoring systems.
demand responsive transit plan	Plan regarding overall demand responsive transit schedules and deployment.
demand responsive transit request	Request for paratransit support.
disaster information_ud	Notification of existence of major incidents and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation regarding large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response.
driver alert response	Commercial Vehicle Driver response to a breach alert for a Freight Equipment breach or tamper event.
driver log	A daily log showing hours in service for the current driver.
driver log request	Request for driver log data.
driver to fleet request	Requests from the driver and vehicle for routing, payment, and enrollment information.
electronic screening request	Request for identification data to support electronic screening.
emergency acknowledge	Acknowledge request for emergency assistance and provide additional details regarding actions and verification requirements.
emergency archive data	Logged emergency information including information that characterizes identified incidents (routine highway incidents through disasters), corresponding incident response information, evacuation information, surveillance data, threat data, and resource information. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived

	information.
emergency data request	A request for additional information or a control command issued by the emergency response agency in response to an emergency request for assistance from a traveler.
emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information and provision of en route status.
emergency equipment request_ud	Request for specialized emergency support equipment owned by transit organization.
emergency equipment response_ud	Response to request for emergency equipment.
emergency notification	An emergency request for assistance automatically initiated by a vehicle or originated by a traveler using an in-vehicle or personal device.
emergency plan coordination	Information that supports coordination of emergency management plans, continuity of operations plans, emergency response and recovery plans, evacuation plans, and other emergency plans between agencies. This includes general plans that are coordinated prior to an incident and shorter duration tactical plans that are prepared during an incident.
emergency route request	Request for access routes for emergency response vehicles and equipment. This may be a request for ingress or egress routes or other emergency routes..
emergency routes	Suggested ingress and egress routes for access to and between the scene and staging areas or other specialized emergency access routes.
emergency traffic control information	Status of a special traffic control strategy or system activation implemented in response to an emergency traffic control request, a request for emergency access routes, a request for evacuation, a request to activate closure systems, a request to employ driver information systems to support public safety objectives, or other special requests. Identifies the selected traffic control strategy and system control status.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments, activate traffic control and closure systems such as gates and barriers, activate safeguard systems, or use driver information systems. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, request a specific evacuation traffic control plan, request activation of a road closure barrier system, or place a public safety or emergency-related message on a dynamic message sign.
emergency transit schedule information	Information on transit schedule and service changes that adapt the service to better meet needs of responders and the general public in an emergency situation, including special service schedules supporting evacuation.
emergency transit service request	Request to modify transit service and fare schedules to address emergencies, including requests for transit services to evacuate people from and/or deploy response agency

	personnel to an emergency scene. The request may poll for resource availability or request pre-staging, staging, or immediate dispatch of transit resources.
emergency transit service response	Response indicating changes to transit service, fares, and/or restrictions that will be made and status of transit resources to be deployed to support emergency response and/or evacuation.
emergency traveler information	Public notification of an emergency such as a natural or man-made disaster, civil emergency, or child abduction. This flow also includes evacuation information including evacuation instructions, evacuation zones, recommended evacuation times, tailored evacuation routes and destinations, traffic and road conditions along the evacuation routes, traveler services and shelter information, and reentry times and instructions.
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.
emissions sensor control	Data used to configure and control vehicle emissions sensors.
environmental conditions data	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by environmental sensors. Operational status of the sensors is also included.
environmental conditions data_ud	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by environmental sensors.
environmental probe data	Current environmental conditions (e.g., air temperature, wind speed, surface temperature) as measured by vehicle-based environmental sensors. In addition to environmental sensor inputs, this flow may also include vehicle control system information that may indicate adverse road surface conditions (e.g., traction control system activations).
environmental probe data_ud	Current environmental conditions (e.g., air temperature, wind speed, surface temperature) as measured by vehicle-based environmental sensors. In addition to environmental sensor inputs, this flow may also include vehicle control system information that may indicate adverse road surface conditions (e.g., traction control system activations).
environmental sensors control	Data used to configure and control environmental sensors.
equipment maintenance status	Current status of field equipment maintenance actions.
evacuation coordination	Coordination of information regarding a pending or in-process evacuation. Includes evacuation zones, evacuation times, evacuation routes, forecast network conditions, and reentry times.
evacuation information	Evacuation instructions and information including evacuation zones, evacuation times, and reentry times.
evacuation information_ud	Evacuation instructions and information including evacuation zones, evacuation times, and reentry times.

evacuation parameters_ud	Evacuation parameters include inputs from local representatives for basic primary and secondary evacuation route information.
evacuation route information_ud	Evacuation route plans including real-time traffic and weather conditions.
event confirmation	Confirmation that special event details have been received and processed.
event information	Special event information for travelers. This would include a broader array of information than the similar "event plans" that conveys only information necessary to support traffic management for the event.
event plans	Plans for major events possibly impacting traffic.
event plans_ud	Plans for major events possibly impacting traffic. See event plans for standards information.
event schedule_ud	Schedule of events provided to public and private transportation providers who provide transportation services for major events.
fare and payment status	Current fare collection information including the operational status of the fare collection equipment and financial payment transaction data.
fare and price information	Current transit, parking, and toll fee schedule information.
fare management information	Transit fare information and transaction data used to manage transit fare processing on the transit vehicle.
field device status	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.
field device status request	User input from field personnel requesting operational status of field equipment (sensors, signals, signs, controllers, etc.).
field equipment status	Identification of field equipment requiring repair and known information about the associated faults.
fleet to driver update	Updated instructions to the driver including dispatch, routing, and special instructions.
freeway control data	Control commands and operating parameters for ramp meters, mainline metering/lane controls and other systems associated with freeway operations.
freeway control status	Current operational status and operating parameters for ramp meters, mainline metering/lane controls and other control equipment associated with freeway operations.
freight equipment information	Container, trailer, or chassis information regarding identity, type, location, brake wear data, mileage, seal #, seal type, door open/close status, chassis bare/covered status, tethered / untethered status, Bill of Lading, and sensor status.
freight information_ud	Information regarding freight scheduling. Information may be used to adjust traffic control strategies, such as traffic signal timing near freight terminals.
hazmat information	Information about a particular hazmat load including nature of the load and unloading instructions. May also include hazmat vehicle route and route update information.
hazmat information request	Request for information about a particular hazmat load.

hazmat spill notification	Information provided to emergency response organizations when cargo sensors detect a release of hazardous material. This information will include sensor information, vehicle location and identification, and carrier identification.
highway control status	Current traffic control equipment status that indicates operational status and right-of-way availability to the non-highway transportation mode at a multimodal crossing.
hov data	Current HOV lane information including both standard traffic flow measures and information regarding vehicle occupancy in HOV lanes, and operational status of the HOV monitoring equipment.
hri advisories	Notification of Highway-Rail Intersection equipment failure, intersection blockage, or other condition requiring attention, and maintenance activities at or near highway rail intersections.
hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations.
hri operational status	Status of the highway-rail grade crossing equipment including both the current state or mode of operation and the current equipment condition.
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation.
hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.
incident command information coordination	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response.
incident information for media	Report of current desensitized incident information prepared for public dissemination through the media.
incident information_ud	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. See incident information for standards activities information.

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow provides current situation information, including a summary of incident status and its impact on the transportation system and other infrastructure, and current and planned response activities. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.
incident response coordination_ud	Incident response procedures and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow provides current situation information, including a summary of incident status and its impact on the transportation system and other infrastructure, and current and planned response activities. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies. See incident response coordination for standards activities information.
incident response status	Status of the current incident response including a summary of incident status and its impact on the transportation system, traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides), and current and planned response activities.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.
information on violators	Information on violators provided by a law enforcement agency. May include information about commercial vehicle violations or other kinds of violations associated with the particular entity. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
infrastructure monitoring sensor control	Data used to configure and control infrastructure monitoring sensors.
infrastructure monitoring sensor data	Data read from infrastructure-based sensors that monitor the condition or integrity of transportation infrastructure including bridges, tunnels, interchanges, pavement, culverts, signs, transit rail or guideway, and other roadway infrastructure. Includes sensor data and the operational status of the sensors.
inter-agency toll payment information_ud	This flow supports reciprocity between toll agencies/service centers by allowing the exchange of information that supports reconcilliation of toll charges by customers that are enrolled with other toll service centers.
intermod CVO coord	Cargo movement logs, routing information, and cargo ID’s.
intermodal freight archive data	Information describing demand at intermodal freight terminals including loading/unloading activities of trailers and containers. Content may include a catalog of available information, the actual information to be archived, and associated meta data

	that describes the archived information.
intermodal freight event information	Plans for movement of intermodal freight from the depot area possibly impacting traffic. May also include requests for special treatment at traffic signals.
intermodal freight traffic confirmation	Confirmation that details concerning the movement of intermodal freight on the roadway network have been received and processed. May also include information on traffic conditions affecting the depot.
intersection blockage notification	Notification that a highway-rail intersection is obstructed and supporting information.
ISP coordination	Coordination and exchange of transportation information between centers. This flow allows a broad range of transportation information collected by one ISP to be redistributed to many other ISPs and their clients.
license request	Request supporting registration data based on license plate read during violation.
local signal preemption request	Direct control signal or message to a signalized intersection that results in preemption of the current control plan and grants right-of-way to the requesting vehicle.
local signal priority request	Request from a vehicle to a signalized intersection for priority at that intersection.
maint and constr administrative information	Administrative information that is provided to support maintenance and construction operations. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.
maint and constr archive data	Information describing road construction and maintenance activities identifying the type of activity, the work performed, and work zone information including work zone configuration and safety (e.g., a record of intrusions and vehicle speeds) information.. For construction activities, this information also includes a description of the completed infrastructure, including as-built plans as applicable. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.
maint and constr dispatch information	Information used to dispatch maintenance and construction vehicles, equipment, and crews and information used to keep work zone crews informed. This information includes routing information, traffic information, road restrictions, incident information, environmental information, decision support information, maintenance schedule data, dispatch instructions, personnel assignments, alert notifications, and corrective actions.
maint and constr dispatch status	Current maintenance and construction status including work data, operator status, crew status, and equipment status.
maint and constr equipment repair status	Current maintenance and repair status of the maintenance and construction vehicle fleet and other support equipment. This information includes a record of all maintenance and repair

	activities performed.
maint and constr fleet information	Information supporting maintenance of the maintenance and construction vehicle fleet and other support equipment. This information includes vehicle status and diagnostic information, vehicle utilization, and coordination of when vehicles will be available for preventative and corrective maintenance.
maint and constr resource coordination	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response.
maint and constr resource request	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response. The request may poll for resource availability or request pre-staging, staging, or immediate dispatch of resources.
maint and constr resource response	Current status of maintenance and construction resources including availability and deployment status. General resource inventory information covering vehicles, equipment, materials, and people and specific resource deployment status may be included.
maint and constr vehicle conditions	Vehicle diagnostics information that is collected, filtered, and selectively reported by a maintenance and construction vehicle. The information includes engine temperature, mileage, tire wear, brake wear, belt wear, and any warnings or alarms concerning the operational condition of the vehicle and ancillary equipment.
maint and constr vehicle location data	The current location and related status (e.g., direction and speed) of the maintenance/construction vehicle.
maint and constr vehicle operational data	Data that describes the maintenance and construction activity performed by the vehicle. Operational data includes materials usage (amount stored and current application rate), operational state of the maintenance equipment (e.g., blade up/down, spreader pattern), vehicle safety status, and other measures associated with the operation of a maintenance, construction, or other special purpose vehicle. Operational data may include basic operational status of the vehicle equipment or a more precise record of the work performed (e.g., application of crack sealant with precise locations and application characteristics).
maint and constr work plans	Future construction and maintenance work schedules and activities including anticipated closures with anticipated impact to the roadway, alternate routes, anticipated delays, closure times, and durations.
maint and constr work plans_ud	Future construction and maintenance work schedules and activities including anticipated closures with anticipated impact to the roadway, alternate routes, anticipated delays, closure times, and durations.
media information request	Request from the media for current transportation information.
multimodal archive data	Operational information from alternate passenger transportation modes including air, rail transit, taxis, and ferries. Content may include a catalog of available information, the

	actual information to be archived, and associated meta data that describes the archived information.
multimodal crossing status	Indication of operational status and pending requests for right-of-way from equipment supporting the non-highway mode at multimodal crossings.
multimodal information	Schedule information for alternate mode transportation providers such as train, ferry, air and bus.
multimodal service data	Multimodal transportation schedules and other service information.
on-board safety data	Safety data measured by on-board sensors. Includes information about the vehicle, vehicle components, cargo, and driver.
on-board safety request	Request for on-board vehicle safety data by the roadside equipment.
on-board vehicle data	Information about the commercial vehicle stored on-board (for maintenance purposes, gate access, cargo status, lock status, etc.).
on-board vehicle request	Request for on-board vehicle data.
onboard_surveillance_ud	CCTV surveillance on board a transit vehicle. Maybe real-time video or stored video images.
other data source archive data	Data extracted from other data sources. A wide range of ITS and non-ITS data and associated meta data may be provided.
overdimension vehicle alarm_ud	Alarm indicating that an overdimension vehicle is nearing an underdimension structure.
parking demand management request	Request to change the demand for parking facility use through pricing or other mechanisms.
parking demand management response	Response to parking demand management change requests indicating level of compliance with request.
parking information	General parking information and current parking availability.
parking information_ud	General parking information and current parking availability. See parking information for standards activities information.
parking lot data request	Request for parking lot occupancy, fares, and availability. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
parking lot inputs	Instructions for operation of local parking facilities to support regional traffic management objectives (e.g. which parking lot exits to use). Also, includes inputs from traffic sensors to support calculation of parking lot occupancy and support more effective management of parking entrances and exits.
parking lot reservation confirmation	Confirmation for parking lot reservation.
parking reservations request	Reservation request for parking lot.
pass/pull-in	Command to commercial vehicle to pull into or bypass inspection station.
passenger information_ud	Provides detailed passenger information. May include scheduled pickup and dropoff information, and passenger (on-board) status. For paratransit and demand-responsive

	requests. Also, for school bus.
patient status	Information that supports assessment of the patient's condition. Information could include general categorization of patient status, patient vital signs, pertinent medical history, and emergency care information.
payment	Payment of some kind (e.g., toll, parking, fare) by traveler which, in most cases, can be related to a credit account.
payment request	Request for payment from financial institution.
payment request_ud	Request for payment in response to paratransit or demand-responsive transit requests
payment violation notification	Notification to enforcement agency of a toll, parking, or transit fare payment violation.
payment violations_ud	Information regarding accounts with electronic payment violations or outstanding fines. May be used to restrict motor vehicle re-registrations until outstanding payments or fines are settled.
payment_ud	Payment of some kind (e.g., toll, parking, fare) by traveler which, in most cases, can be related to a credit account. See payment for standards activities information.
personal transit information	General and personalized transit information for a particular fixed route, flexible route, or paratransit system.
pollution sensor control	Data used to configure and control area pollution and air quality sensors.
pollution state data request	Aggregated emissions data information request.
probe data	Aggregate data from probe vehicles including location, speed for a given link or collection of links.
probe data_ud	Aggregate data from probe vehicles including location, speed for a given link or collection of links. See probe data for standards activities information.
rail archive data_ud	Operational information from rail transit, and rail freigh. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.
rail system status assessment	Assessment of damage sustained by rail lines and associated railroad infrastructure including location and extent of the damage, impact on current operations and necessary restrictions, and time frame for repair and recovery.
railroad advisories	Real-time notification of railway-related incident or advisory.
railroad schedules	Train schedules, maintenance schedules, and other information from the railroad that supports forecast of HRI closures.
registration	Registered owner of vehicle and associated vehicle information.
registration_ud	Registered owner of vehicle and associated vehicle information.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

request fare and price information	Requests for current fare and price information from a service provider that can be used to augment the traffic manager's overall view of current transportation network status.
request for freight information_ud	Request for freight information, such as freight delivery schedules.
request for payment	Request to deduct cost of service from user's payment account.
request for right-of-way	Forwarded request from signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.
request for vehicle measures	Request for vehicle performance and maintenance data collected by onboard sensors.
request tag data	Request for tag information including credit identity, stored value card cash, etc.
request transit information	Request for transit service information and current transit status.
resource coordination	Coordination of resource inventory information, specific resource status information, resource prioritization and reallocation between jurisdictions, and specific requests for resources and responses that service those requests..
resource deployment status	Status of traffic management resource deployment identifying the resources (vehicles, equipment, materials, and personnel) available and their current status. General resource inventory information and specific status of deployed resources may be included.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. The request may poll for resource availability or request pre-staging, staging, or immediate deployment of resources.
reversible lane control	Control of automated reversible lane configuration and driver information systems.
reversible lane status	Current reversible lane status including traffic sensor and surveillance data and the operational status and mode of the reversible lane control equipment.
reversible lane status_ud	Current reversible lane status including traffic sensor and surveillance data and the operational status and mode of the reversible lane control equipment. See reversible lane status for standards activities information.
road network conditions	Current and forecasted traffic information, road and weather conditions, traffic incident information, and other road network status. Either raw data, processed data, or some combination of both may be provided by this architecture flow. Information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) in effect is also included.
road network conditions_ud	Current and forecasted traffic information, road and weather conditions, traffic incident information, and other road network status. Either raw data, processed data, or some combination

	of both may be provided by this architecture flow. See road network conditions for standards activities information.
road network probe information	Aggregated route usage, travel times, environmental conditions, and other aggregated data collected from probe vehicles.
road network status assessment	Assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.
road weather information	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.
road weather information_ud	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators. See road weather information for standards activities information.
roadside archive data	A broad set of data derived from roadside sensors that includes current traffic conditions, environmental conditions, and any other data that can be directly collected by roadside sensors. This data also indicates the status of the sensors and reports of any identified sensor faults.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.
roadway maintenance status	Summary of maintenance fleet operations affecting the road network. This includes the status of winter maintenance (snow plow schedule and current status).
route plan	Tailored route provided by ISP in response to a specific request.
route request	Request for a tailored route based on given constraints.
route restrictions	Information about routes, road segments, and areas that do not allow the transport of security sensitive hazmat cargoes or include other restrictions (such as height or weight limits).
safeguard system control	Data that controls safeguard systems (remotely controlled equipment used to mitigate the impact of incidents on transportation infrastructure, such as blast shields, exhaust systems, etc.).
safeguard system status	Current operating status of safeguard systems (remotely controlled equipment used to mitigate the impact of incidents on transportation infrastructure, such as blast shields, exhaust systems, etc.). Status of the systems includes operating condition and current operational state.

safety inspection record	Record containing results of commercial vehicle safety inspection.
safety inspection report	Report containing results of commercial vehicle safety inspection. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
safety inspection request	Request for safety inspection record.
safety status information	Safety information such as safety ratings, inspection summaries, and violation summaries. A unique identifier is included. Corresponds to the safety portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.
screening event record	Results of CVO electronic screening activity.
secure area sensor control	Information used to configure and control threat sensors (e.g., thermal, acoustic, radiological, chemical), object, motion and intrusion detection sensors. The provided information controls sensor data collection, aggregation, filtering, and other local processing.
secure area sensor data	Data provided by threat sensors (e.g., thermal, acoustic, radiological, chemical), and intrusion, motion, and object detection sensors in secure areas indicating the sensor's operational status, raw and processed sensor data, and alarm indicators when a threat has been detected.
secure area surveillance control	Information used to configure and control audio and video surveillance systems used for transportation infrastructure security in secure areas. The provided information controls surveillance data collection, aggregation, filtering, and other local processing.
secure area surveillance control_ud	Information used to configure and control audio and video surveillance systems used for transportation infrastructure security in secure areas. The provided information controls surveillance data collection, aggregation, filtering, and other local processing. See secure area surveillance control for standards activities information.
secure area surveillance data	Data collected from surveillance systems used to monitor secure areas. Includes video, audio, processed surveillance data, equipment operational status, and alarm indicators when a threat has been detected.
secure area surveillance data_ud	Data collected from surveillance systems used to monitor secure areas. Includes video, audio, processed surveillance data, equipment operational status, and alarm indicators when a threat has been detected. See secure area surveillance data for standards activities information.
security field equipment status	Identification of security sensors and surveillance equipment requiring repair and known information about the associated faults.

selected routes	Routes selected based on route request criteria.
signal control data	Information used to configure and control traffic signal systems.
signal control status	Status of surface street signal controls including operating condition and current operational state.
special permit information request_ud	A request for special oversize/overweight permit information. The request can specify parameters (e.g., minimum height, weight, width) and route information that can be used to filter the returned data to only include those specific vehicles .
speed monitoring control	Information used to configure and control automated speed monitoring, speed warning, and speed enforcement systems.
speed monitoring information	System status including current operational state and logged information including measured speeds, warning messages displayed, and violation records.
suggested route	Suggested route for a dispatched emergency or maintenance vehicle that may reflect current network conditions and the additional routing options available to en route emergency or maintenance vehicles that are not available to the general public.
tag data	Unique tag ID and related vehicle information.
tag update	Data written to a tag to support electronic toll collection or parking payment.
tax filing	Commercial vehicle tax filing data. Authorization for payment is included.
threat information	Threats regarding transportation infrastructure, facilities, or systems detected by a variety of methods (sensors, surveillance, threat analysis of advisories from outside agencies, etc.
threat information coordination	Sensor, surveillance, and threat data including raw and processed data that is collected by sensor and surveillance equipment located in secure areas.
toll archive data	Data indicating toll facility usage and pricing schedules. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.
toll coordination	This flow supports reciprocity between toll agencies/service centers by exchanging information that supports reconciliation of toll charges by customers that are enrolled with other toll service centers. In addition to toll charge reconciliation, exchanged information may include toll schedule information, customer information and other toll service information that is coordinated between toll agencies or centers.
toll data	Current toll schedules for different types of vehicles as well as advanced toll payment information.
toll data request	Request made to obtain toll schedule information or pay a toll in advance. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
toll instructions	Information provided to configure and support toll plaza operations including toll pricing information.

toll service change request	Request to change pricing, modify restrictions, or modify operations of a toll road facility
toll service change response	Response to toll service change requests indicating level of compliance with request.
toll transactions	Detailed list of transactions from a toll station.
track status	Current status of the wayside equipment and notification of an arriving train.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.
traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic control priority request	Request for signal priority at one or more intersections along a particular route.
traffic control priority status	Status of signal priority request functions at the roadside (e.g. enabled or disabled).
traffic flow	Raw and/or processed traffic detector data which allows derivation of traffic flow variables (e.g., speed, volume, and density measures) and associated information (e.g., congestion, potential incidents). This flow includes the traffic data and the operational status of the traffic detectors.
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications. This flow includes the images and the operational status of the surveillance system.
traffic images_ud	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications. This flow includes the images and the operational status of the surveillance system. See traffic images for standards activities information.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.
traffic plans_ud	Set traffic plan information for use by traffic managment center in putting up DMS displays.
traffic sensor control	Information used to configure and control traffic sensor systems.
traffic sensor control_ud	Information used to configure and control traffic sensor systems. See traffic sensor control for standards activities information.

traffic violation notification	Notification to enforcement agency of a detected traffic violation including speed violations and HOV violations.
transaction status	Response to transaction request. Normally dealing with a request for payment.
transaction status_ud	Response to requests for payment for parantransit and/or demand-responsive transit service
transit and fare schedules	Transit service information including routes, schedules, schedule adherence, and fare information. Includes transit service information during evacuation.
transit archive data	Data used to describe and monitor transit demand, fares, operations, and system performance. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.
transit fare and passenger status	Information provided from the traveler location that supports fare payments, passenger data, and associated record-keeping.
transit fare coordination	Fare and pricing information shared between local/regional transit organizations.
transit fare information	Information provided by transit management that supports fare payment transactions and passenger data collection.
transit incident information	Information on transit incidents that impact transit services for public dissemination.
transit information request	Request for transit operations information including schedule and fare information. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
transit information request_ud	Request for transit operations information including schedule and fare information. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information. See transit information request for standards activities information.
transit information user request	Request for special transit routing, real-time schedule information, and availability information.
transit multimodal information	Transit schedule information for coordination at modal interchange points.
transit request confirmation	Confirmation of a request for transit information or service.
transit schedule information	Current and projected transit schedule used to develop corrective actions on-board.
transit service coordination	Schedule coordination information shared between local/regional transit organizations.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation

	network performance.
transit system status assessment	Assessment of damage sustained by the public transportation system including location and extent of the damage, current operational status including an estimate of remaining capacity and necessary restrictions, and time frame for repair and recovery.
transit traveler information	Transit information prepared to support transit users and other travelers. It contains transit schedules, real-time arrival information, fare schedules, alerts and advisories, and general transit service information.
transit traveler information_ud	Transit information prepared to support transit users and other travelers. It contains transit schedules, real-time arrival information, fare schedules, alerts and advisories, and general transit service information. See transit traveler information for standards activities information.
transit traveler request	Request by a Transit traveler to summon assistance, request transit information, or request any other transit services.
transit vehicle conditions	Operating conditions of transit vehicle (e.g., engine running, oil pressure, or mileage).
transit vehicle location data	Current transit vehicle location and related operational conditions data provided by a transit vehicle.
transit vehicle operator information	Transit service instructions, wide area alerts, traffic information, road conditions, and other information for both transit and paratransit operators.
transit vehicle passenger and use data	Data collected on board the transit vehicle pertaining to availability and/or passenger count.
transit vehicle schedule performance	Estimated times of arrival and anticipated schedule deviations reported by a transit vehicle.
transportation border clearance assessment	Notification regarding the granting of permission for commercial freight shipment to enter the U.S. Includes directions for commercial driver to proceed to nearest vehicle weigh and inspection station for further review if required.
transportation network observations_ud	Roadway network conditions, including incidents, as reported by transit operators.
transportation system status	Current status and condition of transportation infrastructure (e.g., tunnels, bridges, interchanges, TMC offices, maintenance facilities). In case of disaster or major incident, this flow provides an assessment of damage sustained by the surface transportation system including location and extent of the damage, estimate of remaining capacity and necessary restrictions, and time frame for repair and recovery.
transportation weather information	Current and forecast road conditions and weather information (e.g., surface condition, flooding, wind advisories, visibility, etc.) associated with the transportation network. This information is of a resolution, timeliness, and accuracy to be useful in transportation decision making.
travel time_ud	Roadway network conditions, as measured by travel times.
traveler archive data	Data associated with traveler information services including service requests, facility usage, rideshare, routing, and traveler

	payment transaction data. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.
traveler information	Traveler information comprised of traffic and road conditions, advisories, incidents, payment information, transit services, and many other travel-related data updates and confirmations.
traveler information for media	General traveler information regarding incidents, unusual traffic conditions, transit issues, or other advisory information that has been desensitized and provided to the media.
traveler profile	Information about a traveler including equipment capabilities, personal preferences and recurring trip characteristics.
traveler request	Request by a traveler to summon assistance, request information, make a reservation, or initiate any other traveler service.
trip confirmation	Acknowledgement by the driver/traveler of acceptance of a route.
trip declaration identifiers	Specific identifiers extracted from notification containing information regarding pending commercial freight shipment into the U.S. Includes carrier, vehicle, and driver identification data.
trip identification number	The unique trip load number for a specific cross-border shipment.
trip log	Driver's daily log, vehicle location, mileage, and trip activity (includes screening, inspection and border clearance event data as well as fare payments).
trip log request	Request for trip log.
trip plan	A sequence of links and special instructions comprising of a trip plan indicating efficient routes for navigating the links. Normally coordinated with traffic conditions, other incidents, preemption and prioritization plans.
trip request	Request by a driver/traveler for special routing.
utility location information_ud	Maps and surveys indicating the locations and elevations of underground utilities, such as below-ground conduits, pipes, boxes and other structures.
vehicle based information_ud	Vehicle information transmitted from on-board vehicle equipment used as part of VII effort to communicate between vehicles and traffic management centers via roadway equipment.
vehicle dimensions_ud	Information flows containing physical attributes of vehicles, such as size and weight.
vehicle emissions data	Measured emissions of specific vehicles comprised of exhaust pollutants including hydrocarbons, carbon monoxide, and nitrogen oxides.
vehicle messages_ud	Vehicle messages used as part of VII effort to communicate with the on-board equipment.
vehicle probe data	Vehicle probe data indicating identity, route segment identity, link time and location, and the operational status of the probe vehicle equipment.
video surveillance control	Information used to configure and control video surveillance

	systems.
VII Initiative Coordination_ud	Information being shared that allows VII systems to smoothly transfer to and be used on public sector systems.
violation notification	Notification to enforcement agency of a violation. The violation notification flow describes the statute or regulation that was violated and how it was violated (e. g., overweight on specific axle by xxx pounds or which brake was out of adjustment and how far out of adjustment it was). A violation differs from a citation because it is not adjudicated by the courts.
violation notification_ud	Notification to enforcement agency of a violation. The violation notification flow describes the statute or regulation that was violated and how it was violated (e. g., overweight on specific axle by xxx pounds or which brake was out of adjustment and how far out of adjustment it was). A violation differs from a citation because it is not adjudicated by the courts.
voice-based alert notification	Information to be distributed to the traveling public via voice regarding a major emergency such as a natural or man-made disaster, civil emergency, severe weather or child abduction. The flow may identify the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. The content of this architecture flow may be specially formatted for voice-based traveler information.
voice-based traveler information	Traveler information sent to the telecommunications systems for traveler information terminator. This flow may represent the bulk transfer of traveler information, including traffic conditions, incident information, transit information and weather and road condition information. It may be specially formatted for voice-based traveler information.
voice-based traveler request	The electronic traveler information request from the telecommunications systems for traveler information terminator. It may be specifically formatted for voice-based traveler requests. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
weather information	Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.).
widearea statistical pollution information	Aggregated region-wide measured emissions data and possible pollution incident information.
wim and queue data_ud	Weigh-in-motion and queue length data.
work orders_ud	Work orders for maintanence of ITS equipment.
work plan coordination	Coordination of work plan schedules and activities between maintenance and construction organizations or systems. This information includes the work plan schedules and comments and suggested changes that are exchanged as work plans are coordinated and finalized.
work plan feedback	Comments and suggested changes to proposed construction

	and maintenance work schedules and activities. This information influences work plan schedules so that they minimize impact to other system operations and the overall transportation system.
work plans_ud	This information includes the work plan schedules, activities and locations.
work zone information	Summary of maintenance and construction work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.
work zone status	Current work zone status including current location (and future locations for moving work zones), impact to the roadway, required lane shifts, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits.
work zone warning device control	Data used to configure and control work zone safety monitoring and warning devices.
work zone warning notification	Notification of a work zone emergency or safety issue. This flow identifies that a work zone emergency or safety issue has occurred so that warnings may be generated by more than one system in the work zone.
work zone warning status	Status of a work zone safety monitoring and warning devices. This flow documents system activations and includes additional supporting information (e.g., an image) that allows verification of the alarm.

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Section 3

Stakeholders

ITS Stakeholders

ITS Stakeholders	Description
Airport Authorities	Represents regional airport authorities and agencies responsible for operating and maintaining regional airports.
Amtrak	Nationwide passenger rail organization with service throughout the United States.
Archived Data Users	Users of archived data.
Brevard County	Represent the agencies and departments of Brevard County.
Canaveral Port Authority	Represents the agency responsible for the operation of Port Canaveral.
CHEMTREC	CHEMTREC (CHEMical TRansportation Emergency Center) was established by the chemical industry as a public service hotline for fire fighters, law enforcement, and other emergency responders to obtain information and assistance for emergency incidents involving chemicals and hazardous materials.
City of Daytona Beach	Represents the municipal agencies and departments of the City of Daytona Beach.
City of Maitland	Represents the municipal agencies and departments of the City of Maitland.
City of Melbourne	Represents the municipal agencies and departments of the City of Melbourne.
City of Melbourne Airport Authority	Represents the city agency responsible for operating and maintaining Melbourne airport.
City of Ocala	Represents the municipal agencies and departments of the City of Ocala.
City of Orlando	Represents the municipal agencies and departments of the City of Orlando.
City of Winter Park	Represents the municipal agencies and departments of the City of Winter Park.
Counties and Cities	Represents generic county and municipal agencies and departments, including public works departments, and permit offices.
County and City Traffic Engineering	Represents the generic county and local traffic management agencies.
County Emergency Management Agencies	Represents the generic county agencies and departments that coordinates emergency response during major disasters or incidents.
County Public Safety Agencies	Represents the generic county public safety agencies, including EMS, fire departments, and sheriff's departments.
County School Districts	Represents the public school districts in Florida.

ITS Stakeholders	*Description*
Disney/Reedy Creek Improvement District	Reedy Creek Improvement District is a public corporation of the State of Florida and is located in Orange and Osceola Counties in central Florida, about 15 miles southwest of the City of Orlando. The District currently encompasses approximately 25,000 acres. The district is home to Disney World.
FDOT	Florida Department of Transportation (FDOT). The mission of the department is to provide a safe and reliable transportation system that ensures the mobility of people and goods, enhances economic prosperity and preserves the quality of Florida's environment and communities. Various modes of transportation are supported by the department including roadways, railways, seaport and airports.
FDOT Central Office of Information Services	The Office of Information Systems (OIS) is a division level organization within the Department of Transportation. The Chief Information Officer serves as the director of OIS. The primary functions of the OIS are to provide FDOT with a functional, statewide information processing and communications network, provide technical support for the Department's integrated office automation systems; provide staff controls for all statutory requirements of information resources in the area of procurement, security and finance; and manage all computer-based administrative and managerial data processing information. It is the mission of the Office of Information Systems to meet the requirements of customers who use computer-generated information by providing and supporting technology, systems, and services that are reliable, available, and protected.
FDOT Central Planning Office	The central office for statewide transportation planning for FDOT.
FDOT Central Planning Transportation Statistics Office	Florida Department of Transportation's central clearinghouse and principal source for highway and traffic data.
FDOT Commission for the Transportation Disadvantaged	State of Florida Commission for the Transportation Disadvantaged (CTD). An independent commission housed administratively within the Florida Department of Transportation whose mission is to insure the availability of efficient, cost-effective, and quality transportation services for transportation disadvantaged persons.
FDOT D5/FHP	A stakeholder group consisting of FDOT District 5 and FHP. Created for elements that are jointly operated by FDOT District 5 and FHP.
FDOT District 5	Represents Florida Department of Transportation District 5, Central Florida, which includes the following counties: Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter, and Volusia.

ITS Stakeholders	*Description*
FDOT Turnpike Enterprise	Represents Florida Department of Transportation Turnpike Enterprise Division, which manages and operates limited-access toll highways in the State of Florida, including the Florida Turnpike.
FDOT/LYNX	A stakeholder group composed of FDOT District 5 and LYNX Transit.
Financial Institutions	Financial and banking institutions that play a role in electronic payment financial transactions.
Florida Department of Highway Safety and Motor Vehicles	The Florida Department of Highway Safety and Motor Vehicles promotes a safe driving environment through law enforcement, public education and service, reduction of traffic crashes, titling and registering of motor vehicles and vessels, licensing motor vehicle operators, and regulation of motor vehicle exhaust.
Florida Department of Law Enforcement	Florida Department responsible for initiating Amber Alert messages.
Florida Division of Emergency Management	A division of the Florida Department of Community Affairs, the Florida Division of Emergency Management is responsible for ensuring that the State of Florida is prepared to respond to emergencies, recover from them, and mitigate their impacts.
Florida Highway Patrol	The Florida Highway Patrol's (FHP) mission is to promote a safe driving environment through aggressive law enforcement, public education, and safety awareness; reduce the number and severity of traffic crashes in Florida, preserve and protect human life and property.
Greater Orlando Airport Authority	Represents airport authority responsible for operating and maintaining Orlando International airport
Lake County	Represent the agencies and departments of Lake County.
Local Agencies	Represents local government agencies and departments, including local fire/rescue departments, law enforcement providers, and emergency management agencies.
Local Media	Owner/operators of communications media including television, cable TV, radio, and news papers.
Local Transit Operators	Represents generic public transit operators, agencies, and their systems.
Local Venue Promoters	Local event promoters, such as arenas.
LYNX	LYNX is the primary transit system of the region operated by the Central Florida Regional Transportation Authority
Manatee County Transportation Department	The Manatee County division responsible for traffic services in the county.
Marion County Government	Represents the agencies and departments of Marion County

ITS Stakeholders	*Description*
MetroPlan Orlando	The Metropolitan Planning Organization (MPO) for the Orlando region.
NASA/Private Companies	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration. Includes the National Weather Service and the National Hurricane Center.
Orange County	Represents the agencies and departments of Orange County.
Orange County/OCCC	Orange County Convention Center (OCCC) is owned and operated by Orange County and is the largest convention center in District 5.
Orlando/Orange County Expressway Authority	The Orlando-Orange County Expressway Authority operates toll roads in Orange County and in adjacent counties if requested by local government.
Osceola County Engineering	Represents the traffic and engineering departments of the Osceola County.
Osceola County Expressway Authority	Planned new Expressway Authority for Osceola County.
Parking Facility Operators	Operators of public or private parking facilities, including park-and-ride facilities. May include bus shuttle services provided by private park-and-ride facilities.
Polk County Transit Services	Polk County Transit Services provide paratransit services for the county.
Private Bus Companies	Represents private companies providing fixed route or paratransit services in the region.
Private Commercial Vehicle and Fleet Operators	Owner/operators of private commercial vehicles and fleets.
Private Concierge Service Provider	Private concierge service providers within the region. Includes Onstar, etc.
Private Maintenance Contractors	Represents private companies hired by the public sector to provide roadway maintenance, ITS equipment maintenance or vehicle maintenance.
Private Sector ISPs	Private traveler and transportation information service providers, including Mobility Technologies, SmartRoute Systems, Shadow Traffic, and Metro Traffic.
Private Transit Operators	Owner/operators of bus services, including private long-distance bus service, private shuttle services, and demand-responsive bus services
Private Weather Information Providers	Private companies providing weather services and information.
Private/Public Regional Medical Centers	Hospital/trauma centers in the region.

ITS Stakeholders	*Description*
Probe Information Providers	Providers of probe information. These providers can provide wide area probe data information based on the location of cell phones, automated vehicle locators, and other technologies.
Rail Operator	Generic owner/operator of commercial or passenger rail service. Includes CSXNS and FEC.
Regional Public Safety Agencies	Represents the generic county and municipal public safety agencies, including EMS, fire departments, police departments, and sheriff's departments. Also represents the agencies that manage and operate PSAPs (Public Safety Answering Points).
Regional Transit Management Agencies	Generic element representing transit management agencies and operators in the State of Florida.
SCAT - Space Coast Area Transit	Transit provider in Brevard County
Seminole County	Represents the agencies and departments of Seminole County.
SunGuide Partners/ISP Vendor Team	Represents the public agencies and private partners that operate and manage the regional 511 systems.
SUNTRAN	SUNTRAN provides fixed-route public transportation in the City of Ocala. SUNTRAN is a cooperative effort of the Ocala/Marion County Metropolitan Planning Organization, Marion County, the City of Ocala, the Florida Department of Transportation & Federal Transportation Administration.
Traveler Information Radio Network	Private companies that provide traveler information radio in the region.
Travelers	Represents the general public, including passengers and travelers.
VII Provider	A private sector company that provides data support and vehicle support for all Vehicle Infrastructure Initiative (VII).
Volusia County	Represents the agencies and departments of Volusia County.
Volusia County MPO	The Metropolitan Planning Organization (MPO) for Volusia County and portions of Flagler County.
VOTRAN	Volusia County's primary transit agency, providing fixed route and paratransit operations.

Section 4

Inventory (Elements) By Stakeholders

Inventory by Stakeholder

Stakeholder	*ITS Element*	*Status*	*Entity*
Airport Authorities			
	Air Freight Terminals	Existing	Intermodal Freight Depot
Amtrak			
	Amtrak Passenger Train Terminal	Existing	Multimodal Transportation Service Provider
Archived Data Users			
	Archived Data User Systems	Existing	Archived Data User Systems
Brevard County			
	Brevard County Field Equipment	Existing	Roadway Subsystem
	Brevard County Traffic Operations Center	Existing	Other Traffic Management
	Brevard County Traffic Operations Center	Existing	Traffic Management
Canaveral Port Authority			
	Port Canaveral	Existing	Intermodal Freight Depot
	Port Canaveral	Existing	Multimodal Transportation Service Provider
CHEMTREC			
	CHEMTREC	Existing	Fleet and Freight Management
City of Daytona Beach			
	City of Daytona Beach Field Equipment	Existing	Roadway Subsystem
	City of Daytona Beach Traffic Management Center	Existing	Other Traffic Management
	City of Daytona Beach Traffic Management Center	Existing	Traffic Management
City of Maitland			
	City of Maitland Field Equipment	Existing	Roadway Subsystem
	City of Maitland Traffic Operations Center	Existing	Traffic Management
City of Melbourne			
	City of Melbourne Field Equipment	Existing	Roadway Subsystem
	City of Melbourne Traffic Operations Center	Existing	Emissions Management
	City of Melbourne Traffic Operations Center	Existing	Traffic Management
City of Melbourne Airport Authority			
	Melbourne International Airport	Existing	Multimodal Transportation Service Provider
City of Ocala			
	City of Ocala Field Equipment	Existing	Roadway Subsystem
	City of Ocala Traffic Management Center	Existing	Traffic Management

Stakeholder	*ITS Element*	*Status*	*Entity*
	SUNTRAN Transit Dispatch Center	Existing	Transit Management
	SUNTRAN Transit Vehicles	Existing	Transit Vehicle Subsystem
City of Orlando			
	City of Orlando Field Equipment	Existing	Roadway Subsystem
	City of Orlando Traffic Management Center	Existing	Traffic Management
City of Winter Park			
	City of Winter Park Field Equipment	Existing	Roadway Subsystem
	City of Winter Park Traffic Operations Center	Existing	Traffic Management
Counties and Cities			
	County and City Public Information System	Existing	Information Service Provider
	County and City Public Information System	Existing	Maintenance and Construction Management
	County and City PWD Vehicles	Existing	Maintenance and Construction Vehicle
	County and City Roadway Maintenance and Construction Systems	Existing	Maintenance and Construction Management
	County and Local Asset Management Systems	Planned	Asset Management
	County and Local Drawbridge Systems	Existing	Multimodal Crossings
	County and Local Equipment Repair Facility	Existing	Equipment Repair Facility
	Local Transportation Data Collection Systems	Planned	Archived Data Management Subsystem
	Municipality Event Permit Systems	Existing	Event Promoters
	Other County and City Maintenance	Existing	Maintenance and Construction Management
	Other County and City Maintenance	Existing	Other MCM
County and City Traffic Engineering			
	County and Local Field Equipment	Planned	Roadway Subsystem
	County and Local Traffic Control Systems	Existing	Traffic Management
County Emergency Management Agencies			
	County Emergency Broadcast Systems	Existing	Information Service Provider
	County EOCs/Warning Points	Existing	Emergency Management
County Public Safety Agencies			
	County Fire EMS/Rescue Dispatch	Existing	Emergency Management
	County Fire EMS/Rescue Vehicles	Existing	Emergency Vehicle Subsystem
	County Sheriff Dispatch	Existing	Emergency Management
	County Sheriff Dispatch	Existing	Enforcement Agency
	County Sheriffs Vehicles	Existing	Emergency Vehicle Subsystem
County Public Safety Agencies - Fire/EMS			

Stakeholder	*ITS Element*	*Status*	*Entity*
	County Fire EMS/Rescue Dispatch	Existing	Emergency Management
	County Fire EMS/Rescue Vehicles	Existing	Emergency Vehicle Subsystem
	County Sheriff Dispatch	Existing	Emergency Management
	County Sheriff Dispatch	Existing	Enforcement Agency
	County Sheriffs Vehicles	Existing	Emergency Vehicle Subsystem
County Public Safety Agencies - Sheriffs Department			
	County Fire EMS/Rescue Dispatch	Existing	Emergency Management
	County Fire EMS/Rescue Vehicles	Existing	Emergency Vehicle Subsystem
	County Sheriff Dispatch	Existing	Emergency Management
	County Sheriff Dispatch	Existing	Enforcement Agency
	County Sheriffs Vehicles	Existing	Emergency Vehicle Subsystem
County School Districts			
	School Buses	Existing	Transit Vehicle Subsystem
	School District Transportation Dispatch	Existing	Emergency Management
	School District Transportation Dispatch	Existing	Other Transit Management
	School District Transportation Dispatch	Existing	Transit Management
	School District Transportation Web Site	Existing	Information Service Provider
Disney/Reedy Creek Improvement District			
	Disney Field Equipment	Existing	Roadway Subsystem
	Disney Traffic Operations Center	Existing	Other Traffic Management
	Disney Traffic Operations Center	Existing	Traffic Management
FDOT			
	FDOT 511 System	Planned	Telecommunications System for Traveler Information
	FDOT Asset Management Systems	Existing	Asset Management
	FDOT Statewide C2C Information Network	Planned	Other Traffic Management
	FDOT Statewide Transportation EOC (TEOC)	Existing	Emergency Management
	Other FDOT District Infrastructure Monitoring Equipment	Existing	Security Monitoring Subsystem
	Other FDOT District Maintenance and Construction	Existing	Maintenance and Construction Management
	Other FDOT District TMCs	Existing	Other Traffic Management
	Other FDOT District TMCs	Existing	Traffic Management
	Regional ITS Data Warehouse	Planned	Archived Data Management Subsystem
	Rest Areas/Visitor Centers/Service Plazas	Existing	Remote Traveler Support

Stakeholder	*ITS Element*	*Status*	*Entity*
	SUNTRAN Transit Dispatch Center	Existing	Transit Management
	SUNTRAN Transit Vehicles	Existing	Transit Vehicle Subsystem
FDOT Central Office of Information Services			
	FDOT Safety and Crash Data Collection System	Existing	Archived Data Management Subsystem
	FDOT Statewide OIS Enterprise Databases	Existing	Archived Data Management Subsystem
FDOT Central Planning Office			
	FDOT Traffic Count Stations	Existing	Roadway Subsystem
FDOT Central Planning Transportation Statistics Office			
	FDOT Traffic Characteristics Inventory	Existing	Archived Data Management Subsystem
	FDOT Traffic Characteristics Inventory	Existing	Other Archives
FDOT Commission for the Transportation Disadvantaged			
	Florida Human Service Agencies	Existing	Information Service Provider
	Florida Human Service Agencies	Existing	Social Services Agencies
FDOT D5/FHP			
	FDOT District 5 RTMC	Existing	Emergency Management
	FDOT District 5 RTMC	Existing	Other Traffic Management
	FDOT District 5 RTMC	Existing	Traffic Management
FDOT District 5			
	Central Florida Data Warehouse	Existing	Archived Data Management Subsystem
	Central Florida TMC Information Network	Planned	Other Traffic Management
	FDOT District 5 Construction and Maintenance	Existing	Maintenance and Construction Management
	FDOT District 5 Emergency Operations Center	Existing	Emergency Management
	FDOT District 5 Equipment Repair Facility	Existing	Equipment Repair Facility
	FDOT District 5 Field Equipment	Existing	Roadway Subsystem
	FDOT District 5 Infrastructure Monitoring Equipment	Planned	Security Monitoring Subsystem
	FDOT District 5 Maintenance Vehicles	Existing	Maintenance and Construction Vehicle
	FDOT District 5 Office	Existing	Maintenance and Construction Management
	FDOT District 5 Public Information Office Systems	Existing	Information Service Provider
	FDOT District 5 Road Ranger Service Patrol Dispatch	Existing	Emergency Management
	FDOT District 5 Road Ranger Service Patrol Vehicles	Existing	Emergency Vehicle Subsystem
	FDOT District 5 RTMC	Existing	Emergency Management
	FDOT District 5 RTMC	Existing	Other Traffic Management

Stakeholder	*ITS Element*	*Status*	*Entity*
	FDOT District 5 RTMC	Existing	Traffic Management
	FDOT District 5 Transportation Data Warehouse	Existing	Archived Data Management Subsystem
	FDOT District 5 VII Roadside Equipment	Planned	Roadway Subsystem
FDOT Turnpike Enterprise			
	FTE Boca Data Center	Existing	Toll Administration
	FTE Data Dissemination Field Equipment	Existing	Roadway Subsystem
	FTE Motorist Aid Call Boxes	Existing	Remote Traveler Support
	FTE Operations Center (Turkey Lake)	Existing	Emergency Management
	FTE Operations Center (Turkey Lake)	Existing	Information Service Provider
	FTE Operations Center (Turkey Lake)	Existing	Maintenance and Construction Management
	FTE Operations Center (Turkey Lake)	Existing	Other Traffic Management
	FTE Operations Center (Turkey Lake)	Existing	Toll Administration
	FTE Operations Center (Turkey Lake)	Existing	Traffic Management
	SunPass Customer Service Center	Existing	Toll Administration
	SunPass Tag	Existing	Traveler Card
	SunPass Tag	Existing	Vehicle
FDOT/LYNX			
	FDOT District 5 Road Ranger Service Patrol Dispatch	Existing	Emergency Management
	FDOT District 5 Road Ranger Service Patrol Vehicles	Existing	Emergency Vehicle Subsystem
Financial Institutions			
	Financial Institutions	Existing	Financial Institution
Florida Department of Highway Safety and Motor Vehicles			
	Florida DMV Licensing and Registration System	Existing	DMV
Florida Department of Law Enforcement			
	FDLE Headquarters	Existing	Emergency Management
	FDLE Headquarters	Existing	Enforcement Agency
Florida Division of Emergency Management			
	Florida Statewide EOC/Warning Point (SEOC)	Existing	Emergency Management
Florida Highway Patrol			
	FDOT District 5 RTMC	Existing	Emergency Management
	FDOT District 5 RTMC	Existing	Other Traffic Management
	FDOT District 5 RTMC	Existing	Traffic Management
	FHP Regional Administration	Existing	Emergency Management

Stakeholder	ITS Element	Status	Entity
	FHP Regional Dispatch	Existing	Emergency Management
	FHP Regional Dispatch	Existing	Enforcement Agency
	FHP Troop K Dispatch	Existing	Emergency Management
	FHP Troop K Dispatch	Existing	Enforcement Agency
	Florida Highway Patrol Vehicles	Existing	Emergency Vehicle Subsystem
Greater Orlando Airport Authority			
	Orlando International Airport	Existing	Multimodal Transportation Service Provider
Lake County			
	Lake County Field Equipment	Existing	Roadway Subsystem
	Lake County Traffic Operations Center	Existing	Other Traffic Management
	Lake County Traffic Operations Center	Existing	Traffic Management
	Lake Trans Dispatch	Existing	Transit Management
	Lake Trans Vehicles	Existing	Transit Vehicle Subsystem
Local Agencies			
	Local Agency Traveler Information System	Existing	Information Service Provider
	Local EOCs	Existing	Emergency Management
	Local Fire/EMS Dispatch	Existing	Emergency Management
	Local Fire/EMS Vehicles	Existing	Emergency Vehicle Subsystem
	Local Police Dispatch	Existing	Emergency Management
	Local Police Dispatch	Existing	Enforcement Agency
	Local Police Vehicles	Existing	Emergency Vehicle Subsystem
Local Agencies - Fire EMS/Rescue Departments			
	Local Agency Traveler Information System	Existing	Information Service Provider
	Local EOCs	Existing	Emergency Management
	Local Fire/EMS Dispatch	Existing	Emergency Management
	Local Fire/EMS Vehicles	Existing	Emergency Vehicle Subsystem
	Local Police Dispatch	Existing	Emergency Management
	Local Police Dispatch	Existing	Enforcement Agency
	Local Police Vehicles	Existing	Emergency Vehicle Subsystem
Local Agencies - Police Departments			
	Local Agency Traveler Information System	Existing	Information Service Provider
	Local EOCs	Existing	Emergency Management
	Local Fire/EMS Dispatch	Existing	Emergency Management

Stakeholder	ITS Element	Status	Entity
	Local Fire/EMS Vehicles	Existing	Emergency Vehicle Subsystem
	Local Police Dispatch	Existing	Emergency Management
	Local Police Dispatch	Existing	Enforcement Agency
	Local Police Vehicles	Existing	Emergency Vehicle Subsystem
Local Media			
	Newspapers, Radio, Television Stations	Existing	Media
Local Transit Operators			
	Local Transit Operator Systems	Planned	Transit Management
Local Venue Promoters			
	Local Venue Event Scheduling System	Existing	Event Promoters
LYNX			
	Access LYNX Paratransit Systems	Existing	Transit Management
	Access LYNX Paratransit Vehicles	Existing	Transit Vehicle Subsystem
	FDOT District 5 Road Ranger Service Patrol Dispatch	Existing	Emergency Management
	FDOT District 5 Road Ranger Service Patrol Vehicles	Existing	Emergency Vehicle Subsystem
	LYNX Commuter Rail	Planned	Multimodal Transportation Service Provider
	LYNX FlexBus Transit Central System	Planned	Transit Management
	LYNX FlexBus Transit Vehicles	Planned	Transit Vehicle Subsystem
	LYNX Maintenance Dispatch	Existing	Transit Management
	LYNX Operations Center	Existing	Transit Management
	LYNX Road Ranger Vehicles	Planned	Emergency Vehicle Subsystem
	LYNX Transit Vehicles	Existing	Transit Vehicle Subsystem
	LYNX Website	Existing	Information Service Provider
	Orlando Intermodal Center	Planned	Multimodal Transportation Service Provider
	Virtual Travel Planning Center	Planned	Emergency Management
	Virtual Travel Planning Center	Planned	Information Service Provider
Manatee County Transportation Department			
	Manatee County Traffic Signal Control System	Existing	Other Traffic Management
	Manatee County Traffic Signal Control System	Existing	Traffic Management
Marion County Government			
	Marion County Field Equipment	Existing	Roadway Subsystem
	Marion County Traffic Management Center	Planned	Traffic Management

Stakeholder	*ITS Element*	*Status*	*Entity*
	Marion Transit Services Dispatch	Existing	Transit Management
	Marion Transit Vehicles	Existing	Transit Vehicle Subsystem
	SUNTRAN Transit Dispatch Center	Existing	Transit Management
	SUNTRAN Transit Vehicles	Existing	Transit Vehicle Subsystem
MetroPlan Orlando			
	MetroPlan Transportation Data Collection System	Planned	Archived Data Management Subsystem
	MetroPlan Transportation Data Collection System	Planned	Other Archives
NASA/Private Companies			
	Canaveral/Kennedy Space Port	Planned	Event Promoters
	Canaveral/Kennedy Space Port	Planned	Multimodal Transportation Service Provider
NOAA			
	National Hurricane Center Info. System	Existing	Weather Service
	National Weather Service	Existing	Weather Service
Orange County			
	Orange County Field Equipment	Existing	Roadway Subsystem
	Orange County Traffic Management Center	Existing	Other Traffic Management
	Orange County Traffic Management Center	Existing	Traffic Management
Orange County/OCCC			
	OCCC/IDRA Field Equipment	Existing	Roadway Subsystem
	OCCC/IDRA Operations Center	Existing	Parking Management
	OCCC/IDRA Operations Center	Existing	Traffic Management
	Orlando Convention Center Parking Facility	Existing	Parking Management
Orlando/Orange County Expressway Authority			
	E-Pass Headquarters	Existing	Toll Administration
	E-Pass Service Center	Existing	Toll Administration
	E-Pass Tag	Existing	Traveler Card
	E-Pass Tag	Existing	Vehicle
	OOCEA Construction and Maintenance Operations	Existing	Maintenance and Construction Management
	OOCEA Maintenance Vehicles	Existing	Maintenance and Construction Vehicle
	OOCEA Road Ranger Dispatch	Existing	Emergency Management
	OOCEA Road Ranger Service Patrol Vehicles	Existing	Emergency Vehicle Subsystem
	OOCEA Toll Plazas	Existing	Toll Collection
	OOCEA Traffic Management Server	Existing	Information Service Provider

Stakeholder	*ITS Element*	*Status*	*Entity*
	OOCEA Traffic Management Server	Existing	Toll Administration
	OOCEA Traffic Management Server	Existing	Traffic Management
	OOCEA Website	Existing	Information Service Provider
Osceola County Engineering			
	Osceola County Field Equipment	Existing	Roadway Subsystem
	Osceola County Traffic Operations Center	Existing	Traffic Management
Osceola County Expressway Authority			
	OOCEA Field Equipment	Existing	Roadway Subsystem
	Osceola County Customer Service Center	Existing	Toll Administration
Parking Facility Operators			
	Private/Public Parking Facility Operators	Existing	Parking Management
Polk County Transit Services			
	PCTS Paratransit Vehicles	Existing	Transit Vehicle Subsystem
	Polk County Transit Services	Existing	Transit Management
Private Bus Companies			
	I-RIDE Tourist Shuttle Dispatch	Existing	Transit Management
	I-RIDE Tourist Shuttles	Existing	Transit Vehicle Subsystem
Private Commercial Vehicle and Fleet Operators			
	Commercial Vehicle	Existing	Basic Commercial Vehicle
	Commercial Vehicle	Existing	Basic Vehicle
	Commercial Vehicle	Existing	Commercial Vehicle Subsystem
	Commercial Vehicle	Existing	Vehicle
	Private Fleet Vehicle Dispatch Systems	Existing	Fleet and Freight Management
Private Concierge Service Provider			
	Private Sector Mayday/Concierge Service Center	Existing	Archived Data User Systems
	Private Sector Mayday/Concierge Service Center	Existing	Emergency Management
	Private Sector Mayday/Concierge Service Center	Existing	Information Service Provider
Private Maintenance Contractors			
	Private Maintenance and Construction Dispatch	Existing	Maintenance and Construction Management
Private Sector ISPs			
	Private Sector Traveler Information Services	Existing	Information Service Provider
Private Transit Operators			
	Inter-City Bus Service	Existing	Multimodal Transportation Service Provider

Stakeholder	*ITS Element*	*Status*	*Entity*
	Inter-City Bus Service	Existing	Other Transit Management
	Inter-City Bus Service	Existing	Transit Management
Private Weather Information Providers			
	Private/Public Weather Information Providers	Existing	Weather Service
Private/Public Regional Medical Centers			
	Private/Public Ambulance Dispatch	Existing	Emergency Management
	Private/Public Ambulance Vehicles	Existing	Emergency Vehicle Subsystem
	Regional Medical Centers	Existing	Care Facility
Probe Information Providers			
	Probe Monitoring Systems	Planned	Information Service Provider
Rail Operator			
	Rail Intermodal Terminals	Existing	Intermodal Freight Depot
	Rail Operations Centers	Existing	Other Data Sources
	Rail Operations Centers	Existing	Rail Operations
	Railroad Operators Wayside Equipment	Existing	Wayside Equipment
Regional Public Safety Agencies			
	911 Emergency Call Centers	Existing	Emergency Management
	911 Emergency Call Centers	Existing	Other Emergency Management
	Other Public Safety Communications and Dispatch Centers	Existing	Emergency Management
	Other Public Safety Communications and Dispatch Centers	Existing	Other Emergency Management
	Regional HAZMAT Team	Existing	Emergency Management
	Regional Incident and Mutual Aid Network	Existing	Other Emergency Management
Regional Transit Management Agencies			
	Transit Facility Security Monitoring System	Existing	Remote Traveler Support
	Transit Facility Security Monitoring System	Existing	Security Monitoring Subsystem
	Transit Kiosks	Planned	Remote Traveler Support
	Transit Stops/Stations Equipment	Planned	Remote Traveler Support
SCAT - Space Coast Area Transit			
	SCAT Dispatch Center	Existing	Transit Management
	SCAT Transit Vehicles	Existing	Transit Vehicle Subsystem
	SCAT Website	Existing	Information Service Provider
Seminole County			
	Orlando-Sanford International Airport	Existing	Multimodal Transportation Service Provider

Stakeholder	*ITS Element*	*Status*	*Entity*
	Seminole County Field Equipment	Existing	Roadway Subsystem
	Seminole County Traffic Action Center (SEMTAC)	Existing	Other Traffic Management
	Seminole County Traffic Action Center (SEMTAC)	Existing	Traffic Management
SunGuide Partners/ISP Vendor Team			
	Central Florida Traveler Information System	Planned	Information Service Provider
SUNTRAN			
	SUNTRAN Transit Dispatch Center	Existing	Transit Management
	SUNTRAN Transit Vehicles	Existing	Transit Vehicle Subsystem
Traveler Information Radio Network			
	Traveler Info. Radio Network Stations	Planned	Media
Travelers			
	Private Travelers Personal Computing Devices	Existing	Personal Information Access
	Smart Card	Existing	Traveler Card
	Vehicles	Existing	Vehicle
VII Provider			
	VII Private Sector Partner	Planned	Traffic Management
Volusia County			
	Daytona Beach International Airport	Existing	Multimodal Transportation Service Provider
	Volusia County Field Equipment	Existing	Roadway Subsystem
	Volusia County Traffic Management Center	Existing	Traffic Management
Volusia County MPO			
	Volusia County MPO Transportation Data Collection System	Planned	Archived Data Management Subsystem
	Volusia County MPO Transportation Data Collection System	Planned	Other Archives
VOTRAN			
	VOTRAN Maintenance Dispatch	Existing	Transit Management
	VOTRAN Transit Dispatch	Existing	Emergency Management
	VOTRAN Transit Dispatch	Existing	Transit Management
	VOTRAN Transit Vehicles	Existing	Transit Vehicle Subsystem
	VOTRAN Website	Existing	Information Service Provider

Section 5

Service/Market Package Descriptions

Market Package Descriptions

Market Package		*Description*
AD1	ITS Data Mart	This market package provides a focused archive that houses data collected and owned by a single agency, district, private sector provider, research institution, or other organization. This focused archive typically includes data covering a single transportation mode and one jurisdiction that is collected from an operational data store and archived for future use. It provides the basic data quality, data privacy, and meta data management common to all ITS archives and provides general query and report access to archive data users.
AD2	ITS Data Warehouse	This market package includes all the data collection and management capabilities provided by the ITS Data Mart, and adds the functionality and interface definitions that allow collection of data from multiple agencies and data sources spanning across modal and jurisdictional boundaries. It performs the additional transformations and provides the additional meta data management features that are necessary so that all this data can be managed in a single repository with consistent formats. The potential for large volumes of varied data suggests additional on-line analysis and data mining features that are also included in this market package in addition to the basic query and reporting user access features offered by the ITS Data Mart.
AD3	ITS Virtual Data Warehouse	This market package provides the same broad access to multimodal, multidimensional data from varied data sources as in the ITS Data Warehouse Market Package, but provides this access using enhanced interoperability between physically distributed ITS archives that are each locally managed. Requests for data that are satisfied by access to a single repository in the ITS Data Warehouse Market Package are parsed by the local archive and dynamically translated to requests to remote archives which relay the data necessary to satisfy the request.
APTS1	Transit Vehicle Tracking	This market package monitors current transit vehicle location using an Automated Vehicle Location System. The location data may be used to determine real time schedule adherence and update the transit system's schedule in real-time. Vehicle position may be determined either by the vehicle (e.g., through GPS) and relayed to the infrastructure or may be determined directly by the communications infrastructure. A two-way wireless communication link with the Transit Management Subsystem is used for relaying vehicle position and control measures. Fixed route transit systems may also employ beacons along the route to enable position determination and facilitate communications with each vehicle at fixed intervals. The Transit Management Subsystem processes this information, updates the transit schedule and makes real-time schedule information available to the Information Service Provider.
APTS2	Transit Fixed-Route Operations	This market package performs vehicle routing and scheduling, as well as automatic operator assignment and system monitoring for fixed-route and flexible-route transit services. This service determines current schedule performance using AVL data and provides information displays at the Transit Management Subsystem. Static and real time transit data is exchanged with Information Service Providers where it is integrated with that from other transportation modes (e.g. rail, ferry, air) to provide the public with integrated and personalized dynamic schedules.
APTS3	Demand Response Transit Operations	This market package performs vehicle routing and scheduling as well as automatic operator assignment and monitoring for demand responsive transit services. In addition, this market package performs similar functions to support dynamic features of flexible-route transit services. This package monitors the current status of the transit fleet and supports allocation of these fleet resources to service incoming requests for transit service while also considering traffic conditions. The Transit Management Subsystem provides the necessary data processing and information display to assist the transit operator in making optimal use of the transit fleet. This service includes the capability for a traveler request for personalized transit services to be made through the Information Service Provider (ISP) Subsystem. The ISP may either be operated by a transit management center or be independently owned and operated by a separate service provider. In the first scenario, the traveler makes a direct request to a specific paratransit service. In the second scenario, a third party service provider determines that the paratransit service is a viable means of satisfying a traveler request and makes a reservation for the traveler.

Market Package		*Description*
APTS4	Transit Passenger and Fare Management	This market package manages passenger loading and fare payments on-board transit vehicles using electronic means. It allows transit users to use a traveler card or other electronic payment device. Sensors mounted on the vehicle permit the operator and central operations to determine vehicle loads, and readers located either in the infrastructure or on-board the transit vehicle allow electronic fare payment. Data is processed, stored, and displayed on the transit vehicle and communicated as needed to the Transit Management Subsystem. Two other market packages, ATMS10: Electronic Toll Collection and ATMS16: Parking Facility Management also provide electronic payment services. These three market packages in combination provide an integrated electronic payment system for transportation services.
APTS5	Transit Security	This market package provides for the physical security of transit passengers and transit vehicle operators. On-board equipment is deployed to perform surveillance and sensor monitoring in order to warn of potentially hazardous situations. The surveillance equipment includes video (e.g., CCTV cameras), audio systems and/or event recorder systems. The sensor equipment includes threat sensors (e.g., chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors (e.g., metal detectors). Transit user or transit vehicle operator activated alarms are provided on-board. Public areas (e.g., transit stops, park and ride lots, stations) are also monitored with similar surveillance and sensor equipment and provided with transit user activated alarms. In addition this market package provides surveillance and sensor monitoring of non-public areas of transit facilities (e.g., transit yards) and transit infrastructure such as bridges, tunnels, and transit railways or bus rapid transit (BRT) guideways. The surveillance equipment includes video and/or audio systems. The sensor equipment includes threat sensors and object detection sensors as described above as well as, intrusion or motion detection sensors and infrastructure integrity monitoring (e.g., rail track continuity checking or bridge structural integrity monitoring). The surveillance and sensor information is transmitted to the Emergency Management Subsystem, as are transit user activated alarms in public secure areas. On-board alarms, activated by transit users or transit vehicle operators are transmitted to both the Emergency Management Subsystem and the Transit Management Subsystem, indicating two possible approaches to implementing this market package. In addition the market package supports remote transit vehicle disabling by the Transit Management Subsystem and transit vehicle operator authentication.
APTS6	Transit Maintenance	This market package supports automatic transit maintenance scheduling and monitoring. On-board condition sensors monitor system status and transmit critical status information to the Transit Management Subsystem. Hardware and software in the Transit Management Subsystem processes this data and schedules preventative and corrective maintenance.
APTS7	Multi-modal Coordination	This market package establishes two way communications between multiple transit and traffic agencies to improve service coordination. Multimodal coordination between transit agencies can increase traveler convenience at transit transfer points and clusters (a collection of stops, stations, or terminals where transfers can be made conveniently) and also improve operating efficiency. Transit transfer information is shared between Multimodal Transportation Service Providers, Transit Agencies, and ISPs. 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. More limited local coordination between the transit vehicle and the individual intersection for signal priority is also supported by this package.
APTS8	Transit Traveler Information	This market package provides transit users at transit stops and on-board transit vehicles with ready access to transit information. The information services include transit stop annunciation, imminent arrival signs, and real-time transit schedule displays that are of general interest to transit users. Systems that provide custom transit trip itineraries and other tailored transit information services are also represented by this market package.

Market Package		*Description*
ATIS1	Broadcast Traveler Information	This market package collects traffic conditions, advisories, general public transportation, toll and parking information, incident information, roadway maintenance and construction information, air quality and weather information, and broadly disseminates this information through existing infrastructures and low cost user equipment (e.g., FM subcarrier, cellular data broadcast). The information may be provided directly to travelers or provided to merchants and other traveler service providers so that they can better inform their customers of travel conditions. Different from the market package ATMS6 - Traffic Information Dissemination, which provides localized HAR and DMS information capabilities, ATIS1 provides a wide area digital broadcast service. Successful deployment of this market package relies on availability of real-time traveler information from roadway instrumentation, probe vehicles or other sources.
ATIS2	Interactive Traveler Information	This market package provides tailored information in response to a traveler request. Both real-time interactive request/response systems and information systems that "push" a tailored stream of information to the traveler based on a submitted profile are supported. The traveler can obtain current information regarding traffic conditions, roadway maintenance and construction, transit services, ride share/ride match, parking management, detours and pricing information. A range of two-way wide-area wireless and fixed-point to fixed-point communications systems may be used to support the required data communications between the traveler and Information Service Provider. A variety of interactive devices may be used by the traveler to access information prior to a trip or en route including phone via a 511-like portal, kiosk, Personal Digital Assistant, personal computer, and a variety of in-vehicle devices. This market package also allows value-added resellers to collect transportation information that can be aggregated and be available to their personal devices or remote traveler systems to better inform their customers of transportation conditions. Successful deployment of this market package relies on availability of real-time transportation data from roadway instrumentation, transit, probe vehicles or other means. A traveler may also input personal preferences and identification information via a “traveler card” that can convey information to the system about the traveler as well as receive updates from the system so the card can be updated over time.
ATIS5	ISP Based Trip Planning and Route Guidance	This market package offers the user trip planning and en-route guidance services. It generates a trip plan, including a multimodal route and associated service information (e.g., parking information), based on traveler preferences and constraints. Routes may be based on static information or reflect real time network conditions. Unlike ATIS3 and ATIS4, where the user equipment determines the route, the route determination functions are performed in the Information Service Provider Subsystem in this market package. The trip plan may be confirmed by the traveler and advanced payment and reservations for transit and alternate mode (e.g., airline, rail, and ferry) trip segments, and ancillary services (e.g., parking reservations) are accepted and processed. The confirmed trip plan may include specific routing information that can be supplied to the traveler as general directions or as turn-by-turn route guidance depending on the level of user equipment.
ATIS8	Dynamic Ridesharing	This market package provides dynamic ridesharing/ride matching services to travelers. This service could allow near real time ridesharing reservations to be made through the same basic user equipment used for Interactive Traveler Information. This ridesharing/ride matching capability also includes arranging connections to transit or other multimodal services.
ATMS01	Network Surveillance	This market package includes traffic detectors, other surveillance equipment, the supporting field equipment, and fixed-point to fixed-point communications to transmit the collected data back to the Traffic Management Subsystem. The derived data can be used locally such as when traffic detectors are connected directly to a signal control system or remotely (e.g., when a CCTV system sends data back to the Traffic Management Subsystem). The data generated by this market package enables traffic managers to monitor traffic and road conditions, identify and verify incidents, detect faults in indicator operations, and collect census data for traffic strategy development and long range planning. The collected data can also be analyzed and made available to users and the Information Service Provider Subsystem.

Market Package		Description
ATMS02	Probe Surveillance	This market package provides an alternative approach for surveillance of the roadway network. Two general implementation paths are supported by this market package: 1) wide-area wireless communications between the vehicle and Information Service Provider is used to communicate current vehicle location and status, and 2) dedicated short range communications between the vehicle and roadside is used to provide equivalent information directly to the Traffic Management Subsystem. The first approach leverages wide area communications equipment that may already be in the vehicle to support personal safety and advanced traveler information services. The second approach utilizes vehicle equipment that supports toll collection, in-vehicle signing, and other short range communications applications identified within the architecture. The market package enables traffic managers to monitor road conditions, identify incidents, analyze and reduce the collected data, and make it available to users and private information providers. It requires one of the communications options identified above, roadside beacons and fixed-point to fixed-point communications for the short range communications option, data reduction software, and utilizes fixed-point to fixed-point links between the Traffic Management Subsystem and Information Service Provider Subsystem to share the collected information. Both “Opt out” and “Opt in” strategies are available to ensure the user has the ability to turn off the probe functions to ensure individual privacy. Due to the large volume of data collected by probes, data reduction techniques are required, such as the ability to identify and filter out-of-bounds or extreme data reports.
ATMS03	Surface Street Control	This market package provides the central control and monitoring equipment, communication links, and the signal control equipment that support local surface street control and/or arterial traffic management. A range of traffic signal control systems are represented by this market package ranging from fixed-schedule control systems to fully traffic responsive systems that dynamically adjust control plans and strategies based on current traffic conditions and priority requests. This market package is generally an intra-jurisdictional package that does not rely on real-time communications between separate control systems to achieve area-wide traffic signal coordination. Systems that achieve coordination across jurisdictions by using a common time base or other strategies that do not require real time coordination would be represented by this package. This market package is consistent with typical urban traffic signal control systems.
ATMS04	Freeway Control	This market package provides central monitoring and control, communications, and field equipment that support freeway management. It supports a range of freeway management control strategies including ramp metering, interchange metering, mainline lane controls, mainline metering, and other strategies including variable speed controls. This package incorporates the instrumentation included in the Network Surveillance Market Package to support freeway monitoring and adaptive strategies as an option. This market package also includes the capability to utilize surveillance information for detection of incidents. Typically, the processing would be performed at a traffic management center; however, developments might allow for point detection with roadway equipment. For example, a CCTV might include the capability to detect an incident based upon image changes. Additionally, this market package allows general advisory and traffic control information to be provided to the driver while en route.
ATMS05	HOV Lane Management	This market package manages HOV lanes by coordinating freeway ramp meters and connector signals with HOV lane usage signals. Preferential treatment is given to HOV lanes using special bypasses, reserved lanes, and exclusive rights-of-way that may vary by time of day. Vehicle occupancy detectors may be installed to verify HOV compliance and to notify enforcement agencies of violations.

Market Package		Description
ATMS06	Traffic Information Dissemination	This market package provides driver information using roadway equipment such as dynamic message signs or highway advisory radio. A wide range of information can be disseminated including traffic and road conditions, closure and detour information, incident information, and emergency alerts and driver advisories. This package provides information to drivers at specific equipped locations on the road network. Careful placement of the roadway equipment provides the information at points in the network where the drivers have recourse and can tailor their routes to account for the new information. This package also covers the equipment and interfaces that provide traffic information from a traffic management center to the media (for instance via a direct tie-in between a traffic management center and radio or television station computer systems), Transit Management, Emergency Management, and Information Service Providers. A link to the Maintenance and Construction Management subsystem allows real time information on road/bridge closures due to maintenance and construction activities to be disseminated.
ATMS07	Regional Traffic Control	This market package provides for the sharing of traffic information and control among traffic management centers to support a regional control strategy. This market package advances the Surface Street Control and Freeway Control Market Packages by adding the communications links and integrated control strategies that enable integrated interjurisdictional traffic control. The nature of optimization and extent of information and control sharing is determined through working arrangements between jurisdictions. This package relies principally on roadside instrumentation supported by the Surface Street Control and Freeway Control Market Packages and adds hardware, software, and fixed-point to fixed-point communications capabilities to implement traffic management strategies that are coordinated between allied traffic management centers. Several levels of coordination are supported from sharing of information through sharing of control between traffic management centers.
ATMS08	Traffic Incident Management System	This market package manages both unexpected incidents and planned events so that the impact to the transportation network and traveler safety is minimized. The market 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 market package to detect and verify incidents and implement an appropriate response. This market 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 market package and dissemination of incident information to travelers through the Broadcast Traveler Information or Interactive Traveler Information market 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.
ATMS09	Traffic Forecast and Demand Management	This market package includes advanced algorithms, processing, and mass storage capabilities that support historical evaluation, real-time assessment, and forecast of the roadway network performance. This includes the prediction of travel demand patterns to support better link travel time forecasts. The source data would come from the Traffic Management Subsystem itself as well as other traffic management centers and forecasted traffic loads derived from route plans supplied by the Information Service Provider Subsystem. This market package provides data that supports the implementation of TDM programs, and policies managing both traffic and the environment. The package collects information on vehicle pollution levels, parking availability, usage levels, and vehicle occupancy to support these functions. Demand management requests can also be made to Toll Administration, Transit Management, and Parking Management Subsystems.

Market Package		Description
ATMS10	Electronic Toll Collection	This market package provides toll operators with the ability to collect tolls electronically and detect and process violations. The fees that are collected may be adjusted to implement demand management strategies. Dedicated short range communication between the roadway equipment and the vehicle is required as well as fixed-point to fixed-point interfaces between the toll collection equipment and transportation authorities and the financial infrastructure that supports fee collection. Vehicle tags of toll violators are read and electronically posted to vehicle owners. Standards, inter-agency coordination, and financial clearinghouse capabilities enable regional, and ultimately national interoperability for these services. Two other market packages, APTS4: Transit Passenger and Fare Management and ATMS16: Parking Facility Management also provide electronic payment services. These three market packages in combination provide an integrated electronic payment system for transportation services. The toll tags and roadside readers that these systems utilize can also be used to collect road use statistics for highway authorities. This data can be collected as a natural by-product of the toll collection process or collected by separate readers that are dedicated to probe data collection.
ATMS11	Emissions Monitoring and Management	This market package monitors individual vehicle emissions and provides general air quality monitoring using distributed sensors to collect the data. The collected information is transmitted to the emissions management subsystem for processing. Both area wide air quality monitoring and point emissions monitoring are supported by this market package. For area wide monitoring, this market package measures air quality, identifies sectors that are non-compliant with air quality standards, and collects, stores and reports supporting statistical data. For point emissions monitoring, this market package measures tail pipe emissions and identifies vehicles that exceed emissions standards. Summary emissions information or warnings can also be displayed to drivers. The gathered information can be used to implement environmentally sensitive TDM programs, policies, and regulations.
ATMS13	Standard Railroad Grade Crossing	This market package manages highway traffic at highway-rail intersections (HRIs) where operational requirements do not dictate more advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Both passive (e.g., the crossbuck sign) and active warning systems (e.g., flashing lights and gates) are supported. (Note that passive systems exercise only the single interface between the roadway subsystem and the driver in the architecture definition.) These traditional HRI warning systems may also be augmented with other standard traffic management devices. The warning systems are activated on notification by interfaced wayside equipment of an approaching train. The equipment at the HRI may also be interconnected with adjacent signalized intersections so that local control can be adapted to highway-rail intersection activities. Health monitoring of the HRI equipment and interfaces is performed; detected abnormalities are reported to both highway and railroad officials through wayside interfaces and interfaces to the traffic management subsystem.
ATMS14	Advanced Railroad Grade Crossing	This market package manages highway traffic at highway-rail intersections (HRIs) where operational requirements demand advanced features (e.g., where rail operational speeds are greater than 80 miles per hour). This market package includes all capabilities from the Standard Railroad Grade Crossing Market Package and augments these with additional safety features to mitigate the risks associated with higher rail speeds. The active warning systems supported by this market package include positive barrier systems that preclude entrance into the intersection when the barriers are activated. Like the Standard Package, the HRI equipment is activated on notification by wayside interface equipment which detects, or communicates with the approaching train. In this market package, the wayside equipment provides additional information about the arriving train so that the train's direction of travel, estimated time of arrival, and estimated duration of closure may be derived. This enhanced information may be conveyed to the driver prior to, or in context with, warning system activation. This market package also includes additional detection capabilities that enable it to detect an entrapped or otherwise immobilized vehicle within the HRI and provide an immediate notification to highway and railroad officials.

Market Package		*Description*
ATMS15	Railroad Operations Coordination	This market package provides an additional level of strategic coordination between freight rail operations and traffic management centers. Rail operations provides train schedules, maintenance schedules, and any other forecast events that will result in highway-rail intersection (HRI) closures. This information is used to develop forecast HRI closure times and durations that may be used in advanced traffic control strategies or to enhance the quality of traveler information.
ATMS16	Parking Facility Management	This market package provides enhanced monitoring and management of parking facilities. It assists in the management of parking operations, coordinates with transportation authorities, and supports electronic collection of parking fees. This market package collects current parking status, shares this data with Information Service Providers and Traffic Management, and collects parking fees using the same in-vehicle equipment utilized for electronic toll collection or contact or proximity traveler cards used for electronic payment. Two other market packages, APTS4: Transit Passenger and Fare Management and ATMS10: Electronic Toll Collection also provide electronic payment services. These three market packages in combination provide an integrated electronic payment system for transportation services.
ATMS17	Regional Parking Management	This market package supports coordination between parking facilities to enable regional parking management strategies.
ATMS18	Reversible Lane Management	This market package provides for the management of reversible lane facilities. In addition to standard surveillance capabilities, this market package includes sensory functions that detect wrong-way vehicles and other special surveillance capabilities that mitigate safety hazards associated with reversible lanes. The package includes the field equipment, physical lane access controls, and associated control electronics that manage and control these special lanes. This market package also includes the equipment used to electronically reconfigure intersections and manage right-of-way to address dynamic demand changes and special events.
ATMS19	Speed Monitoring	This market package monitors the speeds of vehicles traveling through a roadway system. If the speed is determine to be excessive, roadside equipment can suggest a safe driving speed. Environmental conditions may be monitored and factored into the safe speed advisories that are provided to the motorist. This service can also support notifications to an enforcement agency to enforce the speed limit on a roadway system.
ATMS20	Drawbridge Management	This market package supports systems that manage drawbridges at rivers and canals and other multimodal crossings (other than railroad grade crossings which are specifically covered by other market packages). The equipment managed by this market package includes control devices (e.g., gates, warning lights, dynamic message signs) at the drawbridge as well as the information systems that are used to keep travelers appraised of current and forecasted drawbridge status.
ATMS21	Roadway Closure Management	This market package closes roadways to vehicular traffic when driving conditions are unsafe, maintenance must be performed, and other scenarios where access to the roadway must be prohibited. The market package includes automatic or remotely controlled gates or barriers that control access to roadway segments including ramps and traffic lanes. Remote control systems allow the gates to be controlled from a central location or from a vehicle at the gate/barrier location, improving system efficiency and reducing personnel exposure to unsafe conditions during severe weather and other situations where roads must be closed. Surveillance systems allow operating personnel to visually verify the safe activation of the closure system and driver information systems (e.g., DMS) provide closure information to motorists in the vicinity of the closure. The equipment managed by this market package includes the control and monitoring systems, the field devices (e.g., gates, warning lights, DMS, CCTV cameras) at the closure location(s), and the information systems that notify other systems of a closure. This market package covers general road closure applications; specific closure systems that are used at railroad grade crossings, drawbridges, reversible lanes, etc. are covered by other ATMS market packages.

Market Package		*Description*
AVSS05	Intersection Safety Warning	This market package will determine the probability of a collision in an equipped intersection (either highway-highway or highway-rail) and provide timely warnings to drivers in response to hazardous conditions. Monitors in the roadway infrastructure assess vehicle locations and speeds near an intersection. Using this information, a warning is determined and communicated to the approaching vehicle using a short range communications system. Information can be provided to the driver through the market package ATIS9--In-Vehicle Signing.
CVO01	Fleet Administration	This market package provides the capabilities to manage a fleet of commercial vehicles. The Fleet and Freight Management subsystem provides the route for a commercial vehicle by either utilizing an in-house routing software package or an Information Service Provider. Routes generated by either approach are constrained by hazardous materials and other restrictions (such as height or weight). Any such restricted areas are determined by the Commercial Vehicle Administration. A route would be electronically sent to the Commercial Vehicle with any appropriate dispatch instructions. The location of the Commercial Vehicle can be monitored by the Fleet and Freight Management subsystem and routing changes can be made depending on current road network conditions. Once a route has been assigned, changes must be coordinated between the Fleet and Freight Management subsystem and the Commercial Vehicle. Commercial Vehicle Drivers would be alerted to any changes in route from the planned route and given an opportunity to justify a rerouting. Any unauthorized or unexpected route changes by the Commercial Vehicle will register a route deviation alert with the Fleet and Freight Management subsystem. The Fleet and Freight Management subsystem can also notify local public safety agencies of the route deviation when appropriate (e.g., if there is safety sensitive HAZMAT being carried), by sending an alarm to the Emergency Management subsystem.
CVO02	Freight Administration	This market package tracks the movement of cargo and monitors the cargo condition. Interconnections are provided to intermodal freight shippers and intermodal freight depots for tracking of cargo from source to destination. In addition to the usual cargo monitoring required to insure that cargo gets from origin to destination, the Fleet and Freight Management subsystem monitors shipments to make sure that no tampering or breach of security occurs to the cargo on commercial vehicles. Any such tampering will be reported to the Fleet and Freight Management subsystem. In addition to exceptions (e.g., alerts) that are reported, on-going indications of the state of the various freight equipment are reported to the Fleet and Freight Management subsystem. The commercial vehicle driver is also alerted of any tampering or breach of cargo security. Freight managers may decide to take further action on the alerts and/or provide responses that explain that the alerts are false alarms. If no explanation is received, the Fleet and Freight Management subsystem may notify the Emergency Management subsystem.
CVO03	Electronic Clearance	This market package provides for automated clearance at roadside check facilities. The roadside check facility communicates with the Commercial Vehicle Administration subsystem to retrieve infrastructure snapshots of critical carrier, vehicle, and driver data to be used to sort passing vehicles. This allows a good driver/vehicle/carrier to pass roadside facilities at highway speeds using transponders and dedicated short range communications to the roadside. Results of roadside clearance activities will be passed on to the Commercial Vehicle Administration. The roadside check facility may be equipped with Automated Vehicle Identification (AVI), weighing sensors, transponder read/write devices and computer workstations.

Market Package		*Description*
CVO04	CV Administrative Processes	This market package provides for electronic application, processing, fee collection, issuance, and distribution of CVO credential and tax filing. Through this process, carriers, drivers, and vehicles may be enrolled in the electronic clearance program provided by a separate market package which allows commercial vehicles to be screened at mainline speeds at roadside check facilities. Through this enrollment process, current profile databases are maintained in the Commercial Vehicle Administration subsystem and snapshots of this database are made available to the roadside check facilities at the roadside to support the electronic clearance process. Commercial Vehicle Administration subsystems can share credential information with other Commercial Vehicle Administration subsystems, so that it is possible for any Commercial Vehicle Administration subsystem to have access to all credentials, credential fees, credentials status and safety status information. In addition, it is possible for one Commercial Vehicle Administration subsystem to collect HAZMAT route restrictions information from other Commercial Vehicle Administration subsystems and then act as a clearinghouse for this route restrictions information for Information Service Providers, Map Update Providers, and Fleet and Freight Management subsystems.
CVO05	International Border Electronic Clearance	This market package provides for automated clearance at international border crossings. This package augments the electronic clearance package by allowing interface with customs related functions.
CVO06	Weigh-In-Motion	This market package provides for high speed weigh-in-motion with or without Automated Vehicle Identification (AVI) capabilities. This market package provides the roadside equipment that could be used as a stand-alone system or to augment the Electronic Clearance (CVO03) market package.
CVO07	Roadside CVO Safety	This market package provides for automated roadside safety monitoring and reporting. It automates commercial vehicle safety inspections at the roadside check facilities. The capabilities for performing the safety inspection are shared between this market package and the On-board CVO and Freight Safety & Security (CVO08) Market Package which enables a variety of implementation options. The basic option, directly supported by this market package, facilitates safety inspection of vehicles that have been pulled in, perhaps as a result of the automated screening process provided by the Electronic Clearance (CVO03) Market Package. In this scenario, only basic identification data and status information is read from the electronic tag on the commercial vehicle. The identification data from the tag enables access to additional safety data maintained in the infrastructure which is used to support the safety inspection, and may also inform the pull-in decision if system timing requirements can be met. More advanced implementations, supported by the On-board CVO and Freight Safety & Security (CVO08) market package, utilize additional on-board vehicle safety monitoring and reporting capabilities in the commercial vehicle to augment the roadside safety check.
CVO08	On-board CVO and Freight Safety & Security	This market package provides for on-board commercial vehicle safety monitoring and reporting. It is an enhancement of the Roadside CVO Safety Market Package and includes roadside support for reading on-board safety data via tags. Safety warnings are provided to the driver as a priority with secondary requirements to notify the Commercial Vehicle Check roadside elements. This market package allows for the Fleet and Freight Management subsystem to have access to the on-board safety data. In addition to safety data, this market package provides a means for monitoring the security of the Commercial Vehicle along with the cargo, containers, trailers, and other equipment that are being hauled. Commercial Vehicle on-board tamper and breach sensors provide an indication of any security irregularities and the sensor data is provided to the Fleet and Freight Management subsystem along with particular notification of any breach alerts. Commercial Vehicle Drivers may be aware of the sensor readings and can provide an explanation back to the Fleet and Freight Management subsystem via the Commercial Vehicle. Commercial vehicle and freight security breaches are also sent to the commercial vehicle check.

Market Package		*Description*
CVO10	HAZMAT Management	This market package integrates incident management capabilities with commercial vehicle tracking to assure effective treatment of HAZMAT material and incidents. HAZMAT tracking is performed by the Fleet and Freight Management Subsystem. The Emergency Management subsystem is notified by the Commercial Vehicle if an incident occurs and coordinates the response. The response is tailored based on information that is provided as part of the original incident notification or derived from supplemental information provided by the Fleet and Freight Management Subsystem. The latter information can be provided prior to the beginning of the trip or gathered following the incident depending on the selected policy and implementation.
CVO11	Roadside HAZMAT Security Detection and Mitigation	This market package provides the capability to detect and classify security sensitive HAZMAT on commercial vehicles using roadside sensing and imaging technology. Credentials information can be accessed to verify if the commercial driver, vehicle and carrier are permitted to transport the identified HAZMAT. If the credentials analysis and sensed HAZMAT information do not agree, the vehicle can be signaled to pull in, and if required, an alarm can be sent to Emergency Management to request they monitor, traffic stop or disable the vehicle.
EM01	Emergency Call-Taking and Dispatch	This market package provides basic public safety call-taking and dispatch services. It includes emergency vehicle equipment, equipment used to receive and route emergency calls, and wireless communications that enable safe and rapid deployment of appropriate resources to an emergency. Coordination between Emergency Management Subsystems supports emergency notification between agencies. Wide area wireless communications between the Emergency Management Subsystem and an Emergency Vehicle supports dispatch and provision of information to responding personnel.
EM02	Emergency Routing	This market package supports automated vehicle location and dynamic routing of emergency vehicles. Traffic information, road conditions, and suggested routing information are provided to enhance emergency vehicle routing. Special priority or other specific emergency traffic control strategies can be coordinated to improve the safety and time-efficiency of responding vehicle travel on the selected route(s). The Emergency Management Subsystem provides the routing for the emergency fleet based on real-time conditions and has the option of requesting a route from the Traffic Management subsystem. The Emergency Vehicle may also be equipped with dedicated short range communications for local signal preemption. The service provides for information exchange between care facilities and both the Emergency Management Subsystem and emergency vehicles.
EM03	Mayday and Alarms Support	This market package allows the user (driver or non-driver) to initiate a request for emergency assistance and enables the Emergency Management Subsystem to locate the user, gather information about the incident, and determine the appropriate response. The request for assistance may be manually initiated or automated and linked to vehicle sensors. This market package also includes general surveillance capabilities that enable the Emergency Management Subsystem to remotely monitor public areas (e.g., rest stops, parking lots) to improve security in these areas. The Emergency Management Subsystem may be operated by the public sector or by a private sector telematics service provider.
EM04	Roadway Service Patrols	This market package supports roadway service patrol vehicles that monitor roads that aid motorists, offering rapid response to minor incidents (flat tire, accidents, out of gas) to minimize disruption to the traffic stream. If problems are detected, the roadway service patrol vehicles will provide assistance to the motorist (e.g., push a vehicle to the shoulder or median). The market package monitors service patrol vehicle locations and supports vehicle dispatch to identified incident locations. Incident information collected by the service patrol is shared with traffic, maintenance and construction, and traveler information systems.

Market Package		*Description*
EM05	Transportation Infrastructure Protection	This market package includes the monitoring of transportation infrastructure (e.g., bridges, tunnels and management centers) for potential threats using sensors and surveillance equipment and barrier and safeguard systems to preclude an incident, control access during and after an incident or mitigate impact of an incident. Threats can result from acts of nature (e.g., hurricanes, earthquakes), terrorist attacks or other incidents causing damage to the infrastructure (e.g., stray barge hitting a bridge support). Infrastructure may be monitored with acoustic, environmental threat (such as nuclear, biological, chemical, and explosives), infrastructure condition and integrity, motion and object sensors and video and audio surveillance equipment. Data from such sensors and surveillance equipment may be processed in the field or sent to a center for processing. The data enables operators at the center to detect and verify threats. When a threat is detected, agencies are notified. Detected threats or advisories received from other agencies result in an increased level of system preparedness. In response to threats, barrier and safeguard systems may be activated by Traffic Management Subsystems to deter an incident, control access to an area or mitigate the impact of an incident. Barrier systems include gates, barriers and other automated and remotely controlled systems that manage entry to transportation infrastructure. Safeguard systems include blast shields, exhaust systems and other automated and remotely controlled systems that mitigate impact of an incident.
EM06	Wide-Area Alert	This market package uses ITS driver and traveler information systems to alert the public in emergency situations such as child abductions, severe weather events, civil emergencies, and other situations that pose a threat to life and property. The alert includes information and instructions for transportation system operators and the traveling public, improving public safety and enlisting the public's help in some scenarios. The ITS technologies will supplement and support other emergency and homeland security alert systems such as the Emergency Alert System (EAS). When an emergency situation is reported and verified and the terms and conditions for system activation are satisfied, a designated agency broadcasts emergency information to traffic agencies, transit agencies, information service providers, toll operators, and others that operate ITS systems. The ITS systems, in turn, provide the alert information to transportation system operators and the traveling public using ITS technologies such as dynamic message signs, highway advisory radios, in-vehicle displays, transit displays, 511 traveler information systems, and traveler information web sites.
EM07	Early Warning System	This market package monitors and detects potential, looming, and actual disasters including natural disasters (hurricanes, earthquakes, floods, winter storms, tsunamis, etc.) and technological and man-made disasters (hazardous materials incidents, nuclear power plant accidents, and acts of terrorism including nuclear, chemical, biological, and radiological weapons attacks). The market package monitors alerting and advisory systems, ITS sensors and surveillance systems, field reports, and emergency call-taking systems to identify emergencies and notifies all responding agencies of detected emergencies.

Market Package		Description
EM08	Disaster Response and Recovery	This market package enhances the ability of the surface transportation system to respond to and recover from disasters. It addresses the most severe incidents that require an extraordinary response from outside the local community. All types of disasters are addressed including natural disasters (hurricanes, earthquakes, floods, winter storms, tsunamis, etc.) and technological and man-made disasters (hazardous materials incidents, nuclear power plant accidents, and national security emergencies such as nuclear, chemical, biological, and radiological weapons attacks). The market package supports coordination of emergency response plans, including general plans developed before a disaster as well as specific tactical plans with short time horizon that are developed as part of a disaster response. The market package provides enhanced access to the scene for response personnel and resources, provides better information about the transportation system in the vicinity of the disaster, and maintains situation awareness regarding the disaster itself. In addition, this market package tracks and coordinates the transportation resources - the transportation professionals, equipment, and materials - that constitute a portion of the disaster response. The market package identifies the key points of integration between transportation systems and the public safety, emergency management, and other allied organizations that form the overall disaster response. In this market package, the Emergency Management subsystem represents the federal, regional, state, and local Emergency Operations Centers and the Incident Commands that are established to respond to the disaster. The interface between the Emergency Management Subsystem and the other center subsystems provides situation awareness and resource coordination among transportation and other allied response agencies. In its role, traffic management implements special traffic control strategies and detours and restrictions to effectively manage traffic in and around the disaster. Maintenance and construction provides damage assessment of road network facilities and manages service restoration. Transit management provides a similar assessment of status for transit facilities and modifies transit operations to meet the special demands of the disaster. As immediate public safety concerns are addressed and disaster response transitions into recovery, this market package supports transition back to normal transportation system operation, recovering resources, managing on-going transportation facility repair, supporting data collection and revised plan coordination, and other recovery activities. This market package builds on the basic traffic incident response service that is provided by ATMS08, the Traffic Incident Management market package. This market package addresses the additional complexities and coordination requirements that are associated with the most severe incidents that warrant an extraordinary response from outside the local jurisdictions and require special measures such as the activation of one or more emergency operations centers. Many users of the National ITS Architecture will want to consider both ATMS08 and this market package since every region is concerned with both day-to-day management of traffic-related incidents and occasional management of disasters that require extraordinary response. Disaster Response and Recovery is also supported by EM10, the "Disaster Traveler Information" market package that keeps the public informed during a disaster response. See that market package for more information.

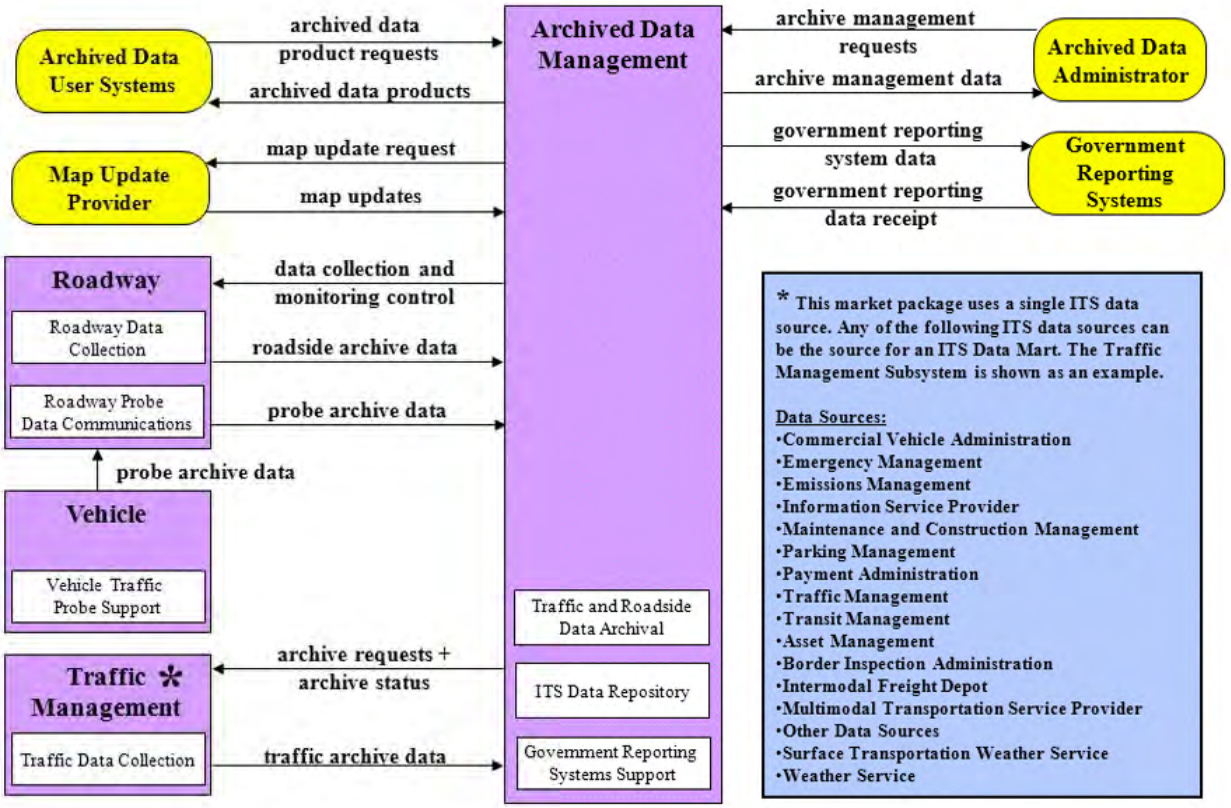
Market Package		Description
EM09	Evacuation and Reentry Management	This market package supports evacuation of the general public from a disaster area and manages subsequent reentry to the disaster area. The market package addresses evacuations for all types of disasters, including disasters like hurricanes that are anticipated and occur slowly, allowing a well-planned orderly evacuation, as well as disasters like terrorist acts that occur rapidly, without warning, and allow little or no time for preparation or public warning. This market package supports coordination of evacuation plans among the federal, state, and local transportation, emergency, and law enforcement agencies that may be involved in a large-scale evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, and along the evacuation route are informed of the plan. Information is shared with traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes. Reversible lanes, shoulder use, closures, special signal control strategies, and other special strategies may be implemented to maximize capacity along the evacuation routes. Transit resources play an important role in an evacuation, removing many people from an evacuated area while making efficient use of limited capacity. Additional shared transit resources may be added and managed in evacuation scenarios. Resource requirements are forecast based on the evacuation plans, and the necessary resources are located, shared between agencies if necessary, and deployed at the right locations at the appropriate times. Evacuations are also supported by EM10, the "Disaster Traveler Information" market package, which keeps the public informed during evacuations. See that market package for more information.
EM10	Disaster Traveler Information	This market package uses ITS to provide disaster-related traveler information to the general public, including evacuation and reentry information and other information concerning the operation of the transportation system during a disaster. This market package collects information from multiple sources including traffic, transit, public safety, emergency management, shelter provider, and travel service provider organizations. The collected information is processed and the public is provided with real-time disaster and evacuation information using ITS traveler information systems. A disaster will stress the surface transportation system since it may damage transportation facilities at the same time that it places unique demands on these facilities to support public evacuation and provide access for emergency responders. Similarly, a disaster may interrupt or degrade the operation of many traveler information systems at the same time that safety-critical information must be provided to the traveling public. This market package keeps the public informed in these scenarios, using all available means to provide information about the disaster area including damage to the transportation system, detours and closures in effect, special traffic restrictions and allowances, special transit schedules, and real-time information on traffic conditions and transit system performance in and around the disaster. This market package also provides emergency information to assist the public with evacuations when necessary. Information on mandatory and voluntary evacuation zones, evacuation times, and instructions are provided. Available evacuation routes and destinations and current and anticipated travel conditions along those routes are provided so evacuees are prepared and know their destination and preferred evacuation route. Information on available transit services and traveler services (shelters, medical services, hotels, restaurants, gas stations, etc.) is also provided. In addition to general evacuation information, this market package provides specific evacuation trip planning information that is tailored for the evacuee based on origin, selected destination, and evacuee-specified evacuation requirements and route parameters. This market package augments the ATIS market packages that provide traveler information on a day-to-day basis for the surface transportation system. This market package provides focus on the special requirements for traveler information dissemination in disaster situations.

Market Package		*Description*
MC01	Maintenance and Construction Vehicle and Equipment Tracking	This market package will track the location of maintenance and construction vehicles and other equipment to ascertain the progress of their activities. These activities can include ensuring the correct roads are being plowed and work activity is being performed at the correct locations.
MC02	Maintenance and Construction Vehicle Maintenance	This market package performs vehicle maintenance scheduling and manages both routine and corrective maintenance activities on vehicles and other maintenance and construction equipment. It includes on-board sensors capable of automatically performing diagnostics for maintenance and construction vehicles, and the systems that collect this diagnostic information and use it to schedule and manage vehicle maintenance.
MC03	Road Weather Data Collection	This market package collects current road and weather conditions using data collected from environmental sensors deployed on and about the roadway (or guideway in the case of transit related rail systems). In addition to fixed sensor stations at the roadside, sensing of the roadway environment can also occur from sensor systems located on Maintenance and Construction Vehicles and on-board sensors provided by auto manufacturers. The collected environmental data is used by the Weather Information Processing and Distribution Market Package to process the information and make decisions on operations.
MC04	Weather Information Processing and Distribution	This market package processes and distributes the environmental information collected from the Road Weather Data Collection market package. This market package uses the environmental data to detect environmental hazards such as icy road conditions, high winds, dense fog, etc. so system operators and decision support systems can make decision on corrective actions to take. The continuing updates of road condition information and current temperatures can be used by system operators to more effectively deploy road maintenance resources, issue general traveler advisories, issue location specific warnings to drivers using the Traffic Information Dissemination market package, and aid operators in scheduling work activity.
MC07	Roadway Maintenance and Construction	This market package supports numerous services for scheduled and unscheduled maintenance and construction on a roadway system or right-of-way. Maintenance services would include landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, CCTV, etc.). Environmental conditions information is also received from various weather sources to aid in scheduling maintenance and construction activities.
MC08	Work Zone Management	This market package manages work zones, controlling traffic in areas of the roadway where maintenance, construction, and utility work activities are underway. Traffic conditions are monitored using CCTV cameras and controlled using dynamic message signs (DMS), Highway Advisory Radio (HAR), gates and barriers. Work zone information is coordinated with other groups (e.g., ISP, traffic management, other maintenance and construction centers). Work zone speeds and delays are provided to the motorist prior to the work zones. This market package provides control of field equipment in all maintenance and construction areas, including fixed, portable, and truck-mounted devices supporting both stationary and mobile work zones.
MC09	Work Zone Safety Monitoring	This market package includes systems that improve work crew safety and reduce collisions between the motoring public and maintenance and construction vehicles. This market package detects vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment or other potential safety hazards. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone. The market package supports both stationary and mobile work zones. The intrusion detection and alarm systems may be collocated or distributed, allowing systems that detect safety issues far upstream from a work zone (e.g., detection of over dimension vehicles before they enter the work zone).
MC10	Maintenance and Construction Activity Coordination	This market package supports the dissemination of maintenance and construction activity to centers that can utilize it as part of their operations, or to the Information Service Providers who can provide the information to travelers.

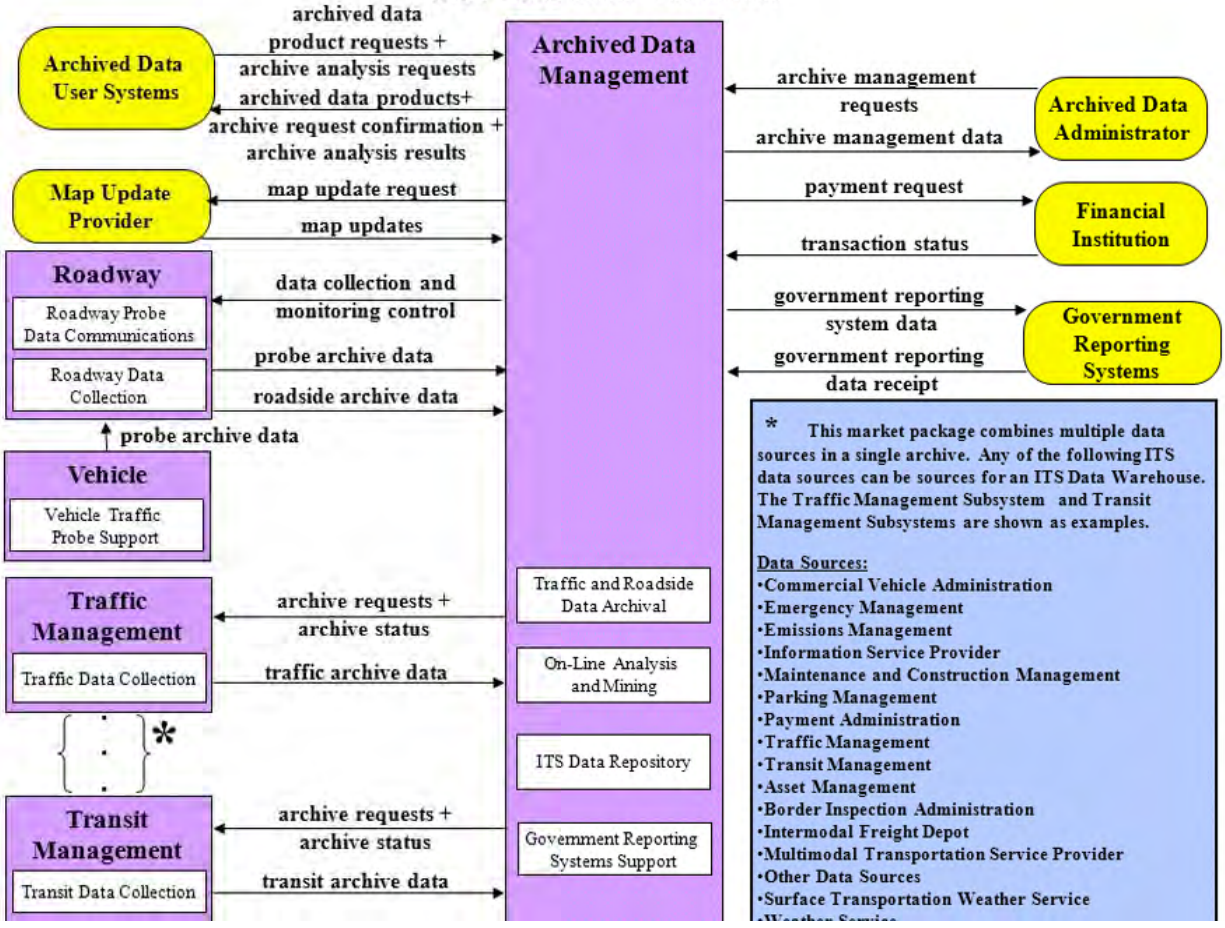
Section 6

Service/Market Package Diagrams

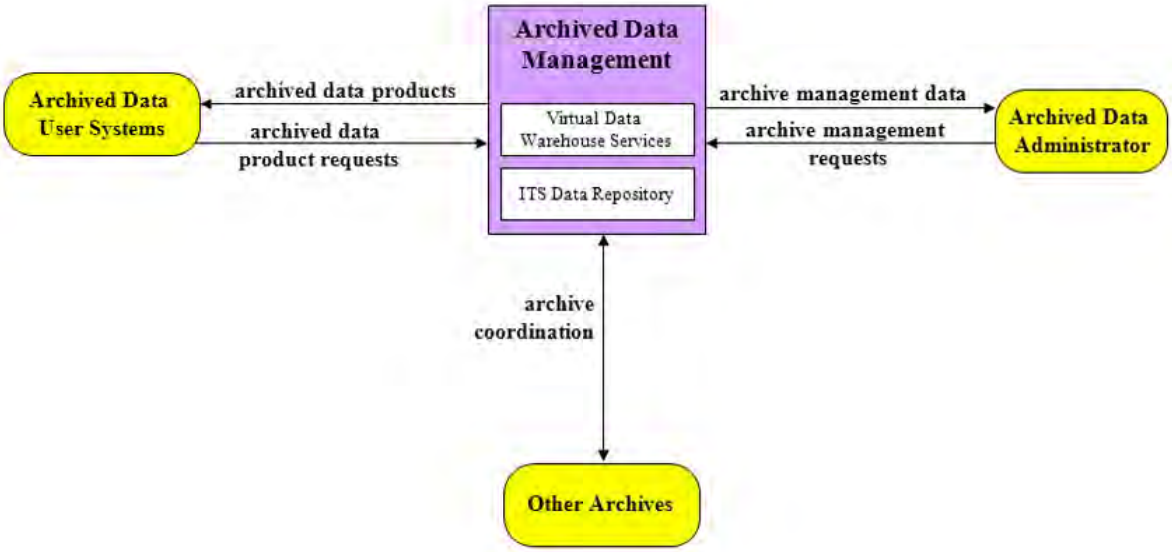
AD1 - ITS Data Mart



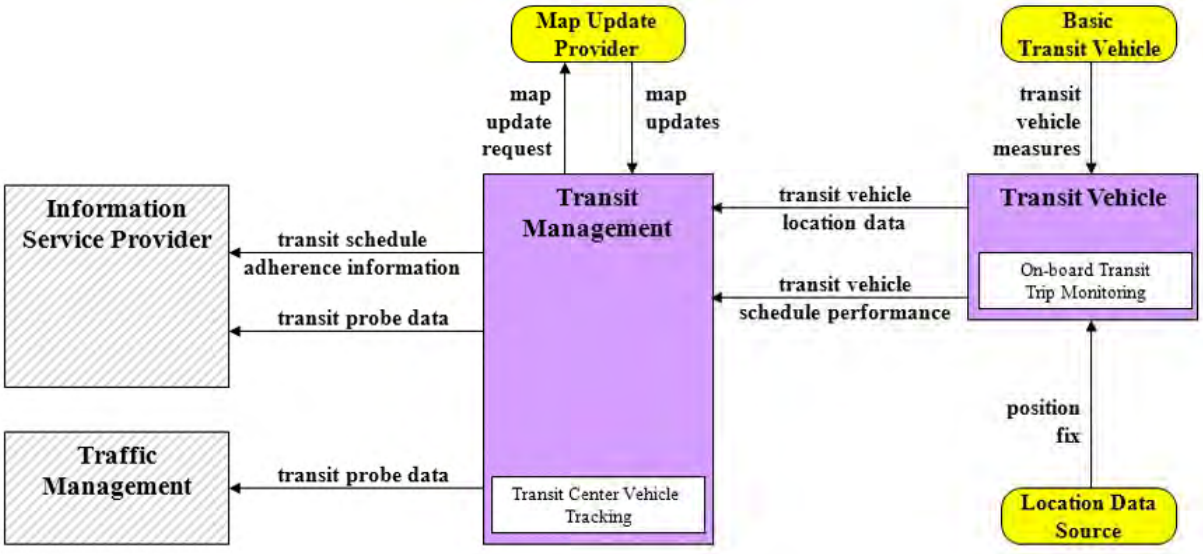
AD2 - ITS Data Warehouse



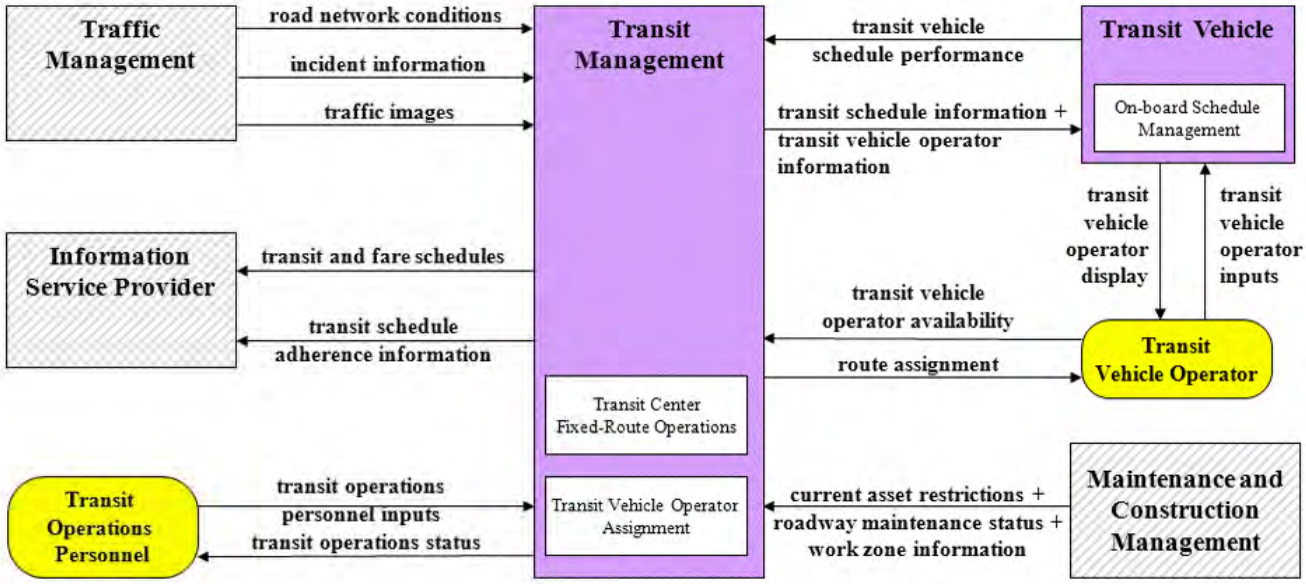
AD3 - ITS Virtual Data Warehouse



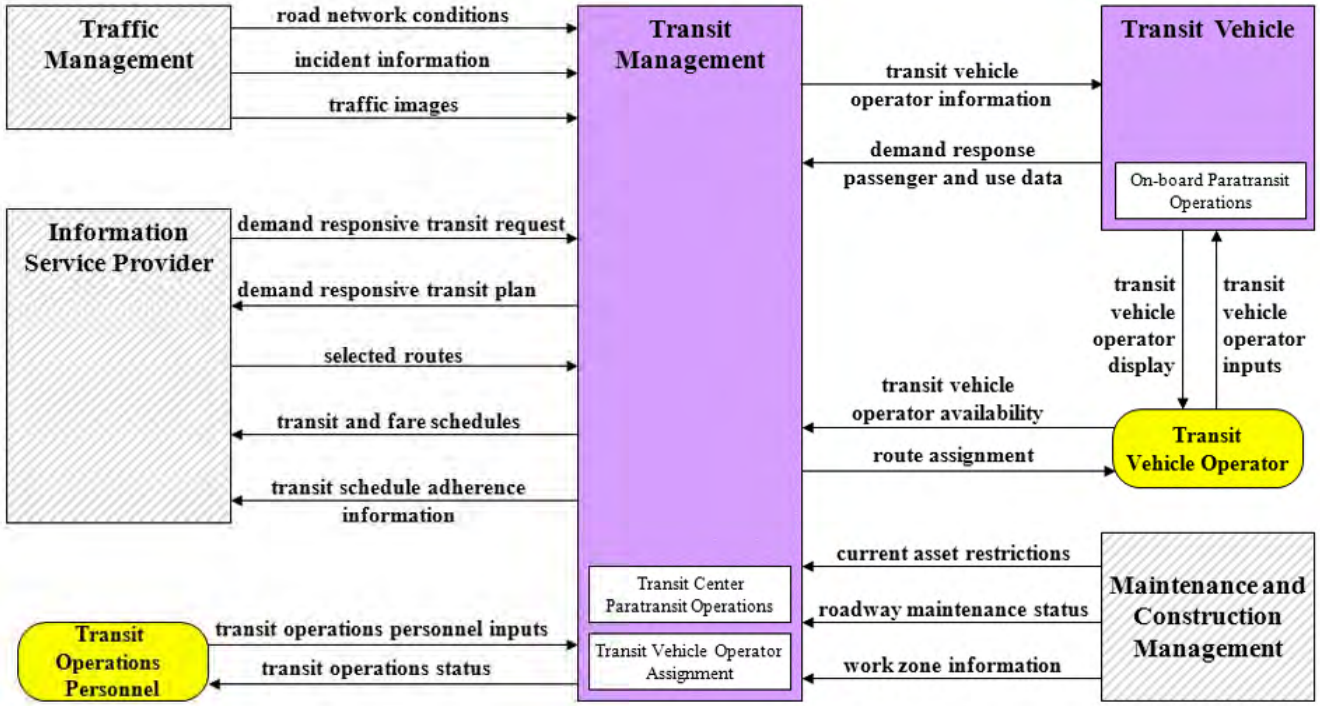
APTS01 – Transit Vehicle Tracking



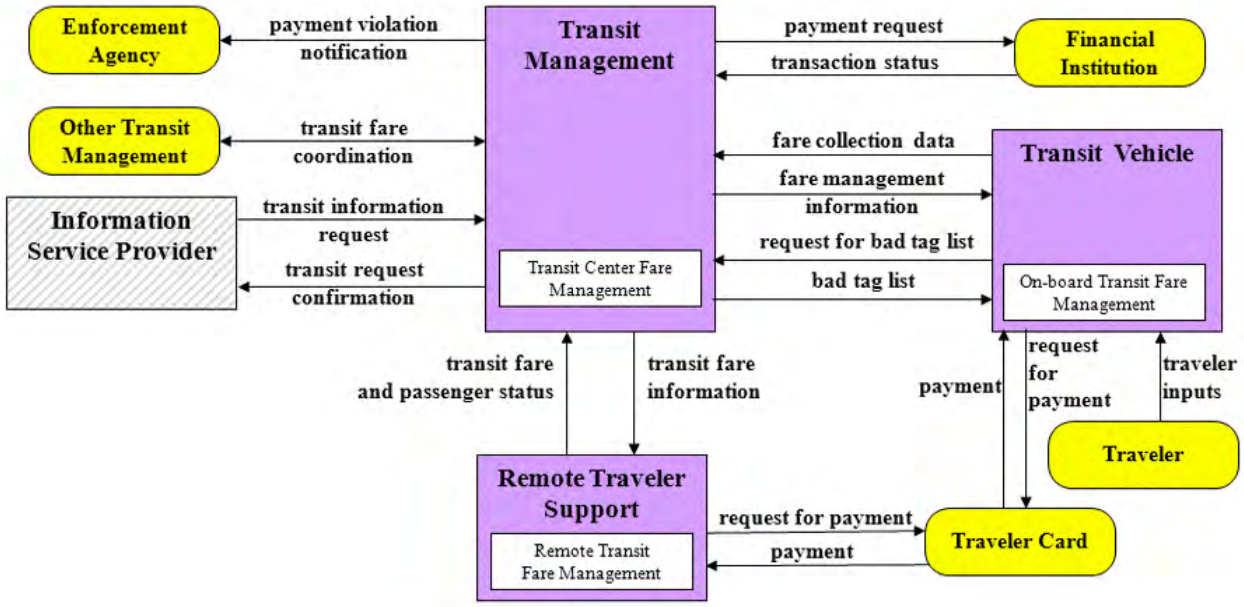
APTS02 – Transit Fixed-Route Operations



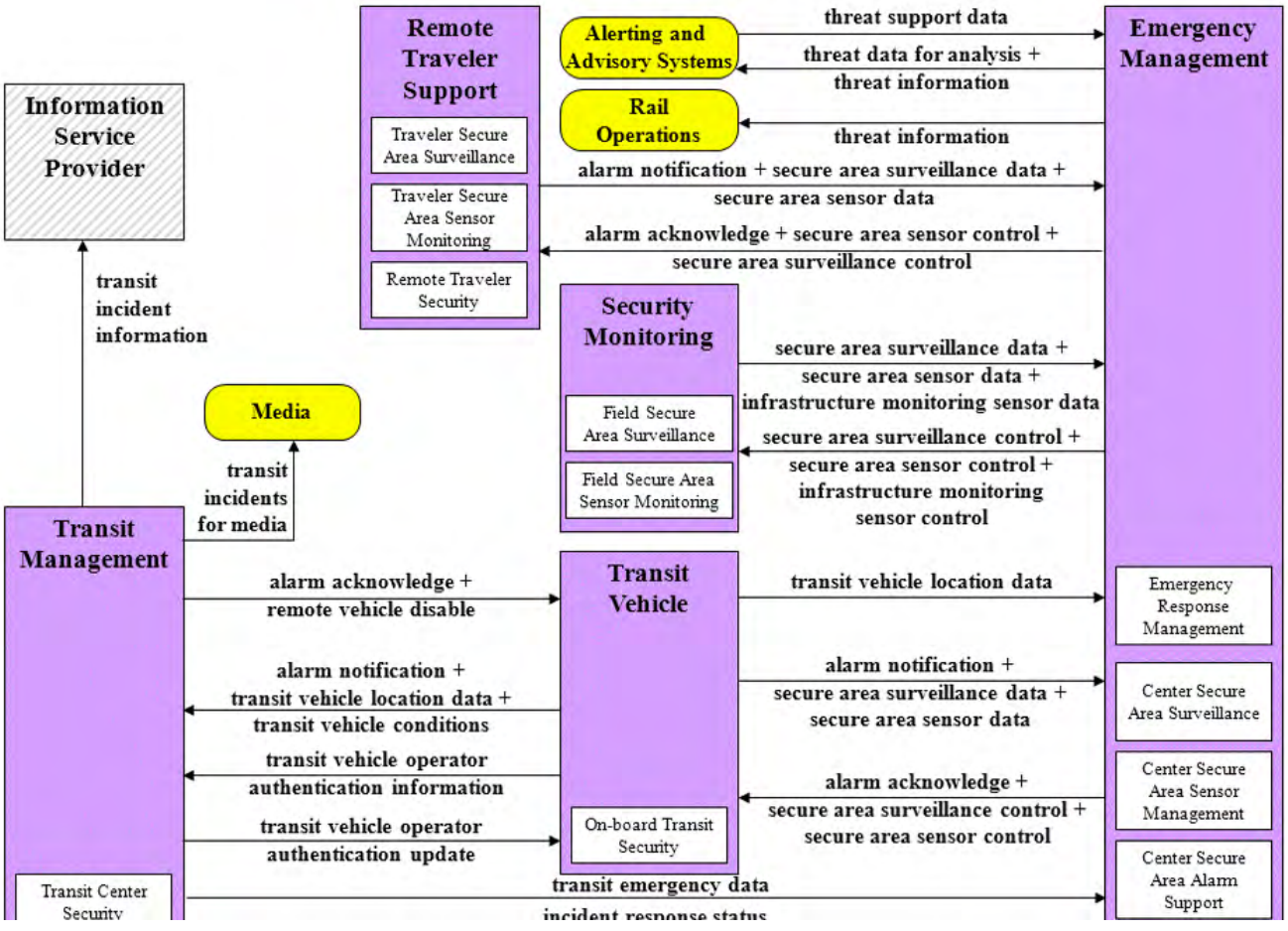
APTS03 – Demand Response Transit Operations



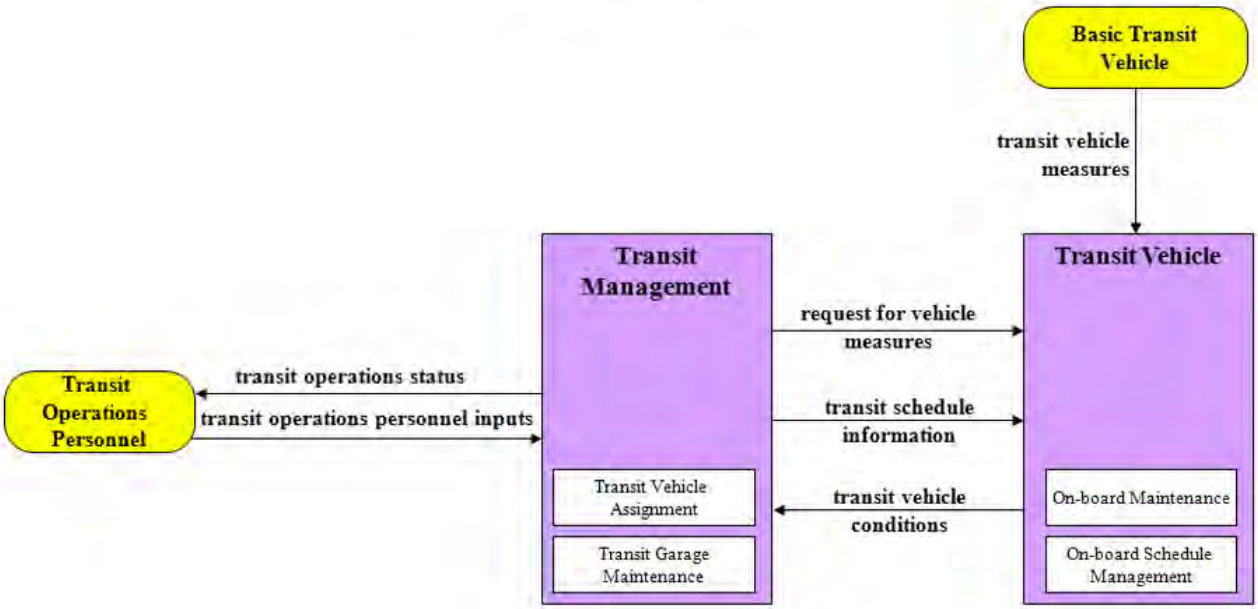
APTS04 – Transit Fare Collection Management



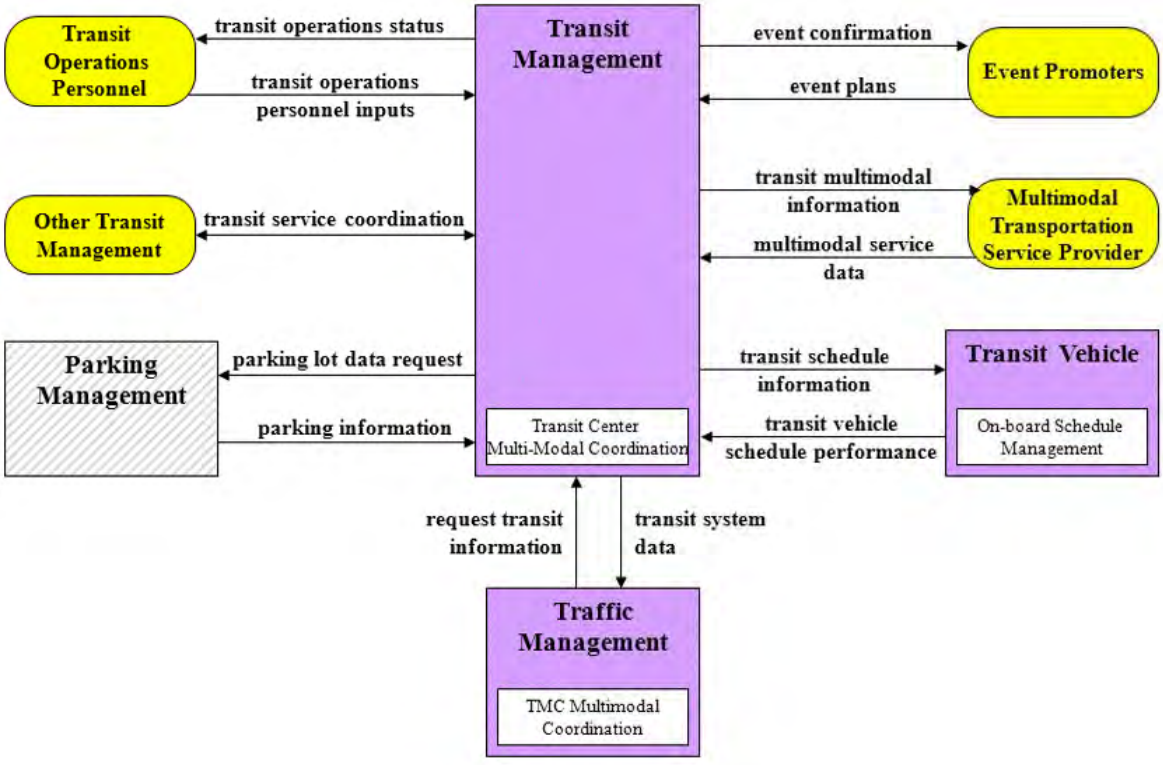
APTS05 - Transit Security



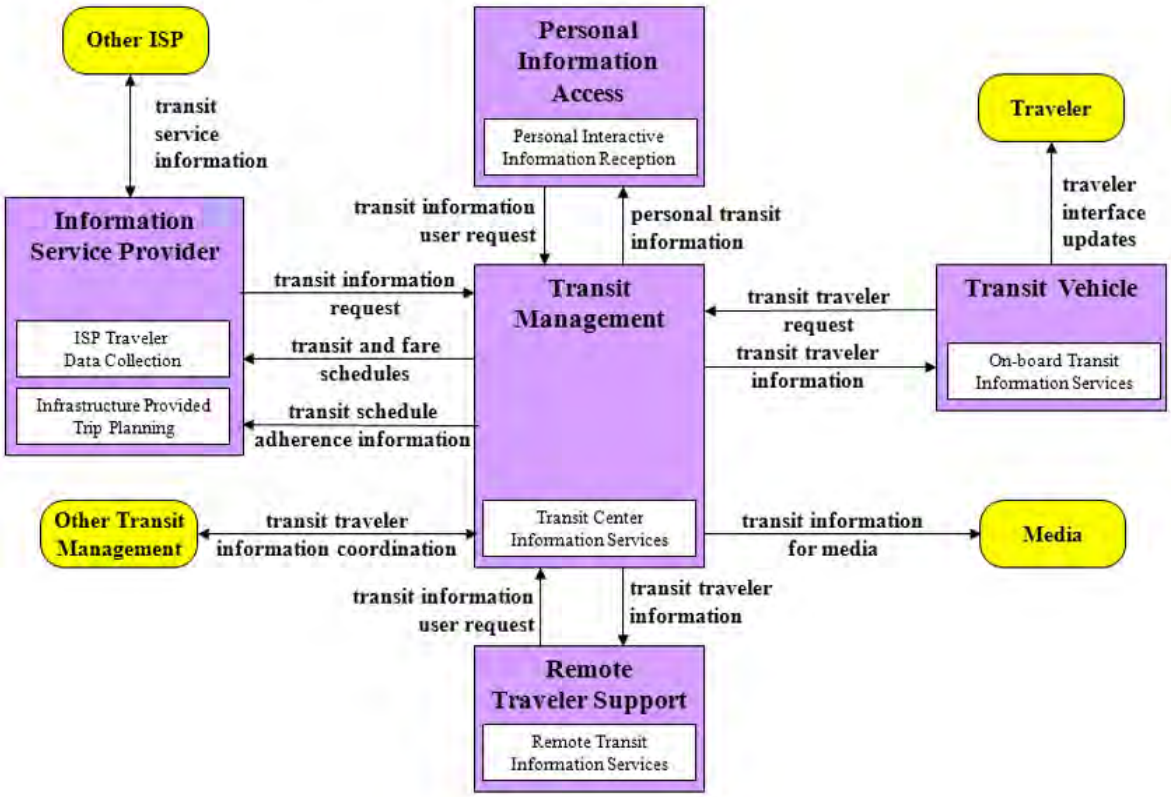
APTS06 - Transit Fleet Management



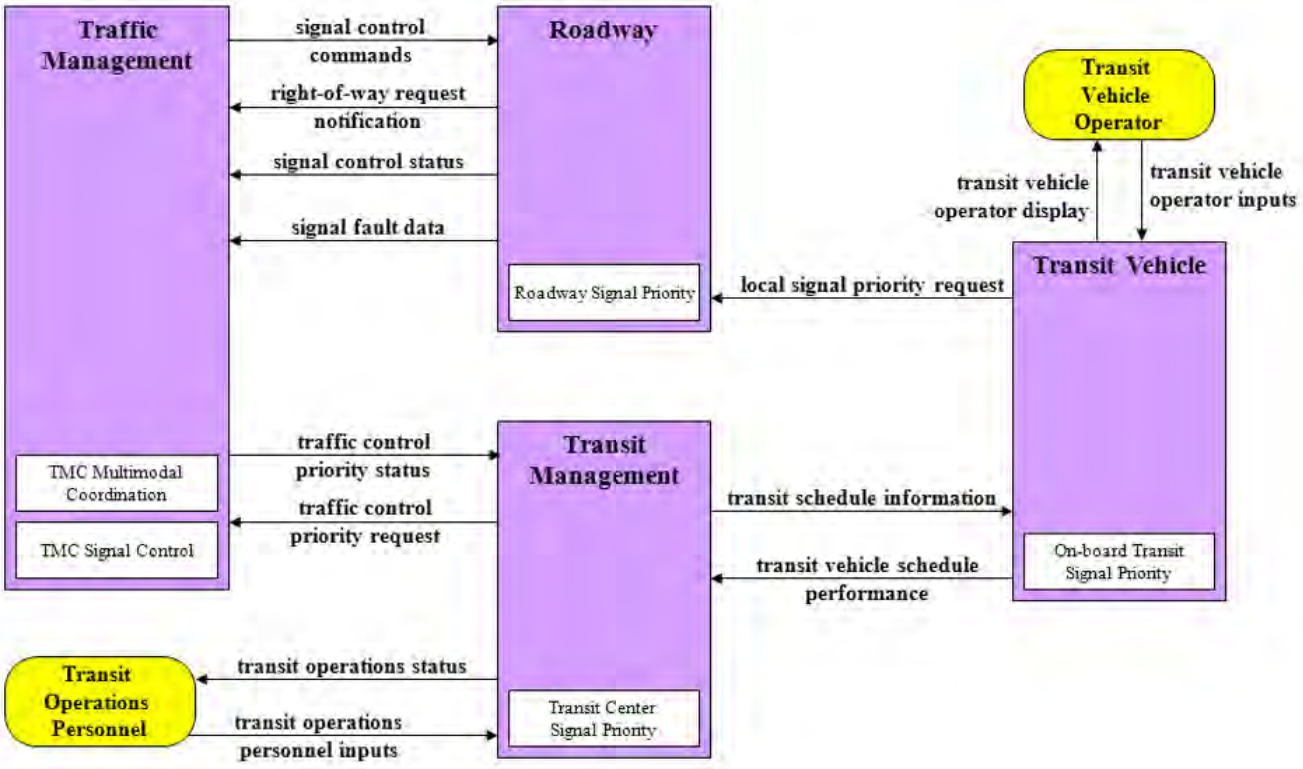
APTS07 – Multi-modal Coordination



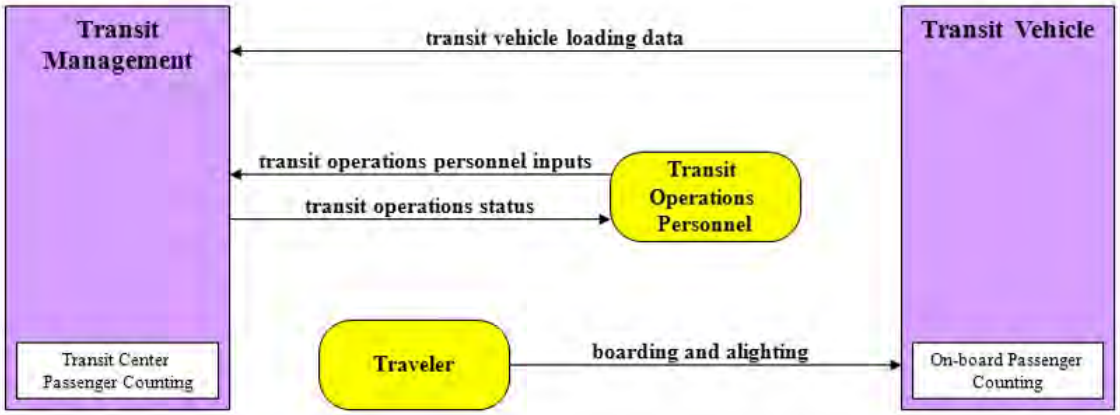
APTS08 - Transit Traveler Information



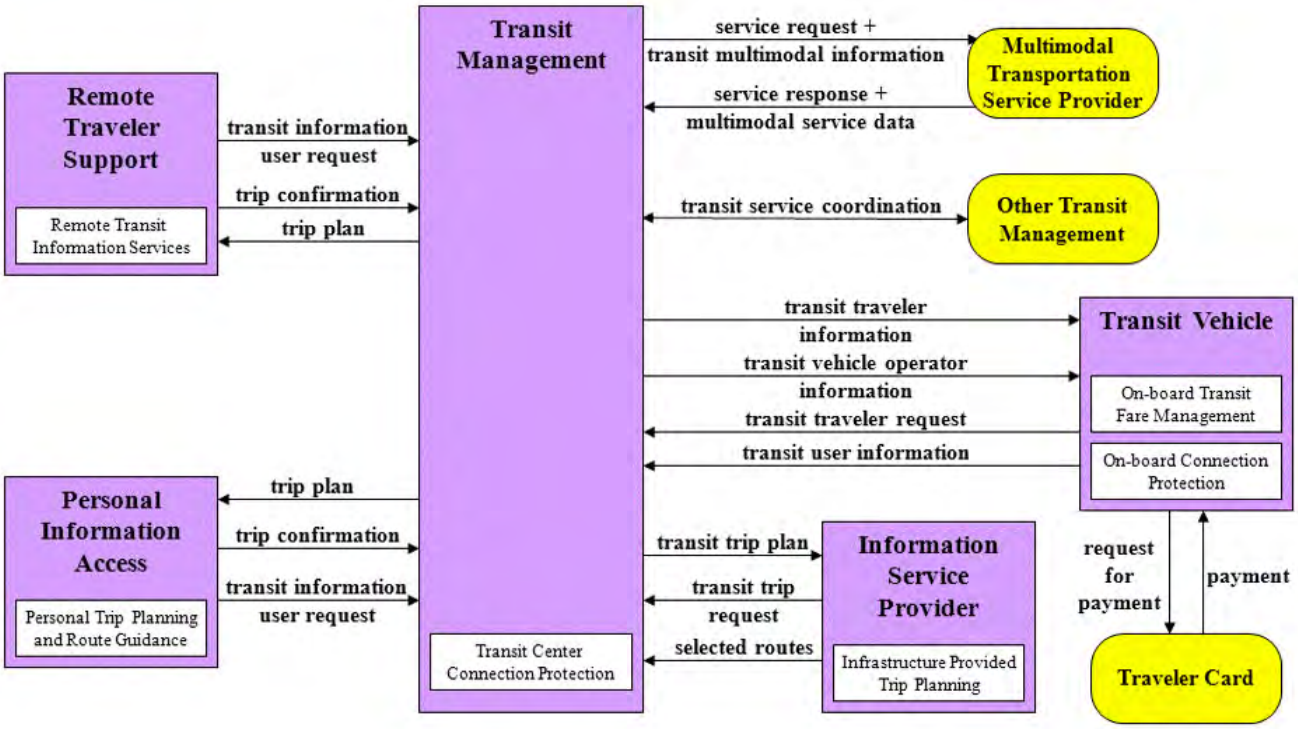
APTS09 – Transit Signal Priority



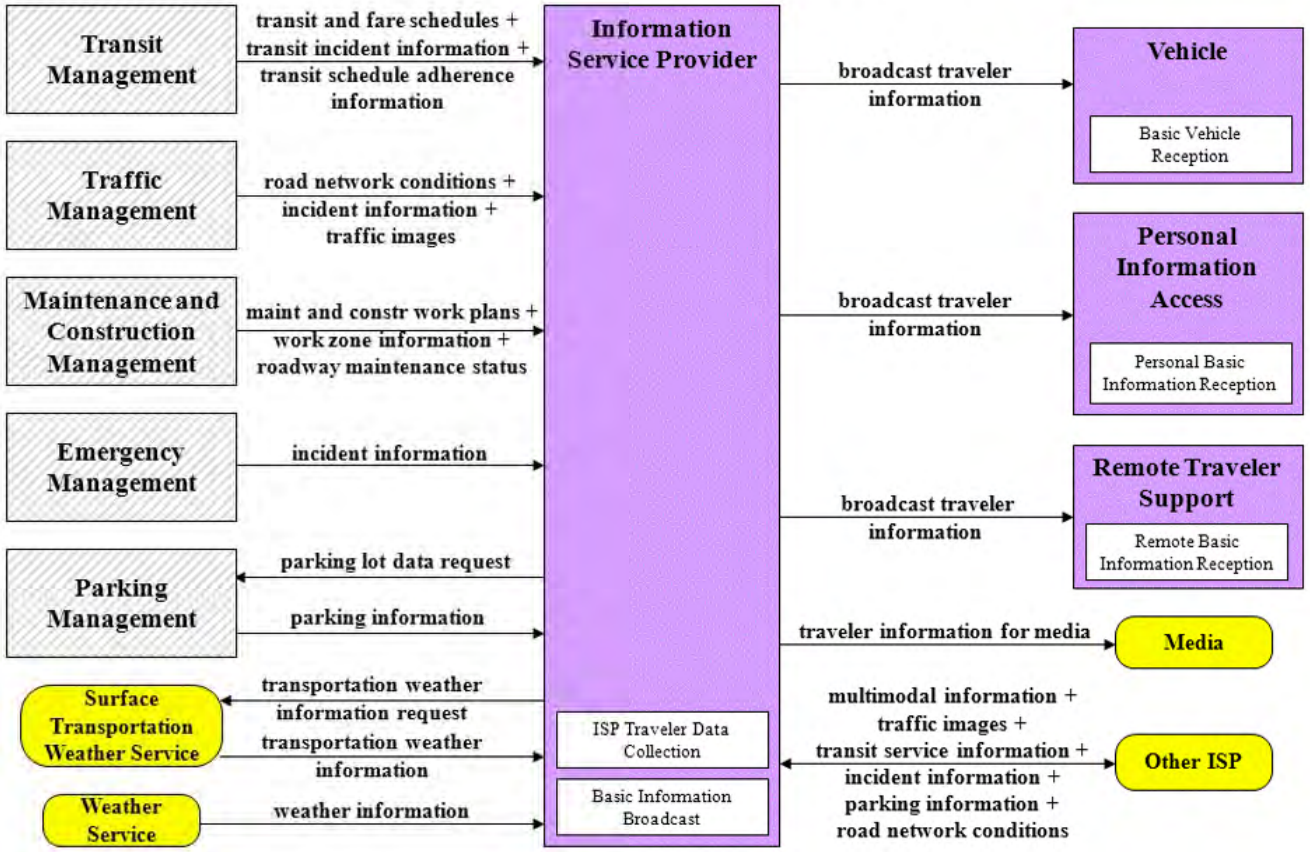
APTS10 – Transit Passenger Counting



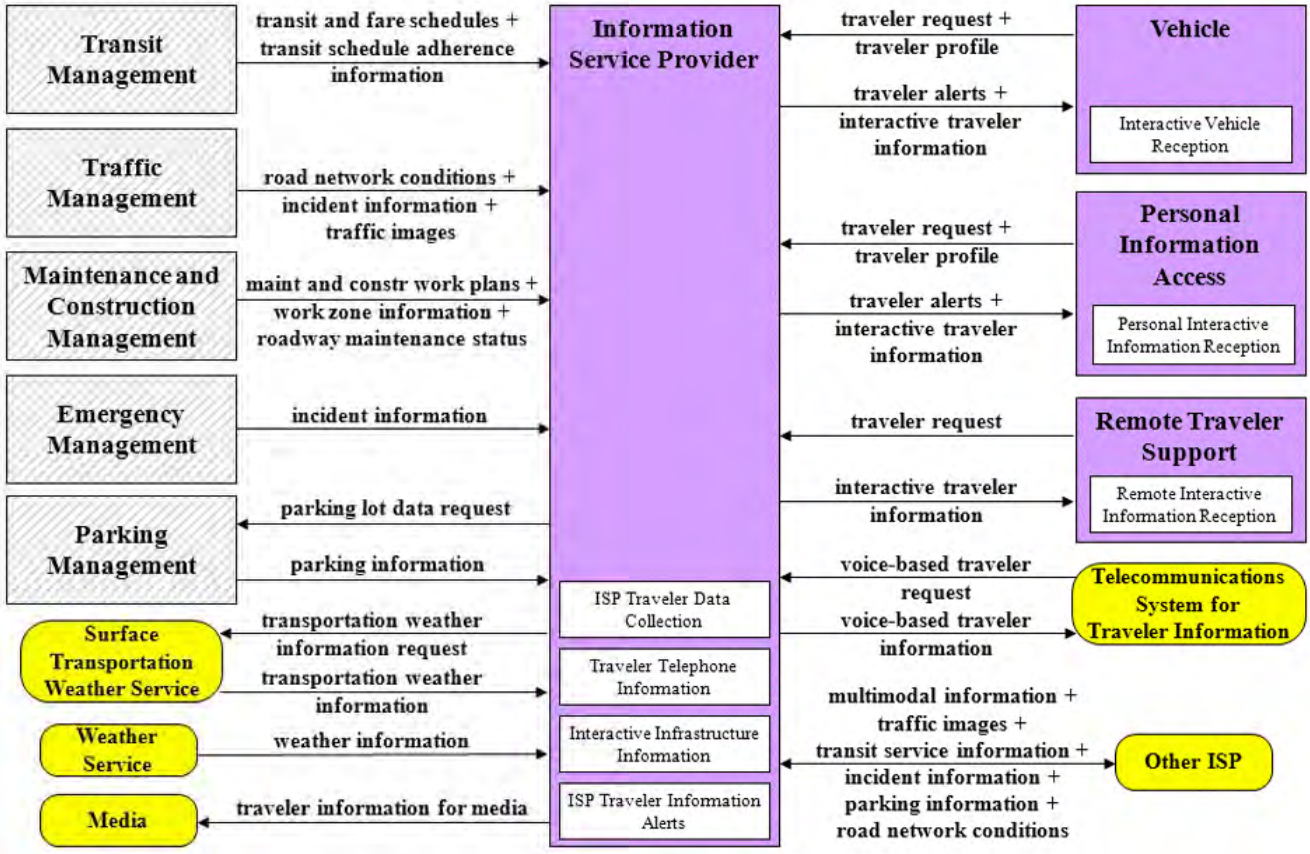
APTS11 – Multimodal Connection Protection



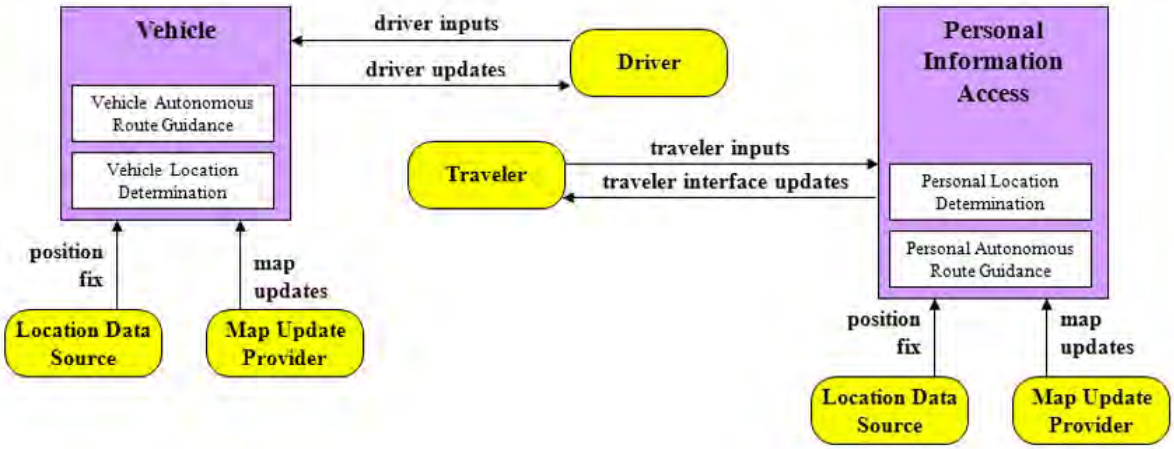
ATIS01 – Broadcast Traveler Information



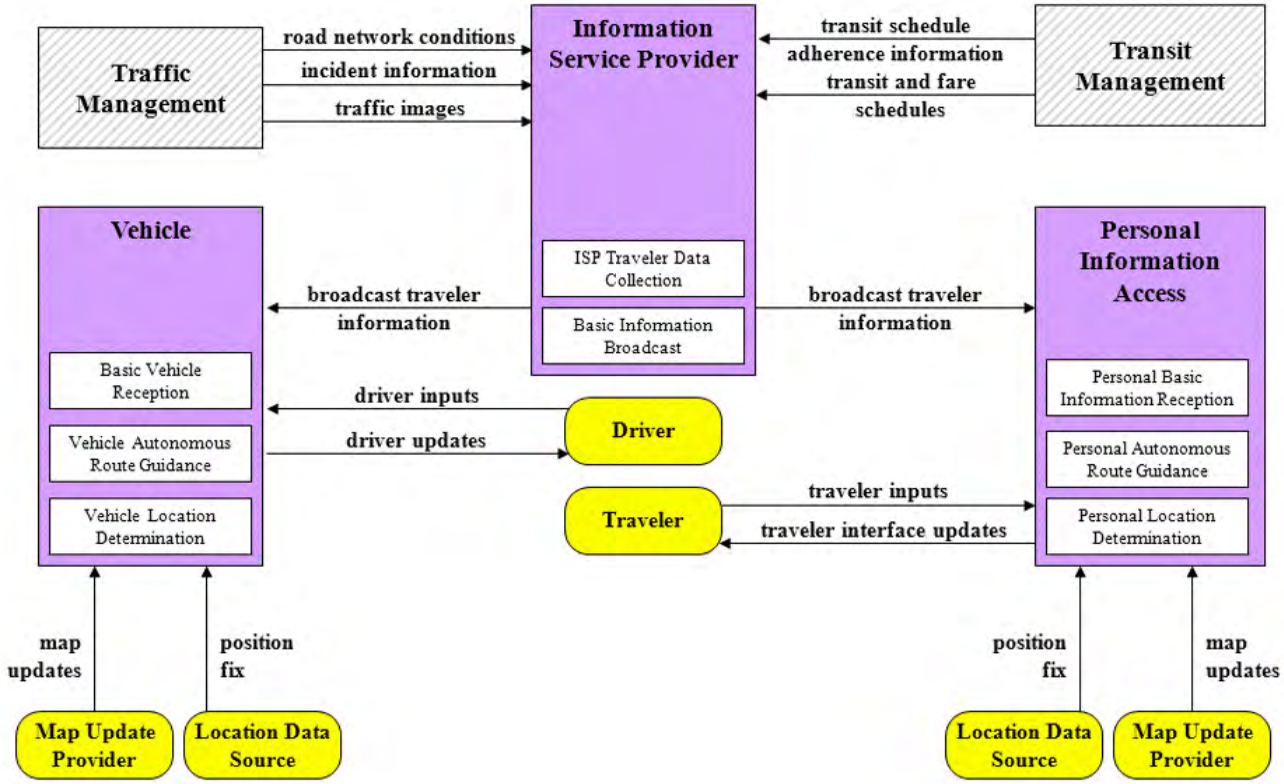
ATIS02 – Interactive Traveler Information



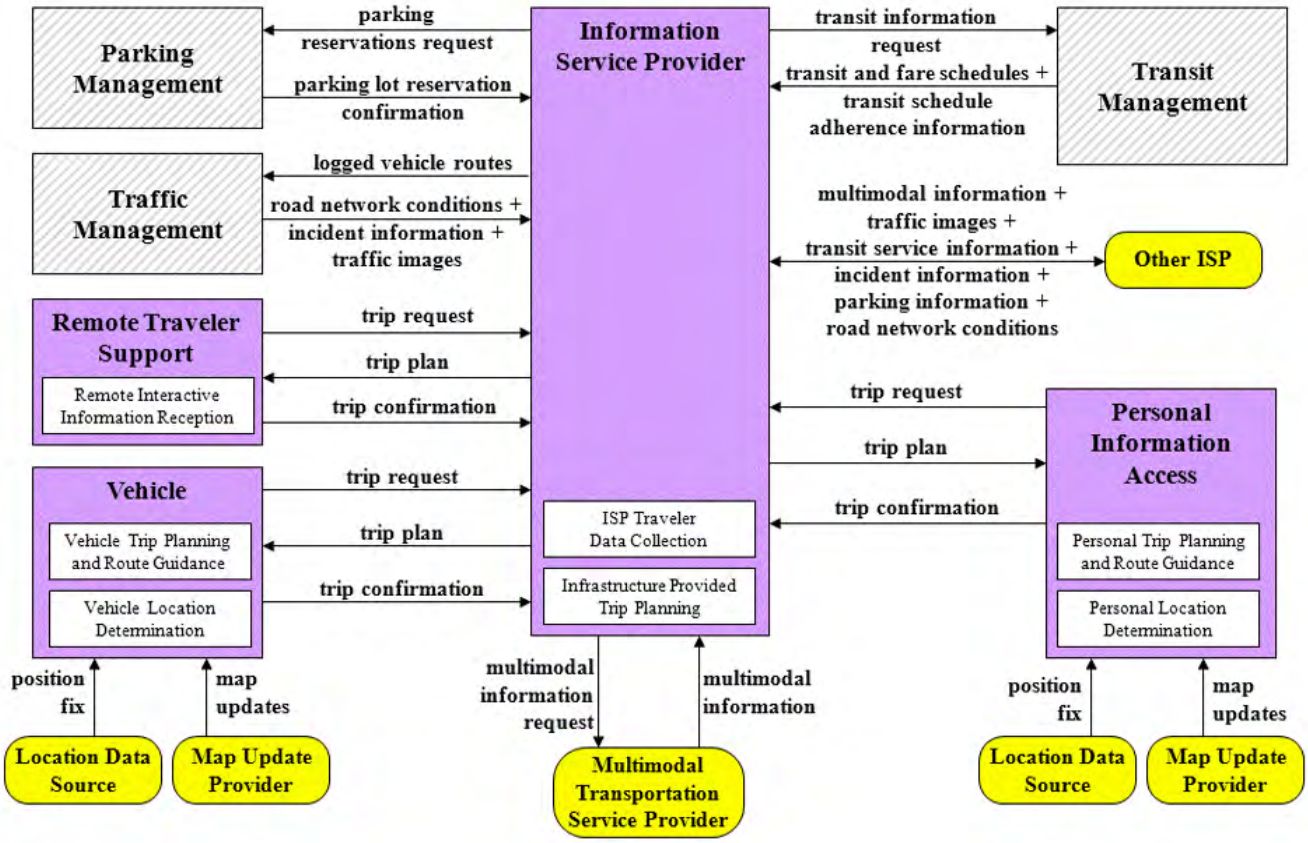
ATIS03 – Autonomous Route Guidance



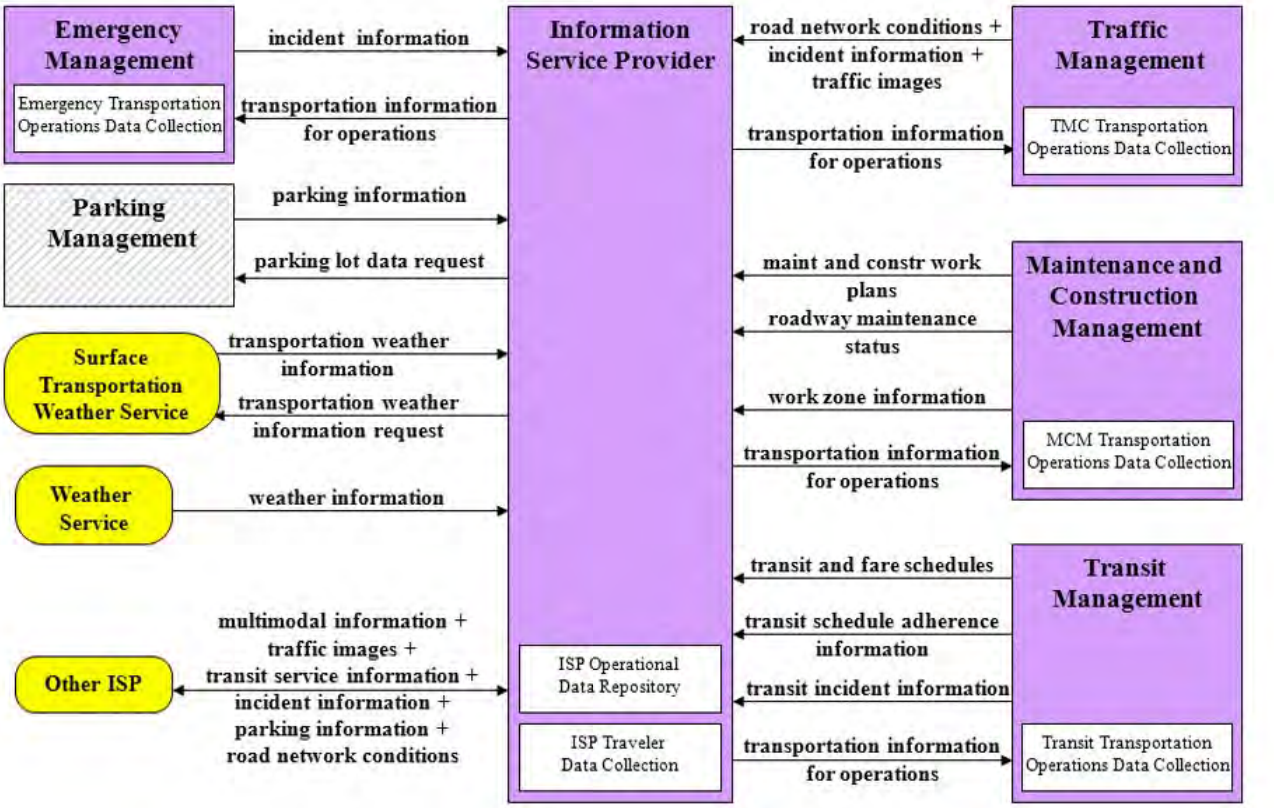
ATIS04 – Dynamic Route Guidance



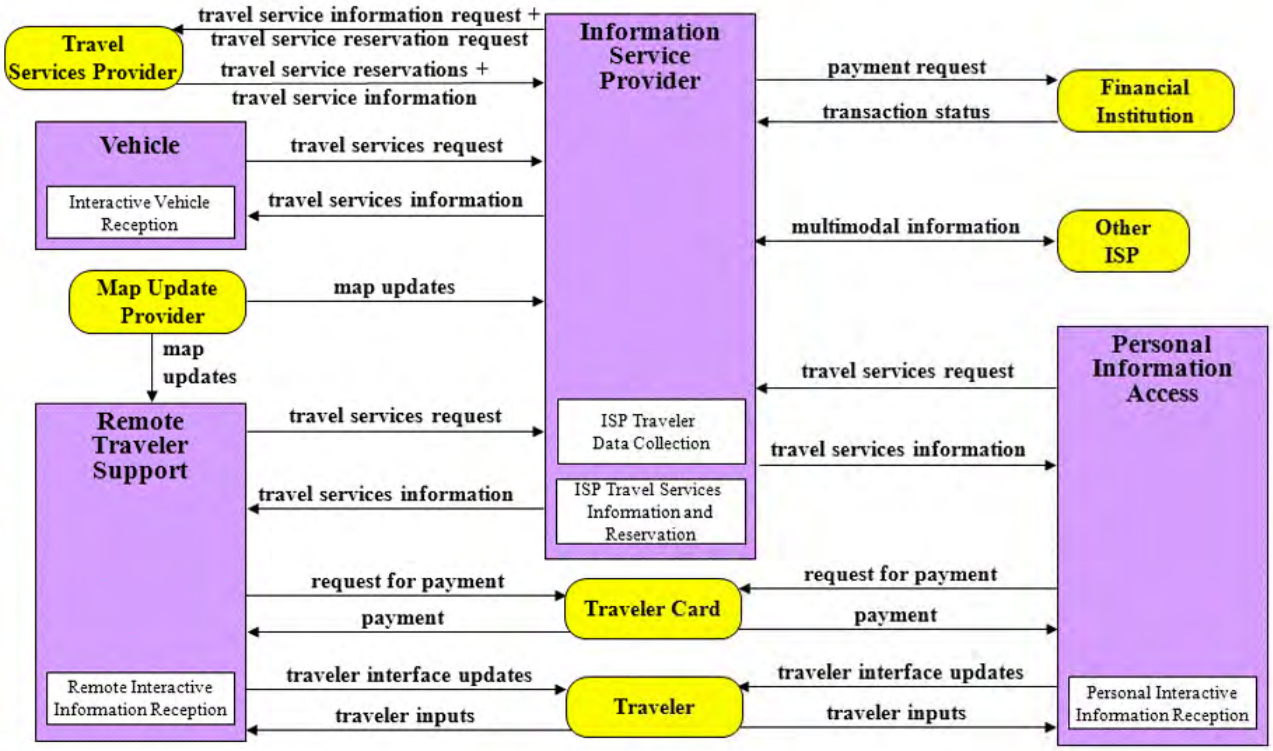
ATIS05 – ISP Based Trip Planning and Route Guidance



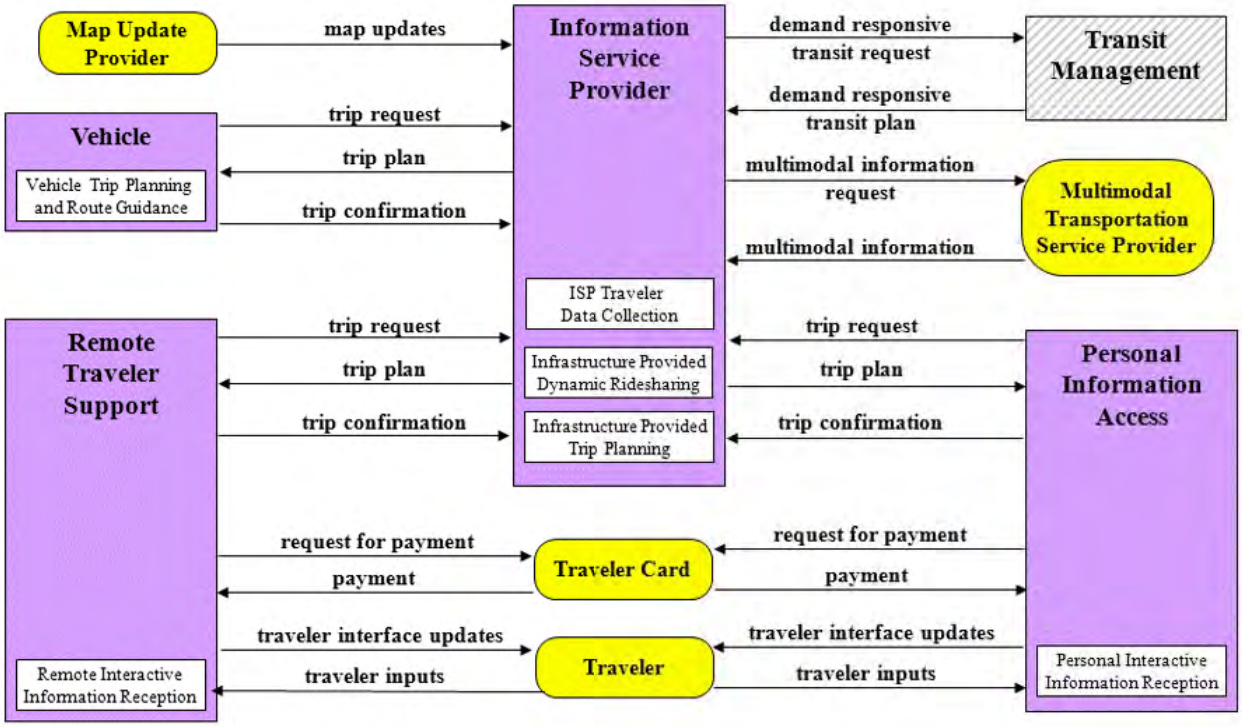
ATIS06 –Transportation Operations Data Sharing



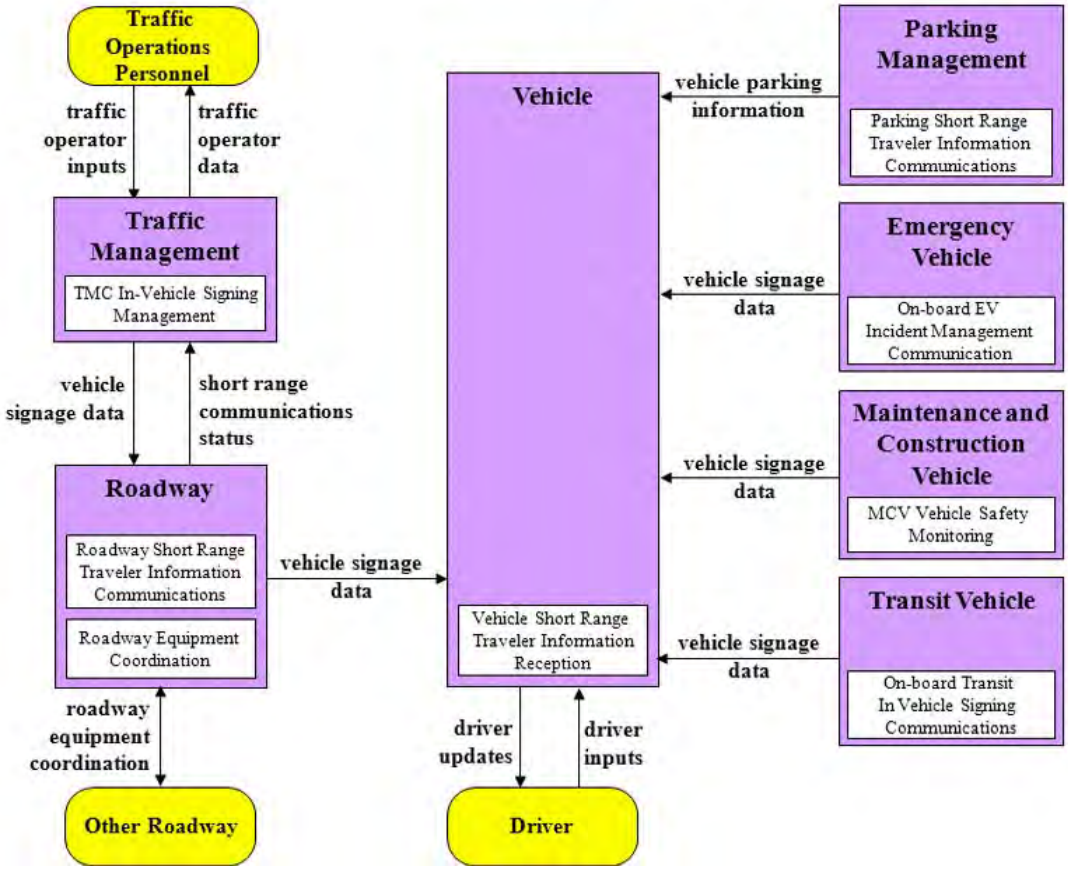
ATIS07 – Travel Services Information and Reservation



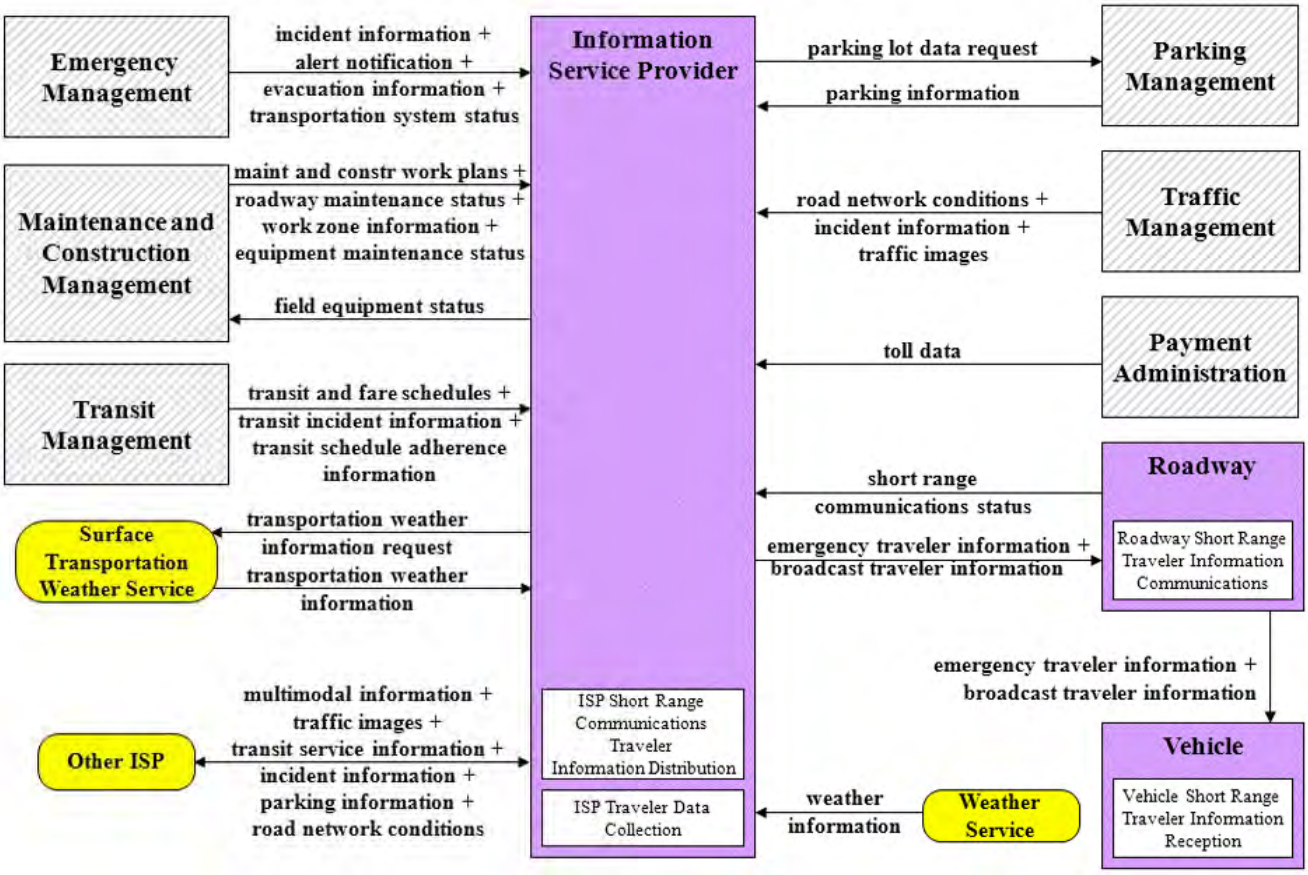
ATIS08 - Dynamic Ridesharing



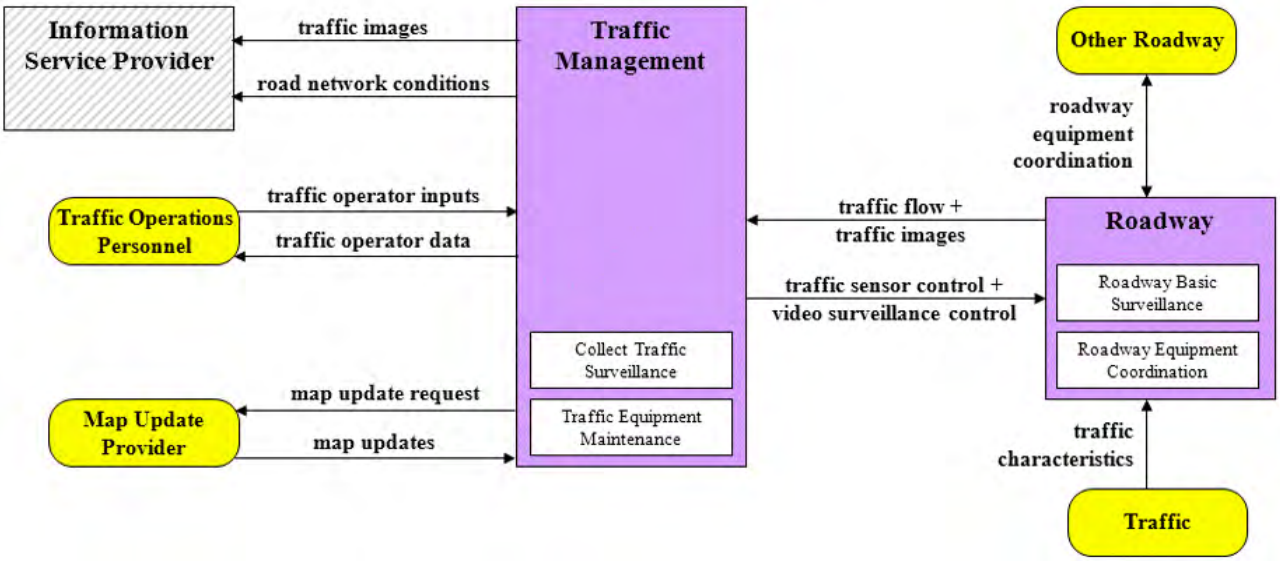
ATIS09 - In Vehicle Signing



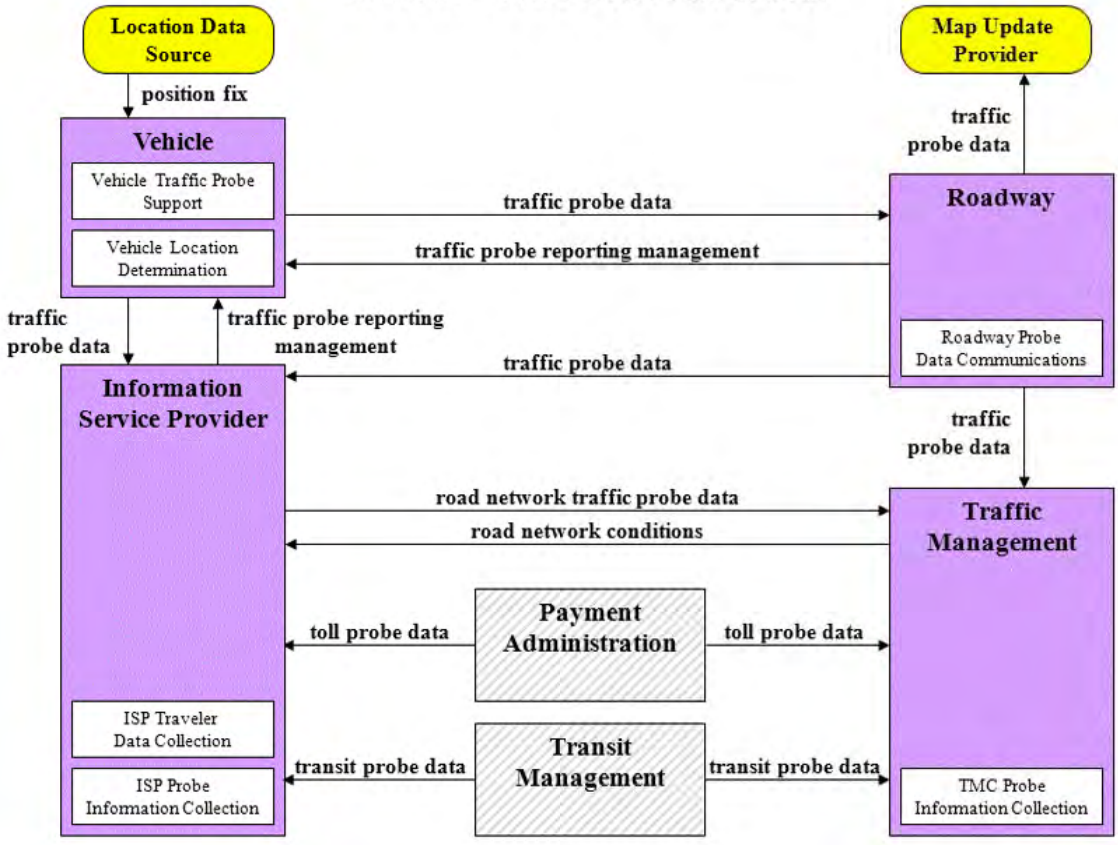
ATIS10 – Short Range Communications Traveler Information



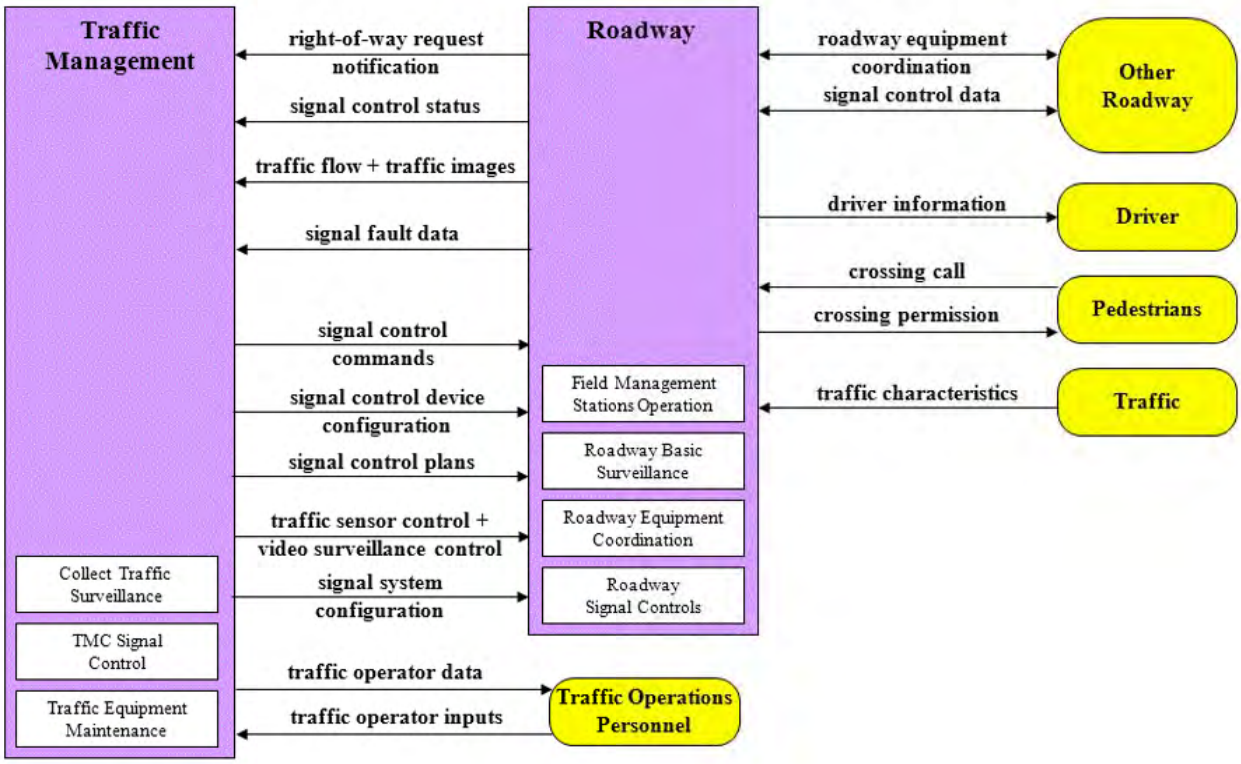
ATMS01 – Network Surveillance



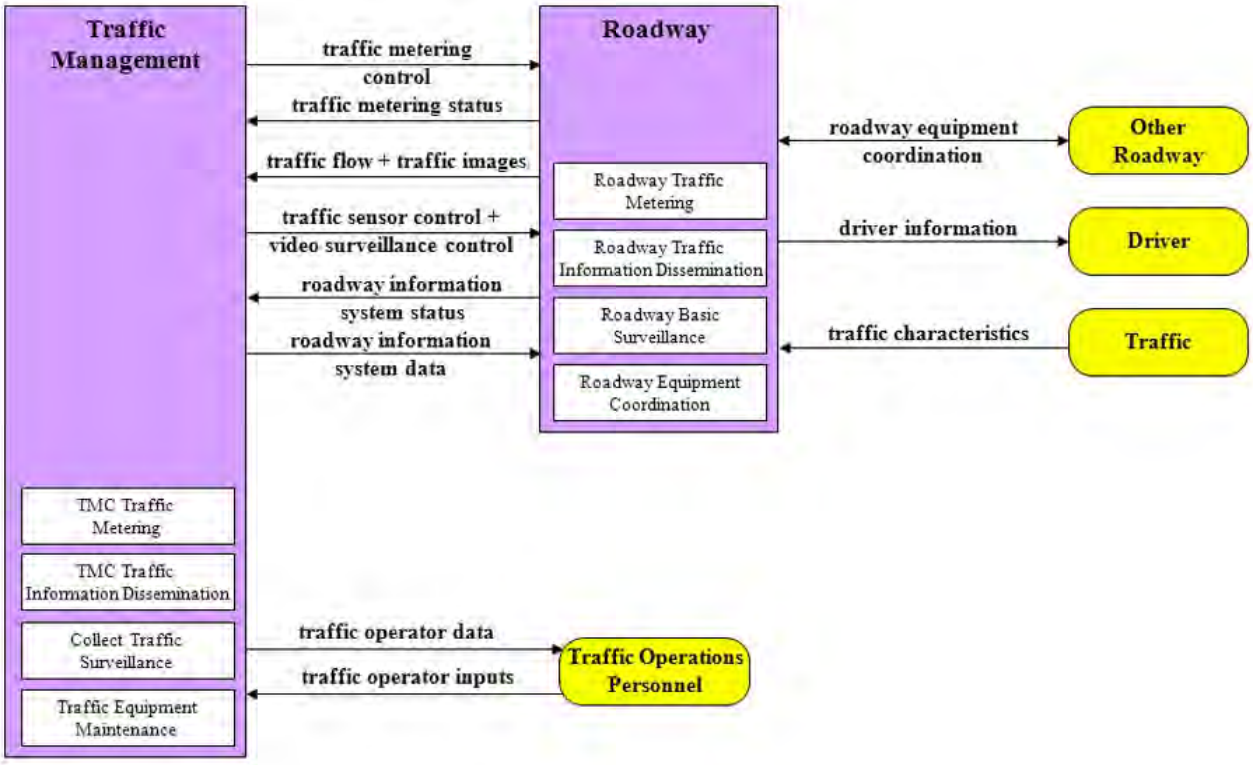
ATMS02 – Traffic Probe Surveillance



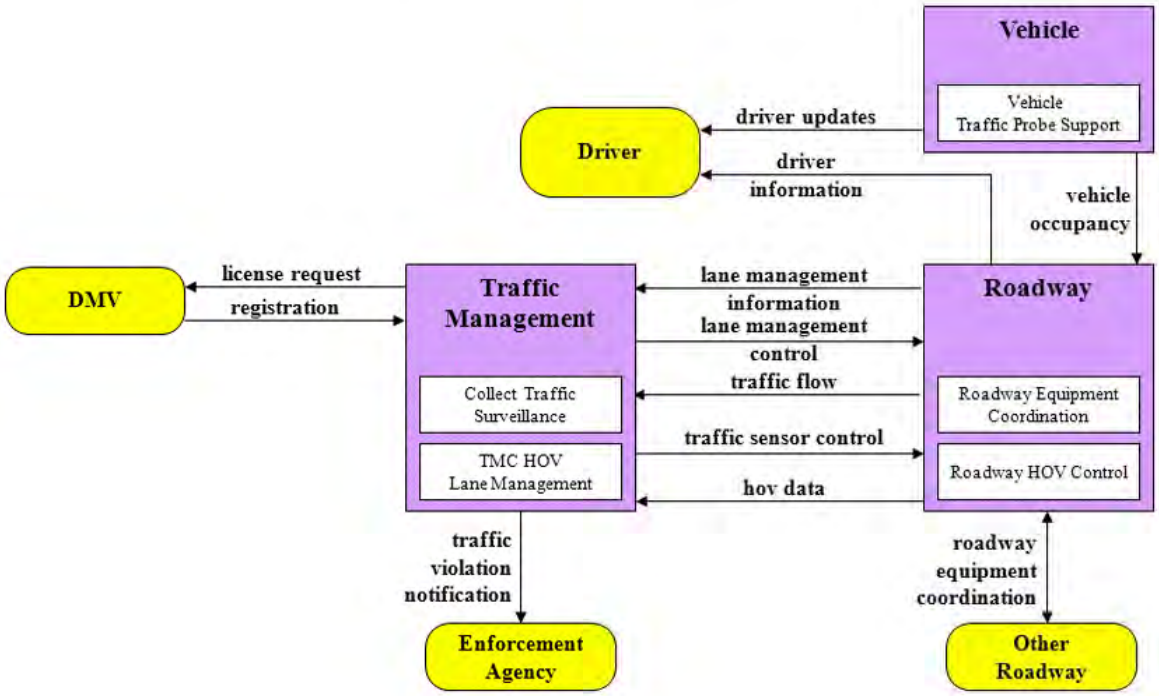
ATMS03 – Traffic Signal Control



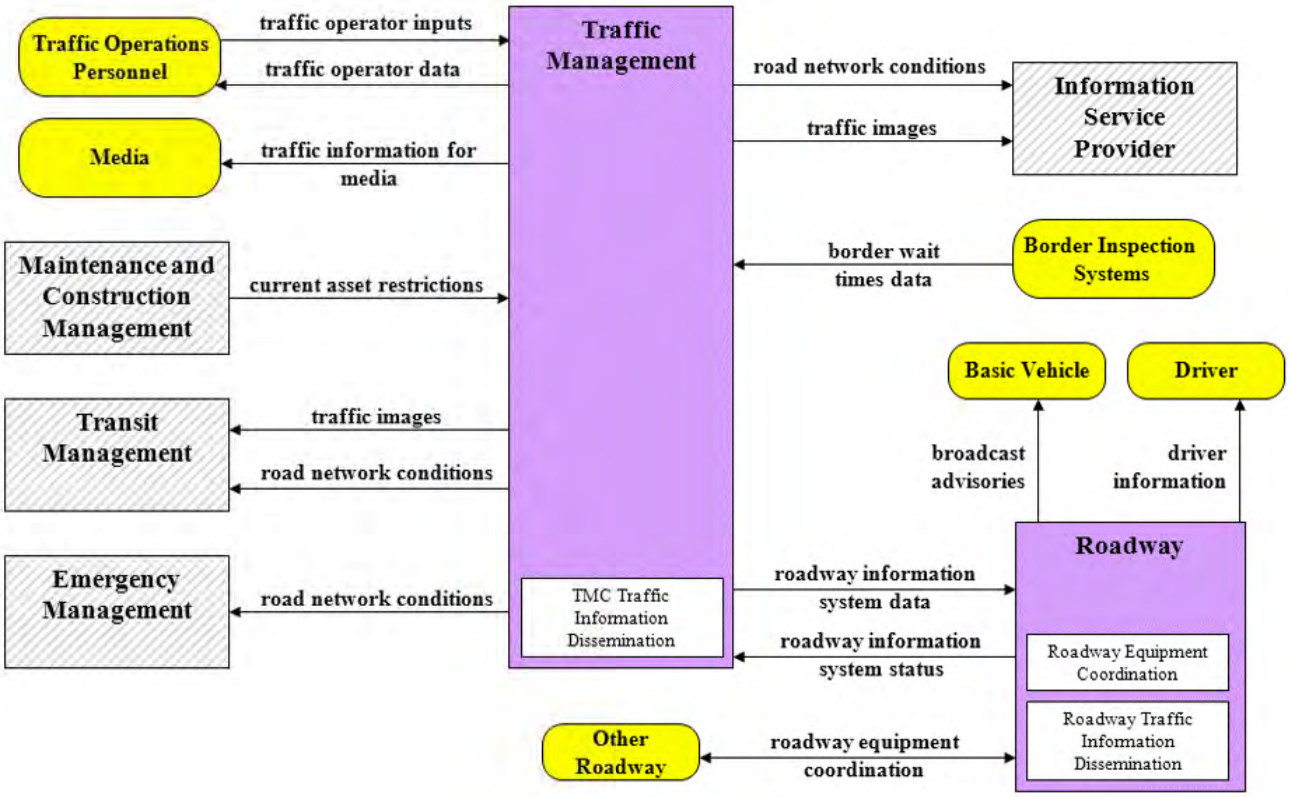
ATMS04 – Traffic Metering



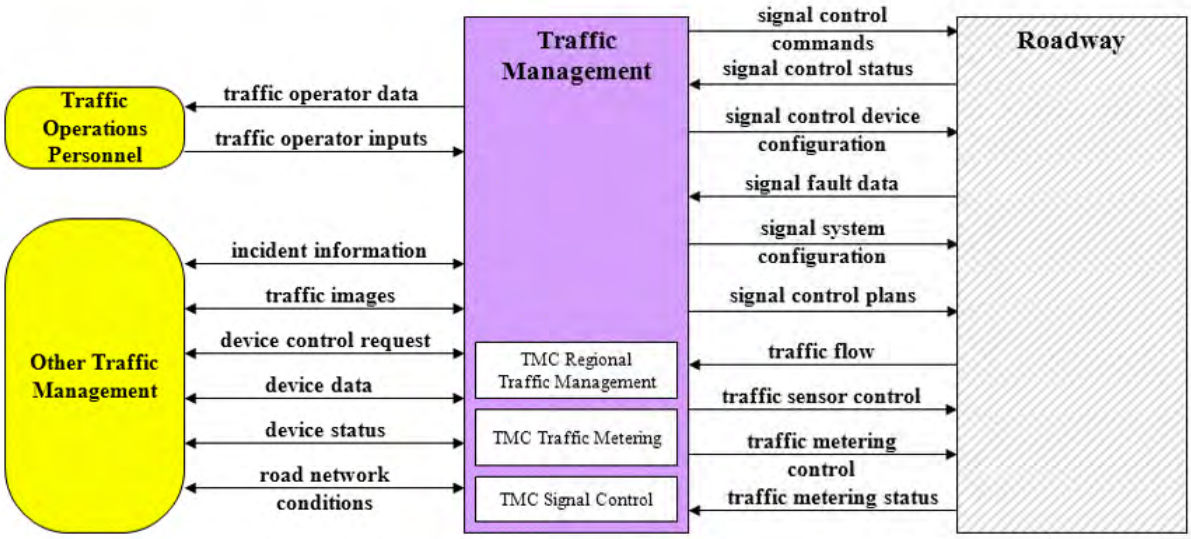
ATMS05 – HOV Lane Management



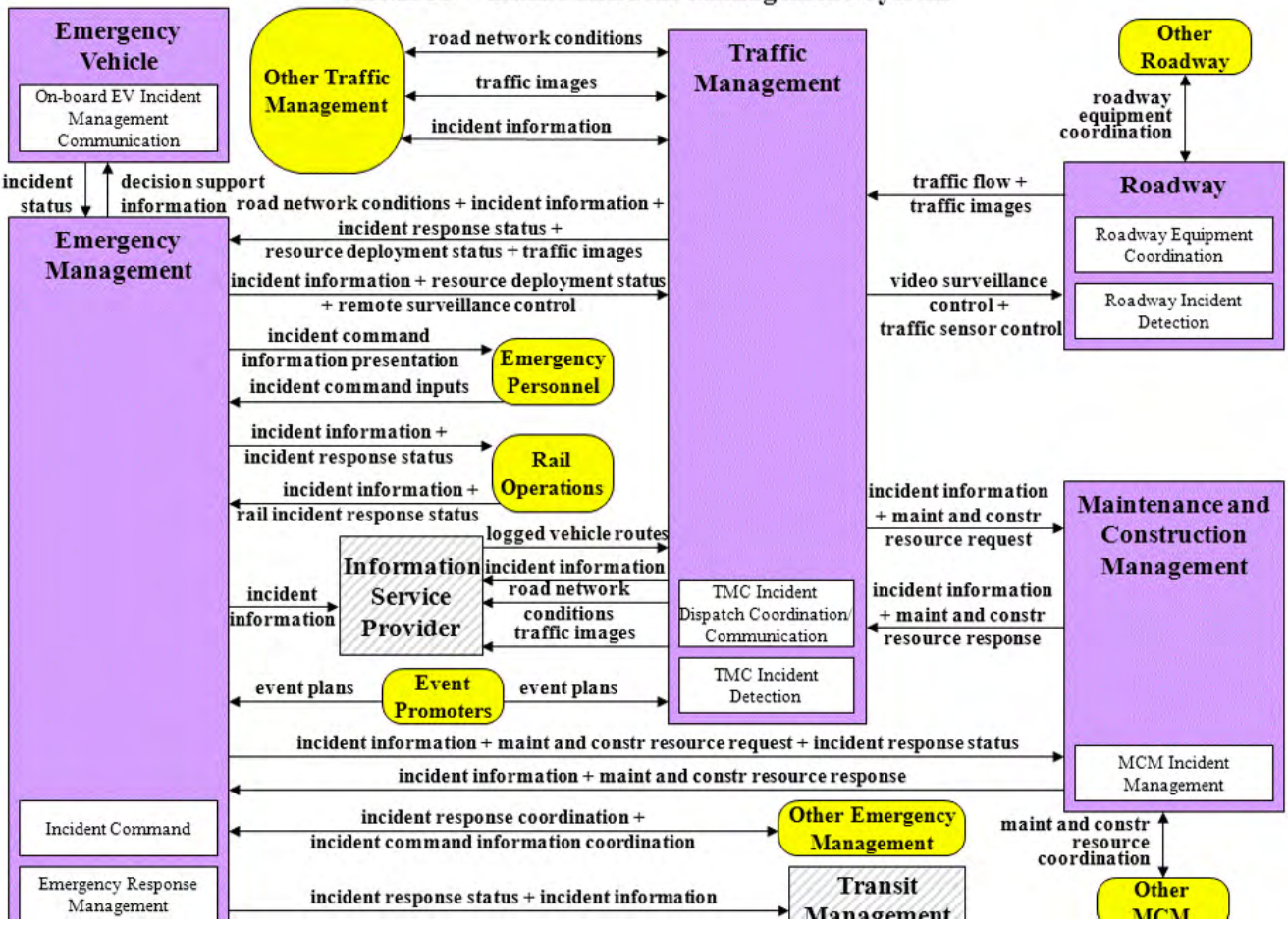
ATMS06 – Traffic Information Dissemination



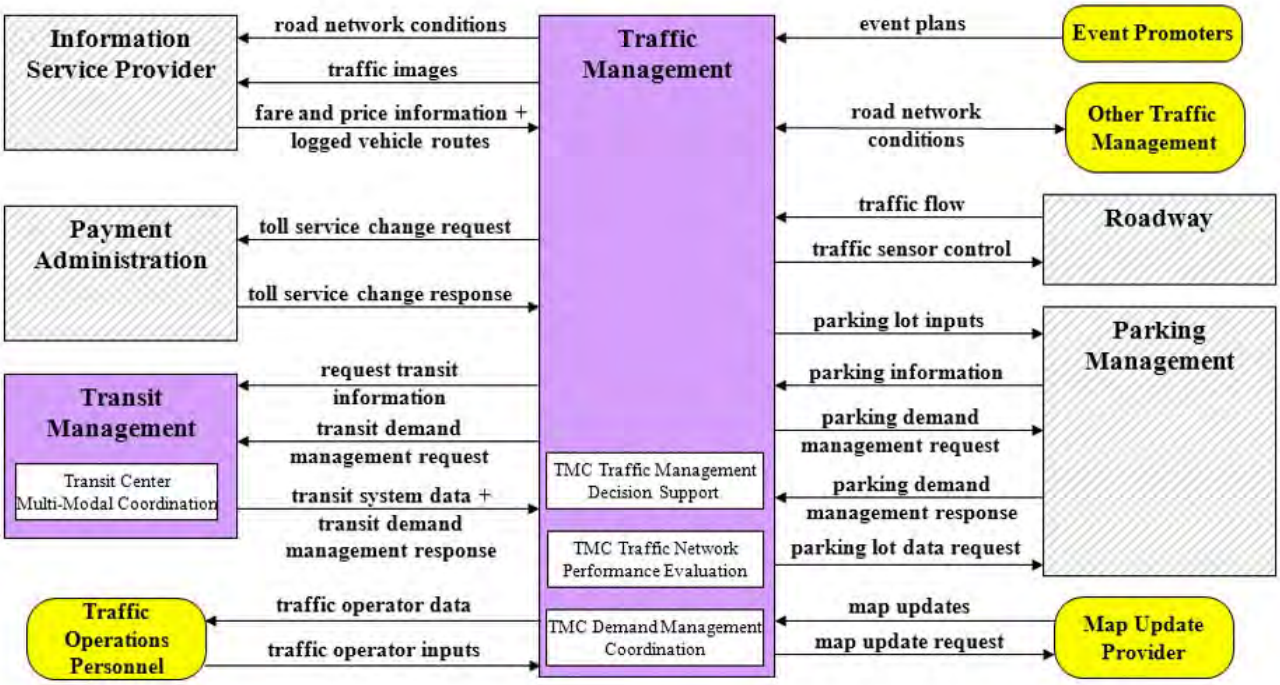
ATMS07 – Regional Traffic Management



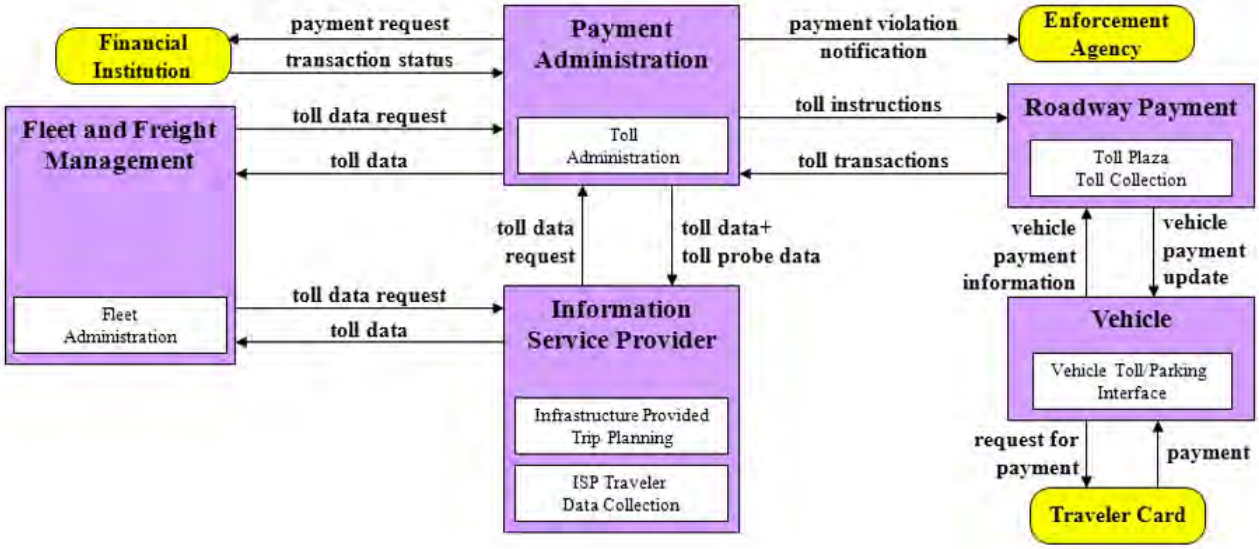
ATMS08 – Traffic Incident Management System



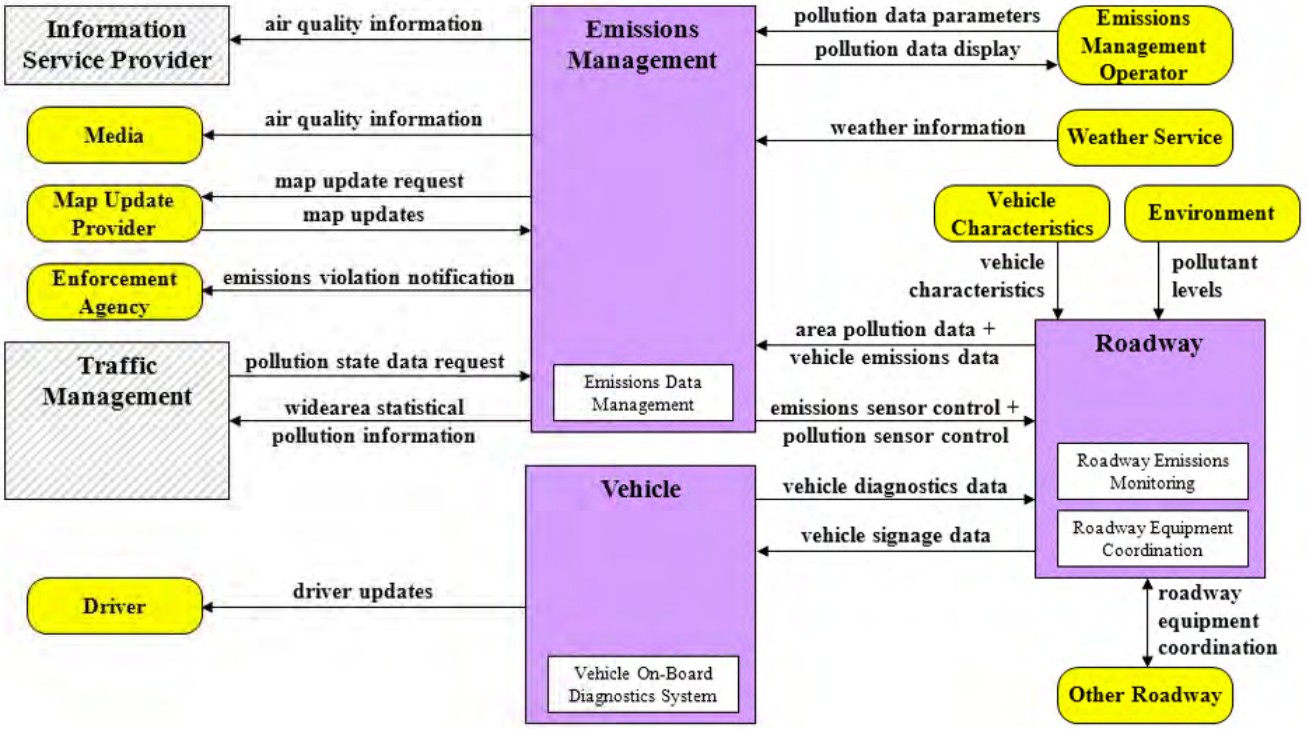
ATMS09 – Transportation Decision Support and Demand Management



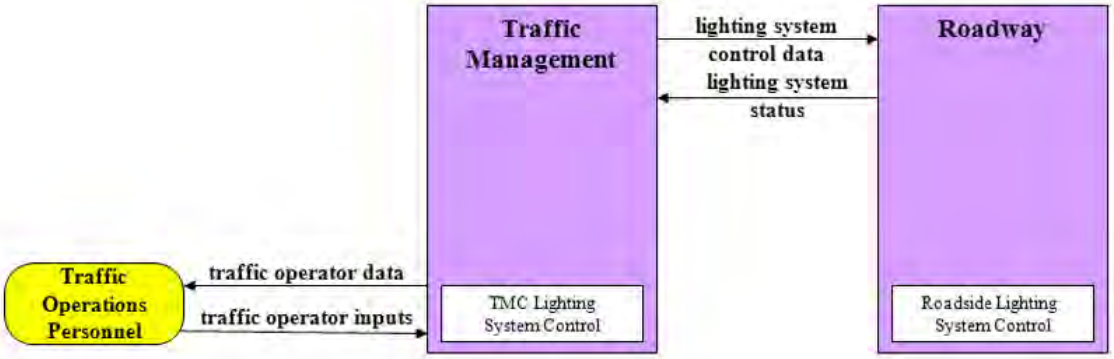
ATMS10 – Electronic Toll Collection



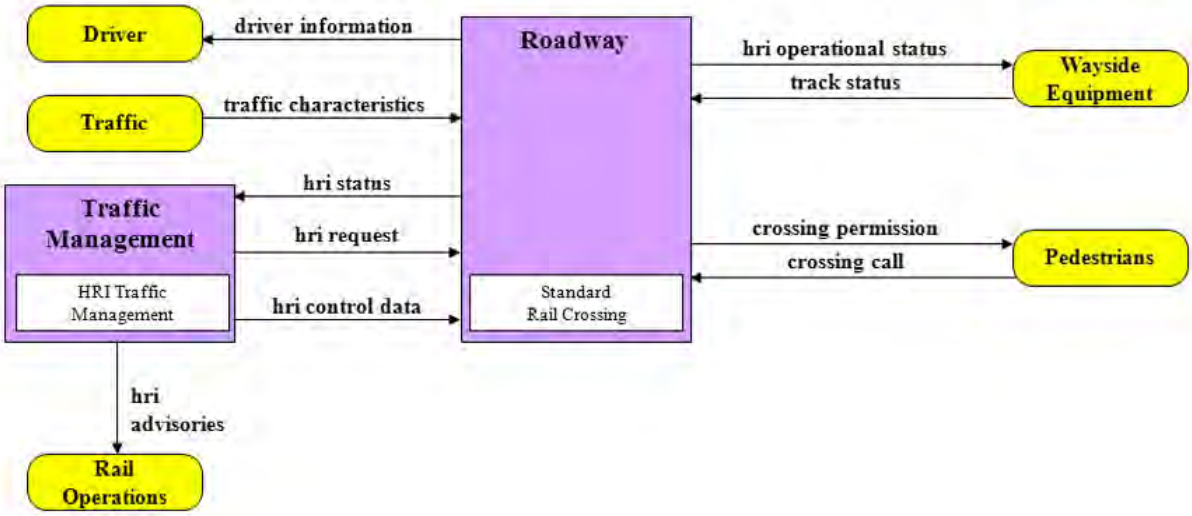
ATMS11 – Emissions Monitoring and Management



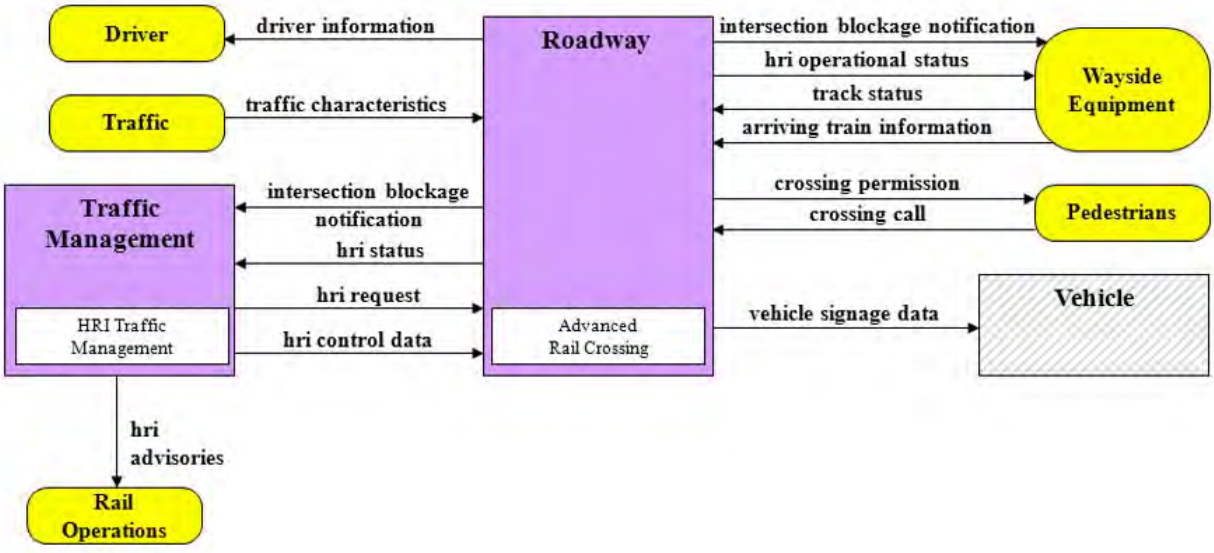
ATMS12 – Roadside Lighting System Control



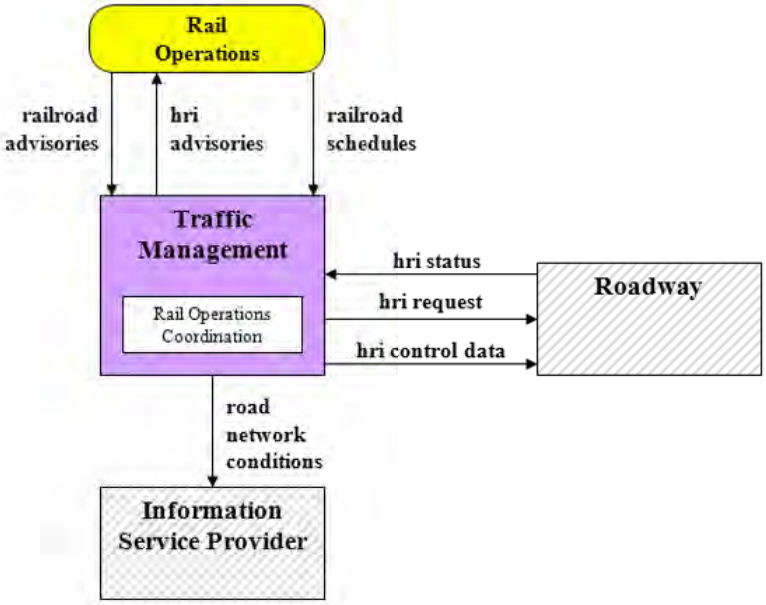
ATMS13 – Standard Railroad Grade Crossing



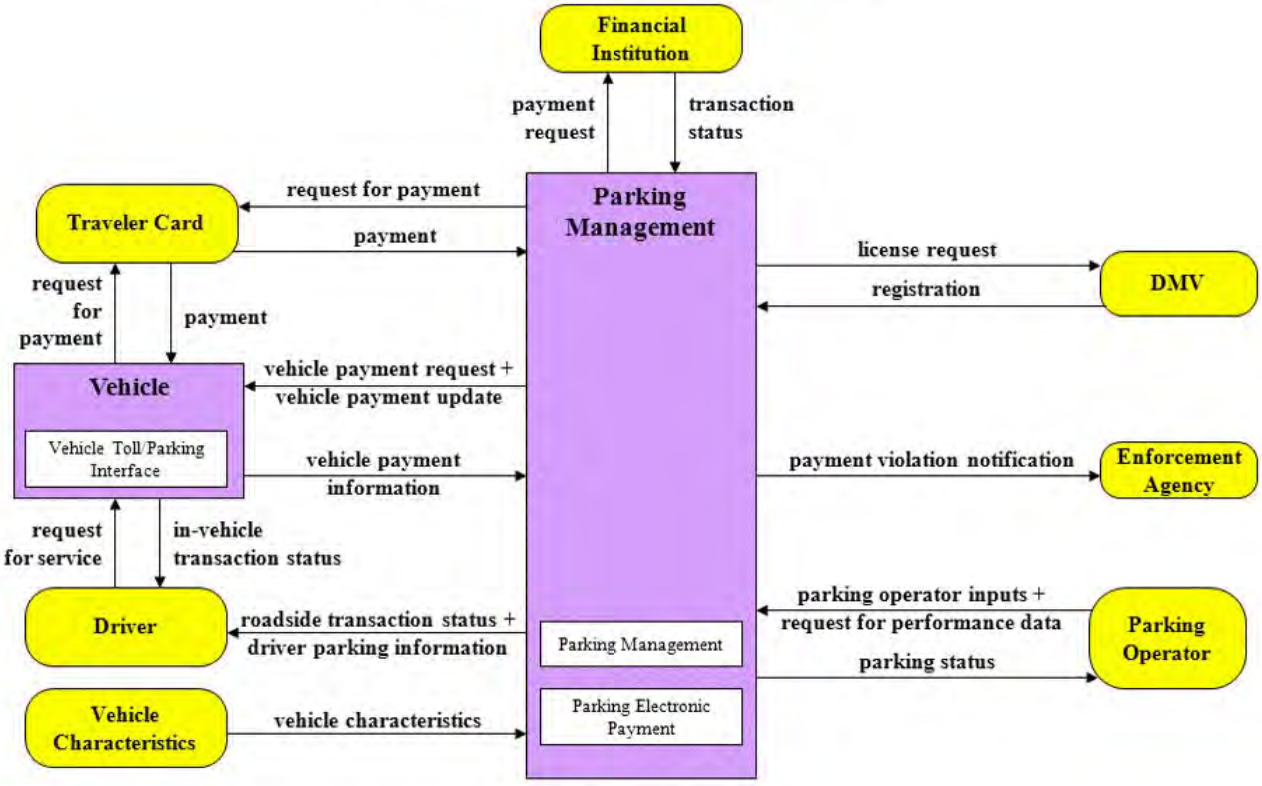
ATMS14 – Advanced Railroad Grade Crossing



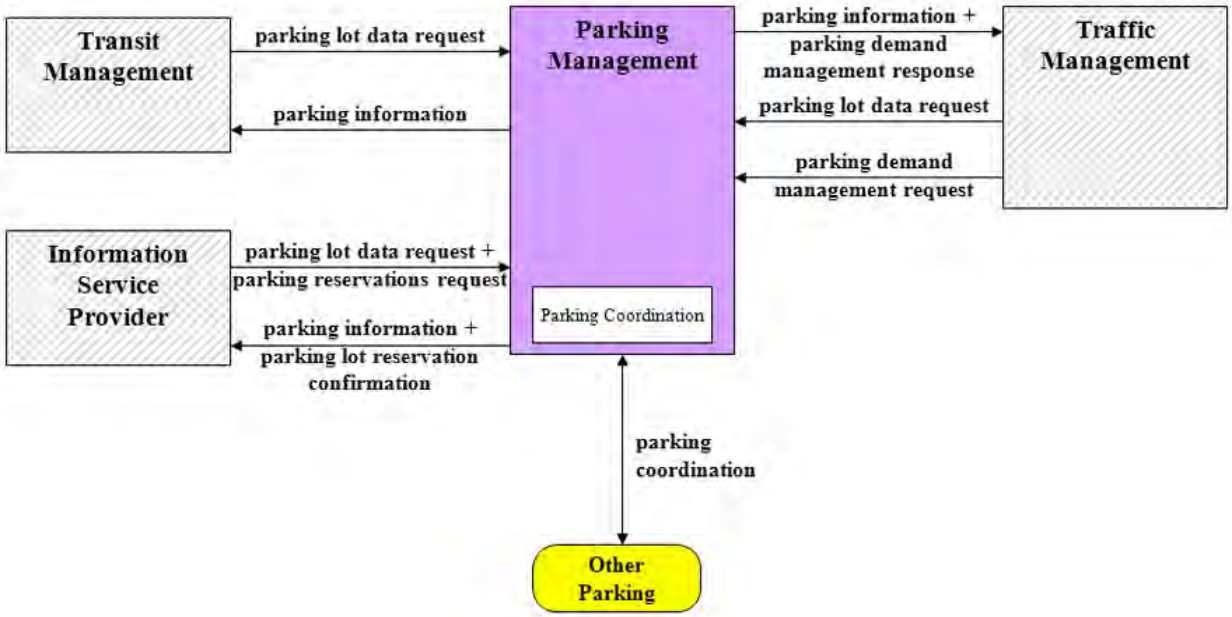
ATMS15 – Railroad Operations Coordination



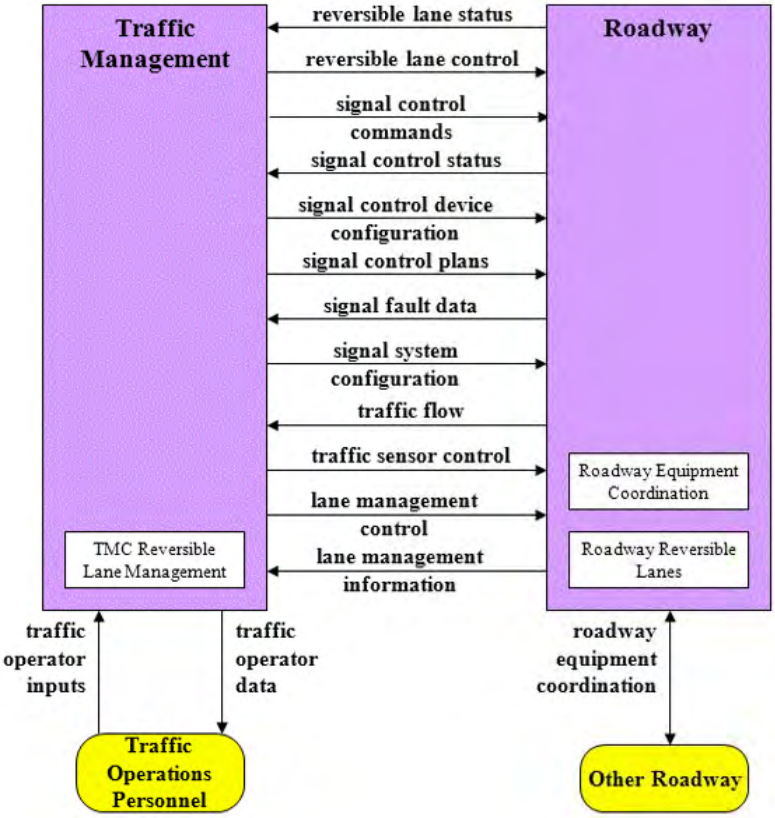
ATMS16 – Parking Facility Management



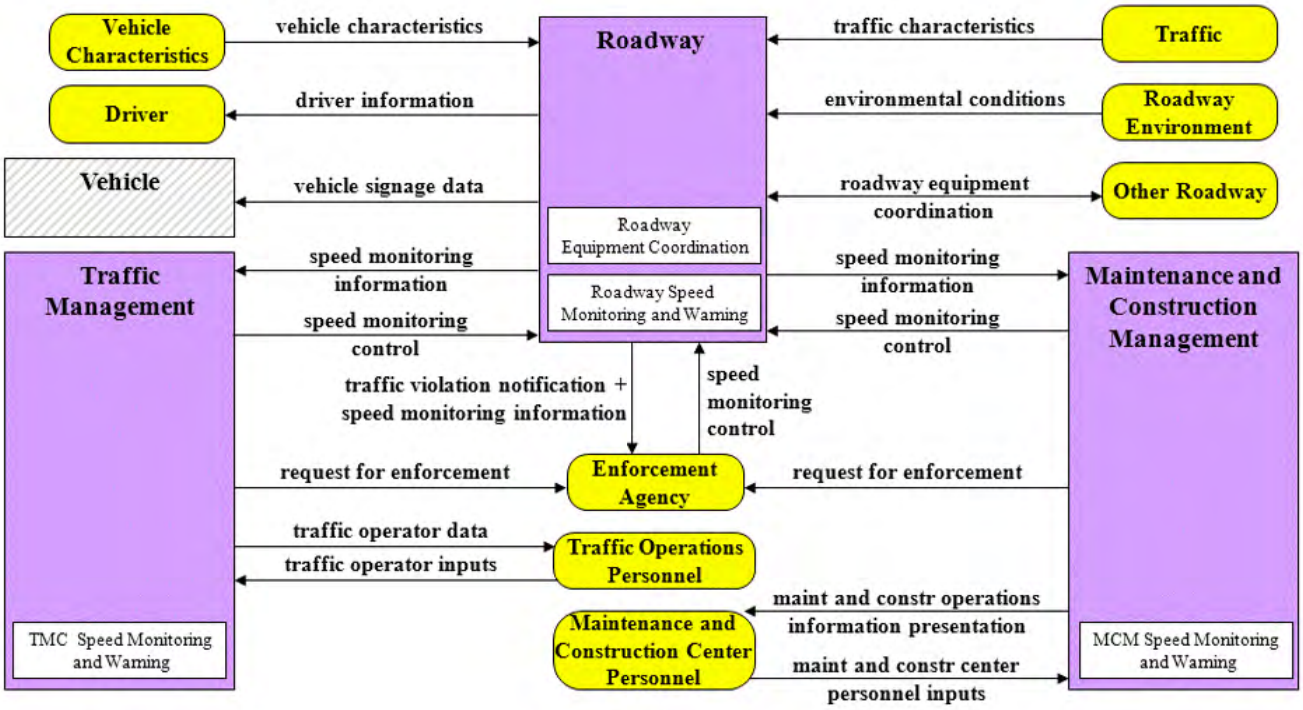
ATMS17 – Regional Parking Management



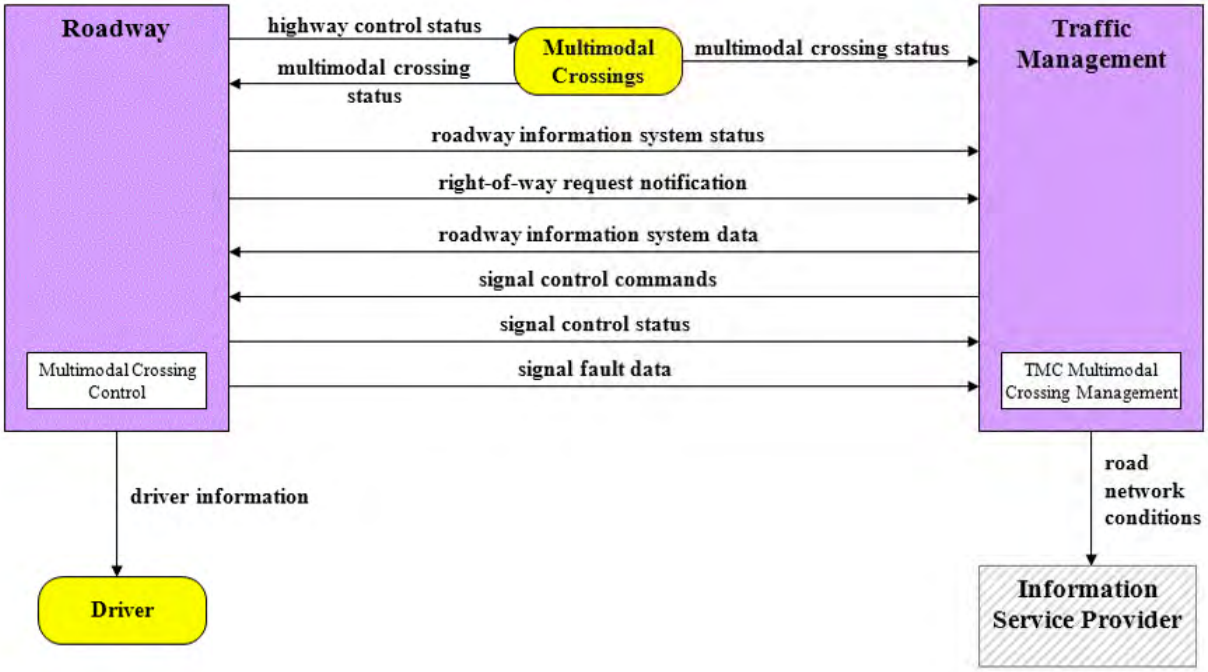
ATMS18 – Reversible Lane Management



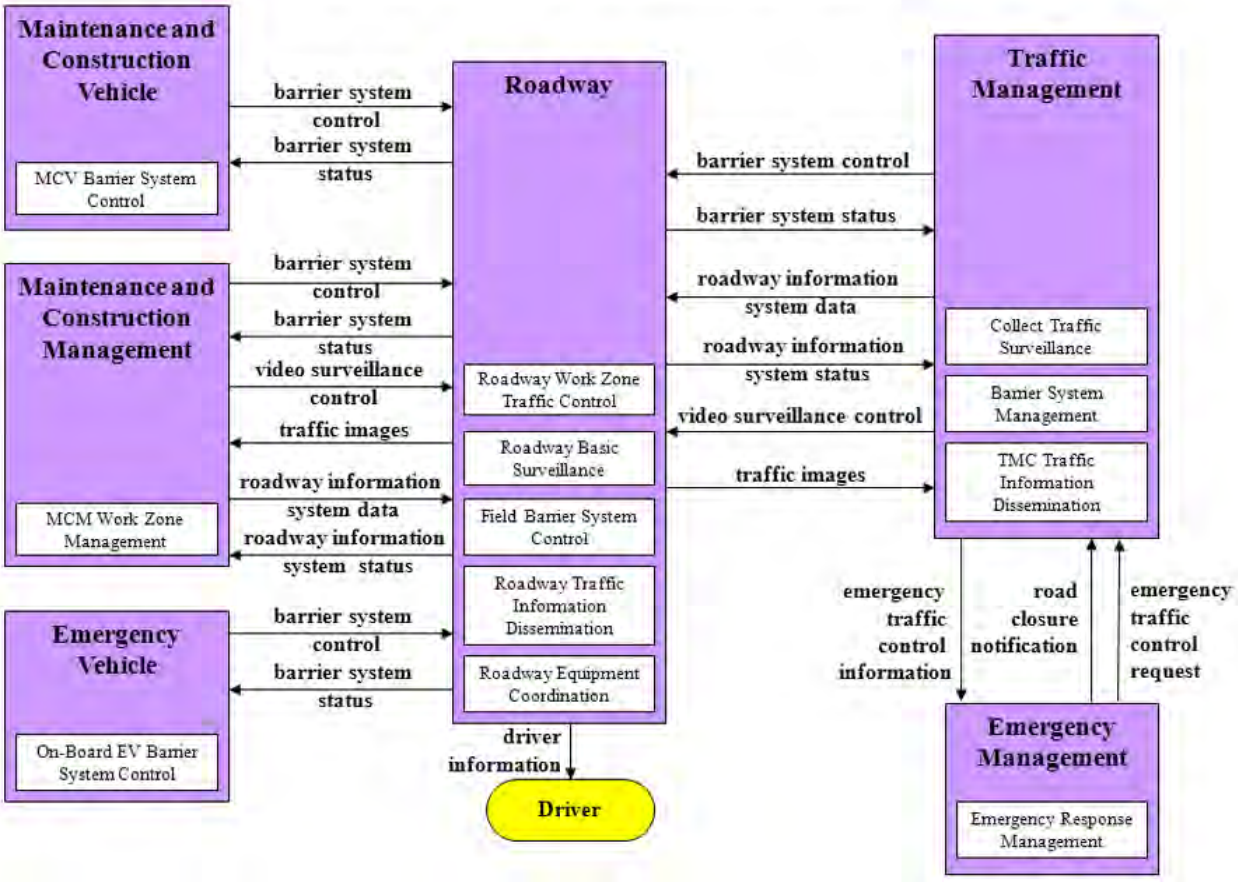
ATMS19 – Speed Warning and Enforcement



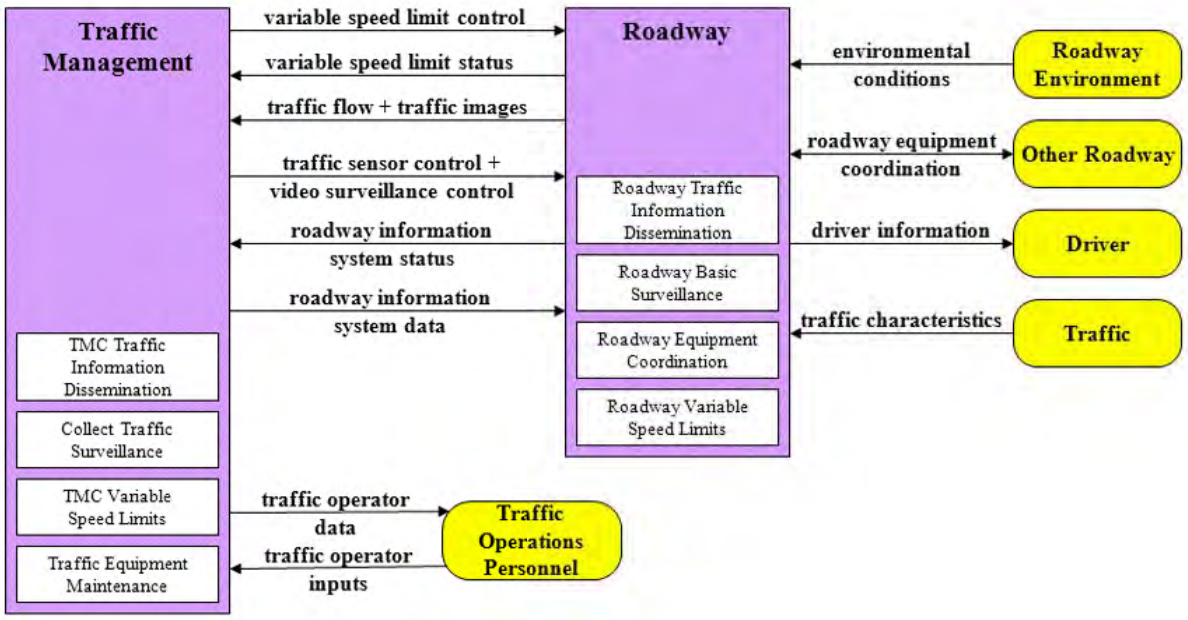
ATMS20 – Drawbridge Management



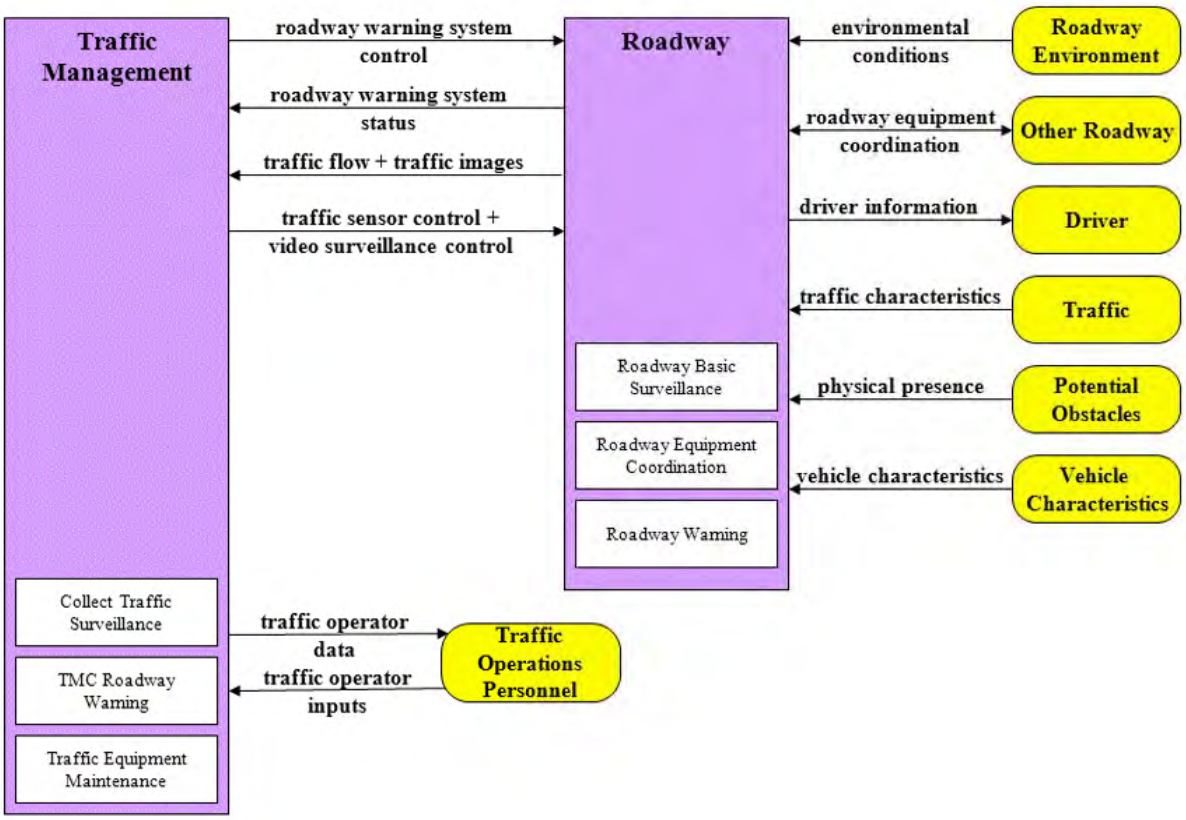
ATMS21 – Roadway Closure Management



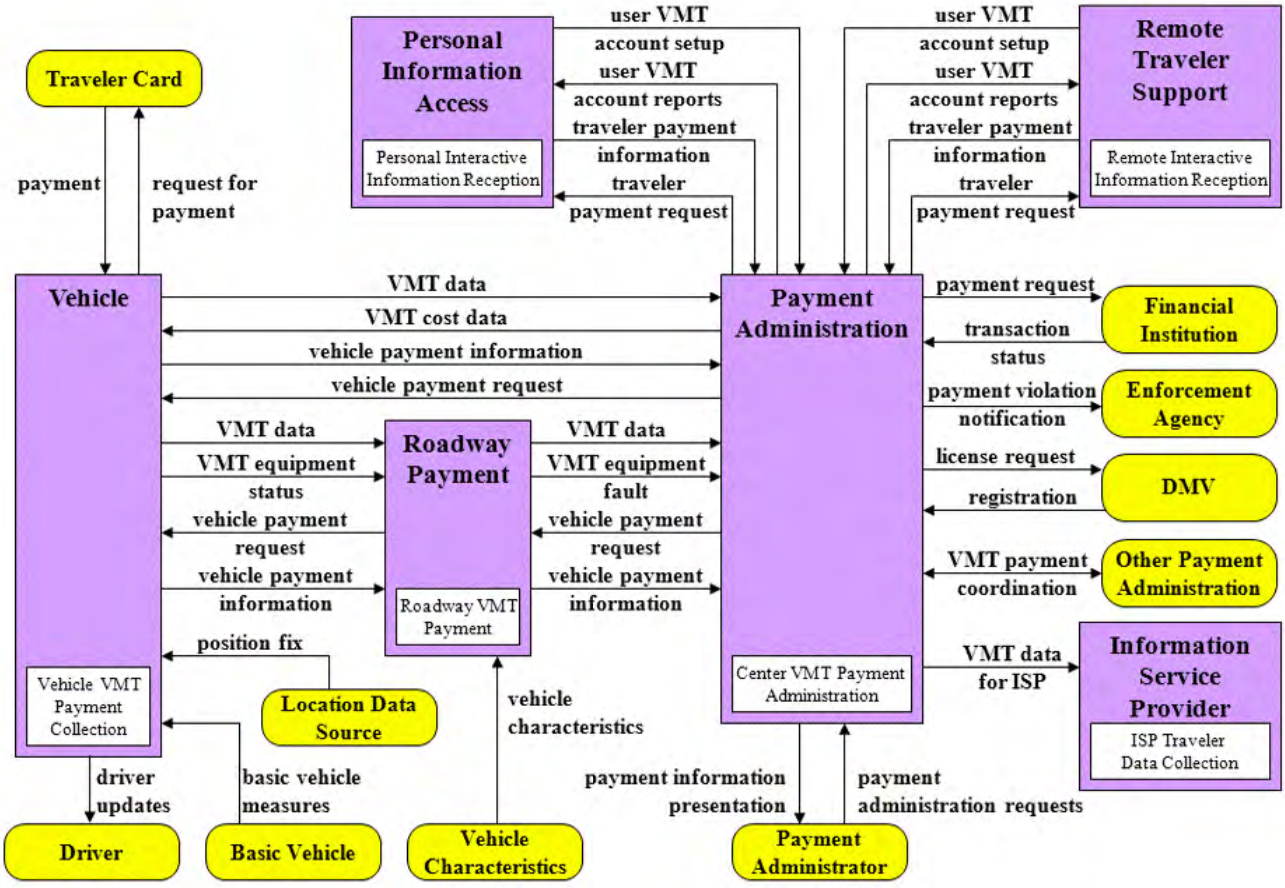
ATMS22 – Variable Speed Limits



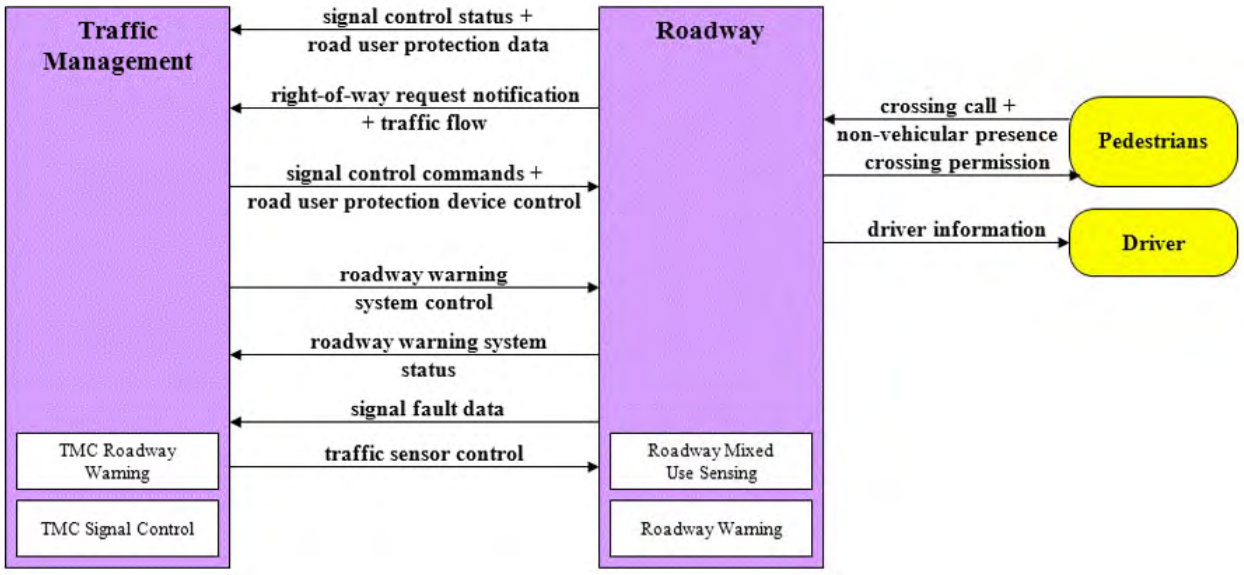
ATMS24 – Dynamic Roadway Warning



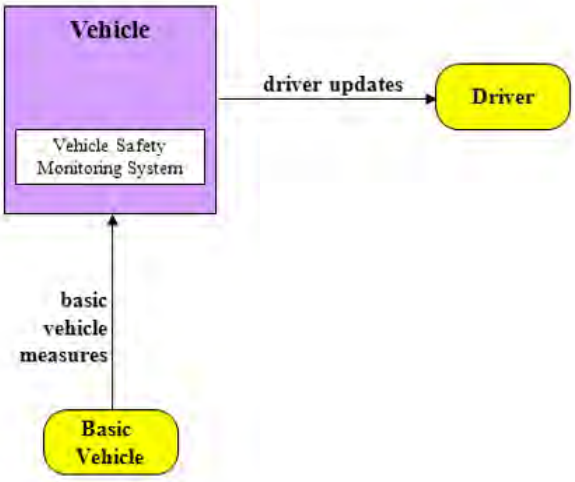
ATMS25 – VMT Road User Payment



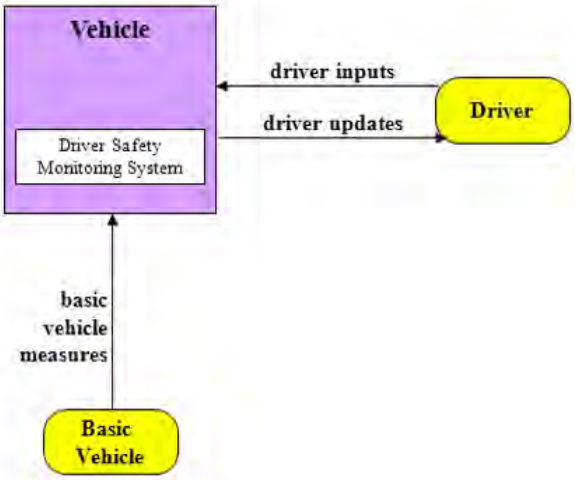
ATMS26 – Mixed Use Warning Systems



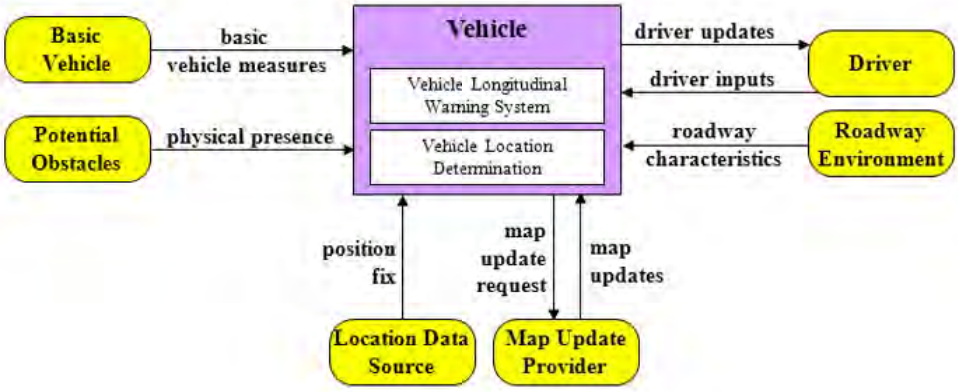
AVSS01 - Vehicle Safety Monitoring



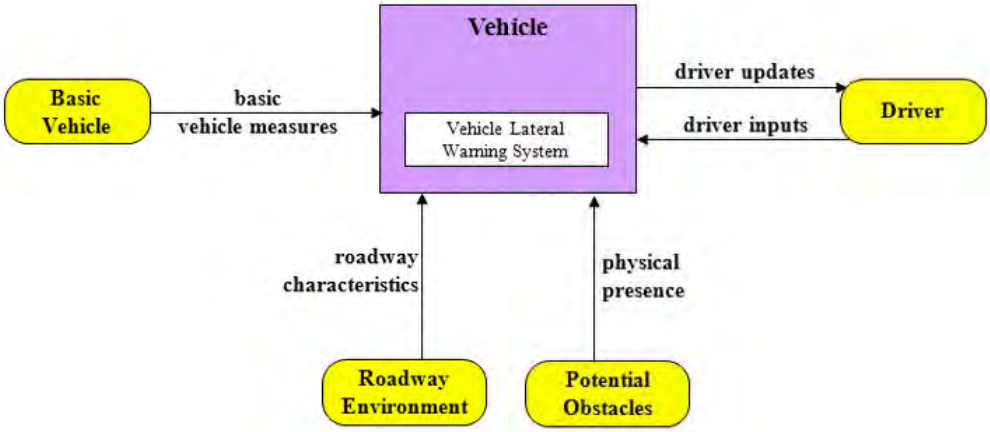
AVSS02 - Driver Safety Monitoring



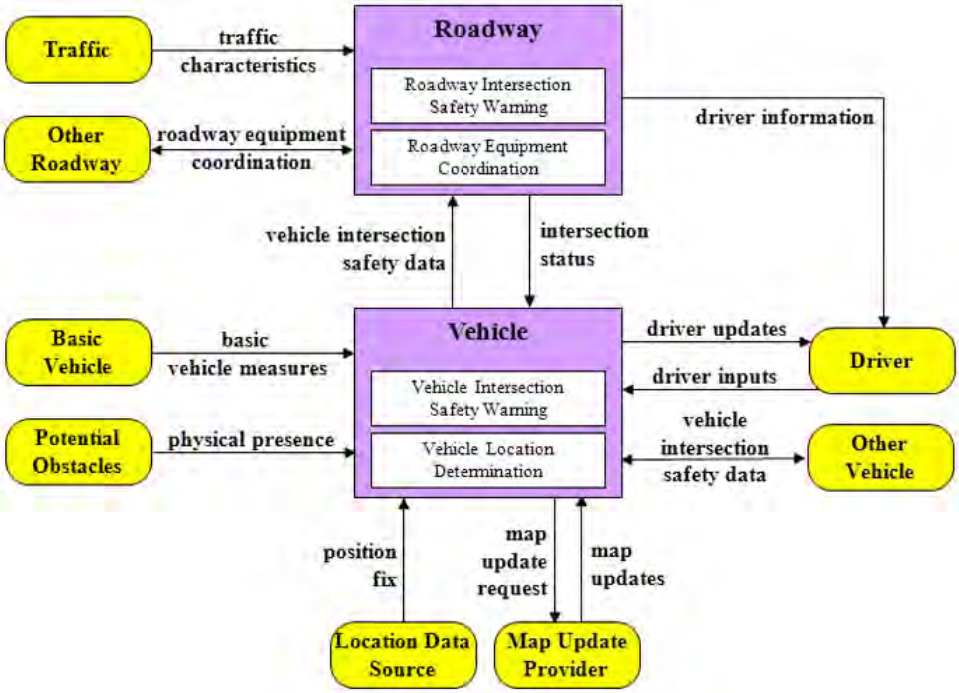
AVSS03 - Longitudinal Safety Warning



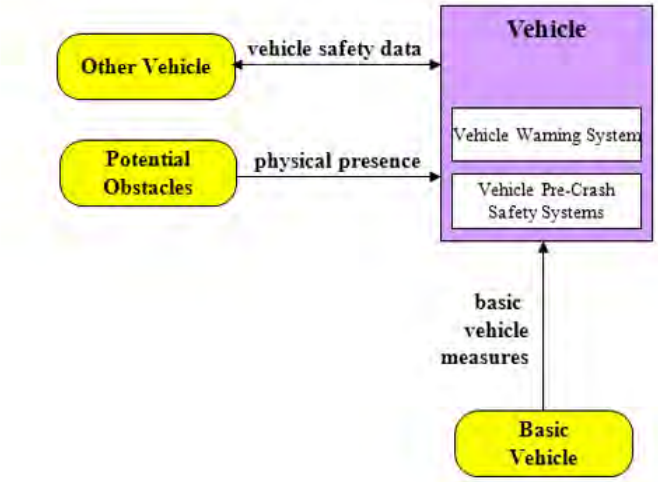
AVSS04 - Lateral Safety Warning



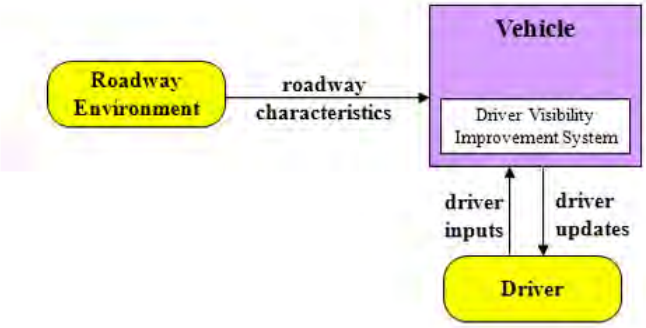
AVSS05 - Intersection Safety Warning



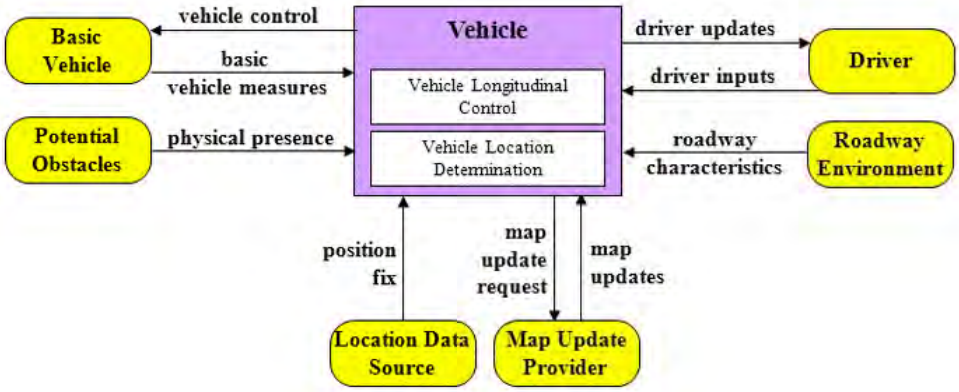
AVSS06 - Pre-Crash Restraint Deployment



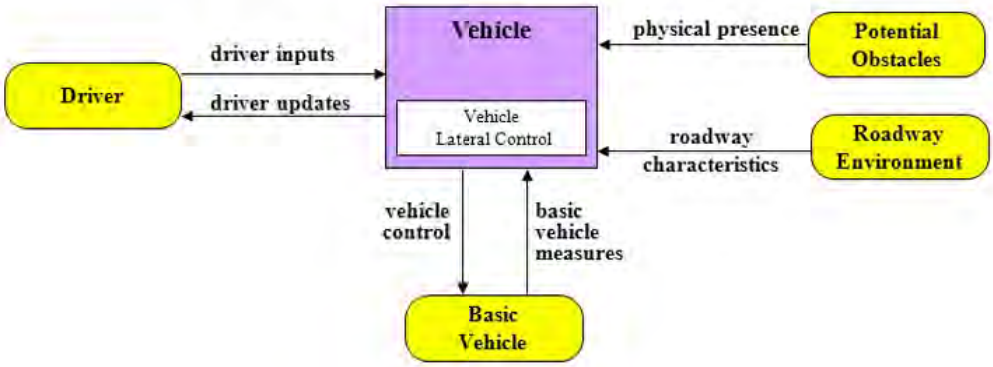
AVSS07 - Driver Visibility Improvement



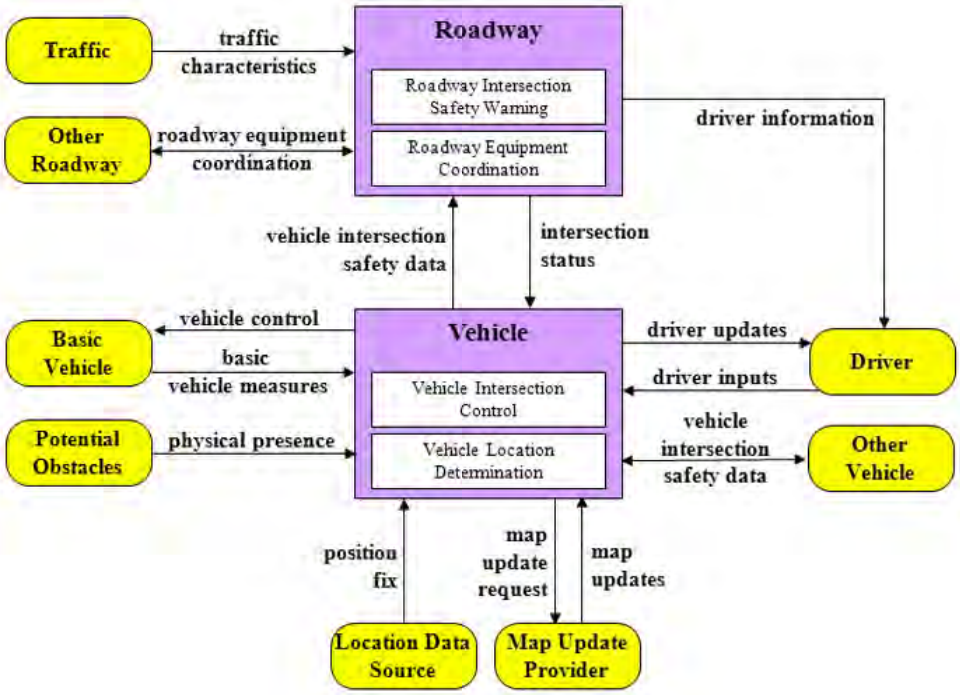
AVSS08 - Advanced Vehicle Longitudinal Control



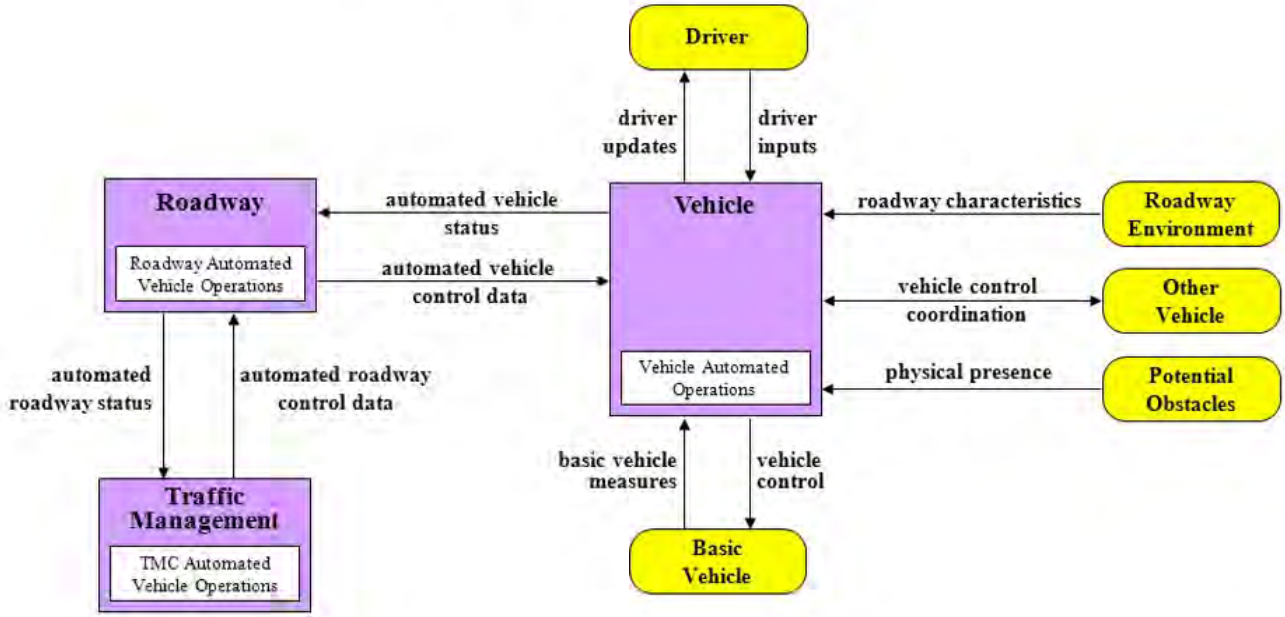
AVSS09 - Advanced Vehicle Lateral Control



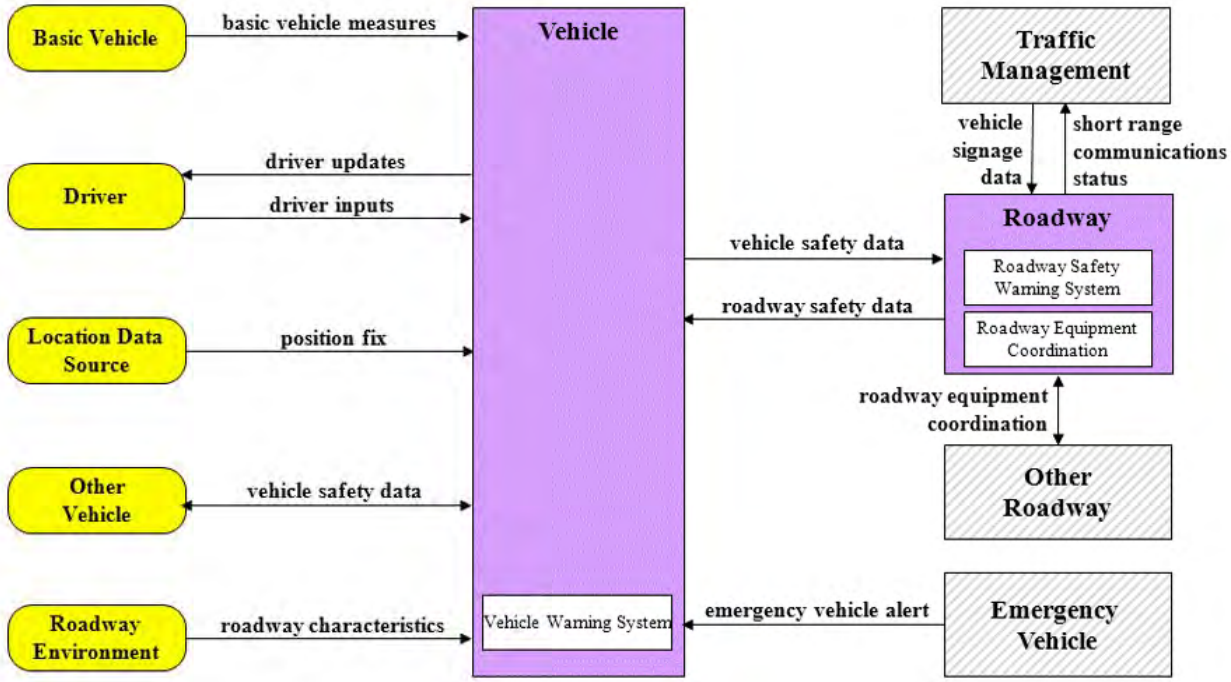
AVSS10 - Intersection Collision Avoidance



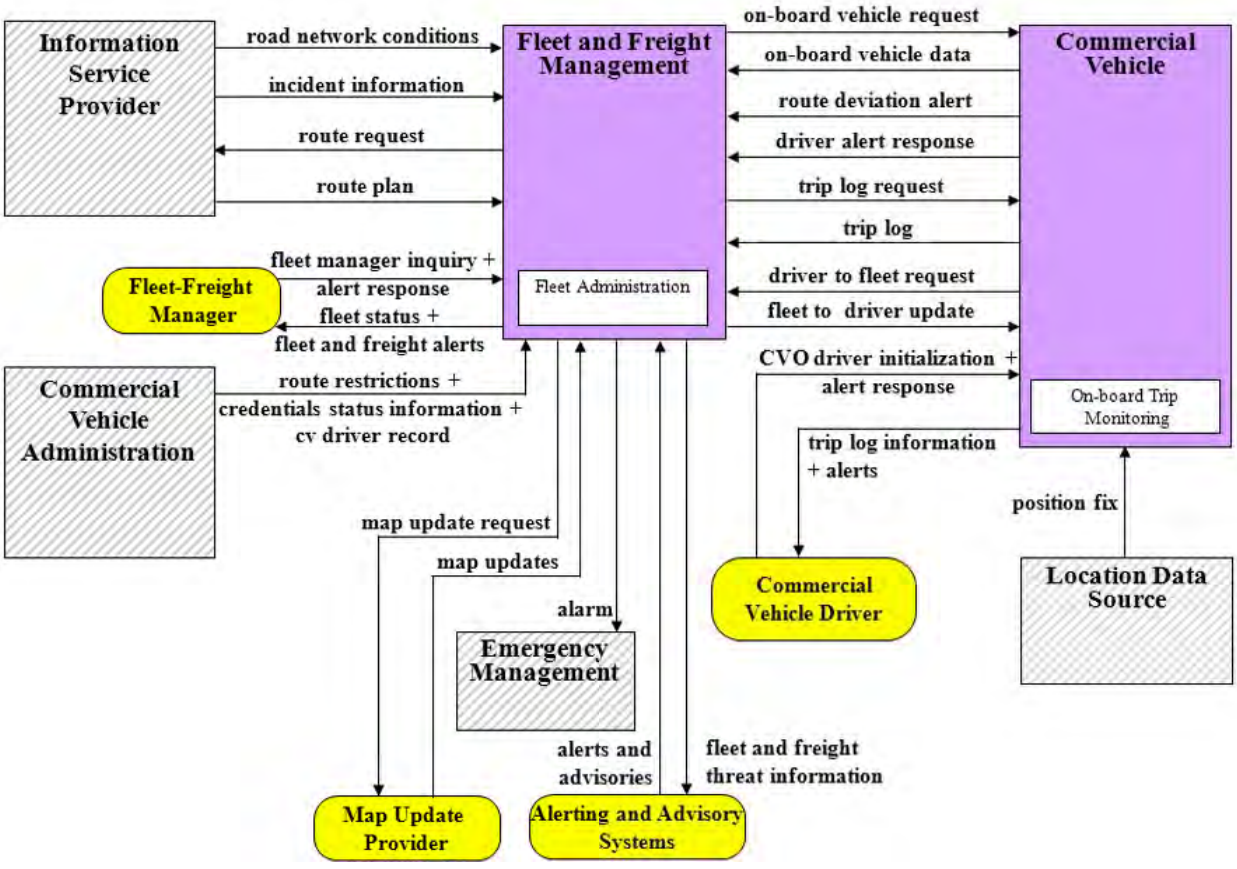
AVSS11 - Automated Vehicle Operations



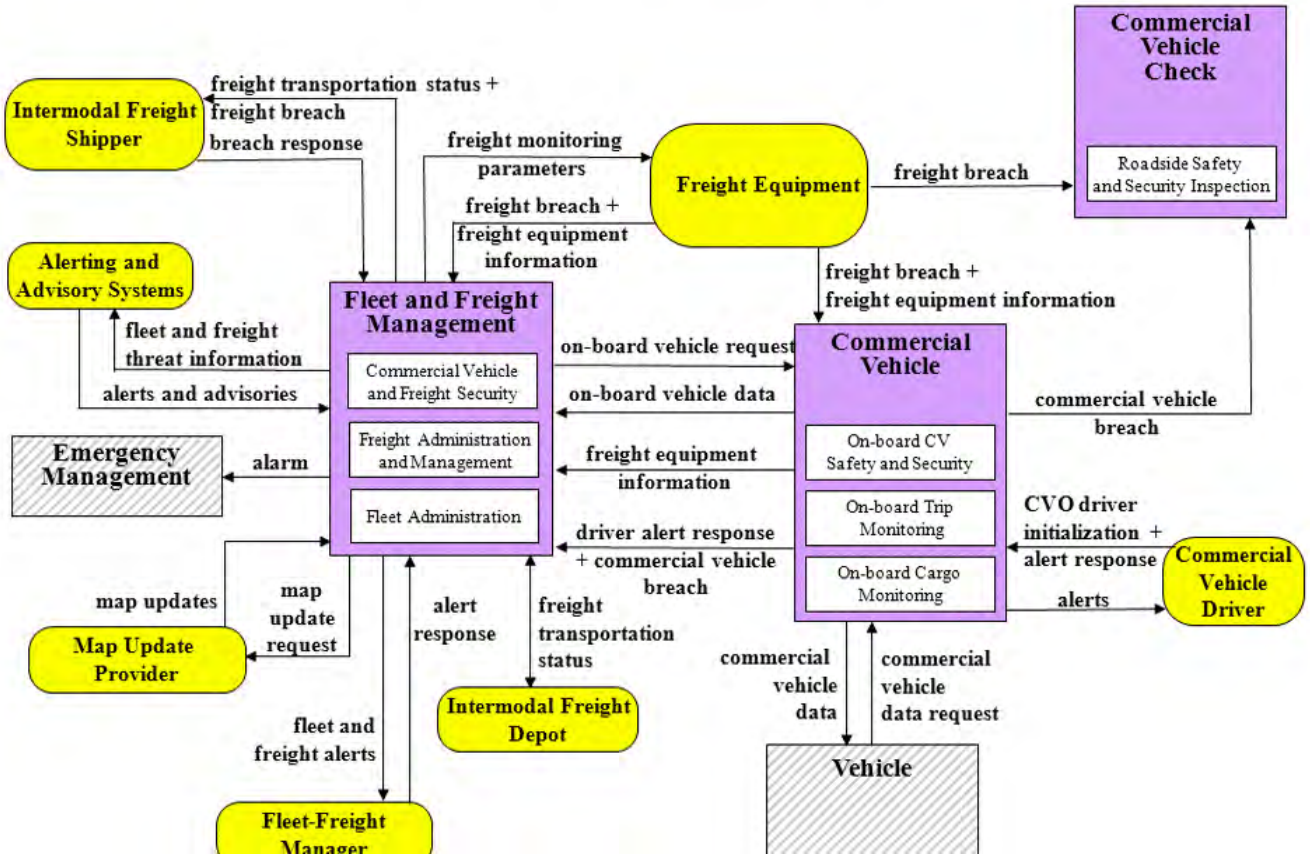
AVSS12 – Cooperative Vehicle Safety Systems



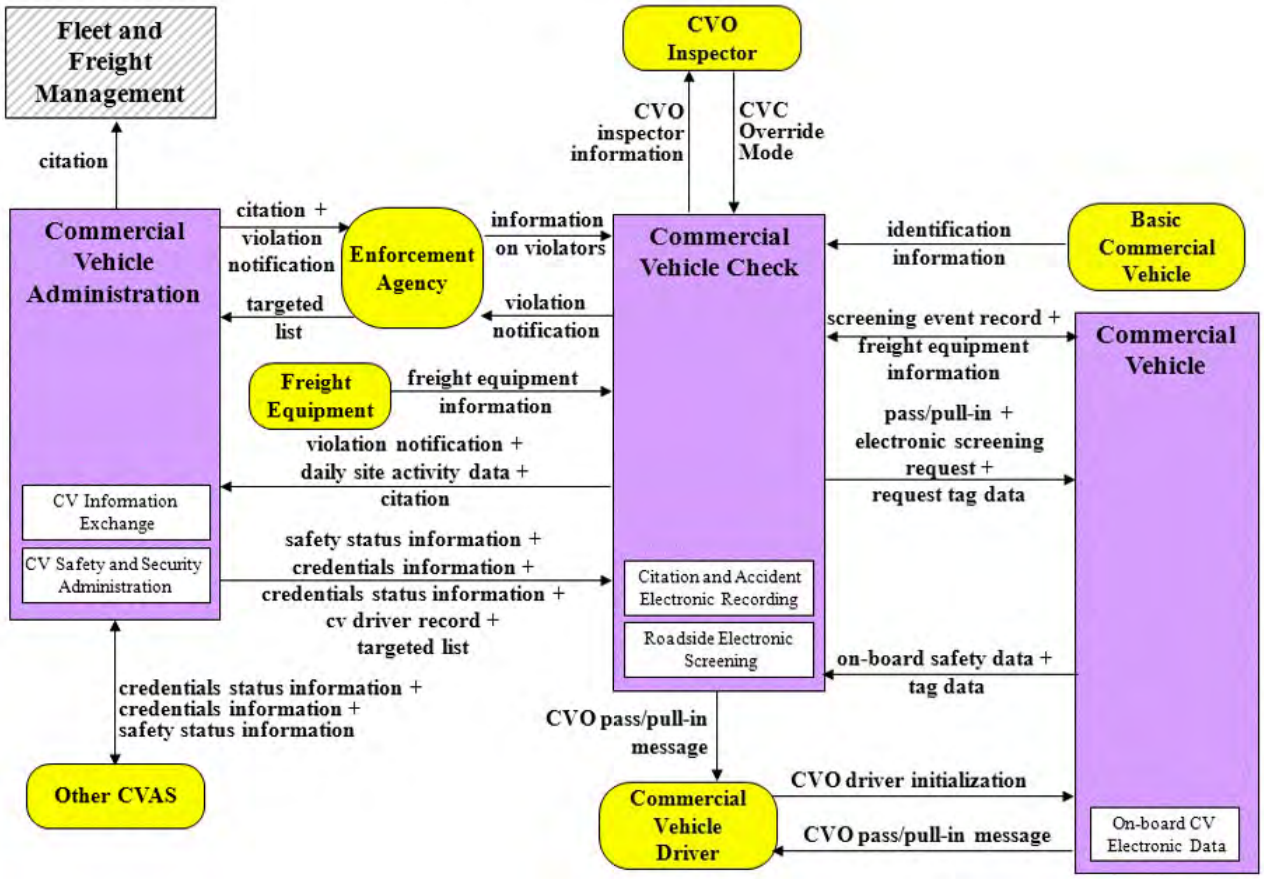
CVO01 – Carrier Operations and Fleet Management



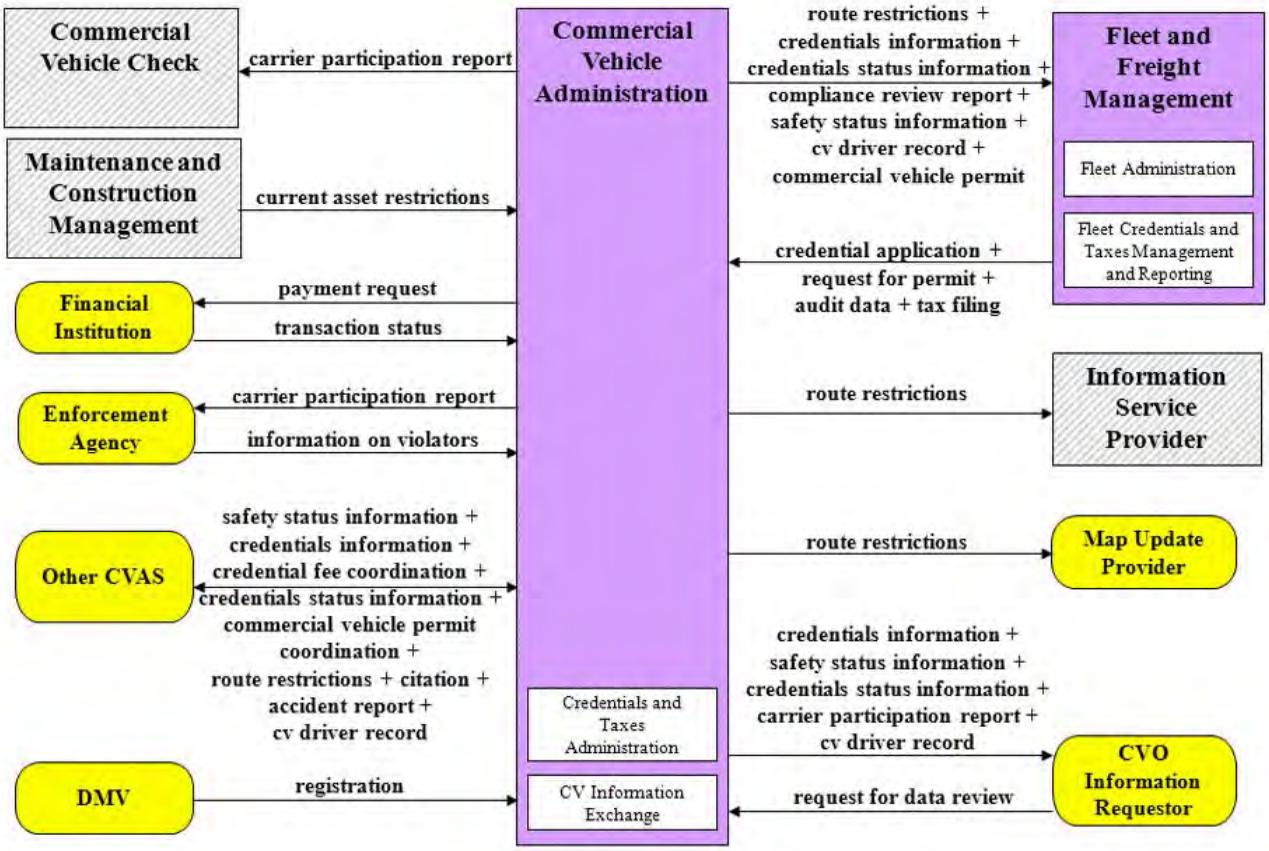
CVO02 - Freight Administration



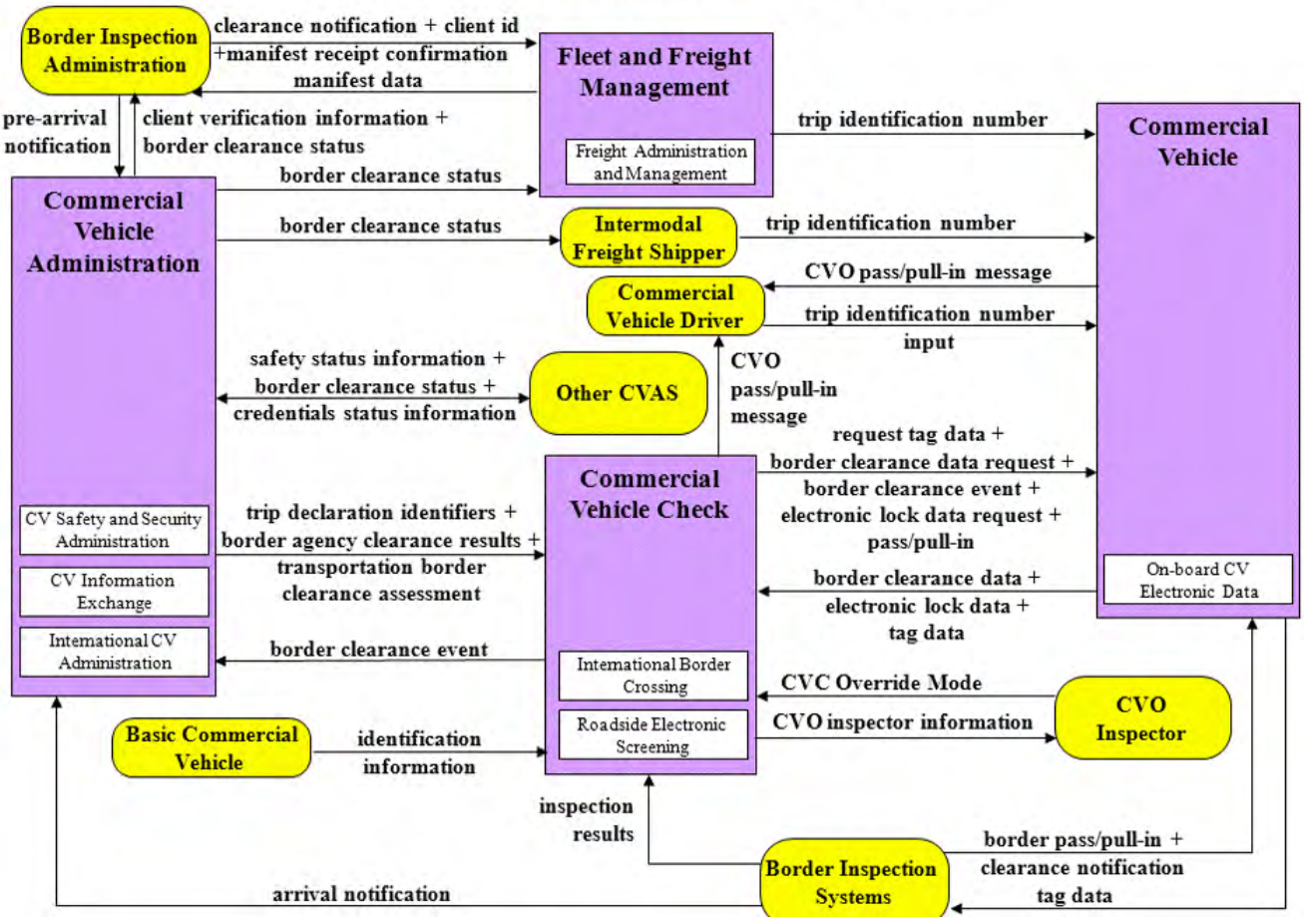
CVO03 - Electronic Clearance



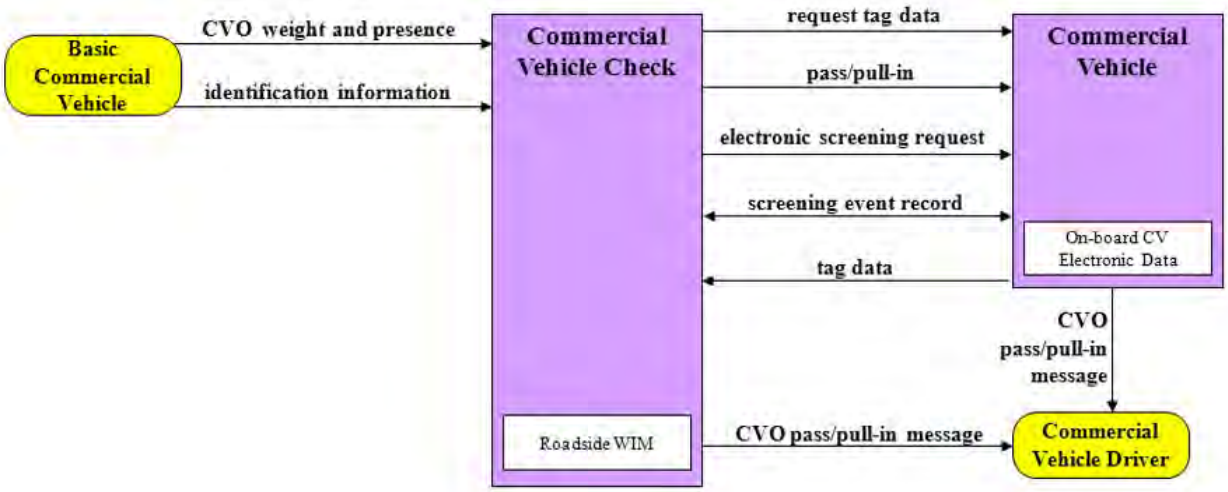
CVO04 - CV Administrative Processes



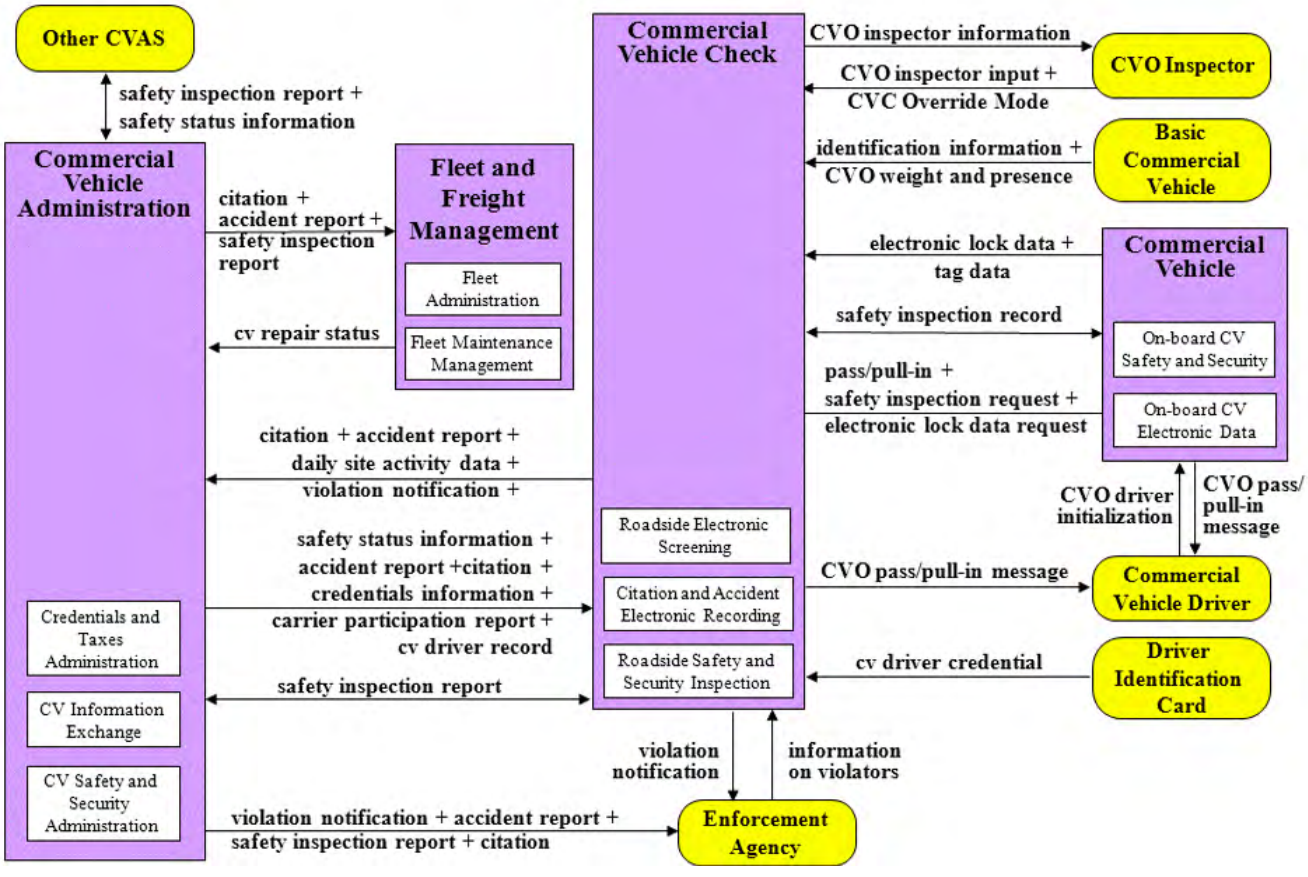
CVO05 - International Border Electronic Clearance



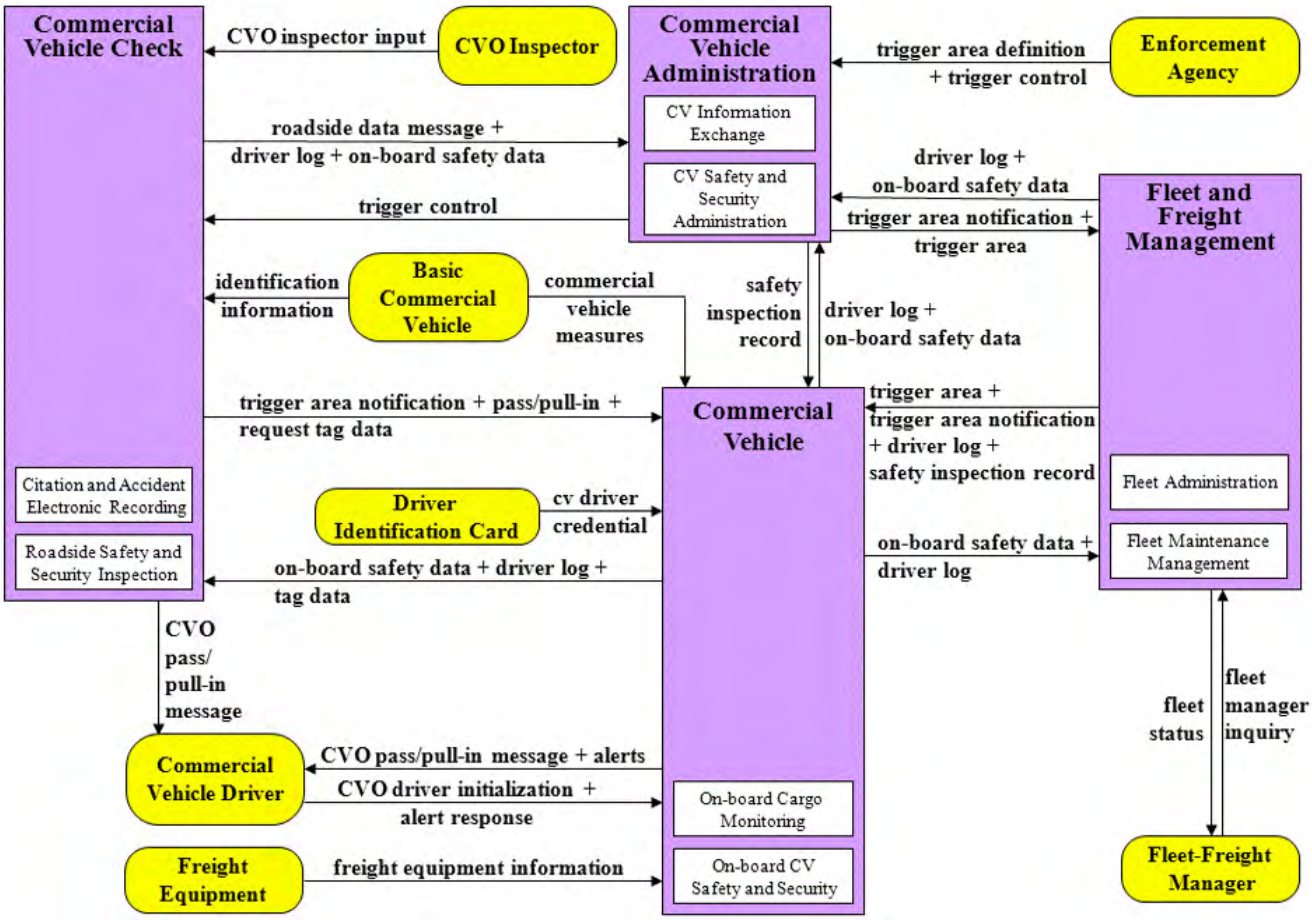
CVO06 - Weigh-In-Motion



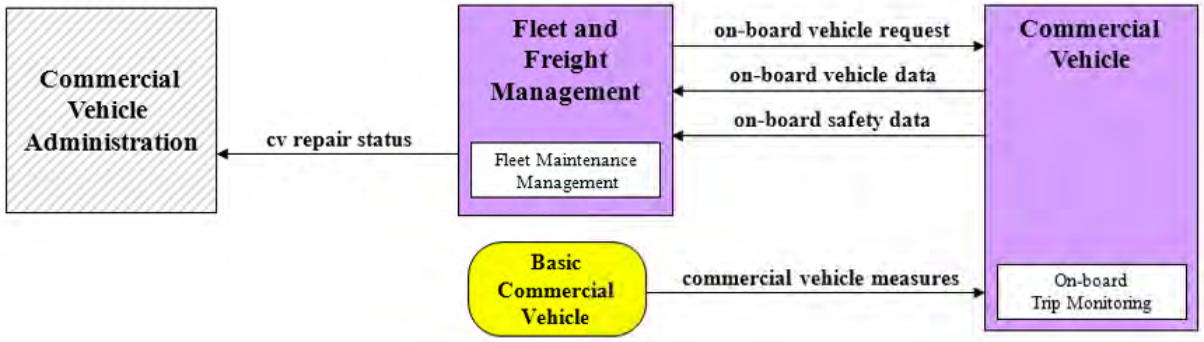
CVO07 - Roadside CVO Safety



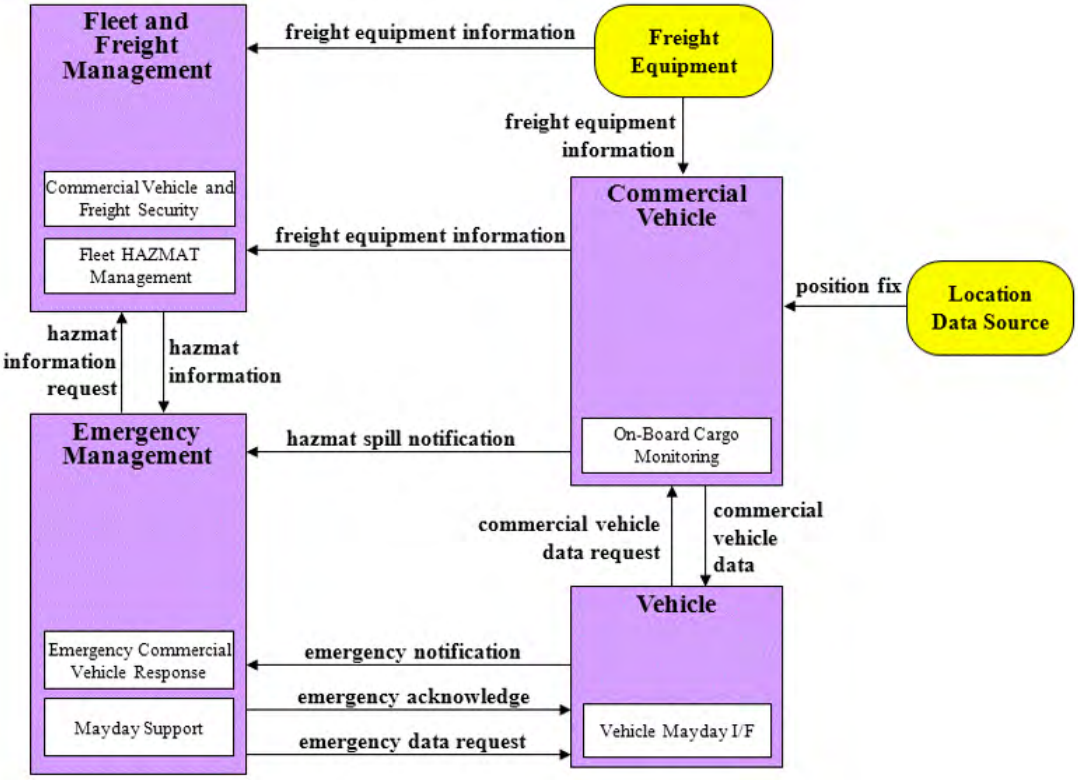
CVO08 - On-board CVO Safety



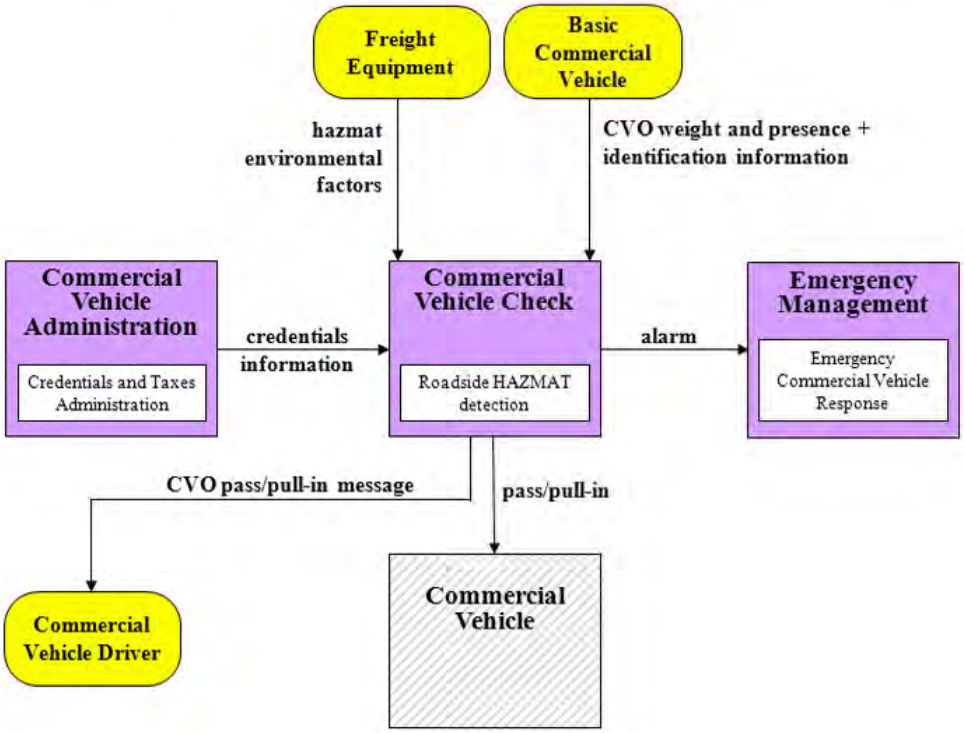
CVO09 - CVO Fleet Maintenance



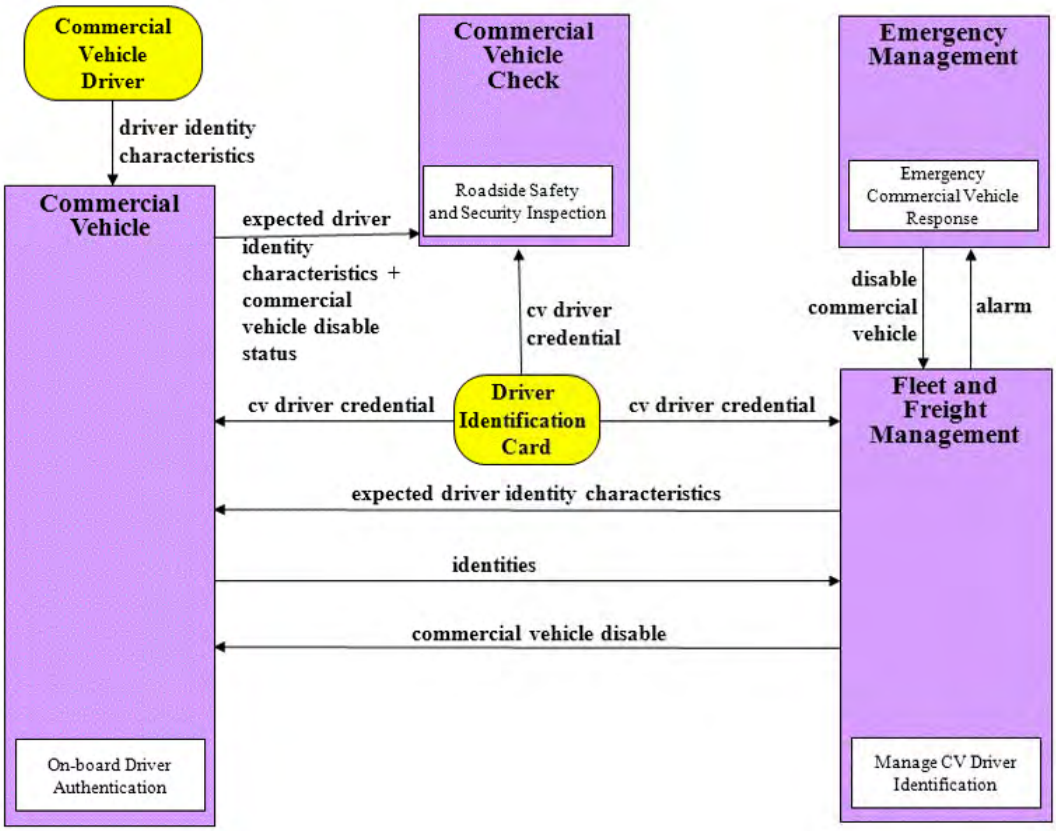
CVO10 - HAZMAT Management



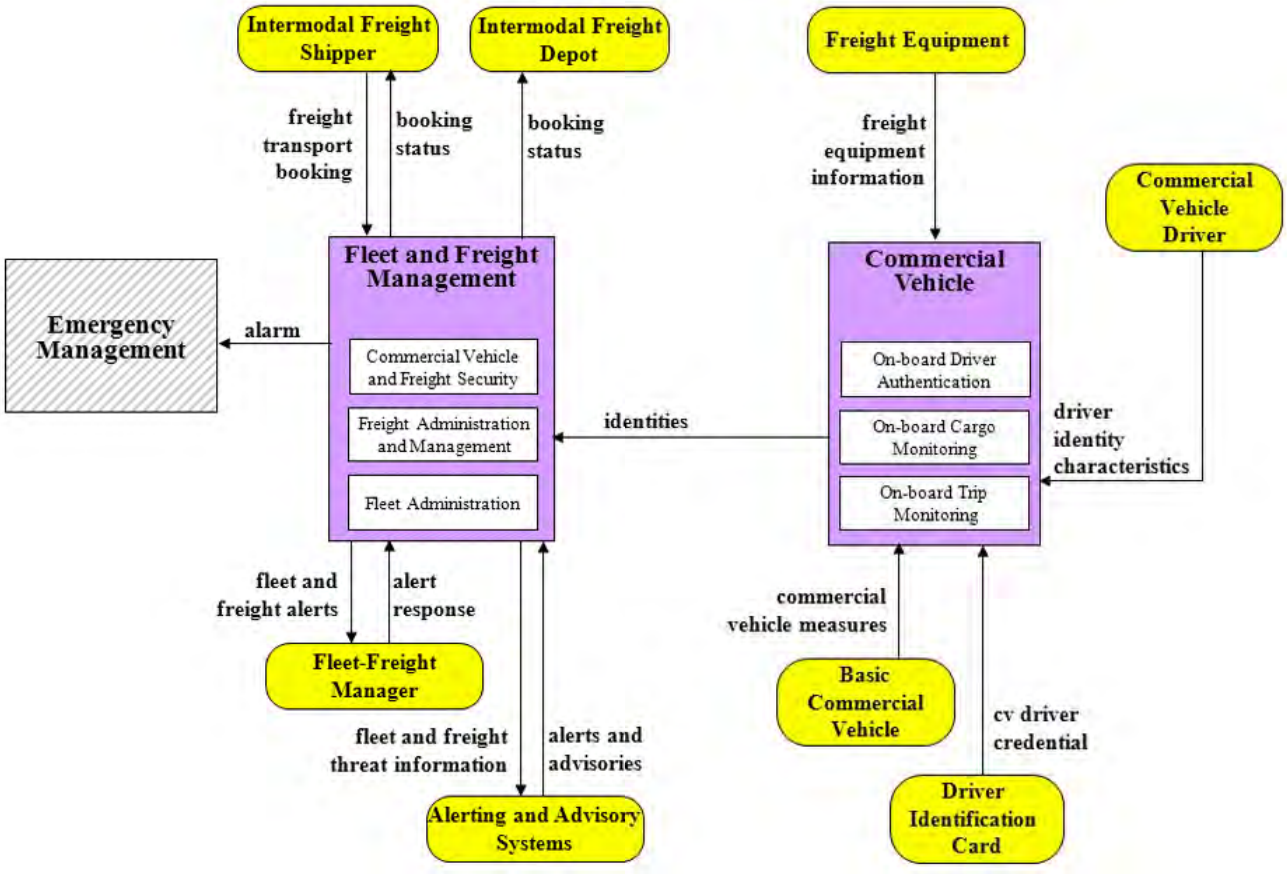
CVO11 – Roadside HAZMAT Security Detection and Mitigation



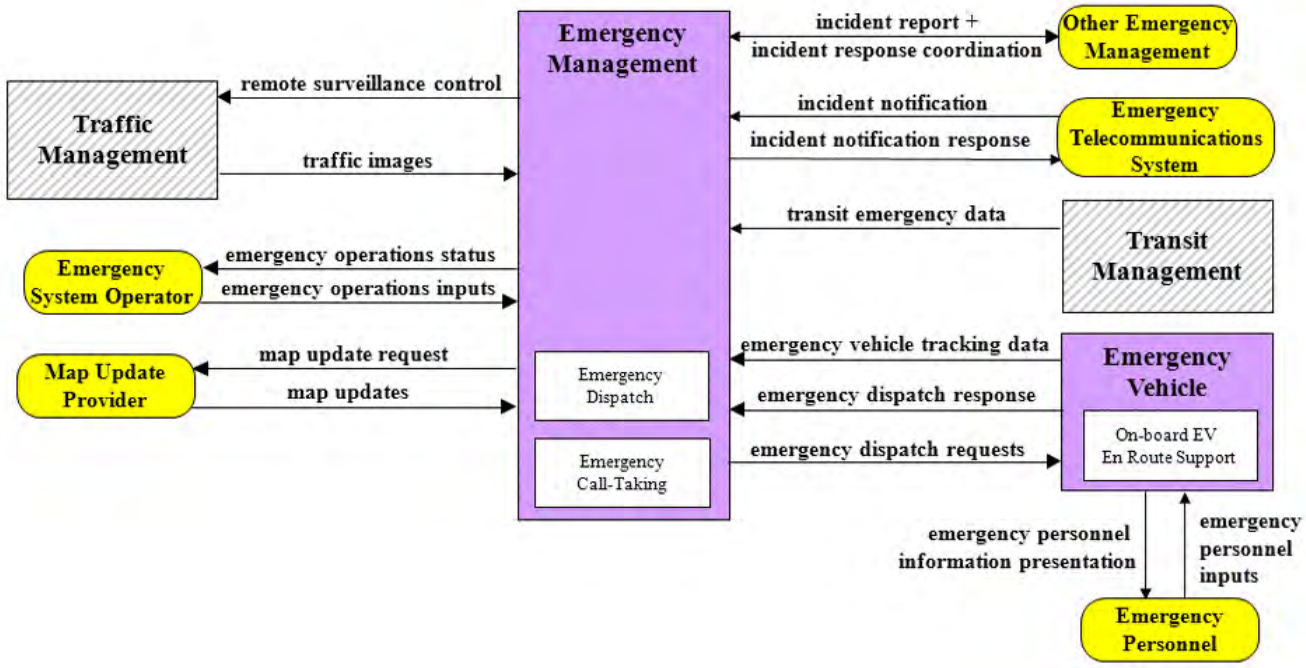
CVO12 – CV Driver Security Authentication



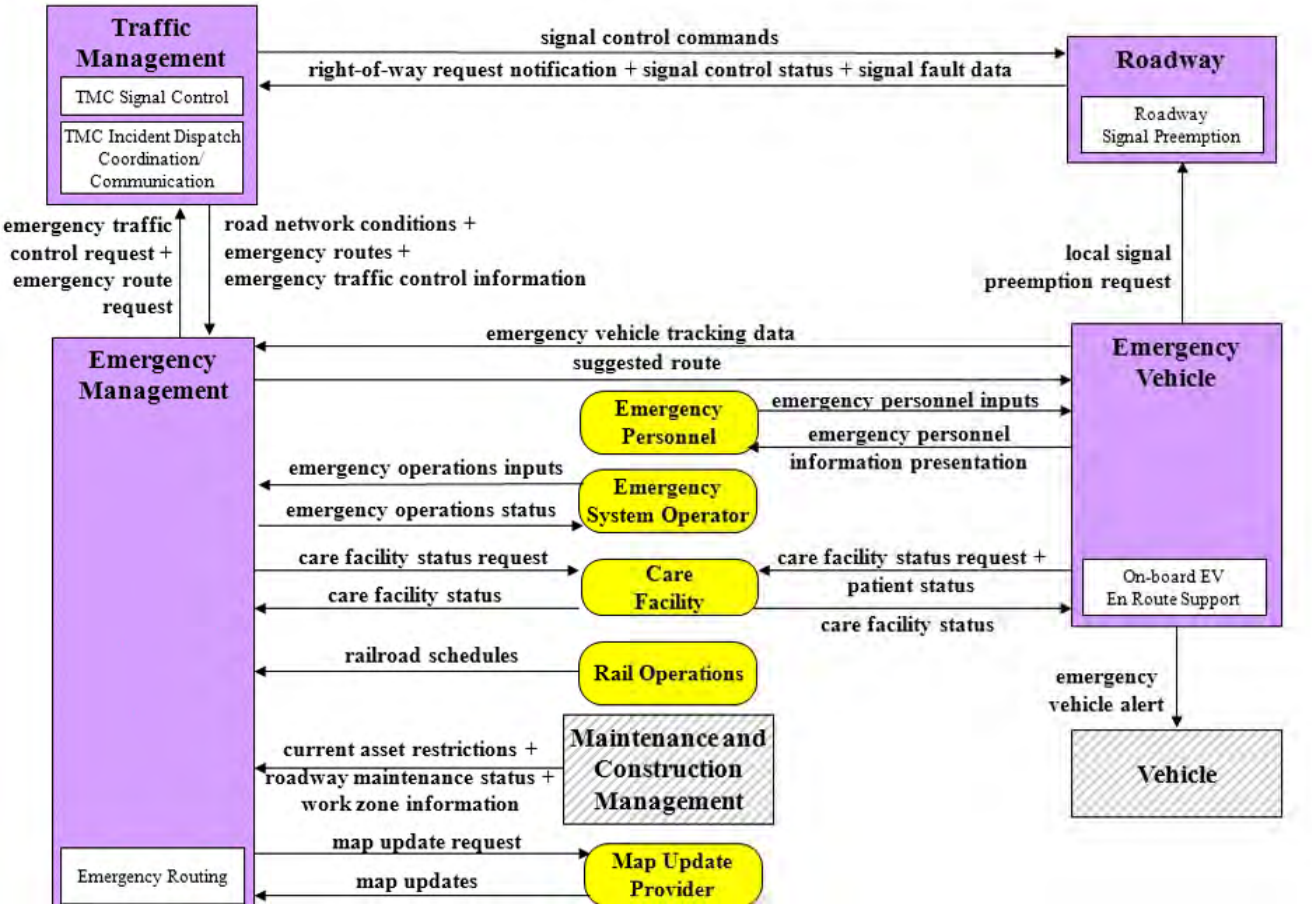
CVO13 – Freight Assignment Tracking



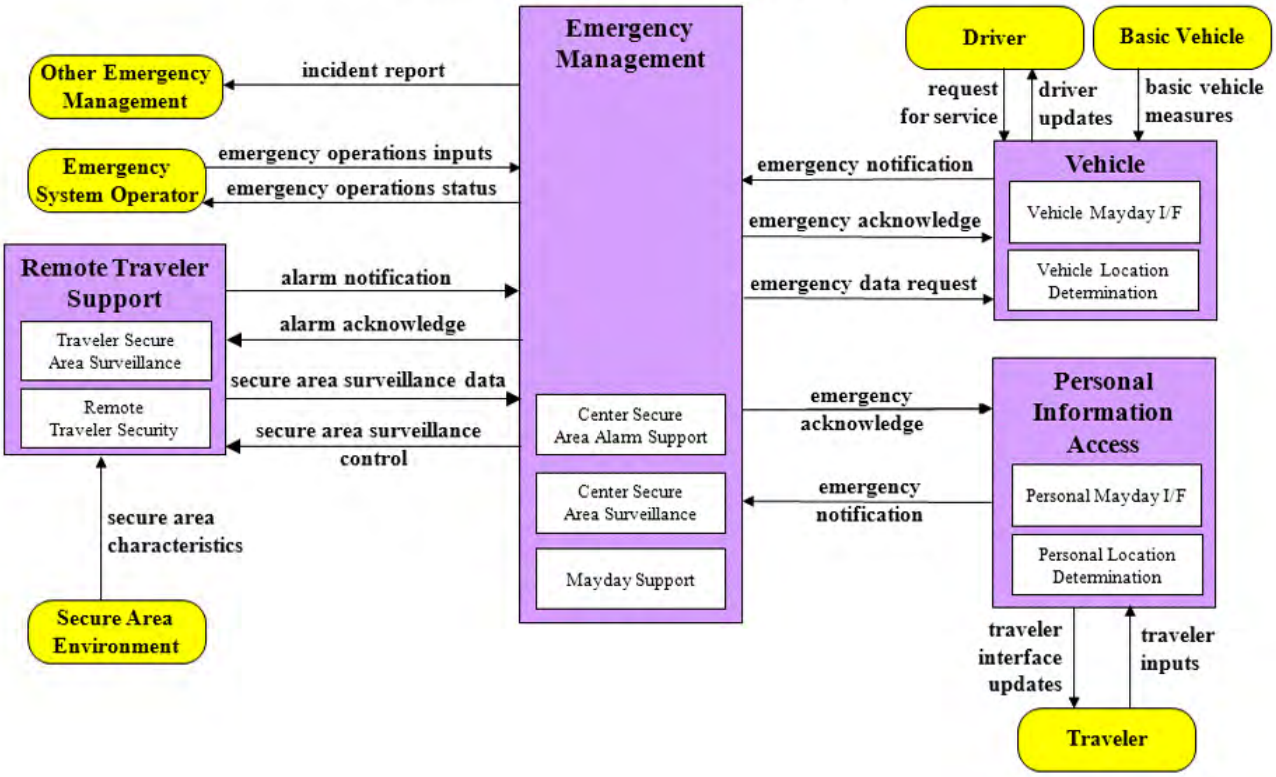
EM01 – Emergency Call-Taking and Dispatch



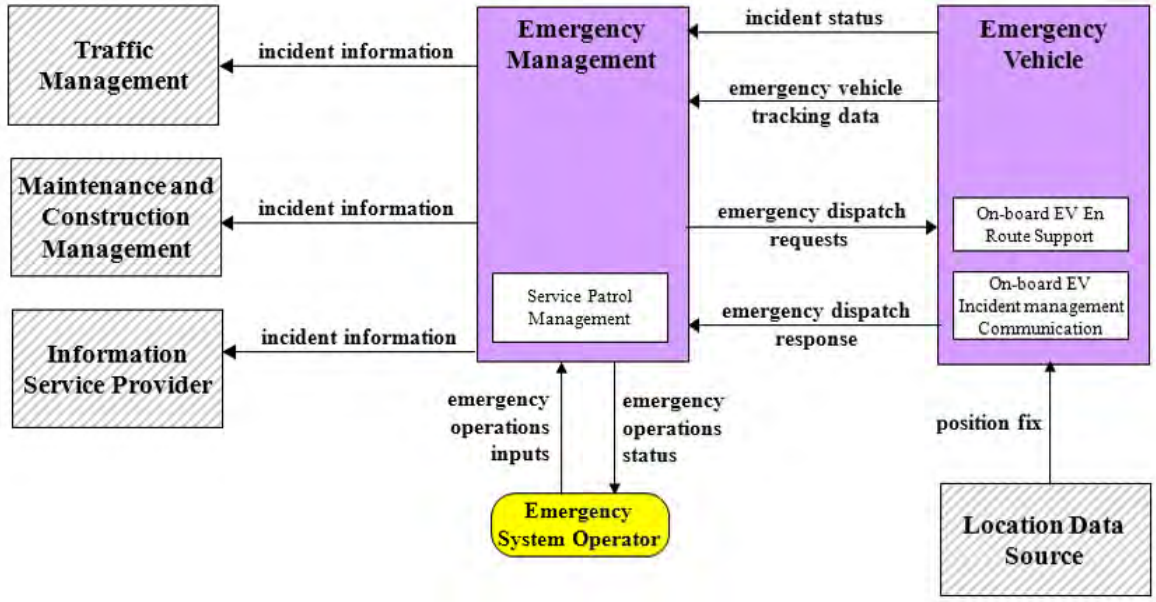
EM02 – Emergency Routing



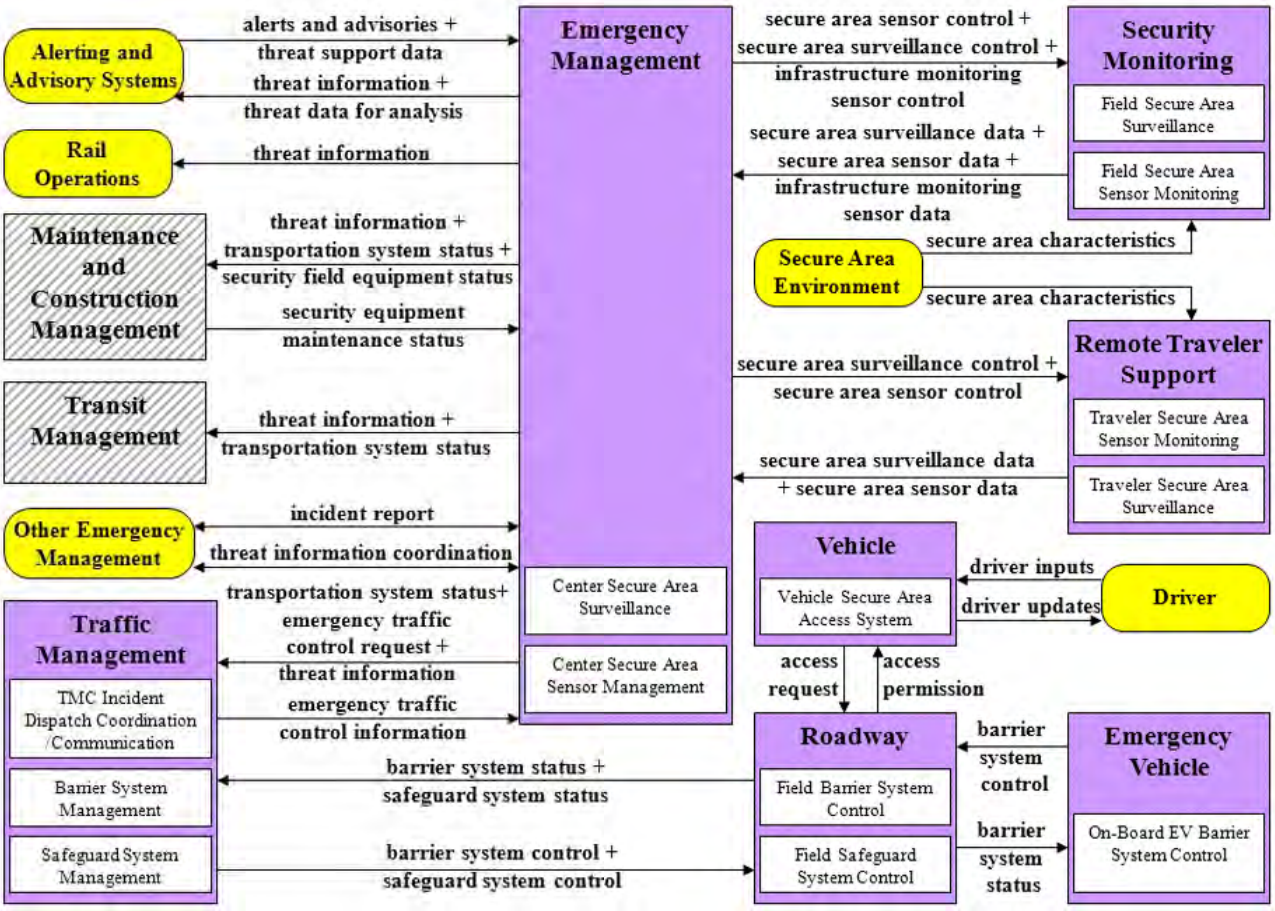
EM03 – Mayday and Alarms Support



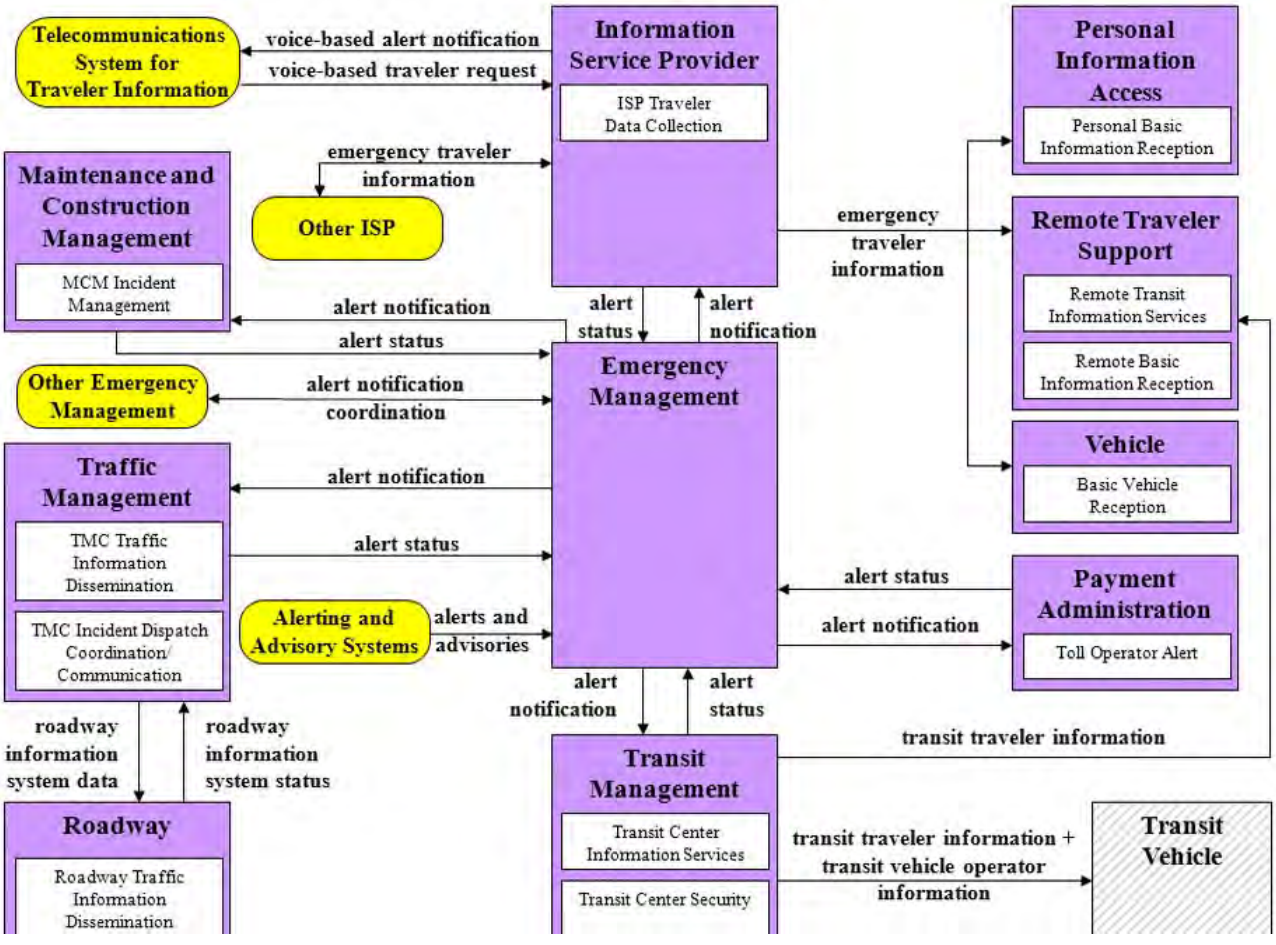
EM04 – Roadway Service Patrols



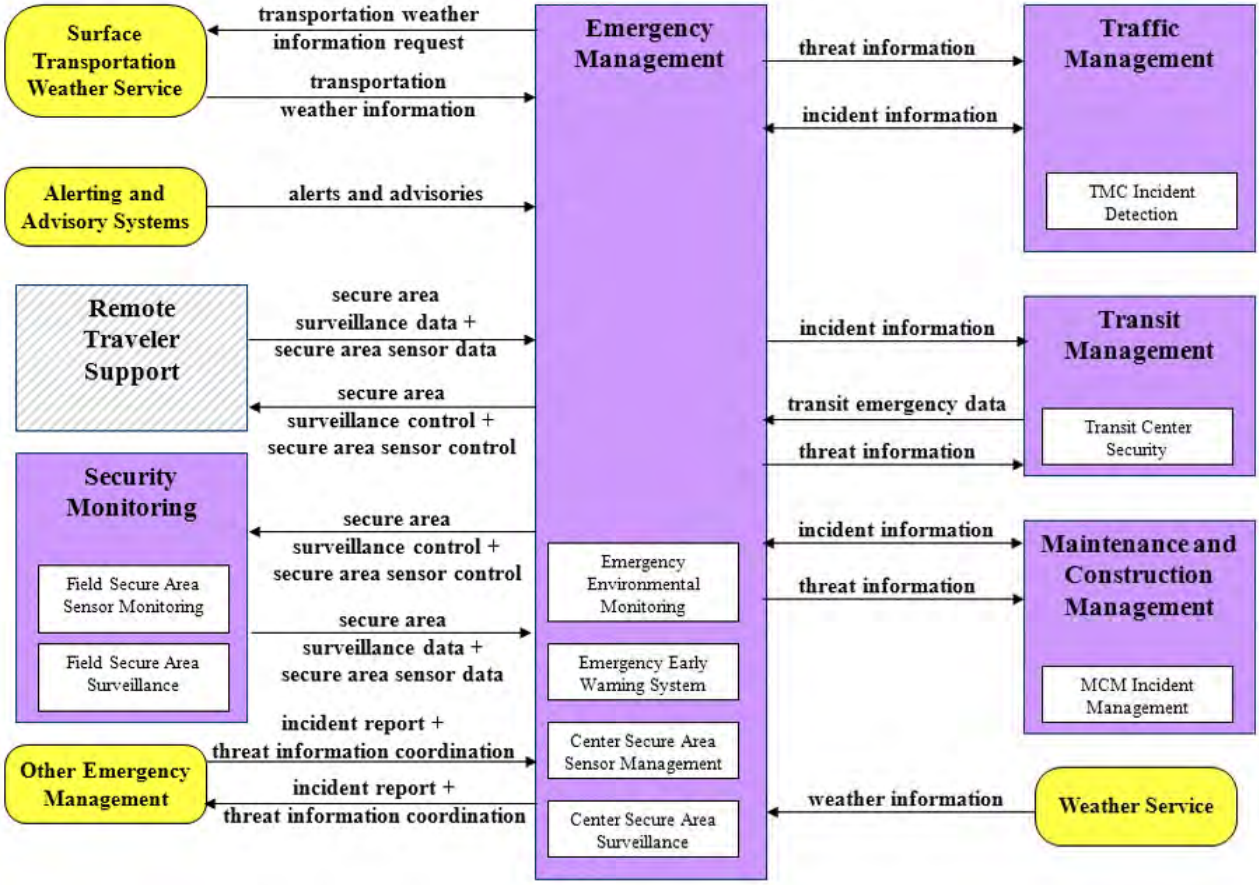
EM05 - Transportation Infrastructure Protection



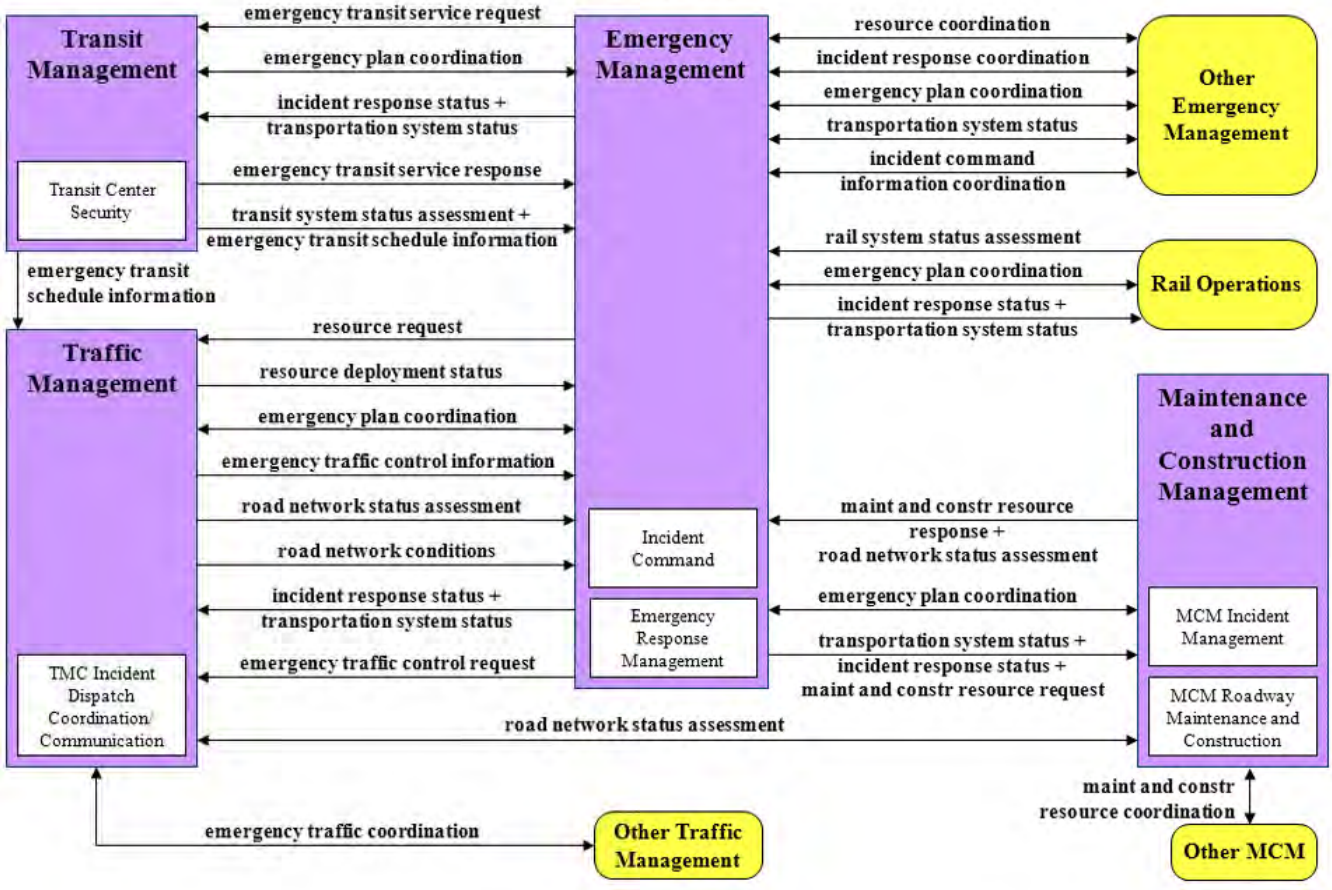
EM06 – Wide-Area Alert



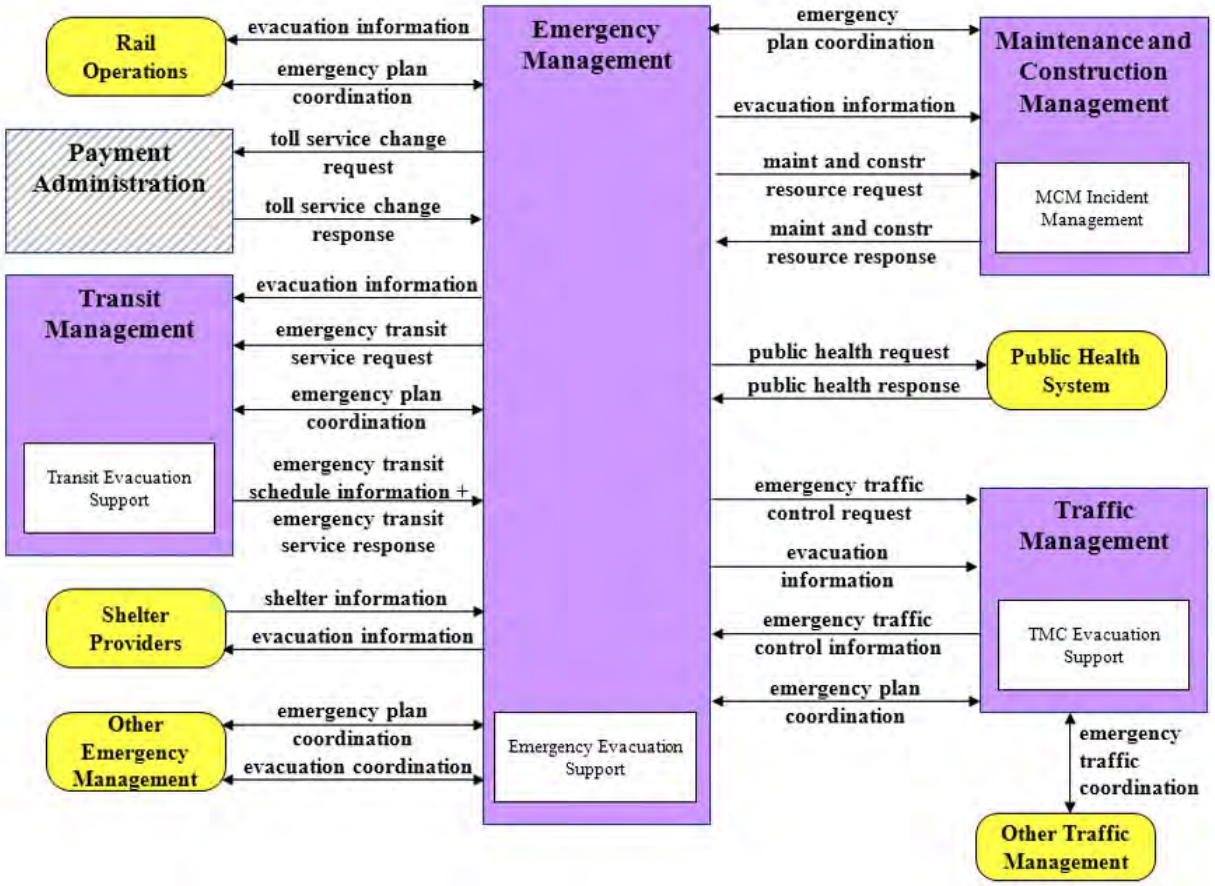
EM07 - Early Warning System



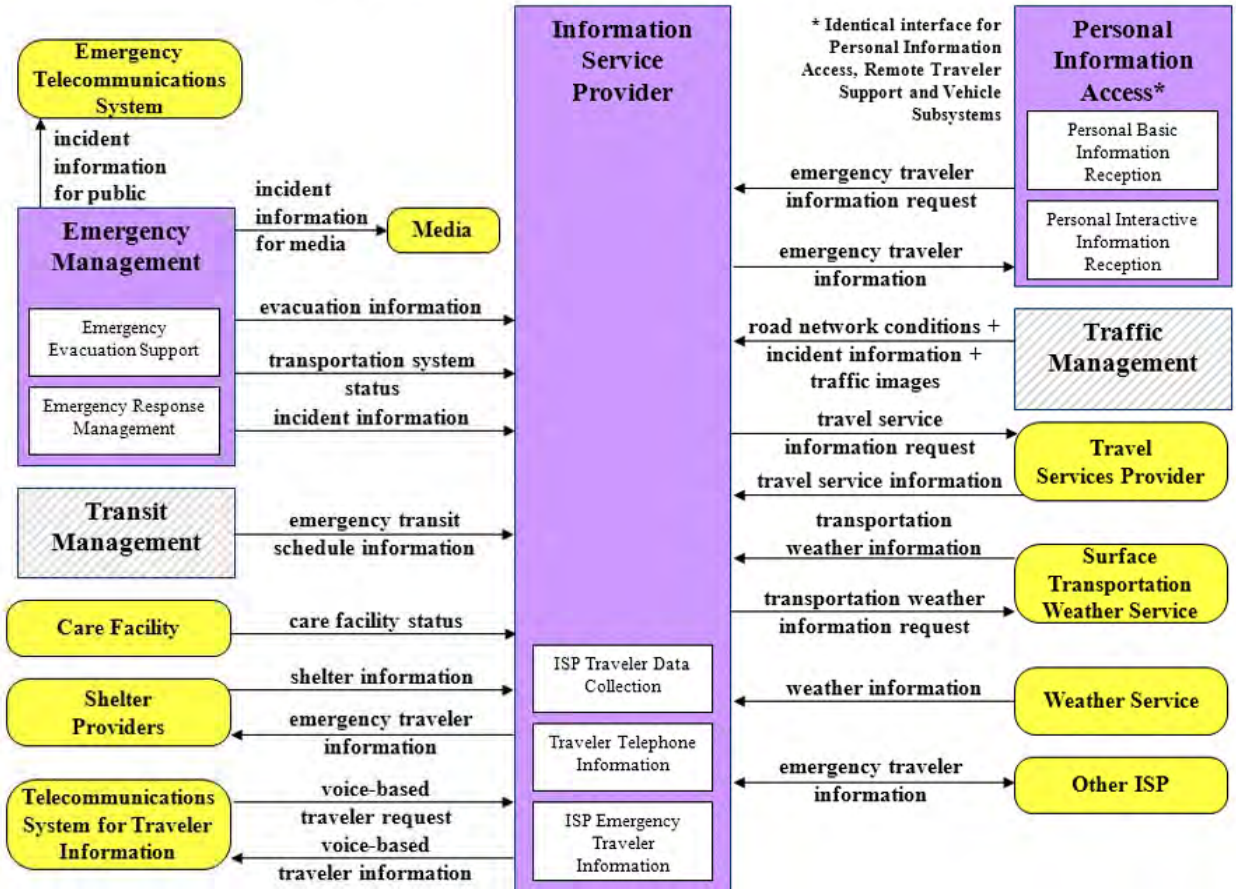
EM08 - Disaster Response and Recovery



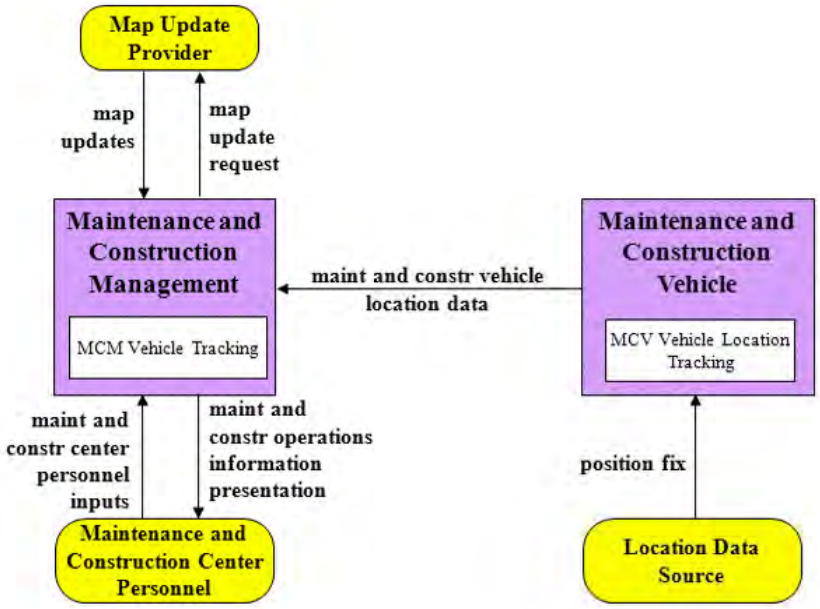
EM09 - Evacuation and Reentry Management



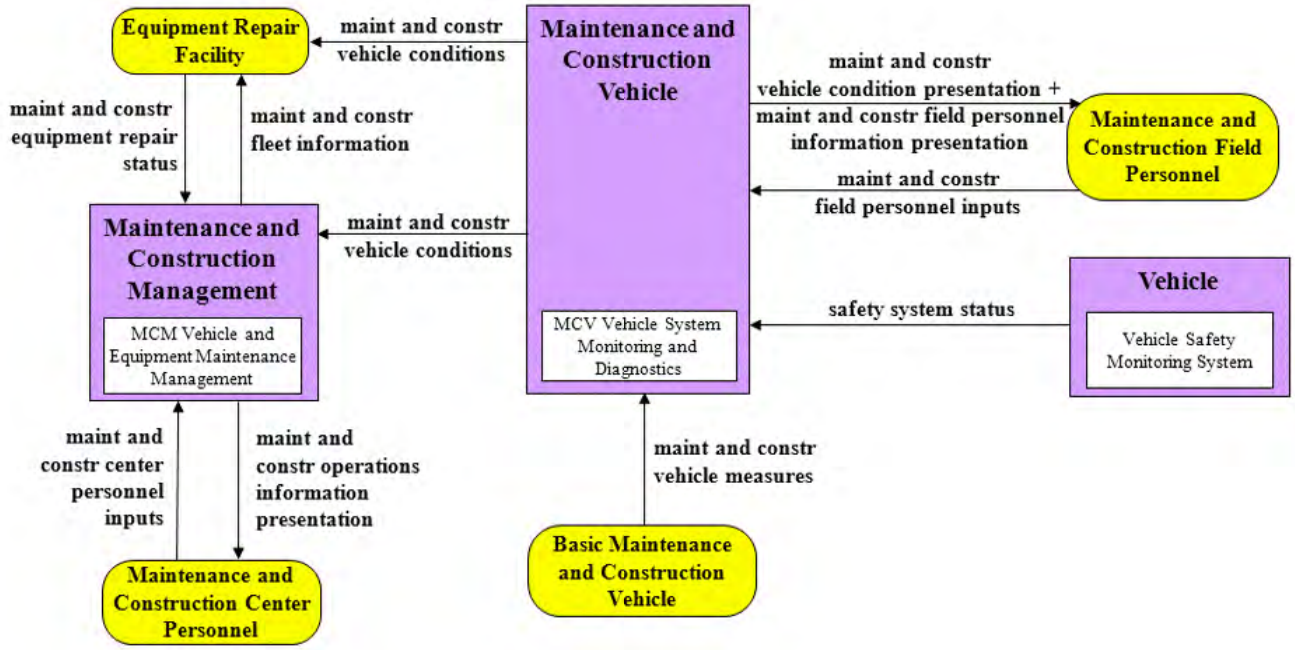
EM10 – Disaster Traveler Information



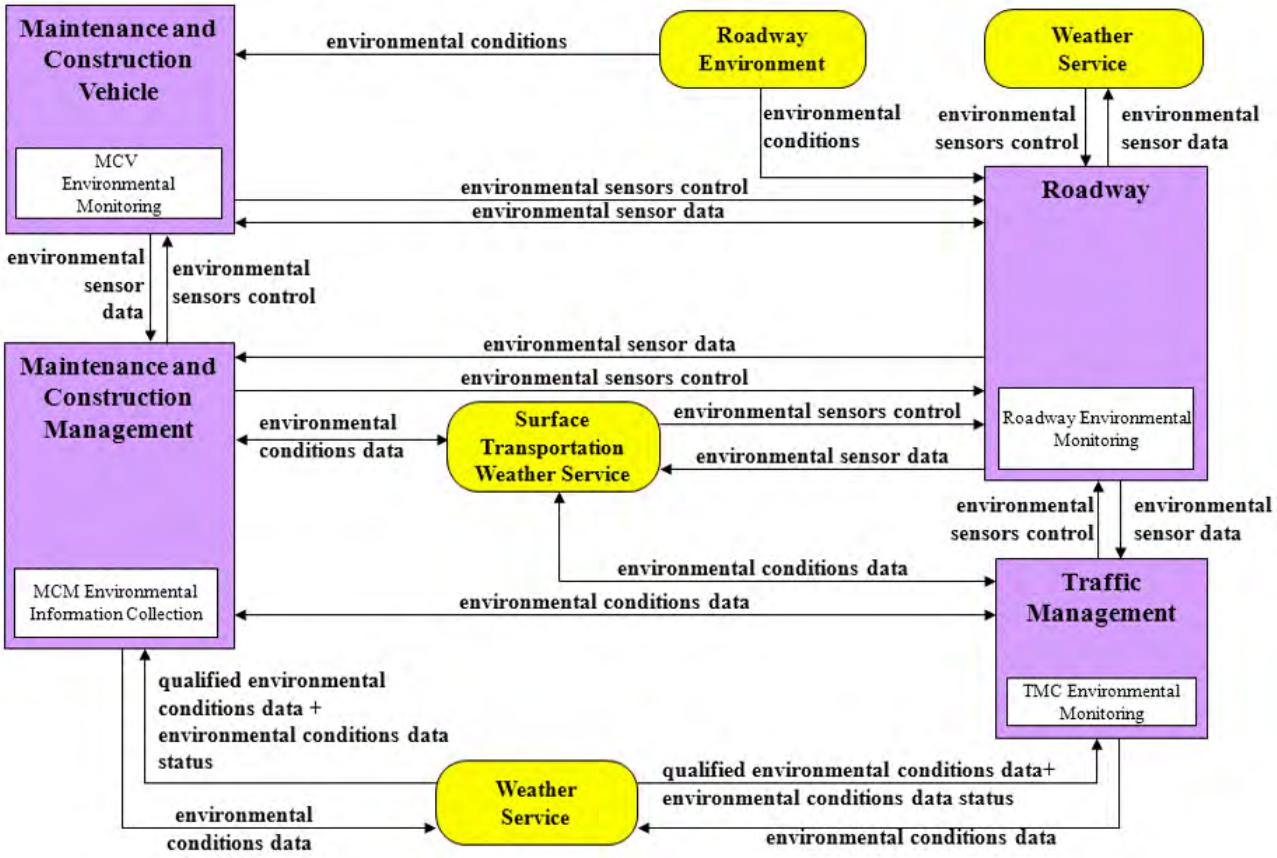
MC01 - Maintenance and Construction Vehicle and Equipment Tracking



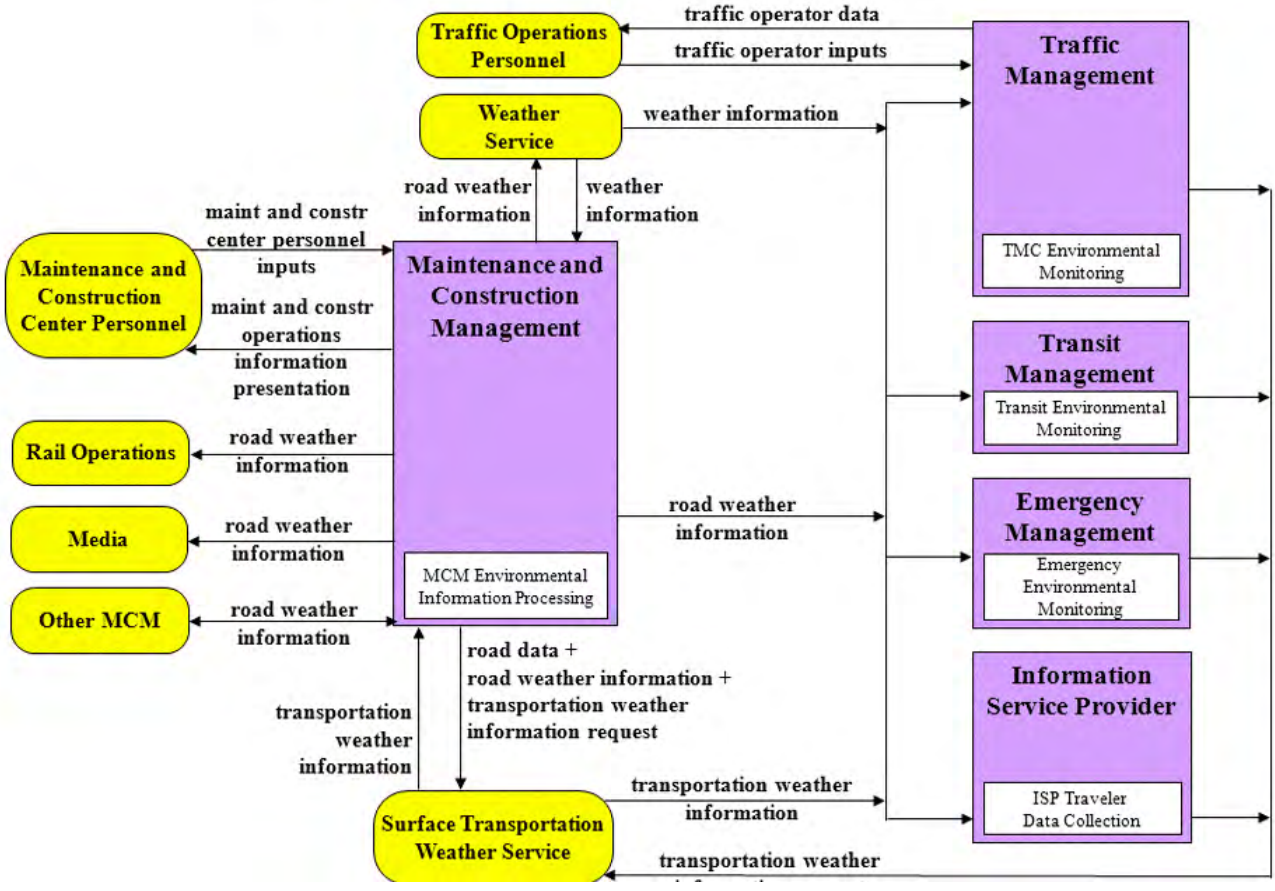
MC02 - Maintenance and Construction Vehicle Maintenance



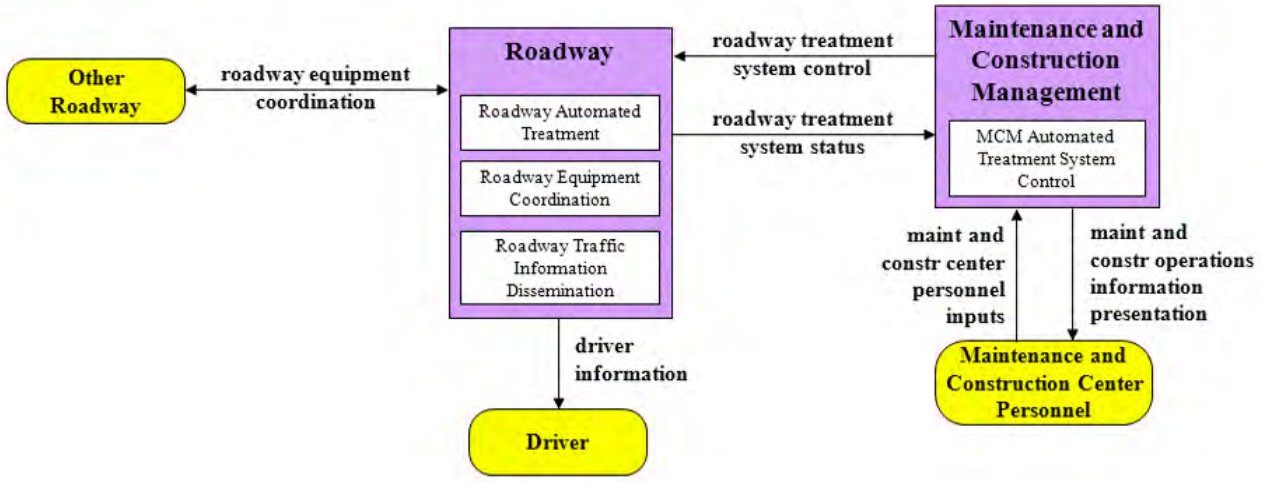
MC03 – Road Weather Data Collection



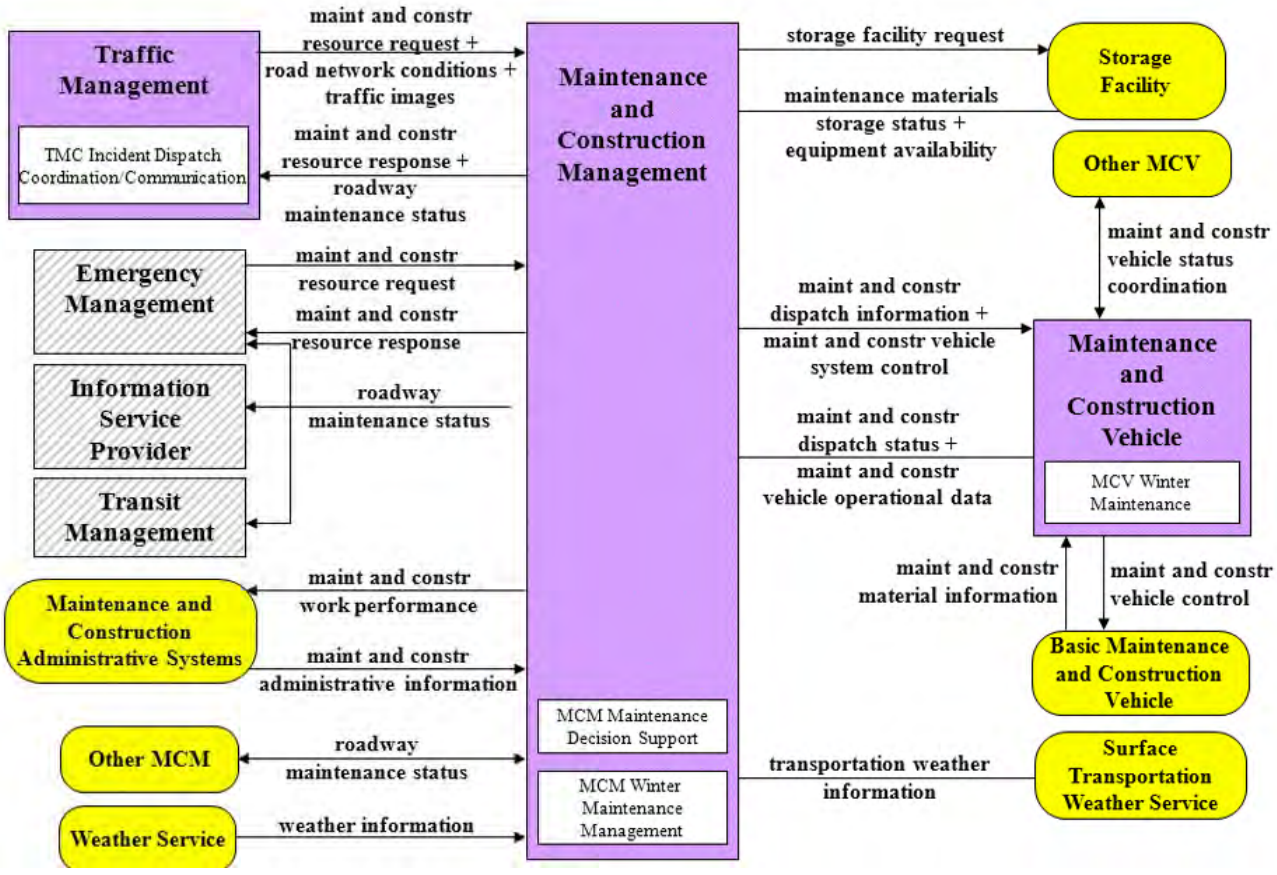
MC04 - Weather Information Processing and Distribution



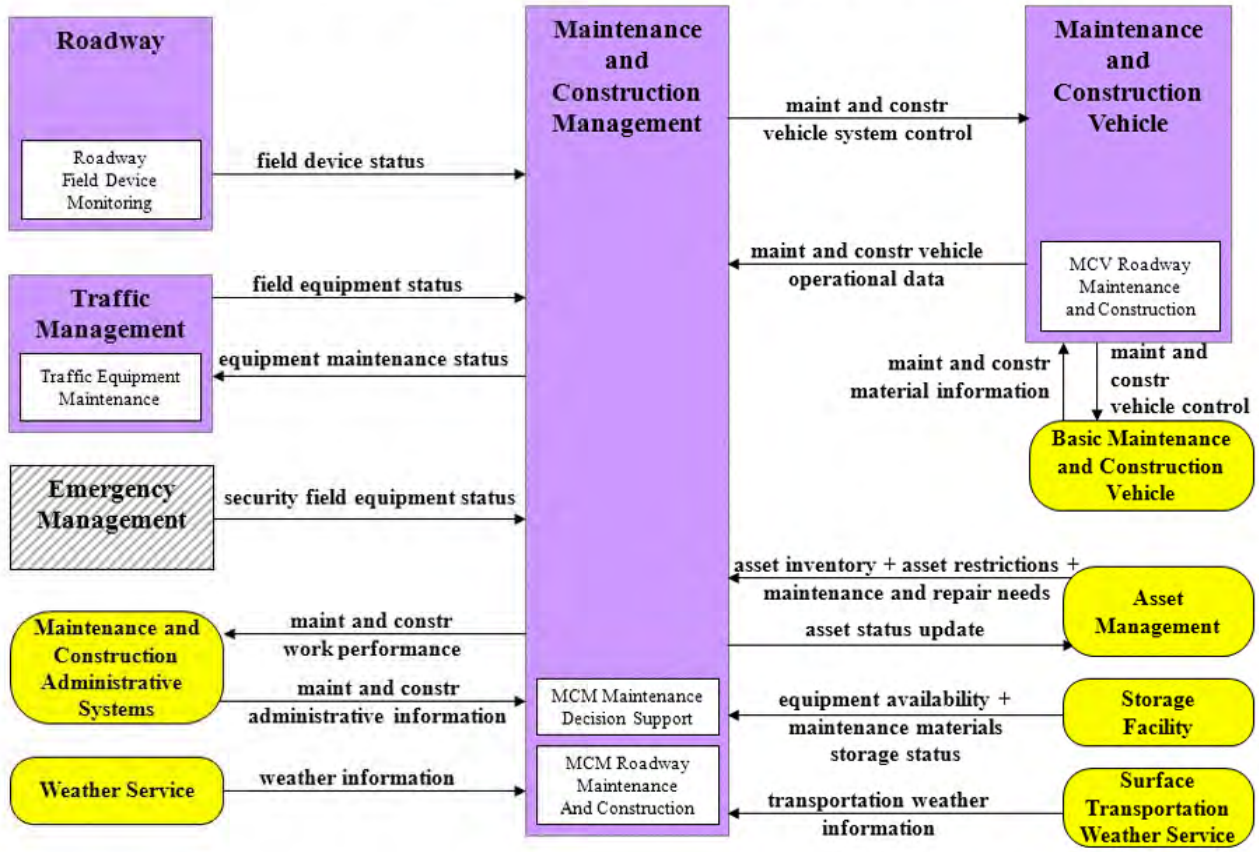
MC05 - Roadway Automated Treatment



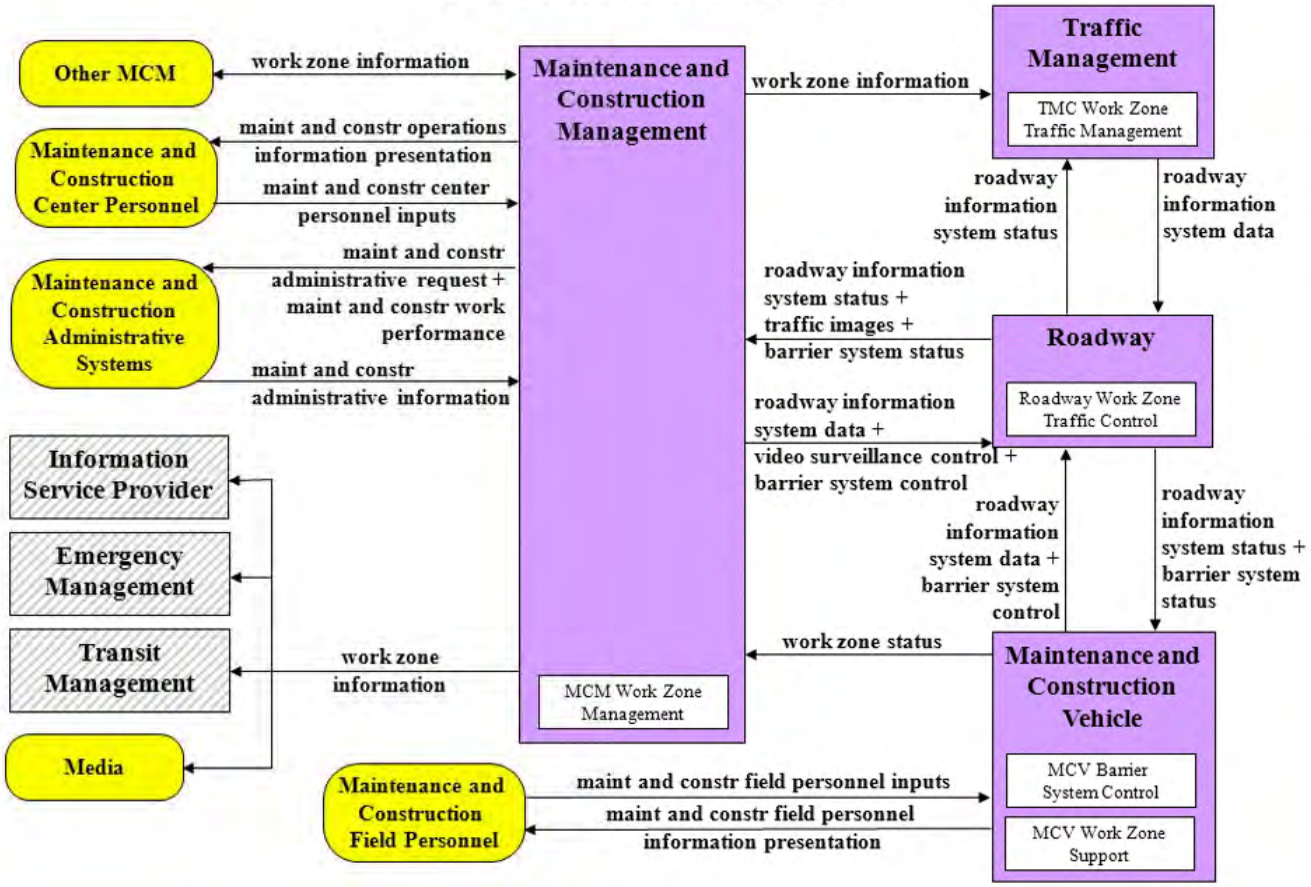
MC06 - Winter Maintenance



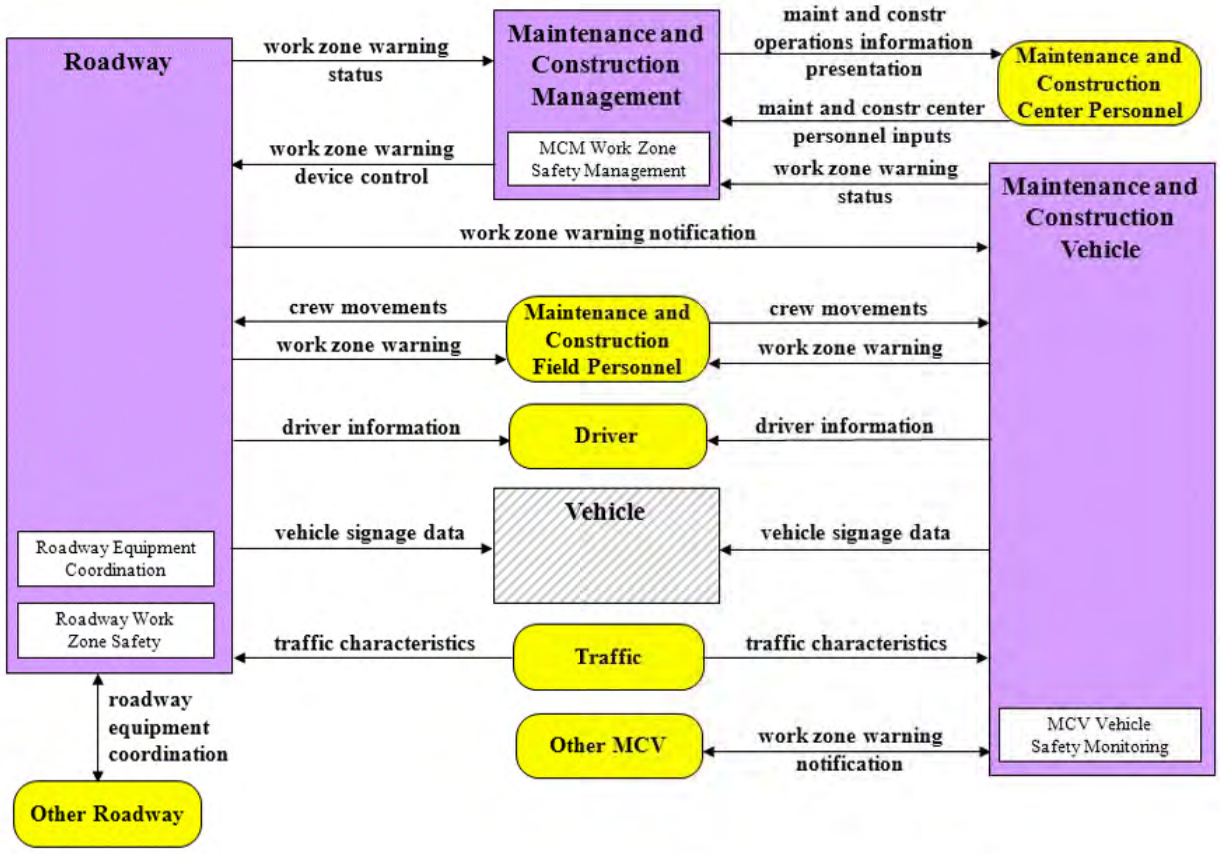
MC07 – Roadway Maintenance and Construction



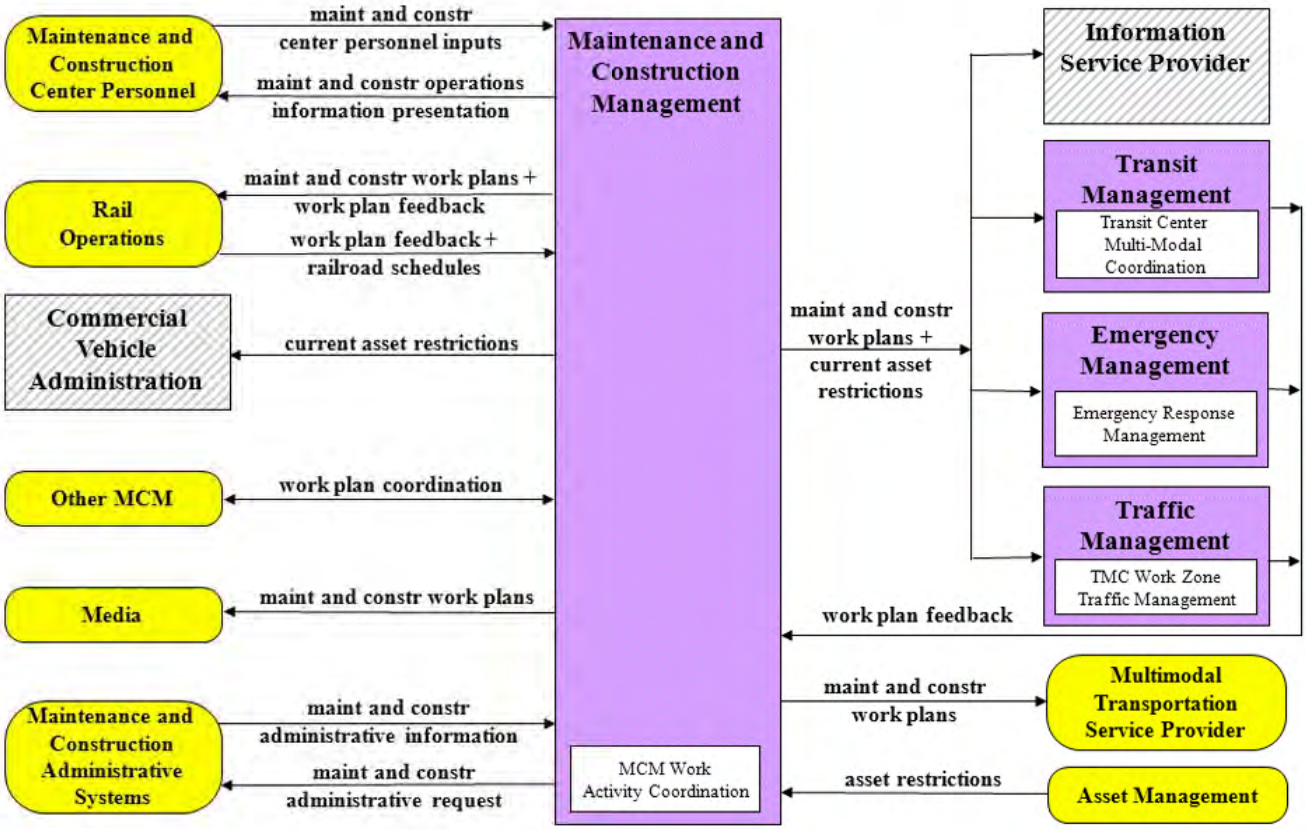
MC08 - Work Zone Management



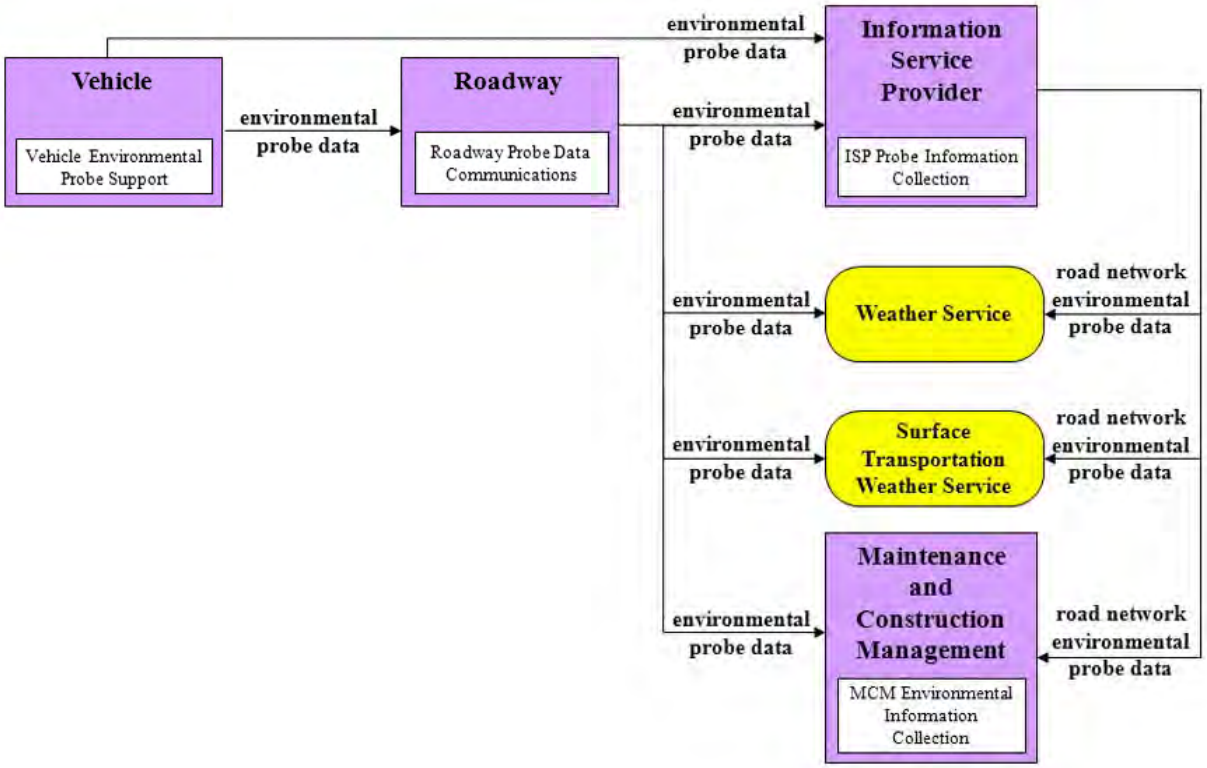
MC09 - Work Zone Safety Monitoring



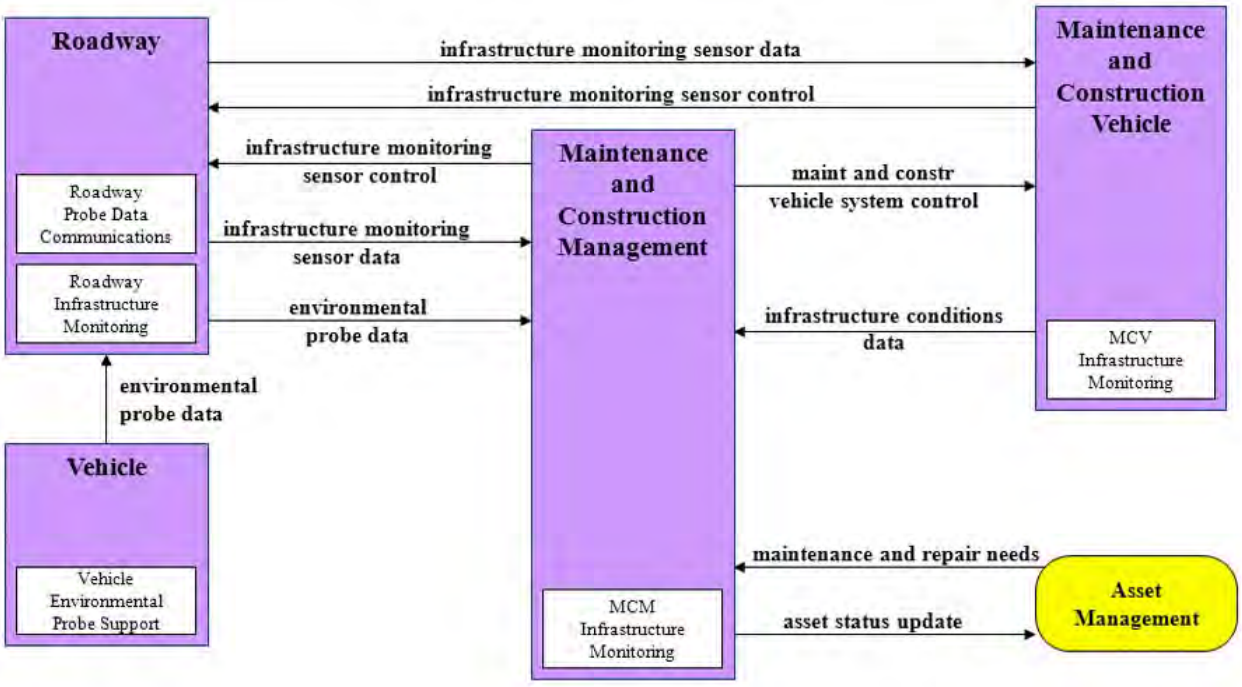
MC10 - Maintenance and Construction Activity Coordination



MC11 – Environmental Probe Surveillance



MC12 –Infrastructure Monitoring



Section 7

Stakeholder's Responsibilities (Operational Concepts)

Operational Concepts By Stakeholder

ITS Stakeholders	Areas	RRDescription	Status
Brevard County			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on county roads, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers via traffic information devices on county roads, and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the County EOC/warning points.	Existing
		Provide traffic and road network information to local transit agencies (Sarasota County SCAT).	Planned
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to travelers using Brevard County DMS devices.	Planned
		Provide traffic information to travelers using the county public information system, private companies, the central Florida traveler information system, and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g.. blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information and traffic control with the FDOT District 5 regional transportation management center (RTMC).	Existing
		Coordinate traffic information with the City of Melbourne Traffic Operations Center (TOC).	Existing
		Obtain traffic images and traffic flow data from Brevard County CCTVs and field sensors, and maintain operational control of all field equipment.	Existing
		Operate county and local drawbridge systems in conjunction with county signal systems.	Existing
		Operate traffic signal systems, including CCTVs, signals, and sensors, for Brevard County.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
City of Daytona Beach			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on city streets, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers using traffic information devices on city streets, and through local ISPs, Web sites, and the local media.	Existing

ITS Stakeholders	Areas	RRDescription	Status
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information and road network conditions to VOTRAN transit operations.	Planned
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to travelers using City of Daytona Beach DMS devices.	Planned
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information and traffic control with the FDOT District 5 RTMC.	Existing
		Coordinate traffic information with Volusia County.	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Existing
		Operate county and local drawbridge systems in conjunction with city signal systems.	Existing
		Operate traffic signal systems, including CCTVs, signals, and sensors, for the City of Daytona Beach.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
		Provide parking demand information to private/public parking facilities to determine parking capacity and traffic implications at the facility.	Planned
		Provide transit signal priority for regional transit providers using roadside devices.	Existing
City of Maitland			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on city streets, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers using traffic information devices on city streets, and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning Points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the southwest Florida TMC information network.	Planned

		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Planned
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Planned
		Operate traffic signal systems, including CCTVs, signals, and sensors, for the City of Maitland.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
		Provide transit signal priority for regional transit providers using roadside devices.	Planned
City of Melbourne			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on city streets, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers using traffic information devices on city streets, and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning point.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information and road network conditions to local transit operations, including SCAT.	Planned
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the southwest Florida TMC information network.	Planned
		Provide traffic information to travelers using City of Melbourne DMS devices.	Planned
		Provide traffic information to travelers via private companies; county and city Public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning Points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information with the Brevard County TOC.	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Planned
		Operate traffic signal systems, including CCTVs, signals, and sensors, for the City of Melbourne.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
City of Ocala			

ITS Stakeholders	Areas	RRDescription	Status
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on city streets, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers using traffic information devices on city streets, and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the southwest Florida TMC information network.	Planned
		Provide traffic information to travelers using City of Ocala DMS devices.	Planned
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Planned
		Operate traffic signal systems, including CCTVs, signals, and sensors, for the City of Ocala.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
		Provide parking demand information to private/public parking facilities to determine parking capacity and traffic implications at the facility.	Planned
City of Orlando			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with County and City Maintenance and Construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on city streets and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers via traffic information devices on city streets and through local information service providers, websites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing

ITS Stakeholders	Areas	RRDescription	Status
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to local transit operations, including ACCESS LYNX paratransit and LYNX operations.	Planned
		Provide traffic information to travelers using City of Orlando DMS devices.	Existing
		Provide traffic information to travelers via private companies; county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information and traffic control with the FDOT District 5 RTMC.	Existing
		Coordinate traffic information with the City of Winter Park TOC, OCCC/IDRA operations, and the Orange County TMC.	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Existing
		Operate traffic signal systems, including CCTVs, signals, and sensors, for the City of Orlando.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Existing
		Provide parking demand information to private/public parking facilities to determine parking capacity and traffic implications at the facility.	Planned
		Provide transit signal priority for regional transit providers using roadside devices.	Existing
Counties and Cities			
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information to travelers using private companies; the county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Maintenance and Construction for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance and construction activities with other county and city maintenance systems, and FDOT District 5 construction and maintenance systems.	Existing
		Coordinate maintenance or construction requests from regional TMCs.	Planned
		Coordinate maintenance resources for incidents with FDOT District 5 maintenance and construction operations, and other county and city maintenance and construction operations outside the district.	Existing
		Distribute maintenance and construction work plan information and asset restrictions to regional traffic agencies, regional transit providers, regional emergency services, the media, private rail operations, and multimodal service providers.	Planned
		Manage work zones for all county and city maintenance and construction activities, and monitor work zone safety with county and city field equipment and vehicles.	Existing
		Perform maintenance for ITS field equipment owned by the cities and counties in the region.	Existing
		Provide maintenance and construction information to regional traffic operations and the traveling public using portable DMS devices.	Existing
		Provide maintenance for local, county, and city roads in the region, including pavement maintenance and construction activities.	Existing

ITS Stakeholders	Areas	RRDescription	Status
		Receive a request for maintenance resources for incident response from county fire/EMS agencies, the county sheriff, local police/fire/EMS agencies, the FHP, 911 emergency call centers, and regional county EOCs.	Existing
		Receive a request for maintenance resources for incident response from regional county and city TMCs.	Planned
		Receive AVL information from county and city PWD vehicles.	Planned
		The following counties and cities have their own road weather data collection equipment: Brevard, Orange, Lake, Seminole, Volusia, and Osceola counties; and the cities of Daytona Beach, Maitland, Melbourne, Orlando, and Winter Park. The information is col	Existing
		Vehicles provide automated maintenance status information to the county and city roadway maintenance and construction operations, as well as county and local equipment repair facilities.	Planned
	Traveler Information for Central Florida Regional ITS Architecture - FDOT District 5		
		Provide maintenance and construction information to the traveling public using portable DMS devices.	Existing
County and City Traffic Engineering			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on county and local roads, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Planned
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate highway-rail intersection (HRI) signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Planned
		Coordinate traffic information with the Orange County TMC and SEMTAC.	Existing
		Obtain traffic images and traffic flow data from Brevard County CCTVs and field sensors, and maintain operational control of all field equipment.	Existing
		Operate county and local drawbridge systems in conjunction with county and local signal systems.	Planned
		Operate traffic signal systems, including CCTVs, signals, and sensors, on county and local roadways (CCTV are future).	Existing
		Provide emergency signal preemption for county and local fire/emergency medical service (EMS) agencies.	Planned
County Emergency Management Agencies			
	Emergency Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans and maintenance resources with local maintenance and construction agencies.	Existing
		Coordinate emergency plans, emergency transit schedules, and the status of emergency transit systems with local transit agencies.	Planned
		Coordinate incident and threat information as part of an early warning system with RTMCs; regional emergency management agencies; regional maintenance and construction agencies; regional transit agencies; and regional ISPs.	Existing
		Coordinate incident response and incident reports with the county sheriff, county fire/EMS agencies, county EOC, local police/fire/EMS agencies, the FHP, and other public safety agencies.	Existing

ITS Stakeholders	Areas	RRDescription	Status
		Coordinate wide area alert notifications with regional traffic management agencies; regional emergency management agencies; regional maintenance and construction agencies; and regional transit agencies.	Existing
		Develop and coordinate county/regional emergency plans; evacuation and reentry plans; and disaster management plans with regional emergency management agencies; traffic management agencies; transit management agencies; and maintenance and construction age	Existing
		Operate the county EOC/warning points, including incident coordination with regional emergency management providers.	Existing
		Participate in incident response, coordination, and reporting for the regional incident and mutual aid network.	Planned
		Provide evacuation and incident information to the regional ISPs and the media for travelers in the region.	Existing
County School Districts			
	Transit Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate a school bus security breach with local police and the county sheriff.	Planned
		Coordinate emergency plans with county EOCs, and provide emergency transit services for evacuations, fires, and disasters, including reentry services.	Planned
		Provide automated transit maintenance scheduling for all school business using automated vehicle conditions reporting.	Planned
		Provide fixed-route school bus service.	Existing
		Provide operator instructions and receive schedule performance information from transit vehicles while in service.	Existing
		Provide school bus schedule and route information to the school district Web site.	Existing
		Provide transit incident information on the school district Web site.	Planned
		Provide transit security on all transit vehicles using silent alarms	Planned
		Receive road network conditions from regional traffic management agencies.	Planned
		Receive work zone information and road network status from regional maintenance and construction agencies.	Planned
		Track and evaluate schedule performance on all school district vehicles.	Existing
Disney/Reedy Creek Improvement District			
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information and road network conditions to I-RIDE tourist shuttle operations.	Planned
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the southwest Florida TMC information network.	Planned
		Provide traffic information to travelers using Disney-owned DMS devices.	Existing
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with county EOC/warning points.	Existing
		Coordinate traffic information and with the Orange County TMC.	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Existing

ITS Stakeholders	Areas	RRDescription	Status
		Operate traffic signal systems, including CCTVs, signals, and sensors, for the Disney parks and surrounding roads.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
FDOT District 5			
	Archived Data Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Collect and archive intermodal freight information from regional intermodal freight depots.	Planned
		Collect and archive multimodal data from multimodal transportation service providers.	Existing
		Collect and archive regional emergency and accident information from local police and the FHP.	Existing
		Collect and archive roadside information from FDOT District 5 traffic count stations (field equipment).	Existing
		Collect and archive traffic and traveler information from the county and city public information system, and the FDOT District 5 PIO.	Existing
		Collect and archive traffic information from RTMCs.	Existing
		Collect and archive traffic information from the FDOT District 5 RTMC.	Existing
		Collect and archive transit information from regional transit providers.	Existing
		Coordinate the archival of information with the central Florida data warehouse and the regional ITS data warehouse.	Planned
		Provide a virtual data warehouse for transportation statistics and coordinate with local transportation data collection systems.	Planned
	Commercial Vehicle Operations for Central Florida Regional ITS Architecture - FDOT District 5		
		Collect intermodal freight event information and provide intermodal freight traffic information to intermodal freight depots.	Existing
	Emergency Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate incident response and incident reports with the county sheriff, county fire/EMS agencies, county EOC, local police/fire/EMS agencies, the FHP, and other public safety agencies.	Existing
		Develop and coordinate regional emergency plans; evacuation and reentry plans; and disaster management plans with FDOT District 5 and other Districts.	Existing
		Monitor secure area sensors and report alert notifications to the FDOT District 5 PIO, FDOT maintenance systems, and regional emergency management agencies.	Existing
		Participate in incident response, coordination, and reporting for the regional incident and mutual aid network.	Planned
	Highway Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Control and coordinate highway traffic, including reversible lanes, with ramp meters and lane control signals on FDOT freeways.	Existing
		Coordinate maintenance resources for incident response with the FDOT District 7 maintenance system, and county and city public works departments (PWDs).	Existing
		Coordinate threat information, such as surveillance or sensor data, with local traffic and emergency management agencies.	Planned
		Coordinate traffic information and traffic control with other FDOT District TMCs.	Existing
		Dispatch FDOT Road Ranger vehicles to incidents in the region.	Existing
		Perform network surveillance for detection and verification of incidents on freeways, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, Road Rangers Service Patrols, the county EOC, and local fire/EMS/p	Existing
		Provide incident information to travelers using traffic information devices on freeways, such as DMS devices and highway advisory radio (HAR) broadcasts, and through local information service providers (ISPs) and Web sites.	Existing
		Provide traffic information reports to other agencies, including other FDOT District TMCs.	Existing

ITS Stakeholders	Areas	RRDescription	Status
		Receive incident information, incident response status, and resource requests from the county EOC/warning points and from the FDOT District 5 EOC.	Existing
		Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5	
		Coordinate maintenance resources for incident response with the FDOT District 5 construction and maintenance systems, and the OOCEA construction and maintenance systems.	Planned
		Coordinate threat information, such as surveillance or sensor data, with local traffic and emergency management agencies.	Existing
		Dispatch FDOT Road Ranger vehicles to incidents in the region.	Existing
		Perform network surveillance for detection and verification of incidents on freeways, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, Road Rangers Service Patrols, the county EOC, and local fire/EMS/p	Existing
		Provide incident information to travelers via traffic information devices on freeways, such as DMS devices and HAR broadcasts, and through local ISPs and Web sites.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points and from the FDOT District 5 EOC.	Existing
		Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5	
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Monitor secure area sensors and report alert notifications to regional ISPs, FDOT maintenance systems, and regional emergency management agencies.	Planned
		Provide traffic information and road network conditions to local emergency management providers, including local fire/EMS/police agencies, the FHP, and the county sheriff.	Planned
		Provide traffic information and road network conditions to LYNX transit operations.	Planned
		Provide traffic information in a coordination effort to the FDOT statewide center-to-center (C2C) information network and the central Florida TMC information network.	Planned
		Provide traffic information to travelers using FDOT DMS devices.	Existing
		Provide traffic information to travelers using OOCEA DMS devices.	Planned
		Provide traffic information to travelers using the FDOT District 5 Public Information Office (PIO), private companies, the central Florida traveler information system, and the media.	Existing
		Receive America's Missing: Broadcast Emergency Response (AMBER) Alerts and other wide area alert information from the county EOC/warning points.	Existing
		Maintenance and Construction for Central Florida Regional ITS Architecture - FDOT District 5	
		Collect environmental information from its own field equipment, and from public and private weather service providers.	Existing
		Coordinate a maintenance or construction request from the FDOT District 5 RTMC.	Planned
		Coordinate maintenance resources for incidents with OOCEA construction and maintenance operations, and other FDOT District maintenance and construction operations.	Existing
		Coordinate with city and county maintenance and construction systems, as well as other FDOT District maintenance and construction sections.	Existing
		Distribute this environmental data to private weather providers, RTMCs, regional emergency management agencies, regional transit agencies, and county and city maintenance systems.	Planned
		Manage work zones on all FDOT maintenance and construction activities, and monitor work zone safety with FDOT field devices and vehicles.	Existing
		Perform maintenance of FDOT-owned ITS field equipment.	Existing
		Provide maintenance and construction information to the FDOT District 5 RTMC; regional maintenance and construction operations; and the traveling public using portable DMS devices.	Existing

ITS Stakeholders	Areas	RRDescription	Status
		Provide regional state highway maintenance information on pavement maintenance and construction activities, including infrastructure monitoring activities.	Existing
		Receive a request for maintenance resources for incident response from county fire/EMS agencies, the county sheriff, local police/fire/EMS agencies, the FHP, 911 emergency call centers, and the FDOT District 5 EOCs.	Existing
		Receive a request for maintenance resources for incident response from the FDOT District 5 RTMC.	Planned
		Receive automatic vehicle location (AVL) information from FDOT District 5 maintenance vehicles.	Planned
		The FDOT PIO and the FDOT District 5 maintenance system distributes work zone information to local transit agencies, local emergency management agencies, private rail operations, the media, and multimodal service providers.	Planned
		Vehicle provides automated maintenance status information to the FDOT District 5 operations center and FDOT District 5 equipment repair facility.	Planned
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate the Vehicle Infrastructure Integration (VII) initiative with private vehicles using FDOT District 5 field equipment.	Existing
		Coordinate traffic information and traffic control with the Orlando-Orange County Expressway Authority's (OOCEA) traffic management system (TMS); Brevard, Orange, Osceola, and Volusia counties; and the cities of Daytona Beach and Orlando.	Existing
		Coordinate traffic information with the Seminole County Traffic Action Center (SEMTAC); Volusia County transportation management center (TMC); the City of Orlando; Orange and Brevard counties; and other FDOT District TMCs.	Existing
		Obtain traffic images and traffic flow data from closed-circuit televisions (CCTVs) and field sensors, and maintain operational control of its own field equipment.	Existing
		Operate signalization and control of reversible lanes in coordination with FDOT District 7 and the Florida Highway Patrol (FHP) for evacuation purposes.	Existing
		Provide parking demand information to private/public parking facilities to determine parking capacity and traffic implications at the facility.	Planned
	Traveler Information for Central Florida Regional ITS Architecture - FDOT District 5		
		Collect traffic, incident, and transit schedule information, and provide it to the media and private travelers.	Existing
		Coordinate and share traveler information with all other traveler information providers in the region.	Planned
		Provide maintenance and construction information to the traveling public using FDOT District 5 portable DMS devices.	Existing
Florida Department of Law Enforcement			
	Emergency Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate AMBER Alert information and alert status to regional emergency management agencies, including the police and sheriff.	Existing
		Originate AMBER Alerts in the State of Florida.	Existing
		Provide AMBER Alert information to RTMCs and EOCs	Existing
Florida Highway Patrol			
	Emergency Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency response with the county EOCs, local police, and county sheriff.	Existing
		Coordinate incident response and incident reports with the county sheriff, county fire/EMS agencies, the county EOC, local police/fire/EMS agencies, and other public safety agencies.	Existing
		Coordinate regional emergency plans; evacuation and reentry plans; and disaster management plans.	Existing

		Dispatch FHP vehicles to incidents in the jurisdiction	Existing
		Participate in incident response, coordination, and reporting for the regional incident and mutual aid network.	Planned
		Perform incident detection and verification for the highways in the cities of the region.	Existing
		Provide incident information to FDOT District 5 traffic, maintenance, and construction agencies as well as regional ISPs.	Existing
		Provide mayday support through call boxes on FTE toll roads.	Planned
		Provide the dispatch of and suggested route information to the FDOT District 5 Road Rangers Service Patrols operated by the FHP.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
		Receive early warning information and threat information from the county EOC/warning points.	Existing
	Incident Management (Emergency) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate FHP public safety resources for incident response with regional traffic agencies, including the FDOT, and county and city agencies.	Existing
		Coordinate incident response with other public safety agencies, including police/fire/EMS agencies and the county sheriff.	Existing
		Coordinate maintenance resources in response to incidents with county and city PWDs; OOCEA construction and maintenance systems; and the FDOT District 5 maintenance system.	Existing
		Dispatch FHP vehicles to incidents in the jurisdiction	Existing
		Perform incident detection and verification for all streets in the region, and provide this information to traffic and other safety agencies.	Existing
Lake County			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on county roads, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the southwest Florida TMC information network.	Planned
		Provide traffic information to LakeTrans transit operations.	Planned
		Provide traffic information to travelers using Lake County DMS devices.	Planned
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information with the Orange County TMC.	Planned

ITS Stakeholders	Areas	RRDescription	Status
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Planned
		Operate traffic signal systems, including CCTVs, signals, and sensors, for Lake County.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
	Transit Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans with county EOCs, and provide emergency transit services for evacuations, fires, and disasters, including reentry Services.	Planned
		Provide a demand-responsive transit plan to users and travelers using local agency traveler information systems.	Existing
		Provide paratransit/demand-responsive transit services for Lake County.	Existing
		Provide transit schedule and fare information to local agency traveler information systems.	Planned
		Track and evaluate schedule performance on all LakeTrans transit vehicles.	Existing
LYNX			
	Transit Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate a transit security breach with local police and the county sheriff.	Existing
		Coordinate emergency plans with county EOCs, and provide emergency transit services for evacuations, fires, and disasters, including reentry.	Planned
		Coordinate multimodal connections for fixed-route transit vehicles with other regional transit agencies and multimodal service providers.	Planned
		Obtain traffic signal priority from Orange, Osceola, and Seminole counties; and the cities of Maitland, Orlando, and Winter Park using the respective roadside field equipment for all fixed-route transit vehicles.	Existing
		Provide a demand-responsive transit plan to users and travelers on the LYNX Web site.	Planned
		Provide automated transit maintenance scheduling for all transit vehicles using automated vehicle conditions reporting.	Planned
		Provide fixed-route and paratransit/demand-responsive transit services for the central Florida region.	Existing
		Provide operator instructions and receive schedule performance data from transit vehicles while in service.	Existing
		Provide transit passenger electronic fare payment on all fixed-route and ACCESS LYNX demand-response vehicles, including the ability to obtain a fare payment card through agency-owned transit kiosks or other kiosks, including fare coordination with the Po	Existing
		Provide transit schedule and fare information to the central Florida traveler information system, local agency traveler information systems, the LYNX transit Web site, and the LYNX virtual planning center.	Existing
		Provide transit security on all transit vehicles, and at transit terminals and other transit facilities, using silent alarms and surveillance systems.	Existing
		Provide transit traveler information on the LYNX Web site to local private sector traveler information services, the central Florida traveler information system, and the virtual travel planning center, as well as making it available on all demand-response	Existing
		Receive road network conditions from regional traffic management agencies.	Planned
		Receive work zone information and road network status from regional maintenance and construction agencies.	Existing
		Track and evaluate schedule performance on all LYNX fixed-route transit and ACCESS LYNX paratransit vehicles.	Existing
	Traveler Information for Central Florida Regional ITS Architecture - FDOT District 5		
		(Inputs) Receive incident information, traffic information, weather information, and transit information from regional agencies.	Planned

ITS Stakeholders	Areas	RRDescription	Status
		(Outputs) Provide real-time trip planning capabilities for transit riders based on real-time travel conditions and transit availability.	Planned
Marion County Government			
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Collect, store and provide access to traffic data.	Existing
		Coordinate alternate routes with City of Ocala when applicable.	Existing
		Detect and verify incidents.	Existing
		Implement incident signal timing plans at County traffic signals.	Existing
		Maintain the County's traffic control devices and systems.	Existing
		Monitor traffic operations.	Existing
	Transit Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans with county EOCs, and provide emergency transit services for evacuations, fires, and disasters, including reentry services.	Planned
		Coordinate multimodal connections for fixed-route transit vehicles with other regional transit agencies.	Planned
		Provide a demand-responsive transit plan to users and travelers using local agency traveler information systems.	Planned
		Provide paratransit/demand-responsive transit service for Marion County.	Existing
		Provide transit schedule and fare information to local agency traveler information systems.	Planned
		Track and evaluate schedule performance on all MTS transit vehicles.	Planned
MetroPlan Orlando			
	Archived Data Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Collect and archive multimodal data from multimodal transportation service providers.	Planned
		Collect and archive traffic and accident information from RTMCs.	Planned
		Collect and archive transit information from regional transit providers.	Planned
Orange County			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on county roads, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers via traffic information devices on county roads and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to local transit operations, including ACCESS LYNX paratransit and LYNX operations.	Planned

ITS Stakeholders	Areas	RRDescription	Status
		Provide traffic information to travelers using Orange County DMS devices.	Existing
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information and traffic control with the FDOT District 5 RTMC.	Existing
		Coordinate traffic information with the Lake County TOC; SEMTAC; the City of Orlando TMC; county and local traffic Control systems; the Disney TOC; the Orange County Convention Center (OCCC)/International Drive Resort Area (IDRA operations; and the Osceol	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Existing
		Operate traffic signal systems, including CCTVs, signals, and sensors, for Orange County.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Existing
		Provide parking demand information to private/public parking facilities to determine parking capacity and traffic implications at the facility.	Planned
		Provide transit signal priority for regional transit providers using roadside devices.	Existing
Orange County/OCCC			
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the southwest Florida TMC information network.	Planned
		Provide traffic information to local transit operations (Access LYNX paratransit and LYNX operations).	Planned
		Provide traffic information to travelers using county and city public information systems, and the media.	Existing
		Provide traffic information to travelers using OCCC/IDRA DMS.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Parking Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Establish a relationship with financial institutions for smart card payments.	Existing
		Provide usability of regional smart cards at facility payment instruments.	Existing
		Receive parking lot input from the OCCC/IDRA TMC for coordination of traffic and signalization at the parking facility.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate traffic information with the Orange County TMC and the City of Orlando TMC.	Existing
		Provide parking information from the OCCC parking facility to travelers using dynamic message sign (DMS) devices while providing parking input to the facility to aide in the coordination/operation of traffic signals at the parking facility.	Planned
Orlando/Orange County Expressway Authority			
	Emergency Management for Central Florida Regional ITS Architecture - FDOT District 5		

		Provide incident information to OOCEA traffic, maintenance, and construction agencies, as well as regional ISPs.	Existing
		Provide the dispatch of and suggested route information to the OOCEA Road Rangers Service Patrols operated by FHP.	Existing
	Highway Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Control and coordinate highway traffic and lane control signals on OOCEA roadways.	Existing
		Coordinate maintenance resources for incident response with the FDOT District 7 maintenance system, and county and city PWDs.	Existing
		Coordinate threat information, such as surveillance or sensor data, with local traffic and emergency management agencies.	Planned
		Dispatch OOCEA Road Ranger vehicles to incidents on OOCEA-operated roadways	Existing
		Perform network surveillance for detection and verification of incidents on OOCEA roadways, and send traffic/incident information and traffic images to OOCEA Road Rangers Service Patrols.	Existing
		Provide incident information to travelers using traffic information devices on roadways, such as DMS devices and HAR broadcasts, and through local ISPs and Web sites.	Existing
		Provide traffic information reports to and coordinate traffic with other regional traffic management agencies, including the FDOT District 5 TMC.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Perform network surveillance for detection and verification of incidents on the streets surrounding the Disney parks, and send traffic/incident information and traffic images to the county sheriff, to local fire/EMS/police agencies, and the county EOC.	Existing
		Provide incident information to travelers using traffic information devices on Disney roads and through local ISPs.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to local transit operations, including ACCESS LYNX paratransit and LYNX operations.	Planned
		Provide traffic information to travelers using OOCEA DMS devices.	Existing
		Provide traffic information to travelers using the OOCEA traveler information system and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Maintenance and Construction for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incidents with the FDOT District 5 maintenance and construction operations.	Existing
		Receive a request for maintenance resources for incident response from the FDOT District 5 RTMC.	Planned
		Receive AVL information from OOCEA construction and maintenance vehicles.	Planned
		Receive requests for maintenance resources for incident response from county fire/EMS agencies, the county sheriff, local police/fire/EMS agencies, the FHP, 911 emergency call centers, regional county EOCs, and the FDOT District 5 EOC.	Existing

ITS Stakeholders	Areas	RRDescription	Status
Osceola County Engineering			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on county roads, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers using traffic information devices on county roads, and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to LYNX transit operations.	Planned
		Provide traffic information to travelers using Osceola County DMS devices.	Planned
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information and traffic control with the FDOT District 5 RTMC.	Existing
		Coordinate traffic information with the Orange County TMC.	Existing
		Obtain traffic images and traffic flow data from CCTVs and field sensors, and maintain operational control of its own field equipment.	Planned
		Operate traffic signal systems, including CCTVs, planned sensors, and existing signals, for Osceola County.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Existing
		Provide transit signal priority for regional transit providers using roadside devices.	Planned
Parking Facility Operators			
	Parking Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Establish a relationship with financial institutions for smart card payments.	Existing
		Provide parking information and parking lot reservation abilities to the central Florida traveler information system and private sector traveler information services.	Planned
		Provide parking information to local area transit systems, including LYNX.	Planned
		Provide usability of regional smart cards at facility payment instruments.	Existing
		Receive parking lot input from the TMCs in the cities of Daytona Beach, Ocala, and Orlando; the FDOT District 5 RTMC; and the Orange County TMC for coordination of traffic and signalization at parking facilities.	Planned
Private Bus Companies			

ITS Stakeholders	Areas	RRDescription	Status
	Transit Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate a transit security breach with local police.	Planned
		Coordinate emergency plans with county EOCs, and provide emergency transit services for evacuations, fires, and disasters, including reentry services.	Planned
		Coordinate multimodal connections for fixed-route transit vehicles with other regional transit agencies.	Planned
		Obtain traffic signal priority from Orange County and the City of Orlando using the respective roadside field equipment for all demand-response transit vehicles.	Existing
		Provide paratransit/demand-responsive transit services for the Orlando region.	Existing
		Provide transit passenger electronic fare payment ability on all fixed-route transit vehicles, including the ability to obtain a fare payment card at agency-owned transit kiosks or other kiosks.	Planned
		Provide transit schedule and fare information to the central Florida traveler information system and local agency traveler information systems.	Existing
		Provide transit security on all transit vehicles using silent alarms.	Planned
		Track and evaluate schedule performance on all I-RIDE tourist shuttles.	Existing
Regional Public Safety Agencies			
	Commercial Vehicle Operations for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate HAZMAT spill incident responses with county and/or local fire/EMS agencies.	Existing
		Receive HAZMAT spill notifications from private commercial fleets.	Existing
	Emergency Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate incident response and incident reports with the county sheriff, county fire/EMS agencies, the county EOC, local police/fire/EMS agencies, the FHP, and other public safety agencies.	Existing
		Participate in incident response, coordination, and reporting for the regional incident and mutual aid network.	Planned
		Receive and coordinate alarms and secure area surveillance for Federal Transit Administration (FTA) customers at FTA motorist aid call boxes.	Planned
		Receive emergency calls for incidents in the 911 center's jurisdiction. Coordinate incident response with local public safety agencies, including police/fire/EMS agencies, the county sheriff, and the FHP.	Existing
	Incident Management (Emergency) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources in response to incidents with county and city PWDs; OOCEA construction and maintenance systems; and the FDOT District 5 maintenance system.	Planned
		Receive emergency calls for incidents in jurisdictions of the 911 center. Coordinate incident response and dispatch with county and local public safety agencies, including police/fire/EMS agencies, the sheriff, and the FHP.	Existing
SCAT - Space Coast Area Transit			
	Transit Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate a transit security breach with local police and the county sheriff.	Planned
		Coordinate emergency plans with county EOCs, and provide emergency transit services for evacuations, fires, and disasters, including reentry services.	Planned
		Coordinate multimodal connections for fixed-route transit vehicles with other regional transit agencies and multimodal service providers.	Planned
		Provide a demand-responsive transit plan to users and travelers using local agency traveler information systems.	Planned
		Provide fixed-route bus service and paratransit/demand-responsive transit service for Brevard County.	Existing

		Provide operator instructions and receive schedule performance information from transit vehicles while in service.	Existing
		Provide transit schedule and fare information to the central Florida traveler information system, local agency traveler information systems, and the SCAT Web site.	Existing
		Provide transit security on all transit vehicles using silent alarms.	Planned
		Provide transit traveler information to the SCAT Web site, local private sector traveler information services, and local agency traveler information systems, and make it available on all SCAT transit vehicles and at transit station kiosks.	Planned
		Receive road network conditions from regional traffic management agencies.	Planned
		Receive work zone information and road network status from regional maintenance and construction agencies.	Planned
		Track and evaluate schedule performance on all SCAT transit vehicles.	Existing
Seminole County			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on county roads, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers using traffic information devices on county roads and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to local transit operations, including ACCESS LYNX paratransit and LYNX operations.	Planned
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Provide traffic information to travelers using Seminole County DMS devices.	Existing
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information for FDOT District 5; Orange County; and county and local traffic control systems (TCSs).	Existing
		Obtain traffic flow data from field sensors, and maintain operational control of its own field equipment.	Existing
		Operate traffic signal systems, including CCTVs, signals, and sensors, for Seminole County.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Existing
		Provide transit signal priority for regional transit providers using roadside devices.	Planned

ITS Stakeholders	Areas	RRDescription	Status
SunGuide Partners/ISP Vendor Team			
	Traveler Information for Central Florida Regional ITS Architecture - FDOT District 5		
		Collect traffic information; incident information; transit and fare schedules; and weather information and provide it to the media and private travelers.	Existing
		Coordinate and share traveler information with all other traveler information providers in the region.	Existing
		Provide interactive traveler information on the agency Web site and at regional kiosks in rest areas/visitor centers/service plazas.	Existing
		Provide trip generation to travelers based on real-time travel conditions from regional traffic, transit, and emergency management agencies.	Existing
Volusia County			
	Incident Management (Traffic and Maintenance) for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate maintenance resources for incident response with county and city maintenance and construction systems.	Planned
		Perform network surveillance for detection and verification of incidents on County roads, and send traffic/incident information and traffic images to county fire/EMS/sheriff agencies, the FHP, the county EOC, and local fire/EMS/police agencies.	Existing
		Provide incident information to travelers using traffic information devices on county roads, and through local ISPs, Web sites, and the local media.	Existing
		Receive incident information, incident response status, and resource requests from the county EOC/warning points.	Existing
	Information Dissemination for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency plans, incident responses, and resources with the county EOC/warning points.	Existing
		Coordinate evacuation and reentry plans with the county EOC/warning points.	Existing
		Provide traffic information in a coordination effort to the FDOT statewide C2C information network and the central Florida TMC information network.	Planned
		Provide traffic information to travelers using private companies; county and city public information systems; and the media.	Existing
		Provide traffic information to travelers using Volusia County DMS devices.	Planned
		Provide traffic information to VOTRAN transit operations.	Planned
		Receive AMBER Alerts and other wide area alert information from the county EOC/warning points.	Existing
	Traffic Signal Control for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate emergency traffic signal control with the county EOC/warning points.	Existing
		Coordinate HRI signal adjustments, and provide track status information (e.g., blockage) to rail operators and local traffic operations.	Existing
		Coordinate traffic information and traffic control with the FDOT District 5 RTMC.	Existing
		Coordinate traffic information with the City of Daytona Beach TMC and the FDOT District 5 RTMC.	Existing
		Operate county and local drawbridge systems in conjunction with county signal systems.	Planned
		Operate traffic signal systems, including CCTVs, signals, and sensors, for Volusia County.	Existing
		Provide emergency signal preemption for county and local fire/EMS agencies.	Planned
		Provide transit signal priority for regional transit providers using roadside devices.	Existing
VOTRAN			
	Transit Management for Central Florida Regional ITS Architecture - FDOT District 5		
		Coordinate a transit security breach with local police and the county sheriff.	Planned

ITS Stakeholders	Areas	RRDescription	Status
		Coordinate emergency plans with the county EOCs, and provide emergency transit services for evacuations, fires, and disasters, including reentry services.	Planned
		Coordinate multimodal connections for fixed-route transit vehicles with other regional transit agencies and multimodal service providers.	Existing
		Obtain traffic signal priority from Volusia County and the City of Daytona Beach using the respective roadside field equipment for all VOTRAN transit vehicles.	Existing
		Provide a demand-responsive transit plan to users and travelers on the VOTRAN Web site.	Planned
		Provide automated transit maintenance scheduling for all VOTRAN transit vehicles using automated vehicle conditions reporting.	Planned
		Provide fixed-route bus service and paratransit/demand-responsive transit service for Volusia County.	Existing
		Provide operator instructions and receive schedule performance information from transit vehicles while in service.	Existing
		Provide transit passenger electronic fare payment on all fixed-route or demand-response transit vehicles.	Planned
		Provide transit schedule and fare information to the central Florida traveler information system, local agency traveler information system, and the VOTRAN transit Web site.	Existing
		Provide transit security on all transit vehicles, in transit terminals, and at transit stops using silent alarms and surveillance systems.	Planned
		Provide transit traveler information to the VOTRAN Web site, local private sector traveler information services, and local agency traveler information systems, and make it available on all VOTRAN transit vehicles and at transit station kiosks.	Existing
		Receive road network conditions from regional traffic management agencies.	Planned
		Receive work zone information and road network status from regional maintenance and construction agencies.	Planned
		Track and evaluate schedule performance on all VOTRAN transit vehicles.	Existing

Section 8

ITS RITSA Goals & Objectives

SGID	ITS Support Goals	Planning Factors
1	Enhance mobility, convenience, and comfort for transportation system users	**D.** Increase the accessibility and mobility of people and for freight;
2	Enhance the integration and connectivity of the transportation system	**F.** Enhance the integration and connectivity of the transportation system, across and between modes,
3	Improve the safety of the transportation system	**B.** Increase the safety of the transportation system for motorized and nonmotorized users;
4	Improve the security of the transportation system	**C.** Increase the security of the transportation system for motorized and nonmotorized users;
5	Increase operational efficiency and reliability of the transportation system	**G.** Promote efficient system management and operation;
6	Preserve the transportation system	**H.** Emphasize the preservation of the existing transportation system.
7	Reduce environmental impacts	**E.** Protect and enhance the environment, promote energy conservation, improve the quality of life,
8	Support regional economic productivity and development	**A.** Support the economic vitality of the metropolitan area, especially by enabling global

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
1	Arterial Management	Delay	**a.** Decrease the seconds of control delay per vehicles on arterial roads by X percent in Y years. (Control delay is defined as the portion of the total delay attributed to traffic signal operation for signalized intersections).	Control delay seconds per vehicle.	A, G	ATMS03, ATMS07
			b. Increase the miles of arterials in the region operating at level of service (LOS) Z by X percent in Y years.	Percent of arterial miles in region operating at LOS Z.		
2	Arterial Management	Reliability	**a.** Reduce buffer index on arterials during peak and off-peak periods by X percent in Y years.	The buffer index (represents the extra time (buffer) travelers add to their average travel time when planning trips in order to arrive	G	ATIS09, ATIS10, ATMS03, ATMS06, ATMS08, EM04, MC08, MC10
			b. Reduce delay associated with incidents on arterials by X percent by year Y.	Hours of delay associated with incidents.		
3	Arterial Management	Traffic Montoring and Data Collection	**a.** Field data collection is conducted either through floating car studies or other methods at least once every Y years on major signalized arterials and X years on minor signalized arterials.	Number of field data collection studies performed every Y and X years on major and minor signalized arterials, respectively.	G	ATMS01, ATMS02, ATMS 03
			b. X percent of intersections in the region are equipped and operating with traffic signals that enable real-time monitoring and management of traffic flows by year Y.	Percent of intersections in the region equipped and operating with traffic signals that enable real-time monitoring and management of traffic flows.		
			c. X percent of major and minor arterials are equipped and operating with arterial link traffic data detection stations (appropriate technology) per Z distance by year Y.	Percent of major and minor arterials equipped and operating with arterial link traffic data detection stations (appropriate technology) per Z distance.		
			d. X percent of major and minor arterials are equipped and operating with closed circuit television (CCTV) cameras per Z distance by year Y.	Percent of major and minor arterials equipped and operating with closed circuit television (CCTV) cameras per Z distance.		
4	Arterial Management	Traffic Signal Management	**a.** Maintain a program of evaluating X percent of signals for retiming every Y years.	Number of traffic signals evaluated for retiming.	G	ATMS03
			b. Increase the number of intersections running in a coordinated, closed-loop, or adaptive system by X percent in Y years.	Number of intersections running in a coordinated, closed-loop, or adaptive system.		
			c. Special timing plans are available for use during freeway incidents, roadway construction activities, or other special events for X miles of arterials in the region by year Y.	Number of miles of arterials that have at least one special timing plan for incidents, construction, or events.		
			d. Crash data for all arterials in the region is reviewed every X years to determine if signal adjustments can be made to address a safety issue.	Number of years between reviews of crash data on all arterials for possible signal timing impacts.		
5	Emergency/ Incident Management	Customer Satisfaction	**a.** Increase customer satisfaction with the region's incident management by X percent over Y years.	Percentage of customers satisfied with region's incident management practices.	D, G	ATMS08, EM01, EM04
6	Emergency/ Incident Management	Evacuation Times	**a.** Reduce the per capita time to evacuate Z persons in the region by X percent over Y years.	Per capita time to evacuate.	B, C	EM09, EM10

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
7	Emergency/ Incident Management	Incident Duration	**a.** 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.).	Average incident notification time of necessary response agencies.	B, C	APTS05, ATMS08, EM01 EM02, EM03, EM04
			b. Reduce mean time for needed responders to arrive on-scene after notification by X percent over Y years.	Mean time for needed responders to arrive on-scene after notification.		
			c. 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.)	Mean incident clearance time per incident.		
			d. 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.)	Mean roadway clearance time per incident.		
			e. 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.	Mean time of incident duration.		
8	Emergency/ Incident Management	Inter-Agency Coordination	**a.** Increase percentage of incident management agencies in the region that (participate in a multi-modal information exchange network, use interoperable voice communications, participate in a regional coordinated incident response team, etc.) by X percent in Y years.	Percentage of incident management agencies in region participating in multi-modal information exchange network.	F, G	ATMS08, EM01, EM02, EM04, EM08
			b. Increase percentage of incident management agencies in the region that (participate in a multi-modal information exchange network, use interoperable voice communications, participate in a regional coordinated incident response team, etc.) by X percent in Y years.	Number of agencies in the region with interoperable voice communications.		
			c. Increase percentage of incident management agencies in the region that (participate in a multi-modal information exchange network, use interoperable voice communications, participate in a regional coordinated incident response team, etc.) by X percent in Y years.	Number of participating agencies in a regional coordinated incident response team.		
			d. Increase the number of corridors in the region covered by regional coordinated incident response teams by X percent in Y years.	Number of TIM corridors in the region covered by regional coordinated incident response teams.		
			e. Hold at least X multi-agency after-action review meetings each year with attendance from at least Y percent of the agencies involved in the incident's response.	Number of multi-agency after-action reviews per year.		
			f. Hold at least X multi-agency after-action review meetings each year with attendance from at least Y percent of the agencies involved in the incident's response.	Percentage of responding agencies participating in after-action review.		
			g. At least X percent of transportation operating agencies have a plan in place for a representative to be at the local or State Emergency Operations Center (EOC) to coordinate strategic activities and response planning for transportation during emergencies by year Y.	X percent of transportation operating agencies that have a plan in place for a representative to be at the local (city or county) EOC or State EOC to coordinate strategic activities and response planning for transportation during emergencies.		
9	Emergency/ Incident Management	Person Hours of Delay	**a.** Reduce the person hours (or vehicle hours) of total delay associated with traffic incidents by X percent over Y years.	Person hours (or vehicle hours) of delay associated with traffic incidents.	A, G	ATIS01, ATIS02, ATIS04, ATIS09, ATIS10, ATMS06, ATMS08, MC01, MC04
10	Emergency/ Incident Management	Training	**a.** 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.	B, G	ATMS08
11	Emergency/ Incident Management	Traveler Information	**a.** Reduce time between incident/emergency verification and posting a traveler alert to traveler information outlets (e.g., variable message signs, agency website, 511 system) by X minutes in Y years.	Time to alert motorists of an incident/emergency.	D, G	ATIS01, ATIS02, ATIS09, ATIS10, ATMS06
			b. Increase number of repeat visitors to traveler information website (or 511 system) by X percent in Y years.	Number of repeat visitors to traveler information website (or 511 system).		
			c. Reduce the time between recovery from incident and removal of traveler alerts for that incident.	Time between recovery from incident and removal of traveler alerts.		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
12	Emergency/ Incident Management	Use of Technology	**a.** 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.	Number of ITS-related assets in use for incident detection.	B, G	ATMS06, ATMS08 EM02
			b. 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.	Number of regional roadway miles covered by ITS-related assets in use for incident detection.		
			c. Increase number of traffic signals equipped with emergency vehicle preemption by X percent in Y years.	Number of traffic signals equipped with emergency vehicle preemption.		
13	Environmental	Clean Air and Climate Change	**a.** Reduce emissions of fine particulates (PM2.5) by X percent by year Y.	Fine particulate (PM2.5) emissions - tons per day	E	ATMS11
			b. Reduce emissions of fine particulates (PM2.5) by X percent by year Y.	Fine particulate (PM2.5) levels - micrograms per cubic meter		
			c. Reduce emissions of coarse particulates (PM10) by X percent by year Y.	Course particulate (PM10) emissions - tons per day		
			d. Reduce emissions of coarse particulates (PM10) by X percent by year Y.	Course particular (PM10) levels - micrograms per cubic meter		
			e. Reduce carbon dioxide (CO2) emissions to X percent below year Y by year Z.	Carbon dioxide emissions - tons per day		
14	Freeway Management	Efficiency	**a.** Reduce the number of person hours (or vehicle hours) of delay experienced by travelers on the freeway system.	Hours of delay (vehicle-hours or person-hours).	A, G	ATIS01, ATIS02 ATIS04, ATIS09, ATIS10, ATMS04, ATMS06, ATMS18, ATMS22, ATMS23
			b. Reduce the number of person hours (or vehicle hours) of delay experienced by travelers on the freeway system.	Hours of delay per capita or driver.		
			c. Reduce the share of freeway miles at Level of Service (LOS) X by Y by year Z.	Miles at LOS X or V/C > 1.0 (or other threshold).		
15	Freeway Management	HOV Lanes	**a.** Increase the number of HOV lane miles from X to Y by year Z.	Total number of HOV lane miles in a region.	G	ATMS05
			b. Provide options for reliable travel times for carpools and transit on at least X percent of the freeway network by year Y.	Share of freeway network with HOV lanes.		
			c. Ensure that all HOV lanes operate at no less than 50 mph during their hours of operation.	Minimum and Average speeds in HOV lanes.		
			d.Ensure that all HOV lanes operate with a volume of at least X vehicles per hour.	Vehicle volume and persons per hour per lane.		
			e. Ensure that all HOV lanes carry a throughput of at least Y persons per hour.	Vehicle volume and persons per hour per lane.		
			f. Increase the average vehicle occupancy rate in HOV lanes to X by year Y.	Vehicle volume and persons per hour per lane.		
			g. Increase the compliance rate for HOV lanes to X by year Y.	Number of vehicles violating HOV restrictions.		
16	Freeway Management	Managed Lanes	**a.** Increase the miles of managed lanes in the region from X to Y by year Z.	Miles of managed lanes.	G	ATMS05, ATMS23
			b. Provide options for reliable travel times for certain types of travel (e.g., transit, carpools, trucks, etc.) on at least X percent of the freeway network by year Y.	Share of freeway network with managed lanes (by class of traveler).		
			c. 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.		
			d. 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.		
			e. 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.		
17	Freeway Management	Pricing and Tolling	**a.** Increase the percentage of users carrying electronic toll collection (ETC) transponders by X percent by year Y.	Percentage of drivers with ETC transponders.	G	ATMS10, ATMS25
			b. Increase the share of toll roadways and bridges that are using variable pricing (e.g., congestion pricing) to X percent by year Y.	Share of toll roads and bridges using variable pricing.		
			c. Increase the share of freeways that are priced to X percent by year Y.	Lane miles that are priced.		
18	Freeway Management	Ramp Management	**a.** Increase the percent of freeway interchanges operating at LOS Z or higher during peak periods by X percent by year Y.	Percent of interchanges operating at LOS Z or above during peak periods (per year).	G	ATMS04
			b. Reduce the number of congestion-inducing incidents occurring at freeway ramps by X percent by year Y.	Total number of congestion-inducing incidents at freeway interchanges during peak period (per year).		
			c. Increase the number freeway ramps currently metered by X percent by year Y.	Total number of ramp meters (by year of installation).		
19	Freeway Management	Reliability	**a.** Reduce buffer index on the freeway system during peak and off-peak periods by X percent in Y years.	The buffer index (represents the extra time (buffer) travelers add to their average travel time when planning trips in order to arrive on-time 95 percent of the time).	G	ATIS09, ATIS10, ATMS04, ATMS06 ATMS08, ATMS22, ATMS23, MC08, MC10
			b. Reduce delay associated with incidents on the freeway system by X percent by year Y.	Hours of delay associated with incidents.		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
20	Freeway Management	Transportation Management Centers	**a.** Increase the level of transportation management center (TMC) field hardware (cameras, variable message signs, electronic toll tag readers, ITS applications, etc.) by X percent by year Y.	Total amount of TMC equipment.	G	ATMS01, ATMS02, ATMS 04, ATMS06
			b. Increase the hours of TMC operation and level of staffing by X percent by year Y.	Number of hours of TMC operation and number of staff serving the TMC.		
			c. Increase the percent of regional transportation system monitored by the TMC for real-time performance.	Percent of regional transportation system monitored by the TMC for real-time performance.		
21	Freight Management	Border Crossing	**a.** Decrease average crossing times at international borders by X minutes for each border in the region over Y years.	Average border crossing time for freight at international borders per year.	A	CVO03, CVO05, CVO06
			b. Increase the use of electronic credentialing to X percent of weigh stations and border crossings by year Y.	Percent of weigh stations and border crossings in the region that use electronic credentialing.		
22	Freight Management	Customer Satisfaction	**a.** Increase ratings for customer satisfaction with freight mobility in the region among shippers, receivers, and carriers by X percent in Y years.	Percentage of customers satisfied with region's freight management practices.	A	CVO01, CVO03, CVO05, CVO04, CVO06, CVO07, CVO08
23	Freight Management	Detours and Routing	**a.** X percent of freeway and major arterial detours can accommodate commercial vehicles by year Y.	Percent of detours of freeways and major arterials that can accommodate commercial vehicles.	A	ATIS01, ATIS02, ATIS04, ATIS09, ATIS10, ATMS06, ATMS08, MC04
			b. Provide freight operators with traveler alerts and alternate routes in the case of incidents, special events, weather, construction, and severe congestion at choke points on X percent of freight-significant routes by year Y.	Percent of freight-significant routes where traveler alerts and alternate route information is provided in the case of incidents, special events, weather, construction, and severe congestion at choke points.		
24	Freight Management	Intermodal Facilities	**a.** Reduce the frequency of delays per month at intermodal facilities by X percent in Y years.	Frequency of delays per month at intermodal facilities where a delay is defined as an addition of Z minutes to free flow conditions.	A	ATMS23, CVO02
			b. Reduce the average duration of delays per month at intermodal facilities by X percent in Y years.	Average duration of delays per month at intermodal facilities.		
25	Freight Management	Travel Time Delay	**a.** Increase the mobility index ([Ton-miles of travel] / [Vehicle-miles of travel * Average speed]) by X percent in Y years.	Mobility index for system users defined as [Ton-miles of travel] / [Vehicle-miles of travel * Average speed].	A	CVO01, CVO03, CVO04, CVO05, CVO06, CVO07
			b. Decrease the annual average travel time index for freight by X points in Y years.	Travel time index: ratio of observed average travel time to free-flow travel time.		
			c. Decrease point-to-point travel times on selected freight-significant highways by Y minutes within Y years.	Point-to-point travel times on selected freight-significant highways.		
			d. Decrease hours of delay per 1,000 vehicle miles traveled on selected freight-significant highways by X percent in Y years.	Hours of delay per 1,000 vehicle miles on selected freight-significant highways.		
26	Freight Management	Travel Time Reliability	**a.** Reduce buffer index on regional freight routes during peak and off-peak periods by X percent in Y years.	Buffer Index on regional freight routes during peak and off-peak period.	A	ATIS04, ATMS06, ATMS08, ATMS22, ATMS23, CVO03, CVO05, CVO06, MC06, MC08, MC10
27	Integration	Connectivity	**a.** Reduce door-to-door trip time by X percent by year Y.	Average door-to-door trip time.	F	APTS02, APTS04, APTS07, APTS11, ATIS06, ATMS07
			b. Reduce cost of transfer fees paid by X percent by year Y.	Average cost of transfers.		
28	Integration	Transportation Data Collection	**a.** Enhance planning with better data	Amount of data gathered from ITS enhancements used in infrastructure and operations planning	F	AD1, AD2, AD3, ATIS06
				Number of planning activities using data from ITS systems		
				Years of data in database that is easily searchable and extractable		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
29	Preservation	Preserve Exisitng Infrastructure	**a.** Maintain pavement condition index (PCI) of X or greater for local streets and roads	Pavement condition index	H	CVO06, MC01, MC02, MC12
			b. Distressed pavement condition lane-miles not to exceed X percent of total state highway system	Distressed pavement condition lane miles		
			c. Enhance asset and resource management	Number of assets tracked in real-time		
				Percentage of geographic jurisdiction covered by agency electronic communications		
				Extended pavement life due to truck weight enforcement		
				Percentage of maintenance activities completed in required time-frame		
				Rate at which equipment is utilized		
				Percentage of fleet/equipment within lifecycle		
				Vehicle operating costs		
			d. Reduce commercial vehicle size and weight violations	Number of size and weight violations		
30	Preservation	Transit Maintenance	**a.** Increase the average number of miles between service calls for transit service in the region to X miles	Average number of transit miles per service call	H	APTS06
			b. Enhance garage operations efficiency	Number of fleet vehicles with maintenance diagnostic equipment		
				Number of vehicles operating under computer-aided dispatch.		
31	Safety	Vehicle Crashes and Fatalities	**a.** Reduce the total number of crashes in the region by X percent by year Y.	Total crashes per X VMT.	B	ATMS12, ATMS13 ATMS14, ATMS19, ATMS22, ATMS24, ATMS26, AVS01, AVS02, AVS03, AVS04, AVS05, AVS06, AVS07, AVS08, AVS09, AVS10, AVS12, CVO08, MC05
			b. Reduce the total number of fatalities and severe injuries in the region by X percent by year Y.	Total fatalities per X VMT.		
				Total severe injuries per X VMT.		
			c. Reduce the total number of crashes involving bicyclists and pedestrians in the region by X percent by year Y.	Total crashes involving pedestrians.		
				Total crashes involving bicycles.		
			d. Reduce crashes due to road weather conditions	Number of crashes and fatalities related to weather conditions		
			e. Reduce crashes due to unexpected congestion	Number of crashes and fatalities related to unexpected congestion		
			d. Reduce secondary crashes	Number of secondary crashes		
			e. Reduce crashes due to red-light running	Number of crashes and fatalities related to red-light running		
			f. Reduce crashes due to unsafe drivers, vehicles and cargo on the transportation system	Number of crashes and fatalities due to commercial vehicle safety violations		
			g. Reduce lane departure crashes	Number of crashes and fatalities related to inappropriate lane departure, crossing or merging		
			h. Reduce crashes at railroad crossings	Number of crashes and fatalities at railroad crossings		
			i. Reduce crashes at intersections	Number of crashes and fatalities related to red-light running		
				Number of crashes and fatalities at signalized intersections		
				Number of crashes and fatalities at unsignalized intersections		
			j. Reduce speed differential	Number of crashes and fatalities related to excessive speeding		
				Number of speed violations		
			k. Reduce crashes due to driver errors and limitations	Number of crashes and fatalities related to driving while intoxicated		
				Number of crashes and fatalities related to driver inattention and distraction		
32	Safety	Worker Safety	**a.** Safeguard public safety personnel while they are at roadway incidents and emergencies	Number of public safety personnel struck by vehicle at incident/emergency site	B	ATMS12, MC09
				Number of public safety vehicles struck at incident/emergency site		
			b. Enhance safety of workers	Number of crashes and fatalities in work zones		
				Number of workers injured by vehicles in work zones		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
33	Security	Crime	**a.** Reduce security risks to transit passengers and transit vehicle operators	Number of transit facilities and vehicles under security surveillance	C	APTS05, CVO10, CVO11, CVO12, CVO13, EM05, EM06, EM07
				Number of security incidents on transit vehicles		
				Number of security incidents at transit facilities		
			b. Reduce security risks to motorists and travelers	Number of security incidents on roadways		
				Number of critical sites with security surveillance		
			c. Reduce security risks to transportation infrastructure	Number of critical sites with security surveillance		
				Number of security incidents on transportation infrastructure		
				Number of critical sites with hardened security enhancements		
34	Security	Terrorism, Natural Disasters, and Hazardous Material Incidents	**a.** Reduce security risks to transit passengers and transit vehicle operators	Number of transit facilities and vehicles under security surveillance	C	APTS05, CVO10, CVO11, CVO12, CVO13, EM05, EM06, EM07
				Number of security incidents on transit vehicles		
				Number of security incidents at transit facilities		
			b. Reduce security risks to motorists and travelers	Number of security incidents on roadways		
				Number of critical sites with security surveillance		
			c. Reduce security risks to transportation infrastructure	Number of critical sites with security surveillance		
				Number of security incidents on transportation infrastructure		
				Number of critical sites with hardened security enhancements		
			d. Reduce exposure due to Hazmat & homeland security incidents	Number of Hazmat incidents		
				Number of homeland security incidents		
				Homeland security incident response time		
			e. Enhance tracking and monitoring of sensitive Hazmat shipments	Number of Hazmat shipments tracked in real-time		
35	Special Event Management	Entry/Exit Travel Times	**a.** Reduce average travel time into and out of the event by X percent in Y years.	Average travel time to selected special events from a set of locations in the area over a year.	G	APTS07, ATIS01, ATIS02, ATIS04, ATMS03, ATMS04, ATMS07, ATMS08, ATMS09, ATMS17, ATMS18, ATMS22, ATMS23
			b. Reduce average travel time into and out of the event by X percent in Y years.	Average travel time away from selected special events to a set of locations over a year.		
			c. Reduce average time to clear event's exiting queue by X percent in Y years.	Average time to clear event's exiting queue by year per event.		
			d. Reduce non-special event VMT in the event area during events by X percent in Y years.	Non-special event VMT in the event area during events over a year.		
			e. Reduce buffer time index for travelers to multiple similar special events by X percent in Y years.	Buffer time index for travelers to multiple similar special events.		
36	Special Event Management	Mode Shift From SOV	**a.** Decrease the percent of special event attendees traveling to the event in single-occupancy vehicles by X percent in Y years.	Percent of special event attendees using single-occupancy vehicles each year for selected events.	D	ATPS07, APTS08, ATIS08, ATIS09, ATMS17
			b. Increase the percent of special event attendees using park & ride lots by X percent in Y years.	Percent of special event attendees utilizing park & ride lots each year for selected events.		
			c. Increase the percent of special events with dedicated shuttle service by X percent in Y years.	Percent of special events with dedicated shuttle service for selected events during a 1-year period.		
37	Special Event Management	Multi-Agency Coordination and Training	**a.** Increase the percentage of special event stakeholder agencies participating in a regional event management team to X percent by year Y.	Percent of stakeholder agencies participating agencies in a regional special event management team.	F, G	ATMS08
			b. Increase the number of agencies with special event management responsibilities that use interoperable communications by X percent in Y years.	Number of agencies special event management responsibilities using interoperable communications.		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
38	Special Event Management	Parking Management	**a.** Increase the number of special events that use shared parking facilities (e.g., parking lots of nearby businesses or organizations) by X percent in Y years.	Number of special events that use shared parking facilities.	D, G	ATMS16, ATMS17
			b. Increase the use of flexible pricing mechanisms near special event locations on X percent of parking spaces in Y years.	Percent of parking spaces near special event locations that use flexible pricing mechanisms.		
			c. Increase on-street parking restrictions on X percent of widely used routes during special events in Y years.	Percent of routes widely used during planned special events with on-street parking restrictions.		
			d. Decrease the time spent clearing special event venue parking lots of vehicles by X percent in Y years following each event.	Percent decrease in time to clear parking lots.		
			e. Enhance parking facility services and management	Number parking facilities with electronic fee collection		
			f. Enhance parking facility services and management	Number of parking facilities with automated occupancy counting and space management		
			g. Enhance parking facility services and management	Number of parking facilities with advanced parking information to customers		
			h. Enhance parking facility services and management	Number of parking facilities with coordinated availability information		
			i. Enhance parking facility services and management	Number of parking facilities with electronic fee collection		
			j. Enhance parking facility services and management	Number of parking facilities with coordinated electronic payment systems		
39	Special Event Management	Traveler Information	**a.** Increase the methods of effectively disseminating special event information to travelers by X percent in Y years (e.g., media releases, highway advisory radio, dynamic message signs, commercial AM and FM radio).	Number of effective methods to disseminate special event information to travelers.	D, G	APTS08, ATIS01, ATIS02, ATMS06
			b. Increase the percentage of planned special events (with attendance above Z) with information on anticipated and actual travel conditions being disseminated to the traveling public at least X hours prior to the event.	Percent of special events with expected attendance over Z that traveler information is disseminated at least X hours prior to the event.		
40	Special Event Management	Use of Technology	**a.** Increase the percent of major special events using ITS-related assets (e.g., roadside cameras, dynamic message signs, vehicle speed detectors) to detect and manage special event entry/exit bottlenecks and incidents by X percent in Y years.	Percent of special events using ITS-related assets to detect and manage incidents/bottlenecks at entry/exit routes of the events.	D, G	ATMS01, ATMS03, ATMS06, ATMS08
			b. Implement special event traffic signal timing plans at X percent of major special events each year beginning in year Y.	Percent of major special events each year in which a special event traffic signal timing plan was implemented.		
41	System Efficiency	Cost of Congestion	**a.** Reduce the annual monetary cost of congestion per capita for the next X years.	Cost (in dollars) of congestion or delay per capita.	A, G	ATIS01, ATIS02, ATIS04, ATIS05, ATIS08, ATIS09, ATIS10 ATMS03, ATMS04, ATMS05, ATMS06, ATMS07, ATMS08, ATMS09, ATMS10, ATMS15, ATMS18, ATMS20, ATMS22, ATMS23, AVSS08, AVSS11, EM04, MC08, MC10
42	System Efficiency	Delay	**a.** Reduce hours of delay per capita by X percent by year Y.	Hours of delay (person-hours).	A, G	APTS07, APTS09 ATIS01, ATIS02, ATIS04, ATIS05, ATIS08, ATIS09, ATIS10 ATMS03, ATMS04, ATMS05, ATMS06, ATMS07, ATMS08, ATMS09, ATMS10, ATMS15, ATMS18, ATMS20, ATMS22, ATMS23, AVSS11, EM06, EM08, EM10
			b. Reduce hours of delay per capita by X percent by year Y.	Hours of delay per capita.		
			c. Reduce hours of delay per driver by X percent by year Y.	Hours of delay (person-hours).		
			d. Reduce hours of delay per driver by X percent by year Y.	Hours of delay per driver.		
43	System Efficiency	Duration of Congestion	**a.** Reduce the daily hours of recurring congestion on major freeways from X to Y by year Z.	Hours per day at LOS F or V/C > 1.0 (or other threshold).	G	ATIS08, ATMS03, ATMS04, ATMS05, ATMS06, ATMS07, ATMS09, ATMS15, ATMS18, ATMS22, ATMS23, AVSS08, AVSS11, MC08
			b. Reduce the number of hours per day that the top 20 most congested roadways experience recurring congestion by X percent by year Y.	Hours per day at LOS F or V/C > 1.0 (or other threshold).		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
44	System Efficiency	Energy Consumption	**a.** Reduce total energy consumption per capita for transportation by X percent by year Y.	Total energy consumed per capita for transportation.	E	APTS07, APTS09, ATIS04, ATIS05, ATIS08, ATIS09, ATIS10, ATMS03, ATMS04, ATMS05, ATMS06, ATMS07, ATMS09, ATMS10, ATMS15, ATMS18, ATMS20, AVSS11, MC08, MC10
			b. Reduce total fuel consumption per capita for transportation by X percent by year Y.	Total fuel consumed per capita for transportation.		
			c. Reduce excess fuel consumed due to congestion by X percent by year Y.	Excess fuel consumed (total or per capita).		
45	System Efficiency	Extent of Congestion	**a.** Reduce the percentage of facility miles (highway, arterial, rail, etc.) experiencing recurring congestion during the peak period by X percent by year Y.	Percent of lane-miles (or rail) operating at LOS F or V/C > 1.0	G	ATIS08, ATMS03 ATMS04, ATMS05, ATMS06, ATMS07, ATMS09, ATMS15, ATMS18, ATMS22, ATMS23, AVSS08, AVSS11, MC08
			b. Maintain the rate of growth in facility miles experiencing recurring congestion as less than the population growth rate (or employment growth rate).	Percent of lane-miles (or rail) operating at LOS F or V/C > 1.0		
			c. Reduce the share of major intersections operating at LOS Z by X percent by year Y.	Percent of intersections operating at LOS F or V/C > 1.0		
46	System Efficiency	Intensity of Congestion (Travel Time Index)	**a.** Reduce the regional average travel time index by X percent per year.	Travel time index (the average travel time during the peak period, using congested speeds, divided by the off-peak period travel time, using posted or free-flow speeds).	G	APTS07, APTS09, ATIS01, ATIS02, ATIS04, ATIS05, ATIS08, ATIS09, ATIS10, ATMS03, ATMS04, ATMS05, ATMS06, ATMS07, ATMS09, ATMS10, ATMS15, ATMS18, ATMS20, ATMS22, ATMS23, AVSS11, MC08, MC10
47	System Efficiency	Travel Time	**a.** 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).	G	APTS02, APTS07, APTS09, ATIS04, ATIS05, ATIS08, ATIS09, ATIS10, ATMS03, ATMS04, ATMS05, ATMS06, ATMS07, ATMS08 ATMS09, ATMS10, ATMS15, ATMS17, ATMS18, ATMS20, ATMS22, ATMS23, ATMS24, AVSS11, MC08, MC10
			b. Improve average travel time during peak periods by X percent by year Y.	Average travel time during peak periods (minutes).		
48	System Efficiency	Trip Connectivity	**a.** Reduce door-to-door trip time by X percent by year Y.	Average door-to-door trip time.	G	APTS02, APTS04, APTS07, APTS11, ATIS06, ATMS07
			b. Reduce cost of transfer fees paid by X percent by year Y.	Average cost of transfers.		
49	System Efficiency	Vehicle Miles Traveled	**a.** Reduce vehicle miles traveled per capita by X percent by year Y.	Average VMT per capita per day, per week, or per year.	G	APTS07, APTS08, APTS09, ATIS03, ATIS04, ATIS05, ATIS08, ATMS05, ATMS09
50	System Option	Modal options for Individuals with Disabilities	**a.** Increase the percent of intersections with ADA (Americans with Disabilities Act) provisions to X percent by year Y.	The percent of intersections with ADA provisions.	D	ATPS03, APTS07 APTS08
			b. Increase the availability of transit to individuals with disabilities by X percent by year Y.	The percent of individuals with disabilities that can access transit.		
			c. Increase the percent of transit stops with ADA (Americans with Disabilities Act) provisions to X percent by year Y.	The percent of transit stops with ADA provisions.		
51	System Option	Mode Share	**a.** Reduce per capita SOV commute trip rate by X percent in Y years.	SOV commute trips per capita.	D	APTS04, APTS07, APTS08, ATIS03, ATIS07, ATIS08, ATMS09
			b. Increase alternative (non-SOV) mode share for all trips by X percent within the next Y years.	Share of trips by each mode of travel.		
			c. Increase active (bicycle/pedestrian) mode share by X percent by year Y.	Share of trips by each mode of travel.		
			d. Reduce SOV vehicle trips by X percent through travel demand management strategies (e.g., employer or residential rideshare) by year Y.	Share of employees walking, biking, telecommuting, carpooling/vanpooling, riding transit, driving alone.		
			e. Achieve X percent alternative (non-SOV) mode share in transit station communities (or other destinations) by year Y.	Percent of all trips made using alternative modes in transit station communities.		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
52	System Option	Transit Use	**a.** Increase transit mode share by X percent by year Y.	Percent of all trips made by transit.	D	APTS04, APTS07, APTS08, ATIS01, ATIS02, ATIS07, ATMS09
			b. Increase transit mode share by X percent by year Y during peak periods.	Percent of all peak-period trips made by transit.		
			c. Increase average transit load factor by X percent by year Y.	Number of riders on various transit units per trip at peak travel times.		
			d. Increase passenger miles traveled per capita on transit by X percent by year Y.	Number of passenger miles traveled per capita.		
53	System Option	Travel Time - Transit Compared to Auto	**a.** Reduce the travel time differential between transit and auto during peak periods by X percent per year for Y years.	Transit to auto travel time differential for a given period (daily, hourly, or peak hours), on a given portion of the system (system wide, by facility type, or by corridor).	D	APTS04, APTS07, APTS09
			b. Maintain a travel time differential between transit and auto during peak periods of X percent for Y years.	Transit to auto travel time differential for a given period (daily, hourly, or peak hours), on a given portion of the system (system wide, by facility type, or by corridor).		
			c. Improve average transit travel time compared to auto in major corridors by X minutes per year for Y years.	Transit to auto travel time differential for a given period (daily, hourly, or peak hours), on a given portion of the system (system wide, by facility type, or by corridor).		
54	System Reliability	Non-Recurring Delay	**a.** Reduce total person hours of delay (or travel-time delay per capita) by time period (peak, off-peak) caused by scheduled events, work zones, or system maintenance by x hours in y years.	Travel time delay during scheduled and/or unscheduled disruptions to travel.	G	APTS07, ATIS01, ATIS02, ATIS04, ATIS09, ATIS10, ATMS03, ATMS04, ATMS06, ATMS07, ATMS08, ATMS09, ATMS18, ATMS22, ATMS23, MC08, MC10
			b. Reduce total person hours of delay (or travel-time delay per capita) by time period (peak, off-peak) caused by unscheduled disruptions to travel.	Total person hours of delay during scheduled and/or unscheduled disruptions to travel.		
			c. Reduce total person hours of delay (or travel-time delay per capita) by time period (peak, off-peak) caused by all transient events such as traffic incidents, special events, and work zones.	Total person hours of delay during scheduled and/or unscheduled disruptions to travel.		
55	System Reliability	Planning Time Index	**a.** Reduce the average planning time index for (specific routes in region) by X (no units) over the next Y years.	The planning time index represents the time that must be added to travel time at free-flow speeds or the posted speed limit to ensure on time arrivals for 95 percent of the trips. Planning time = 95th percentile travel time (minutes) – Travel time at free-flow speed or posted speed limit. Average planning time index or planning time can be computed using a weighted average over person miles traveled.	G	ATIS01, ATIS02, ATIS04, ATMS04, ATMS06, ATMS08, ATMS22, ATMS23, MC06, MC08, MC10
			b. Reduce the average planning time for (specific routes in region) by X minutes over the next Y years.	The planning time index represents the time that must be added to travel time at free-flow speeds or the posted speed limit to ensure on time arrivals for 95 percent of the trips. Planning time = 95th percentile travel time (minutes) – Travel time at free-flow speed or posted speed limit. Average planning time index or planning time can be computed using a weighted average over person miles traveled.		
56	System Reliability	Transit On-Time Performance	**a.** Improve average on-time performance for specified transit routes/facilities by X percent within Y years.	On-time performance of transit.	G	APTS02, APTS09
57	System Reliability	Travel Time 90th/95th Percentile	**a.** Reduce the average of the 90th (or 95th) percentile travel times for (a group of specific travel routes or trips in the region) by X minutes in Y years.	95th or 90th percentile travel times for selected routes.	G	ATIS01, ATIS02, ATIS04, ATIS09, ATIS10, ATMS03, ATMS04, ATMS06, ATMS08, ATMS22, ATMS23,
			b. Reduce the 90th (or 95th) percentile travel times for each route selected by X percent over Y years.	95th or 90th percentile travel times for selected routes.		
			a. 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).		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
58	System Reliability	Travel Time Buffer Index	**b.** 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 miles traveled as a weighting factor. Buffer time = 95th percentile travel time (min) – average travel time (min).	G	ATIS01, ATIS02, ATIS04, ATIS09, ATIS10, ATMS03, ATMS04, ATMS06, ATMS08, ATMS22, ATMS23, CVO06, MC08, MC10
			c. Reduce the average buffer time needed to arrive on-time for 95 percent of trips on (specified routes) by X minutes 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 miles traveled as a weighting factor. Buffer time = 95th percentile travel time (min) – average travel time (min).		
59	System Reliability	Variability	**a.** Reduce the variability of travel time on specified routes by X percent during peak and off-peak periods by year Y.	Variance of travel time. Variance is the sum of the squared deviations from the mean. This can also be calculated as the standard deviation of travel time. Standard deviation is the square root of variance.	G	ATIS01, ATIS02, ATIS04, ATIS09, ATIS10, ATMS03, ATMS04, ATMS06, ATMS08, ATMS22, ATMS23, CVO06, MC08, MC10
60	Transit Operations and Management	Automated Fare Collection	**a.** Implement an automated fare collection system in Y years for X percent of transit providers in the region.	Percent of transit providers using the region's automated fare collection system.	G	APTS04
			b. Integrate X additional modes/services into automated fare collection system by Y years.	Number of additional modes/service integrated into the fare collection system.		
			c. Increase use of system by X percent per year.	Percent of fares collected using automated fare collection.		
			d. Increase by X percentage points, every Y years, the percent of transfers performed with automated fare cards.	Percent of total transfers performed with automated fare cards.		
61	Transit Operations and Management	Customer Service/Safety	**a.** Decrease by X percent on an annual basis the number of complaints per 1,000 boarding passengers.	Complaint rate.	B, C, D	APTS05
			b. Increase the number of closed circuit television (CCTV) cameras installed by X percent in Y years on platforms, park-n-ride lots, vehicles, and other transit facilities.	Number of CCTV cameras on platforms, park-n-ride lots, vehicles, and other transit facilities.		
			c. Increase customer service and personal safety ratings by X percent within Y years.	Personal safety and customer service ratings.		
			d. Decrease the number of personal safety incidents by X percent within Y years.	Number of reported personal safety incidents.		
62	Transit Operations and Management	Demand Responsive Transit	**a.** Improve on-time pick-up of demand response transit passengers.	Demand response passenger pick-up on-time performance	D	APTS03
			b. Increase customer satisfaction with the region's demand response transit service by X percent over Y years.	Customer satisfaction ratings		
			c. Improve the operational efficiency of the demand response transit service in the region.	Passenger miles per vehicle		
			d. Improve the operational efficiency of the demand response transit service in the region.	Passenger trips per vehicle		
			e. Improve the operational efficiency of the demand response transit service in the region.	Operating expense per passenger trip		
			f. Improve the operational efficiency of the demand response transit service in the region.	Operating expense per passenger mile		
63	Transit Operations and Management	Lin-Haul Transit	**a.** Improve average travel speeds by X percent for specified line-haul transit routes every Y years.	Average line-haul transit travel speeds for specified line-haul transit routes.	G	ATPS02
			b. Improve average on-time performance for specified line-haul transit routes by X percent annually.	Average line-haul transit on-time performance for specified line-haul transit routes.		
			c. Provide line-haul transit travel times equal to or less than average auto travel times on same corridors/parallel corridors for X number of routes over Y years.	Number of line-haul transit routes operating with travel times equal to or less than average auto travel times on same corridors/parallel corridors.		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
64	Transit Operations and Management	Loading Standards	**a.** Load factors for (route type) routes at each route's busiest point should not exceed X on any vehicle (or on the average vehicle) during peak/off-peak periods.	Load factor.	D	APTS02, APTS10
			b. Passenger loads on (route type) routes at each route's busiest point should not exceed X passengers on any vehicle (or on average) during the hour during peak/off-peak periods	Maximum passenger loads.		
			c. No more than X standees should be present at each route's busiest point on any vehicle (or on the average vehicle) during peak/off-peak periods.	Maximum standees.		
			d. No passenger will have to stand for more than X minutes during their journey.	Duration of standee time.		
65	Transit Operations and Management	Park-and-Ride Support	**a.** Increase traveler awareness of park-and-ride lots by X percent within Y years.	Number of users aware of park-and-ride lots in their region.	G	APTS07, APTS08, ATMS16
			b. Increase pedestrian and bicycle access to park-and-ride lots by X percent within Y years.	Percent of park-and-ride areas with pedestrian and bicycle access.		
			c. Increase the number of automobile and bicycle spaces by X percent within Y years for lots currently experiencing X percent utilization.	Number of auto/bicycle spaces at the park-and-ride lots		
66	Transit Operations and Management	Service Directness	**a.** At least X percent of trips can be made with no more than Y transfers.	Percent of trips with no more than Y transfers.	G	APTS02, APTS07
			b. Scheduled transfer times between routes should be no longer than X minutes.	Scheduled transfer times between routes.		
67	Transit Operations and Management	Transit Signal Priority	**a.** Increase implementation of transit signal priority strategies on X number of routes (or X number of intersections) over the next Y years.	Number of transit routes/intersections equipped with transit signal priority capability.	D, G	APTS01, APTS09, ATMS03
			b. Decrease system-wide signal delay on transit routes by X percent per year.	System-wide signalized stop delay on transit routes.		
			c. Decrease delay by X percent per year by increasing the use of queue jumping and automated vehicle location.	Travel time delay on routes with queue jumping and automated vehicle location in use.		
68	Transit Operations and Management	Traveler Information	**a.** Equip X shelters/platforms with real-time arrival displays annually.	Number of shelters/platforms equipped with real-time arrival displays per year.	D	APTS08
			b. Increase the number of web-based trip planner requests each year by X percent.	Number of web-based trip planner requests per year.		
			c. All stops have up-to-date schedule information available within X days of schedule changes.	Percent of stops with up-to-date schedule information available within X days of schedule changes.		
			d. Transit traveler information is available in the region via 511 web and phone service by year Y.	Availability of transit traveler information on 511 web and phone service.		
			e. Install Wi-Fi service on X number of routes annually.	The number of routes in which Wi-Fi service was installed.		
69	Travel Deamand Management	Auto Commuter Trip Reduction Programs	**a.** Increase the percentage of major employers (employers with at least Z employees) actively participating in transportation demand management programs by X percent within Y years.	Percent of major employers with active TDM programs.	D, G	ATMS09
			b. Reduce commuter vehicle miles traveled (VMT) per regional job by X percent in Y years.	Commuter VMT per regional employee.		
70	Travel Deamand Management	Carpool/ Vanpool	**a.** Increase the number of carpools by X percent over the next Y years.	Share of household trips by each mode of travel.	D, G	ATIS08
			b. Increase use of vanpools by X percent over the next Y years.	Share of household trips by each mode of travel.		
			c. Provide carpool/vanpool matching and ridesharing information services by year Y.	Availability of carpool/vanpool matching and ridesharing information services.		
			d. Reduce trips per year in region by X percent through carpools/vanpools.	Number of trips in region.		
			e. Reduce trips per year in region by X percent through carpools/vanpools.	Number of person trips by carpool/vanpool in region.		
			f. Create and share regional carpool/vanpool database with Z number of employers per year.	Number of employers with access to regional carpool/vanpool database.		
71	Travel Deamand Management	Marketing	**a.** Develop and provide travel option services to X identified communities and audiences within Y years.	Number of communities receiving travel option services.	D, G	APTS08
			b. Construct visitor information centers in X communities by year Y.	Number of communities in which visitor information centers are constructed.		
			c. Create a transportation access guide, which provides concise directions to reach destinations by alternative modes (transit, walking, bike, etc.) by year Y.	Implementation of transportation access guide.		
			d. Develop and enhance (e.g., through ease of navigation techniques) X number of web-based traveler information tools.	Number of web-based traveler information tools developed or enhanced.		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
72	Travel Deamand Management	Parking Management	**a.** Implement shared parking for X communities every Y years.	Number of communities with shared parking.	D, G	ATMS09, ATMS17
			b. Implement parking pricing for X communities every Y years.	Number of communities with priced parking stalls.		
			c. Install parking meters along X corridors by year Y in the urban core/transit supportive areas.	Number of corridors in urban core/transit supportive areas with parking meters.		
			d. Increase the number of residents/commuters receiving information on parking pricing and availability within Y years.	Number of residents/commuters receiving information on parking pricing and availability.		
			e. Increase park-and-ride lot capacity by X percent over Y years.	Capacity of park & ride lots.		
			f. Biannually increase preferred parking spaces for carpool/vanpool participants within downtown, at special events, and among major employers by X percent within Y years.	Number of preferred parking spaces for carpool/vanpool participants.		
73	Travel Deamand Management	Walking/ Bicycling	**a.** Increase the number of travelers commuting via walking and/or bicycling by X percent over Y years.	Number of travelers commuting via walking and/or bicycling.	D, G	ATIS05
			b. Annually update bicycle/pedestrian map for accuracy.	Number of months since the last update of the bicycle/pedestrian map.		
			c. Increase the number of available tools for travelers that incorporate a bicycle/pedestrian component by X percent by year Y.	Number of traveler tools with a bicycle/pedestrian component.		
74	Travel Weather Management	Clearance Time (Weather-Related Deris)	**a.** Reduce average time to complete clearing (mode, hierarchy of facilities, or subarea of region) of weather-related debris after weather impact by X percent in Y years.	Average time to clear selected surface transportation facilities of weather-related debris after weather impact.	A, G	ATMS08, MC05, MC06
			b. Reduce average time to complete clearing (interstates, freeways, expressways, all roads, main tracks, and main sidewalks) of weather-related debris after weather impact by X percent in Y years.	Average time to clear selected surface transportation facilities of weather-related debris after weather impact.		
75	Travel Weather Management	Detours for Impacted Roadways	**a.** Increase by X percent of significant travel routes covered by weather-related diversion plans by year Y.	Percent of significant travel routes covered by weather-related diversion plans.	B	ATMS21, MC04
			b. Increase the percent of agencies that have adopted multi-agency weather-related transportation operations plans and that are involved in transportation operations during weather events to X percent by year Y.	Percent of agencies involved in transportation operations during weather events that have adopted multi-agency, weather-related transportation operations plans.		
76	Travel Weather Management	Disseminating Information	**a.** Reduce time to alert travelers of travel weather impacts (using variable message signs, 511, road weather information systems, public information broadcasts, the agency's website, Web 2.0 technologies, etc.) by X (time period or percent) in Y years.	Time from beginning of weather event to posting of traveler information on (variable message signs, 511, Road Weather Information Systems, public information broadcasts etc.).	B, D	ATIS02, ATIS09, ATIS10, ATMS06, MC03, MC04
			b. Reduce time to alert travelers of travel weather impacts (using variable message signs, 511, road weather information systems, public information broadcasts, the agency's website, Web 2.0 technologies, etc.) by X (time period or percent) in Y years.	Time from beginning of weather event to posting of traveler information on agency website.		
77	Travel Weather Management	Road Weather Information System Coverage	**a.** Increase the percent of major road network (or transit network or regional bicycle network) covered by weather sensors or a road weather information system (RWIS) by X percent in Y years as defined by an RWIS station within Z miles.	Percent of major road (transit or bicycle) network within Z miles of an RWIS station.	D	MC03, MC04, MC11
78	Travel Weather Management	Signal Timing Plans	**a.** Special timing plans are available for use during inclement weather conditions for X miles of arterials in the region by year Y.	Number of miles of arterials that have at least one special timing plan for inclement weather events.	G	ATMS03
79	Traveler Information	Customer Satisfaction	**a.** Increase customer satisfaction rating of the timeliness, accuracy, and usefulness of traveler information in the region by W, X, and Z percent, respectively, over Y years.	Customer satisfaction ratings of timeliness, accuracy, and usefulness of traveler information.	D, G	ATMS08, ATIS01, ATIS02, ATIS05, ATIS10, EM10
80	Traveler Information	Data Collection and Sharing on Travel Conditions	**a.** Increase the percent of the transportation system in which travel conditions can be detected remotely via CCTV, speed detectors, etc. to X percent by Y year.	Percent of the transportation system in which travel conditions can be detected remotely via CCTV, speed detectors, etc.	D	APTS01, ATIS06, ATMS01
			b. Increase the percent of transportation facilities whose owners share their traveler information with other agencies in the region to X percent by Y year.	Percent of transportation facilities whose owners share their traveler information with other agencies in the region.		
			c. Increase the percent of modes in the region that share their traveler information with other modes in the region to 100 percent by Y year.	Percent of modes in the region that share their traveler information with other modes.		

OBID	ITS Objective Category		Objectives	Performance Measures	Planning Factors	Associated Service Packages
81	Traveler Information	Information Dissemination	**a.** Increase number of 511 calls per year by X percent in Y years.	Number of 511 calls per year.	D, G	APTS08, ATIS01, ATIS02, ATIS09, ATIS10, ATMS06
			b. Increase number of visitors to traveler information website per year by X percent in Y years.	Number of visitors to traveler information website per year.		
			c. Increase number of users of notifications for traveler information (e.g., e-mail, text message) by X percent in Y years.	Number of users of notifications for traveler information (e.g., e-mail, text message) per year.		
			d. Increase number of Web 2.0 (e.g., Twitter, Facebook) followers by X percent in Y months.	Number of Web 2.0 (e.g., Twitter, Facebook) followers.		
			e. Increase the accuracy and completeness of traveler information posted (on variable message signs, websites, and/or web 2.0 technologies) by reducing the number of incomplete and inaccurate reports by X percent in Y years.	Number of complaints received from system users about inaccurate or missing information.		
82	Traveler Information	Trip Planning Tools	**a.** Enhance regional multimodal trip planning tools to X data sources by year Y.	The number of data sources providing information for multi-modal trip planning tools.	D, G	APTS08, ATIS02, ATIS05
			b. Increase the ease of use of trip planning tools by X percent by year Y.	Trip planning tools ease of use rating.		
			c. Increase the number of uses of multimodal trip planning tools by X percent by year Y.	Number of uses of trip planning tools.		
83	Work Zone Management	Construction Coordination	**a.** Increase the number of capital projects reviewed for regional construction coordination by X percent in Y years.	Percent of capital projects whose project schedules have been reviewed.	G	MC10
			b. Decrease the number of work zones on parallel routes/along the same corridor by X percent in Y years.	Percent of work zones on parallel routes/along the same corridor.		
			c. Establish a work zone management system within X years to facilitate coordination of work zones in the region.	Presence of an established work zone management system.		
84	Work Zone Management	Customer Satisfaction	**a.** Increase customer satisfaction with region's work zone management by X percent over Y years.	Percentage of customers satisfied with region's work zone management practices.	D	MC08
85	Work Zone Management	Extent of Congestion	**a.** Reduce the percentage of vehicles traveling through work zones that are queued by X percent in Y years.	Percentage of vehicles experiencing queuing in work zones.	G	MC08, MC10
			b. Reduce the average and maximum length of queues, when present, by X percent over Y years.	Length of average and maximum queues in work zones.		
			c. Reduce the average time duration (in minutes) of queue length greater than some threshold (e.g., 0.5 mile) by X percent in Y years.	Average duration in minutes of queue length greater than X miles.		
86	Work Zone Management	Travel Time Delay	**a.** Reduce the person hours (or vehicle hours) of total delay associated with work zones by X percent over Y years.	Person hours (or vehicle hours) of delay associated with work zones.	G	MC07, MC08, MC10
			b. Increase the rate of on-time completion of construction projects to X percent within Y years.	Percent of construction projects completed on-time according to established schedule.		
			c. Increase the percentage of construction projects that employ night/ off-peak work zones by X percent in Y years.	Percent of construction project employing night /off-peak work zones.		
87	Work Zone Management	Travel Time Reliability	**a.** Reduce vehicle-hours of total delay in work zones caused by incidents (e.g., traffic crashes within or near the work zone).	Vehicle-hours of delay due to incidents related to work zones.	G	ATMS08, MC08, MC09
88	Work Zone Management	Traveler Information	**a.** Provide traveler information regarding work zones using variable message signs (VMS), 511, traveler information websites, and/or Web 2.0 technologies for at least X percent of work zones on major arterials, freeways, and transit routes over the next Y years.	Percent of work zones on major arterials, freeways, and transit routes for which traveler information is available via variable message signs (VMS), 511, traveler information websites, and/or Web 2.0 technologies.	D, G	ATIS01, ATIS02, ATIS04, ATIS05, ATIS10, ATMS06
			b. Provide travelers with information on multimodal alternatives to avoid work zones for at least X percent of work zones on major arterials, freeways, and transit routes over the next Y years.	Percent of work zones on major arterials, freeways, and transit routes for which information on multimodal alternatives to avoid work zones is available to travelers.		
			c. Provide work zone information (for upcoming and ongoing construction projects) to all impacted businesses or tenants of business centers with X employees or more by year Y.	Number of impacted businesses or tenants of business centers of X employees or more receiving work zone information (for upcoming and ongoing construction projects).		

Section 9

Equipment Package Descriptions

Equipment Package Descriptions

Equipment Package	*Description*
Advanced Rail Crossing	This equipment package manages highway traffic at highway-rail intersections (HRIs) where operational requirements demand advanced features (e.g., where rail operational speeds are greater than 80 miles per hour). It includes all capabilities from the Standard Rail Crossing equipment package and augments these with additional safety features. The active warning systems supported by this equipment package include positive barrier systems which preclude entrance into the intersection when the barriers are activated. Like the Standard package, the HRI equipment is activated on notification by wayside interface equipment which detects, or communicates with the approaching train. In this equipment package, additional information about the arriving train is also provided by the wayside interface equipment so that the train's direction of travel, its estimated time of arrival, and the estimated duration of closure may be derived. This enhanced information may be conveyed to the driver prior to, or in context with, warning system activation. This equipment package also includes detection capabilities which enable it to detect an entrapped or otherwise immobilized vehicle within the HRI and provide an immediate notification to the wayside interface equipment and traffic management.
Barrier System Management	This equipment package remotely monitors and controls barrier systems for transportation facilities and infrastructure under control of center personnel. Barrier systems include automatic or remotely controlled gates, barriers and other access control systems. The equipment package also provides an interface to other centers to allow monitoring and control of the barriers from other centers (e.g., public safety or emergency operations centers).
Basic Information Broadcast	This equipment package collects, processes, stores, and disseminates traveler information including traffic and road conditions, incident information, maintenance and construction information, event information, transit information, parking information, and weather information. The same information is broadcast to all equipped traveler interface systems and vehicles.
Basic Vehicle Reception	This equipment package provides the capability for drivers to receive basic transportation information including traffic and road conditions, incident information, maintenance and construction information, event information, transit information, parking information, weather information, and broadcast alerts.
Center Secure Area Alarm Support	This equipment package receives traveler or transit vehicle operator alarm messages, notifies the system operator, and provides acknowledgement of alarm receipt back to the originator of the alarm. The alarms received can be generated by silent or audible alarm systems and may originate from public areas (e.g. transit stops, park and ride lots, transit stations, rest areas) or transit vehicles. The nature of the emergency may be determined based on the information in the alarm message as well as other inputs.
Center Secure Area Sensor Management	This equipment package manages sensors that monitor secure areas in the transportation system, processes the collected data, performs threat analysis in which data is correlated with other sensor, surveillance, and advisory inputs, and then disseminates resultant threat information to emergency personnel and other agencies. In response to identified threats, the operator may request activation of barrier and safeguard systems to preclude an incident, control access during and after an incident or mitigate impact of an incident. The sensors may be in secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. The types of sensors include acoustic, threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity, motion and object sensors.

Equipment Package	*Description*
Center Secure Area Surveillance	This equipment package monitors surveillance inputs from secure areas in the transportation system. The surveillance may be of secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. It provides both video and audio surveillance information to emergency personnel and automatically alerts emergency personnel of potential incidents.
Citation and Accident Electronic Recording	The equipment package documents accidents, citations, and violations identified during roadside safety inspections and forwards the information to the Commercial Vehicle Administration Subsystem for processing.
Collect Traffic Surveillance	This equipment package remotely monitors and controls traffic sensors and surveillance (e.g., CCTV) equipment, and collects, processes and stores the collected traffic data. The collected information is provided to traffic operations personnel and made available to other centers.
Commercial Vehicle and Freight Security	This equipment package provides for the security of the commercial vehicle and the freight that it carries by detecting breaches such as seals or locks being broken into by unauthorized personnel and/or any other unauthorized tampering. In addition, this equipment package monitors the commercial vehicle driver and compares it with the planned driver for the vehicle. In a similar manner, the driver and vehicle that have been assigned to move freight are monitored and compared with the planned assignment for that freight. In all cases, any deviations to the planned assignments and any breach or tamper events are reported to the Emergency Management Subsystem.
Credentials and Taxes Administration	This equipment package issues credentials, collects fees and taxes, and supports enforcement of credential requirements. It communicates with the Fleet and Freight Management Subsystems associated with the motor carriers to process credentials applications and collect fuel taxes, weight/distance taxes, and other taxes and fees associated with commercial vehicle operations. The subsystem also receives applications for, and issues special Oversize/Overweight and HAZMAT permits in coordination with other cognizant authorities. This equipment package communicates with similar packages in other jurisdictions to exchange credentials database information. This equipment package also exchanges hazmat route restrictions information, and provides a clearinghouse for this information that can be shared with Map Update Providers, Fleet and Freight Management subsystems and Information Service Providers.
CV Data Collection	This equipment package collects and stores commercial vehicle information that is collected in the course of Commercial Vehicle Administration Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
CV Information Exchange	This equipment package supports the exchange of safety and credentials data among jurisdiction. The package also supports the exchange of safety and credentials data between systems (for example, an administrative center and the roadside check facilities) within a single jurisdiction. Data are collected from multiple authoritative sources and packaged into snapshots (top-level summary and critical status information) and profiles (detailed and historical data). Data is made available to fleet operators, enforcement agencies, and other information requestors.
CV Safety Administration	This equipment package provides commercial vehicle safety criteria to roadside check facilities, collects and reviews safety data from the field and distributes safety information to other centers, carriers, and enforcement agencies. It supports the collection and review of carrier safety data and supports determination of the carrier safety rating.
Emergency Call-Taking	This equipment package supports the emergency call-taker, collecting available information about the caller and the reported emergency, and forwarding this information to other equipment packages that formulate and manage the emergency response. This equipment package receives 9-1-1, 7-digit local access, and motorist call-box calls and interfaces to other agencies to assist in the verification and assessment of the emergency and to forward the emergency information to the appropriate response agency.

Equipment Package	Description
Emergency Commercial Vehicle Response	This equipment package identifies and initiates a response to commercial vehicle and freight equipment related emergencies. These emergencies may include incidents involving hazardous materials as well as the detection of non-permitted transport of security sensitive hazmat. The equipment package identifies the location of the vehicle, the nature of the incident, the route information, and information concerning the freight itself. The information supports the determination of the response and identifies the responding agencies to notify. As part of the response, this equipment package can request Fleet and Freight Management to disable a specific vehicle in their fleet.
Emergency Data Collection	This equipment package collects and stores emergency information that is collected in the course of operations by the Emergency Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
Emergency Dispatch	This equipment package tracks the location and status of emergency vehicles and dispatches these vehicles to incidents. Pertinent incident information is gathered from the public and other public safety agencies (see the Emergency Call-Taking equipment package) and relayed to the responding units. Incident status and the status of the responding units is tracked so that additional units can be dispatched and/or unit status can be returned to available when the incident is cleared and closed.
Emergency Early Warning System	This equipment package monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies and uses this information to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other equipment packages that provide the emergency response, including public notification using ITS traveler information systems, where appropriate.
Emergency Environmental Monitoring	This equipment package collects current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and presented to the operator and used to more effectively manage incidents.
Emergency Evacuation Support	This equipment package coordinates evacuation plans among allied agencies and manages evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety. Where appropriate, the affected population is evacuated in shifts, using more than one evacuation route, and including several evacuation destinations to spread demand and thereby expedite the evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, and along the evacuation route are informed of the plan. The public is provided with real-time evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary. Resource requirements are forecast based on the evacuation plans, and the necessary resources are located, shared between agencies if necessary, and deployed at the right locations at the appropriate times. The evacuation and reentry status are monitored and used to refine the plan and resource allocations during the evacuation and subsequent reentry.
Emergency Response Management	This equipment package provides the strategic emergency response capabilities and broad inter-agency interfaces that are implemented for extraordinary incidents and disasters that require response from outside the local community. It provides the functional capabilities and interfaces commonly associated with Emergency Operations Centers. This equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This equipment package provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.

Equipment Package	Description
Emergency Routing	This equipment package supports routing of emergency vehicles and enlists support from the Traffic Management Subsystem to facilitate travel along these routes. Routes may be determined by this equipment package based on real-time traffic information and road conditions or routes may be provided by the Traffic Management Subsystem on request. Vehicles are tracked and routes are based on current vehicle location. This equipment package may coordinate with the Traffic Management Subsystem to provide preemption or otherwise adapt the traffic control strategy along the selected route.
Emissions Data Collection	This equipment package collects and stores air quality and emissions management information that is collected in the course of Emissions Management Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
Emissions Data Management	This equipment package collects and stores air quality and vehicle emissions information by remotely monitoring and controlling area wide and point sensors. General air quality measures are distributed as general traveler information and also may be used for in demand management programs. Collected roadside emissions are analyzed and used to detect, identify, and notify concerned parties regarding vehicles that exceed emissions standards.
Field Barrier System Control	This equipment package includes the field equipment that controls barrier systems used to control access to transportation facilities and infrastructure. Barrier systems include automatic or remotely controlled gates, barriers and other access control systems.
Field Safeguard System Control	This equipment package includes field equipment that controls safeguard systems for transportation facilities and infrastructure. Safeguard systems include blast shields, exhaust systems and other automatic or remotely controlled systems intended to mitigate the impact of an incident.
Field Secure Area Sensor Monitoring	This equipment package includes sensors that monitor conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, and transit railways or guideways). A range of acoustic, environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity and motion and object sensors are included.
Field Secure Area Surveillance	This equipment package includes video and audio surveillance equipment that monitors conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. as bridges, tunnels, interchanges, and transit railways or guideways). It provides the surveillance information to the Emergency Management Subsystem for possible threat detection. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Traveler Secure Area Surveillance equipment package.
Fleet Administration	This equipment package provides vehicle tracking, dispatch, and reporting capabilities to fleet management center personnel. It gathers current road conditions and traffic information, prepares vehicle routes, and provides a fleet interface for toll collection. It also provides route plan information for network performance evaluation. As part of the tracking function, this equipment package monitors commercial vehicle location, compares it against the known route and notifies the Emergency Management Subsystem and Fleet-Freight Manager of any deviations, including HAZMAT route restriction violations.
Fleet Credentials and Taxes Management and Reporting	This equipment package provides the capability to purchase credentials, file taxes and trip reports electronically, and perform electronic enrollment in expedited border crossing programs. It tracks and manages credentials and provides electronic interfaces to appropriate state and federal commercial vehicle administration centers.
Fleet HAZMAT Management	This equipment package manages hazardous materials shipments. In the event of an incident, it notifies the Emergency Management Subsystem, providing information on the nature of the cargo and the vehicle equipment.

Equipment Package	*Description*
Fleet Maintenance Management	This equipment package tracks and monitors diagnostic results, vehicle mileage, inspection records, and repair and service records collected from a commercial vehicle fleet equipped with on-board monitoring equipment. The data is used to develop preventative maintenance and repair schedules and repair and service records are maintained.
Freight Administration and Management	This equipment package manages the movement of freight from source to destination via links to the freight equipment, intermodal freight shippers, and depots. It interfaces to intermodal freight shippers to setup and schedule transportation and coordinates with intermodal freight depots to coordinate the shipment. The equipment package monitors the status of the freight and freight equipment (container, trailer, or chassis) and monitors freight location and compares it against the planned route.
Government Reporting Systems Support	This equipment package selects and formats data residing in an ITS archive to facilitate local, state, and federal government data reporting requirements.
HRI Traffic Management	This equipment package monitors and controls highway-rail intersection (HRI) equipment. Various levels of roadside equipment may be interfaced to this equipment package including standard speed active warning systems and high speed systems which provide additional information on approaching trains and detect and report obstructions in the HRI. This equipment package remotely monitors and reports the status of the HRI equipment and sends control plan updates to the HRI equipment.
Incident Command	The equipment package provides tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders at or near the incident scene to support local management of an incident. The equipment package supports communications with public safety, emergency management, transportation, and other allied response agency centers, tracks and maintains resource information, action plans, and the incident command organization itself. Information is shared with agency centers including resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response. This equipment package supports the functions and interfaces commonly supported by a mobile command center.
Infrastructure Provided Dynamic Ridesharing	This equipment package provides dynamic rideshare matches for eligible travelers, connecting riders and drivers for specific trips based on preferences. This ridesharing/ride matching capability also arranges connections to transit or other multimodal services for portions of a multi-segment trip that includes ridesharing. Reservations and advanced payment are also supported so that each segment of the trip may be confirmed.
Infrastructure Provided Trip Planning	This equipment package provides pre-trip and en-route trip planning services for travelers. It receives origin, destination, constraints, and preferences and returns trip plan(s) that meet the supplied criteria. Trip plans may be based on current traffic and road conditions, transit schedule information, and other real-time traveler information. Candidate trip plans are multimodal and may include vehicle, transit, and alternate mode segments (e.g., rail, ferry, bicycle routes, and walkways) based on traveler preferences. This equipment package also confirms the trip plan for the traveler and supports reservations and advanced payment for portions of the trip. The trip plan includes specific routing information and instructions for each segment of the trip and may also include information and reservations for additional services (e.g., parking) along the route.
Interactive Infrastructure Information	This equipment package collects, processes, stores, and disseminates personalized traveler information including traffic and road conditions, transit information, maintenance and construction information, multimodal information, event information, and weather information. Tailored information is provided based on the traveler's request in this interactive equipment package. The interactive service offered by this equipment package is available to the Vehicle, Remote Traveler Support, and Personal Information Access subsystems.

Equipment Package	*Description*
Interactive Vehicle Reception	This equipment package provides drivers with personalized traveler information including traffic and road conditions, transit information, maintenance and construction information, multimodal information, event information, and weather information. The provided information is tailored based on driver requests. Both one-time requests for information and on-going information streams based on a submitted traveler profile and preferences are supported.
International Border Crossing	This equipment package checks compliance with import/export and immigration regulations to manage release of commercial vehicle, cargo, and driver across an international border. It includes the equipment at international border crossings operated by government agencies such as customs and immigration.
International CV Administration	This equipment package generates and processes the entry documentation necessary to obtain release of vehicle, cargo, and driver across an international border, report the results of the crossing event, and handle duty fee processing. It includes the systems used by customs and immigration, carriers, and service providers (e.g., brokers) to generate, process, and store entry documentation.
ISP Data Collection	This equipment package collects and stores traveler information that is collected in the course of operation of the ISP subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
ISP Emergency Traveler Information	This equipment package collects and provides emergency information to the public, including wide-area alerts and evacuation information. It provides emergency alerts, information on evacuation zones and evacuation requirements, evacuation destinations and shelter information, available transportation modes, and traffic and road conditions at the origin, destination, and along the evacuation routes. In addition to general evacuation information, personalized information including tailored evacuation routes, service information, and estimated travel times is also provided based on traveler specified origin, destination, and route parameters. Updated information is provided throughout the evacuation and subsequent reentry as status changes and plans are adapted.
ISP Probe Information Collection	This equipment package collects and aggregates vehicle probe data and processes it to calculate route travel times. It also collects, aggregates, and processes environmental probe data from equipped vehicles. Calculated route travel times and environmental conditions information are distributed to other centers and other equipment packages that use the information to support traveler information services..
ISP Traveler Data Collection	This equipment package collects traveler-related data from other centers, consolidates, verifies, and refines the collected data, and makes this data available in a consistent format to applications that deliver traveler information. A broad range of traveler-related data is collected including traffic and road conditions, transit data, emergency information and advisories, weather data, special event information, traveler services, parking, multimodal data, and toll/pricing data. This equipment package also shares data with other information service providers.
ITS Data Repository	This equipment package collects data and data catalogs from one or more data sources and stores the data in a focused repository that is suited to a particular set of ITS data users. This equipment package includes capabilities for performing quality checks on the incoming data, error notification, and archive to archive coordination. This equipment package supports a broad range of implementations, ranging from simple data marts that collect a focused set of data and serve a particular user community to large-scale data warehouses that collect, integrate, and summarize transportation data from multiple sources and serve a broad array of users within a region.
Mayday Support	This equipment package receives Mayday messages from vehicles or personal handheld devices, determines an appropriate response, and either uses internal resources or contacts a local agency to provide that response. The nature of the emergency is determined based on the information in the mayday message as well as other inputs. This package effectively serves as an interface between automated mobile mayday systems and the local public safety answering point for messages which require a public safety response.

Equipment Package	*Description*
MCM Data Collection	This equipment package collects and stores maintenance and construction information that is collected in the course of operations by the Maintenance and Construction Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
MCM Environmental Information Collection	This equipment package collects current road and weather conditions using data collected from environmental sensors deployed on and about the roadway. In addition to fixed sensor stations at the roadside, this equipment package also collects environmental information from sensor systems located on Maintenance and Construction Vehicles. It also collects current and forecast environmental conditions information that is made available by other systems.
MCM Environmental Information Processing	This equipment package processes current and forecast weather data, road condition information, local environmental data, and uses internal models to develop specialized detailed forecasts of local weather and surface conditions. The processed environmental information products are presented to center personnel and disseminated to other centers.
MCM Incident Management	This equipment package supports maintenance and construction participation in coordinated incident response. Incident notifications are shared, incident response resources are managed, and the overall incident situation and incident response status is coordinated among allied response organizations.
MCM Maintenance Decision Support	This equipment package recommends maintenance courses of action based on current and forecast environmental and road conditions and additional application specific information. Decisions are supported through understandable presentation of filtered and fused environmental and road condition information for specific time horizons as well as specific maintenance recommendations that are generated by the system based on this integrated information. The recommended courses of action are supported by information on the anticipated consequences of action or inaction, when available.
MCM Roadway Maintenance and Construction	This equipment package provides overall management and support for routine maintenance on a roadway system or right-of-way. Services managed include landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, etc.). Environmental conditions information is also received from various weather sources to aid in scheduling routine maintenance activities.
MCM Speed Monitoring	This equipment package remotely monitors and controls devices that monitor vehicle speeds and optionally provide safe speed advisories to the motorist. If excessive speeds are detected, this equipment package also includes the capability to notify an enforcement agency and request traffic enforcement in work zones or other areas where excessive speeds are identified.
MCM Vehicle and Equipment Maintenance Management	This equipment package monitors vehicle and equipment condition, tracks maintenance history, and schedules routine and corrective maintenance based on vehicle utilization and availability schedules.
MCM Vehicle Tracking	This equipment package tracks the location of maintenance and construction vehicles and other equipment. Vehicle location and associated information is presented to the operator.
MCM Work Activity Coordination	This equipment package disseminates work activity schedules and current asset restrictions to other agencies. Work schedules are coordinated with operating agencies, factoring in the needs and activities of other agencies and adjacent jurisdictions. Work schedules are also distributed to Information Service Providers for dissemination to the traveling public.
MCM Work Zone Management	This equipment package remotely monitors and supports work zone activities, controlling traffic through dynamic message signs (DMS), Highway Advisory Radio (HAR), gates and barriers, and informing other groups of activity (e.g., ISP, TM, other maintenance and construction centers) for better coordination management. Work zone speeds, and delays, and closures are provided to the motorist prior to the work zones. This equipment package provides control of field equipment in all maintenance areas, including fixed and portable field equipment supporting both stationary and mobile work zones.

Equipment Package	Description
MCM Work Zone Safety Management	This equipment package remotely monitors work zone safety systems that detect vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone.
MCV Barrier System Control	This on-board equipment package provides local control of automatic or remotely controlled gates and other barrier systems from a maintenance and construction vehicle. Using this equipment package, maintenance and construction field personnel (e.g., snow plow operators) can open and close gates and other barrier systems without leaving the vehicle, using dedicated short range communications to control the barriers.
MCV Environmental Monitoring	This on-board equipment package collects current road and surface weather conditions from sensors on-board the maintenance and construction vehicle or by querying fixed sensors on or near the roadway. Environmental information including road surface temperature, air temperature, and wind speed is measured and spatially located and time stamped, and reported back to a center.
MCV Infrastructure Monitoring	This on-board equipment package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts). It includes vehicle-based sensors that directly monitor the infrastructure, communications that allow roadway-based infrastructure monitoring sensors to be controlled and read, and data communications that allows collected infrastructure condition information to be reported back to a center.
MCV Roadway Maintenance and Construction	This equipment package includes the on-board systems that support routine non-winter maintenance on a roadway system or right-of-way. Routine maintenance includes landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, etc.).
MCV Vehicle Location Tracking	This on-board equipment package tracks vehicle location and reports the position and timestamp information to a dispatch center.
MCV Vehicle Safety Monitoring	This equipment package detects vehicle intrusions in the vicinity of the vehicle and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone. This equipment package can be used for stationary work zones or in mobile applications where a safe zone is maintained around the moving vehicle.
MCV Vehicle System Monitoring and Diagnostics	This equipment package includes on-board sensors capable of monitoring the condition of each of the vehicle systems and diagnostics that can be used to support vehicle maintenance. The status of the vehicle and ancillary equipment and diagnostic information is provided to the vehicle operator, repair facility, and dispatch center.
MCV Work Zone Support	This on-board equipment package provides communications and support for local management of a work zone. It supports communications between field personnel and the managing center to keep the center appraised of current work zone status. It controls vehicle-mounted driver information systems (e.g., dynamic message signs) and uses short range communications to monitor and control other fixed or portable driver information systems in the work zone.
Multimodal Crossing Control	This equipment package monitors multimodal crossings and monitors and controls traffic control equipment in the vicinity of the crossing. Equipment controlled includes warning lights, gates, dynamic message signs, and other systems associated with multimodal crossings. This equipment package manages draw bridges and miscellaneous other crossings between highway traffic and other modes. Railroad grade crossings are covered by the Standard Rail Crossing equipment package.
On-board Cargo Monitoring	This on-board equipment package monitors the location and status of the commercial vehicle and its cargo. It sends the collected data to appropriate centers and roadside facilities, including emergency management in the case of HAZMAT incidents. Depending on the nature of the cargo, this equipment package may include sensors that measure temperature, pressure, load leveling, acceleration, and other attributes of the cargo.

Equipment Package	Description
On-board CV Electronic Data	This on-board equipment package exchanges information with roadside facilities, providing information such as driver, vehicle, and carrier identification to roadside facilities that can be used to support electronic screening. Pass/pull-in messages are received and presented to the commercial vehicle driver and screening events are recorded. Additional information, including trip records (e.g., border clearance information), safety inspection records, cargo information, and driver status information may also be collected, stored, and made available to the roadside facility by this equipment package.
On-board CV Safety and Security	This on-board equipment package collects and processes vehicle and driver safety and security information and provides safety and security information to the Fleet and Freight Management Subsystem. This equipment package also supplies this information to the roadside facilities both at mainline speeds and while stopped for inspections. The capability to alert the commercial vehicle driver whenever there is a critical safety or security problem or potential emergency is also provided. The package also supports on-board driver safety log maintenance and checking.
On-board EV En Route Support	This on-board equipment package supports dispatch, routing, and tracking of an emergency vehicle. Dispatch and routing information are received and presented to the driver and vehicle location and status are tracked and provided back to the dispatcher. This equipment package supports traffic signal preemption via short range communication directly with signal control equipment. It also supports communications with care facilities, sharing patient status and care facility status between the en route emergency vehicle and the care facility.
On-board EV Incident Management Communication	This on-board equipment package provides communications support to first responders. Information about the incident, information on dispatched resources, and ancillary information such as road and weather conditions are provided to emergency personnel. Emergency personnel transmit information about the incident such as identification of vehicles and people involved, the extent of injuries, hazardous material, resources on site, site management strategies in effect, and current clearance status.
On-board Fixed Route Schedule Management	This on-board equipment package monitors schedule performance and identifies corrective actions when a deviation is detected. It provides two-way communication between the transit vehicle and center, enabling the center to communicate with the vehicle operator and monitor on-board systems.
On-board Maintenance	This on-board equipment package collects and processes transit vehicle maintenance data including mileage and vehicle operating conditions. This maintenance information is provided to the management center and used to schedule future vehicle maintenance and repair.
On-board Paratransit Operations	This on-board equipment package forwards paratransit and flexible-route dispatch requests to the operator and forwards acknowledgements to the center. It coordinates with, and assists the operator in managing multi-stop runs associated with demand responsive transit services including paratransit.
On-board Transit Fare and Load Management	This on-board equipment package supports fare collection using a standard fare card or other non-monetary fare medium, detects payment violations, and counts passengers as they embark and disembark from the vehicle. It collects data required to determine accurate ridership levels and implement variable and flexible fare structures. Collected passenger and fare data are made available to the center.
On-board Transit Information Services	This equipment package furnishes en-route transit users with real-time travel-related information on-board a transit vehicle. Current information that can be provided to transit users includes transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, non-motorized transportation services, and special events are provided. In addition to tailored information for individual transit users, this equipment package also supports general annunciation and/or display of general schedule information, imminent arrival information, and other information of general interest to transit users.

Equipment Package	Description
On-board Transit Security	This equipment package provides security and safety functions on-board the transit vehicle. It includes surveillance and sensor systems that monitor the on-board environment, silent alarms that can be activated by transit user or vehicle operator, operator authentication, and a remote vehicle disable function. The surveillance equipment includes video (e.g. CCTV cameras), audio systems and/or event recorder systems. The sensor equipment includes threat sensors (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors (e.g. metal detectors).
On-board Transit Signal Priority	This on-board equipment package provides the capability for transit vehicles to request signal priority at signalized intersections, ramps, and interchanges through short range communication directly with traffic control equipment at the roadside.
On-board Transit Trip Monitoring	This on-board equipment package tracks vehicle location, monitors fuel usage, collects operational status (doors opened/closed, running times, etc.) and sends the collected, timestamped data to the Transit Management Subsystem.
On-board Trip Monitoring	This equipment package provides the capabilities to support fleet management with automatic vehicle location and automated mileage and fuel reporting and auditing. In addition, this equipment is used to monitor the planned route and notify the Fleet and Freight Management Subsystem of any deviations.
On-Line Analysis and Mining	This equipment package provides advanced data analysis, summarization, and mining features that facilitate discovery of information, patterns, and correlations in large data sets. Multidimensional analysis, selective summarization and expansion of data details, and many other advanced analysis services may be offered by various implementations of this equipment package.
Parking Coordination	This equipment package supports communication and coordination between equipped parking facilities and also supports regional coordination between parking facilities and traffic and transit management systems. This equipment package also shares information with transit management systems and information service providers to support multimodal travel planning, including parking reservations capabilities. Information including current parking availability, system status, and operating strategies are shared through this equipment package to enable local parking facility management that supports regional transportation strategies.
Parking Data Collection	This equipment package collects and stores parking information that is collected in the course of parking system operations performed by the Parking Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
Parking Electronic Payment	This equipment package supports electronic payment of parking fees using in-vehicle equipment (tags) or contact or proximity cards. It includes the field elements that provide the interface to the in-vehicle or card payment device and the back-office functionality that performs the transaction.
Parking Management	This equipment package detects and classifies vehicles at parking facility entrances, exits, and other designated locations within the facility. Current parking availability is monitored and used to inform drivers through dynamic message signs/displays so that vehicles are efficiently routed to available spaces. Parking facility information, including current parking rates and directions to entrances and available exits, is also provided to drivers. Coordination with traffic management supports local traffic control coordination in and around the parking facility.
Personal Basic Information Reception	This equipment package receives formatted traffic advisories, road conditions, transit information, broadcast alerts, and other general traveler information broadcasts and presents the information to the traveler. The traveler information broadcasts are received by personal devices including personal computers and personal portable devices such as personal digital assistants (PDAs) and pagers.

Equipment Package	Description
Personal Interactive Information Reception	This equipment package provides traffic information, road conditions, transit information, yellow pages (traveler services) information, special event information, and other traveler information that is specifically tailored based on the traveler's request and/or previously submitted traveler profile information. The interactive traveler information capability is provided by personal devices including personal computers and personal portable devices such as personal digital assistants (PDAs).
Personal Location Determination	This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide guidance and emergency notification services. The equipment package includes location referencing technology such as a GPS receiver that is embedded in the user's personal computer or other portable device.
Personal Trip Planning and Route Guidance	This equipment package provides a personalized trip plan to the traveler. The trip plan is calculated by the Information Service Provider based on preferences and constraints supplied by the traveler and provided to the traveler for confirmation. Reservations and advanced payment may also be processed by this equipment package to confirm the trip plan. Coordination with the Information Service Provider may continue during the trip so that the route plan can be modified to account for new information. Many equipment configurations are possible including systems that provide a basic trip plan to the traveler as well as more sophisticated systems that can provide transition by transition guidance to the traveler along a multi-modal route. Devices represented by this equipment package include desktop computers at home, work, or at major trip generation sites, plus personal portable devices such as PDAs and pagers.
Rail Operations Coordination	This equipment package provides coordination between rail operations and traffic management centers. It receives train schedules, maintenance schedules, incidents, priority messages, and any other forecast events that will impact highway-rail intersection (HRI) closures from Rail Operations. The provided information is used to develop forecast HRI closure times and durations which may be applied in advanced traffic control strategies or delivered as enhanced traveler information. This equipment package includes the processing and algorithms necessary to derive HRI closure times and the communications capabilities necessary to communicate with rail operations and interface to the traffic control and information distribution capabilities included in other Traffic Management Subsystem equipment packages.
Remote Basic Information Reception	This equipment package receives formatted traffic advisories, road conditions, transit information, broadcast alerts, and other general traveler information broadcasts and presents the information to the traveler with a public traveler interface. This equipment package includes the receiver and public display device such as a kiosk, large-scale display monitor or other public display.
Remote Interactive Information Reception	This equipment package provides traffic information, road conditions, transit information, yellow pages (traveler services) information, special event information, and other traveler information that is specifically tailored based on the traveler's request and/or previously submitted traveler profile information. The interactive traveler information capability is provided by a public traveler interface, such as a kiosk.
Remote Transit Fare Management	This equipment package provides the capability for the traveler to use a common fare medium for transit fares, tolls, and/or parking lot charges. It accepts a service request and means of payment, verifies eligibility, calculates the amount due, collects payment, and identifies payment problems. This equipment package may be implemented using a traveler card reader in a kiosk that includes a communications interface to the financial infrastructure to support payment collection and reconciliation.
Remote Transit Information Services	This equipment package furnishes transit users with real-time travel-related information at transit stops, multi-modal transfer points, and other public transportation areas. It provides transit users with information on transit routes, schedules, transfer options, available services, fares, and real-time schedule adherence. In addition to tailored information for individual transit users, this equipment package supports general annunciation and/or display of imminent arrival information and other information of general interest to transit users.

Equipment Package	Description
Remote Traveler Security	This equipment package provides the capability to report an emergency or summon assistance from secure areas such as transit stops, transit stations, modal transfer facilities, rest stops and picnic areas, park-and-ride areas, tourism and travel information areas, and emergency pull off areas. This package includes interfaces that support initiation of an alarm and presentation of the returned alarm acknowledgement as well as a broadcast message to advise or warn the traveler.
Roadside Electronic Screening	This equipment package provides two-way communication with approaching properly equipped commercial vehicles at mainline speeds, reading tags for automated vehicle identification and credential checking. This equipment package processes the data from the commercial vehicles along with accessed database information to determine whether a pull-in message is needed or to generate random pull-in messages with provisions for facility operators and enforcement officials to have manual override capabilities.
Roadside HAZMAT Detection	This equipment package detects and identifies commercial vehicles carrying security sensitive hazardous materials. It assess the likelihood of the presence of security sensitive HAZMAT materials based on remote sensed data as well as other physical information acquired about the commercial vehicle. It then determines if any detected HAZMAT is authorized. If unauthorized HAZMAT material is detected, a pull-in message is generated. The equipment package may also issue a message to the Emergency Management (Police Dispatch) function that includes: location of the incident, current location of the commercial vehicle, timestamp, Vehicle ID, Carrier ID, Driver ID, CV Credentials information, HAZMAT material or category detected, and cargo manifest (if known).
Roadside Safety and Security Inspection	This equipment package supports the roadside safety inspection process. It reads on-board safety data at mainline speeds to rapidly screen the vehicle and driver and accesses historical safety data after identifying vehicles at mainline speeds or while stopped at the roadside. The capabilities to process safety data and issue pull-in messages or provide warnings to the driver, carrier, and enforcement agencies are also provided. It includes hand held devices to rapidly inspect the vehicle and driver. Results of screening and summary safety inspection data are stored and maintained. Since a vehicle may cross jurisdictional boundaries during a trip, this equipment package supports the concept of a last clearance event record carried on the vehicle tag. The last clearance event record reflects the results of the roadside verification action. For example, if the vehicle is pulled over in State A and undergoes credential, weight, and safety checks, the results of the clearance process are written to the vehicle s tag. If the vehicle continues the trip and passes a roadside station in State B, the State B station has access to the results of the previous pull-in because it can read the last clearance event record written by the State A roadside station.
Roadside WIM	This equipment package measures commercial vehicle weight at high speeds. It includes both portable and permanent installations and can be used to augment electronic credentials checking or it can be a stand alone package with display.
Roadway Basic Surveillance	This equipment package monitors traffic conditions using fixed equipment such as loop detectors and CCTV cameras.
Roadway Data Collection	This equipment package collects traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications where data quality and completeness take precedence over real-time performance. This equipment package includes the sensors, supporting roadside infrastructure, and communications equipment that collects and transfers information to a center for archival.
Roadway Emissions Monitoring	This equipment package monitors emissions and general air quality and communicates the collected information back to the emissions management subsystem where it can be monitored, analyzed, and used. This equipment package supports point monitoring of individual vehicle emissions as well as general monitoring of standard air quality measures.

Equipment Package	Description
Roadway Environmental Monitoring	This equipment package measures environmental conditions and communicates the collected information back to a center where it can be monitored and analyzed. A broad array of general weather and road surface information may be collected. Weather conditions that may be measured include temperature, wind, humidity, precipitation, and visibility. Surface and sub-surface sensors can measure road surface temperature, moisture, icing, salinity, and other measures.
Roadway Equipment Coordination	This equipment package supports direct communications between field equipment. It includes field elements that control and send data to other field elements. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., direct coordination between traffic controllers that are controlling adjacent intersections.).
Roadway Field Device Monitoring	This equipment package monitors the operational status of field devices and detects and reports fault conditions. Consolidated operational status (device status, configuration, and fault information) are reported to the Maintenance and Construction Management Subsystem for resolution and repair. A local interface is provided to field personnel for local monitoring and diagnostics, supporting field maintenance, repair, and replacement of field devices.
Roadway Freeway Control	This equipment package includes the field equipment used to control traffic on freeways including ramp meters, interchange connector meters, mainline meters, and lane control signals.
Roadway HOV Control	This equipment package monitors and controls high occupancy vehicle (HOV) and high occupancy toll (HOT) lanes. It includes traffic sensors that monitor HOV lane usage and display equipment such as lane control signals that provide lane status to drivers.
Roadway Infrastructure Monitoring	This equipment package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts). It includes sensors that monitor the infrastructure and the communications necessary to report this data to a center or vehicle-based maintenance system.
Roadway Intersection Collision Warning	This equipment package includes field elements that determine the probability of a collision in an intersection by monitoring vehicles approaching the intersection. When a potential collision is detected, this equipment package sends appropriate warnings and/or control actions to the approaching vehicles using a short-range interface. It also provides signal indication information to approaching vehicles to improve intersection safety. This equipment package covers any signalized intersection equipped with intersection collision warning field equipment.
Roadway Probe Beacons	This equipment package monitors traffic and road conditions by collecting information from passing vehicles that are equipped with a transponder or other short range communications device. The probe data collected by this equipment package may include link travel times, average speeds, road conditions, and any other data that can be measured and communicated by passing vehicles. This equipment package consists of field equipment that communicates with passing vehicles using short range communications, collects the information provided by the vehicles, and forwards this information back to the Traffic Management Subsystem.
Roadway Reversible Lanes	This equipment package includes field elements that monitor and control reversible lane facilities. It includes the traffic sensors, surveillance equipment, lane control signals, physical lane access controls, and other field elements that manage traffic on these facilities. It provides current reversible lane facility status information and accepts requests and control commands from the controlling center.
Roadway Signal Controls	This equipment package includes the field elements that monitor and control signalized intersections. It includes the traffic signal controllers, signal heads, detectors, and other ancillary equipment that supports traffic signal control. It also includes field masters, and equipment that supports communications with a central monitoring and/or control system, as applicable. The communications link supports upload and download of signal timings and other parameters and reporting of current intersection status. This equipment package represents the field equipment used in all levels of traffic signal control from basic actuated systems that operate on fixed timing plans through adaptive systems. It also supports all signalized intersection configurations, including those that accommodate pedestrians.

Equipment Package	Description
Roadway Signal Priority	This equipment package includes the field elements that receive signal priority and/or signal preemption requests from vehicles approaching a signalized intersection and controls traffic signals accordingly. Depending on the type of request and implementation, this equipment package may override (preempt) current signal timing or delay phase transition. In signal priority systems, the request for priority may or may not be granted, based on the overall traffic situation at the intersection.
Roadway Speed Monitoring	This equipment package includes the field elements that monitor vehicle speeds. If the speed is determined to be excessive, then roadside equipment can suggest a safe driving speed. Environmental conditions may be monitored and factored into the safe speed advisories that are provided to the motorist. The operational status (state of the device, configuration, and fault data) is provided to the center. This equipment package can also provide an enforcement function, reporting speed violations to an enforcement agency.
Roadway Traffic Information Dissemination	This equipment package includes field elements that provides information to drivers, including dynamic message signs and highway advisory radio.
Roadway Work Zone Safety	This equipment package includes field elements that detect vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone.
Roadway Work Zone Traffic Control	This equipment package controls traffic in areas of the roadway where maintenance and construction activities are underway, monitoring and controlling traffic using field equipment such as CCTV cameras, dynamic messages signs, and gates/barriers. Work zone speeds and delays are provided to the motorist prior to the work zones.
Safeguard System Management	This equipment package remotely monitors and controls safeguard systems for transportation facilities and infrastructure. Safeguard systems include blast shielding, exhaust systems and other automatic or remotely controlled systems intended to mitigate the impact of an incident. When access to a transportation facility is impacted by the activation of a safeguard system, travelers and appropriate subsystems are notified.
Service Patrol Management	This equipment package supports dispatch and communication with roadway service patrol vehicles that monitor roads to aid motorists, offering rapid response to minor incidents.
Standard Rail Crossing	This equipment package manages highway traffic at highway-rail intersections (HRIs) where operational requirements do not dictate advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Either passive (e.g., the crossbuck sign) or active warning systems (e.g., flashing lights and gates) are supported depending on the specific requirements for each intersection. These traditional HRI warning systems may also be augmented with other standard traffic management devices. The warning systems are activated on notification of an approaching train by interfaced wayside equipment. The equipment at the HRI may also be interconnected with adjacent signalized intersections so that local control can be adapted to highway-rail intersection activities. Health monitoring of the HRI equipment and interfaces is performed; detected abnormalities are reported through interfaces to the wayside interface equipment and the traffic management subsystem.
TMC Environmental Monitoring	This equipment package assimilates current and forecast road conditions and surface weather information using a combination of weather service provider information, information collected by other centers such as the Maintenance and Construction Management Subsystem, and data collected from environmental sensors deployed on and about the roadway. The collected environmental information is monitored and presented to the operator. This information can be used to issue general traveler advisories and support location specific warnings to drivers. Other equipment packages process the collected information and provide decision support.

Equipment Package	*Description*
TMC Evacuation Support	This equipment package supports development, coordination, and execution of special traffic management strategies during evacuation and subsequent reentry of a population in the vicinity of a disaster or major emergency. A traffic management strategy is developed based on anticipated demand, the capacity of the road network including access to and from the evacuation routes, and existing and forecast conditions. The strategy supports efficient evacuation and also protects and optimizes movement of response vehicles and other resources that are responding to the emergency. This equipment package coordinates the evacuation with the Traffic Management Subsystem (representing centers in other affected jurisdictions) and the Emergency Management Subsystem.
TMC Freeway Management	This equipment package provides center monitoring and control of freeway traffic control systems including ramp control, interchange control, and mainline lane control systems. Approaches covered include ramp metering, interchange connector metering, overhead lane control signals, freeway mainline metering, and variable speed control systems.
TMC HOV Lane Management	This equipment package provides center monitoring and control of HOV lanes. It coordinates freeway ramp meters and connector signals with HOV lane usage signals to provide preferential treatment to HOV lanes. In advanced implementations, it automatically detects HOV violators.
TMC Incident Detection	This equipment package identifies and reports incidents to Traffic Operations Personnel. It remotely monitors and controls traffic sensor and surveillance systems that support incident detection and verification. It analyzes and reduces the collected sensor and surveillance data, external alerting and advisory and incident reporting systems, anticipated demand information from intermodal freight depots, special event information, and identifies and reports incidents and hazardous conditions
TMC Incident Dispatch Coordination/Communication	This equipment package formulates and manages an incident response that takes into account the incident potential, incident impacts, and/or resources required for incident management including proposing and facilitating the dispatch of emergency response and service vehicles as well as coordinating response with all appropriate cooperating agencies.
TMC Multimodal Coordination	This equipment package supports center-to-center coordination between the Traffic Management and Transit Management Subsystems. It monitors transit operations and provides traffic signal priority for transit vehicles on request from the Transit Management Subsystem.
TMC Multimodal Crossing Management	This equipment package remotely monitors and manages multimodal crossings, including draw bridges and other crossings between highway traffic and other modes. Equipment controlled includes warning lights, gates, dynamic message signs, and other systems that provide driver information and control traffic at multimodal crossings. Railroad grade crossings are covered by the HRI Traffic Management equipment package.
TMC Probe Information Collection	This equipment package collects, assimilates, and disseminates vehicle probe data collected from roadside beacons and centers controlling transit vehicles, emergency vehicles, toll collection points, and route-guided vehicles. It estimates traffic and road conditions based on the aggregated probe data and disseminates this information to other centers.
TMC Regional Traffic Control	This equipment package supports coordination between traffic management centers in order to share traffic information between centers as well as control of traffic management field equipment. This coordination supports wide area optimization and regional coordination that spans jurisdictional boundaries; for example, coordinated signal control in a metropolitan area or coordination between freeway operations and arterial signal control within a corridor.
TMC Reversible Lane Management	This equipment package remotely monitors and controls reversible lanes. It provides an interface to reversible lane field equipment (traffic sensors, surveillance equipment, lane control signals, physical lane access controls, etc.) and to traffic operations personnel to support central monitoring and control of these facilities.

Equipment Package	Description
TMC Signal Control	This equipment package provides the capability for traffic managers to monitor and manage the traffic flow at signalized intersections. This capability includes analyzing and reducing the collected data from traffic surveillance equipment and developing and implementing control plans for signalized intersections. Control plans may be developed and implemented that coordinate signals at many intersections under the domain of a single traffic management subsystem and are responsive to traffic conditions and adapt to support incidents, preemption and priority requests, pedestrian crossing calls, etc.
TMC Speed Monitoring	This equipment package remotely monitors and controls speed monitoring and speed warning systems. It remotely monitors vehicle speeds and presents this information to traffic operations personnel. It configures and controls the speed monitoring and warning equipment that provides safe speed advisories to the motorist. This equipment package can also notify an enforcement agency if excessive speeds are identified.
TMC Toll/Parking Coordination	This equipment package provides the capability to gather information on regional toll, parking, and transit usage and request changes to pricing and other mechanisms to manage overall transportation demand.
TMC Traffic Information Dissemination	This equipment package disseminates traffic and road conditions, closure and detour information, incident information, driver advisories, and other traffic-related data to other centers, the media, and driver information systems. It monitors and controls driver information system field equipment including dynamic message signs and highway advisory radio, managing dissemination of driver information through these systems.
TMC Traffic Network Performance Evaluation	This equipment package predicts travel demand patterns to support traffic flow optimization, demand management, and incident management. This equipment package collects traffic data from sensors and surveillance equipment as well as input from other traffic management centers, emissions management, transit operations, and event promoters. It collects route planning information from information service providers and integrates and uses this information to predict future traffic conditions. The planned control strategies can be passed back to the Information Service Provider so that the intended strategies can be reflected in future route planning.
TMC Work Zone Traffic Management	This equipment package coordinates work plans with maintenance systems so that work zones are established that have minimum traffic impact. Traffic control strategies are implemented to further mitigate traffic impacts associated with work zones that are established, providing work zone information on driver information systems such as dynamic message signs.
Toll Administration	This equipment package provides administration and management of an electronic toll collection system. It provides the back office functions that support enrollment, pricing, payment reconciliation with financial institutions, and violation notification to enforcement agencies. It also supports dynamic pricing to support demand management. Secure communications with the financial infrastructure and distributed toll plazas support electronic payments and other ancillary requirements such as lost/stolen tag identification and management.
Toll Data Collection	This equipment package collects and stores toll information that is collected in the course of toll operations performed by the Toll Administration Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
Toll Operator Alert	This equipment package provides wide-area alerts (safety/security broadcasts, child abductions, etc.) to toll operators. It provides the capability to monitor for active alerts and presents these alerts to administrative staff (the "Toll Administrator") and forwards these alerts to toll operators at the toll plazas/toll collection facilities. The Toll Administrator determines which alerts should be forwarded to toll operators and can inject alerts that are identified through other means.
Toll Plaza Toll Collection	This equipment package provides toll plazas the capability to identify properly equipped vehicles, collect electronic tolls, and provide a positive indication to the driver that a toll was collected. Violators are identified and images are collected. Toll transactions are stored and reported to the Toll Administration Subsystem.

Equipment Package	*Description*
Traffic and Roadside Data Archival	This equipment package collects and archives traffic, roadway, and environmental information for use in off-line planning, research, and analysis. The equipment package controls and collects information directly from equipment at the roadside, reflecting the deployment of traffic detectors that are used primarily for traffic monitoring and planning purposes rather than for traffic management.
Traffic Data Collection	This equipment package collects and stores traffic information that is collected in the course of traffic operations performed by the Traffic Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
Traffic Maintenance	This equipment package monitors the operational status of field equipment and detects failures. It presents field equipment status to Traffic Operations Personnel and reports failures to the Maintenance and Construction Management Subsystem. The equipment package tracks the repair or replacement of the failed equipment. The entire range of ITS field equipment may be monitored by this equipment package including sensors (traffic, infrastructure, environmental, security, speed, etc.) and devices (highway advisory radio, dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, beacons, security surveillance equipment, etc.).
Transit Center Fare and Load Management	This equipment package manages fare collection and passenger load management at the transit center. It provides the back office functions that support transit fare collection, supporting payment reconciliation with links to financial institutions and enforcement agencies for fare violations. It collects data required to determine accurate ridership levels, establish fares, and distribute fare information. This equipment package supports two-way data communication between the transit vehicle and center to support collection of fare and passenger loading information.
Transit Center Fixed-Route Operations	This equipment package manages fixed route transit operations. It supports planning and scheduling of fixed and flexible route transit services. The package allows fixed-route and flexible-route transit services to develop and disseminate schedules and automatically updates customer service operator systems with the most current schedule information. This equipment package also supports automated dispatch of transit vehicles. Current vehicle schedule adherence and optimum scenarios for schedule adjustment are also provided.
Transit Center Information Services	This equipment package collects the latest available information for a transit service and makes it available to transit customers and to Information Service Providers for further distribution. Customers are provided information at transit stops and other public transportation areas before they embark and on-board the transit vehicle once they are enroute. Information provided can include the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, yellow pages, and special events. In addition to general service information, tailored information (e.g., itineraries) are provided to individual transit users.
Transit Center Multi-Modal Coordination	This equipment package determines the need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations. The equipment package also supports schedule coordination between transit properties and coordinates with other surface and air transportation modes. As part of schedule coordination, this equipment package shares transit transfer cluster (a collection of stops, stations, or terminals where transfers can be made conveniently) and transfer point information between Multimodal Transportation Service Providers, Transit Agencies, and ISPs. An interface to Traffic Management also supports demand management strategies.
Transit Center Paratransit Operations	This equipment package manages demand responsive transit services, including paratransit services. It supports planning and scheduling of these services, allowing paratransit and other demand response transit services to plan efficient routes and better estimate arrival times. This equipment package also supports automated dispatch of paratransit vehicles. Customer service operator systems are updated with the most current schedule information.

Equipment Package	Description
Transit Center Security	This equipment package monitors transit vehicle operator or traveler activated alarms received from on-board a transit vehicle. It supports transit vehicle operator authentication and provides the capability to remotely disable a transit vehicle. This equipment package also includes the capability to alert operators and police to potential incidents identified by these security features.
Transit Center Vehicle Tracking	This equipment package monitors transit vehicle location. The location information is collected via a data communication link between the transit vehicles and the transit center. The location information is presented to the transit operator on a digitized map of the transit service area. The location data may be used to determine real time schedule adherence and update the transit system's schedule in real-time. The real-time schedule information is provided to Information Service Providers and the Transit Center Information Services equipment package, which furnish the information to travelers.
Transit Data Collection	This equipment package collects and stores transit information that is collected in the course of transit operations performed by the Transit Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
Transit Environmental Monitoring	This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and forwarded to other agencies to more effectively manage transit operations.
Transit Evacuation Support	This equipment package manages transit resources to support evacuation and subsequent reentry of a population in the vicinity of a disaster or other emergency. It supports coordination of regional evacuation plans, identifying the transit role in a regional evacuation and identifying transit resources that would be used. During an evacuation, this equipment package coordinates the use of transit and school bus fleets, supporting evacuation of those with special needs and the general population. Transit service and fare schedules are adjusted and updated service and fare information is made available through traveler information systems. This equipment package coordinates the functions in other Transit equipment packages to support these requirements.
Transit Garage Maintenance	This equipment package provides advanced maintenance functions for the transit property. It collects operational and maintenance data from transit vehicles, manages vehicle service histories, and monitors operators and vehicles. It collects vehicle mileage data and uses it to automatically generate preventative maintenance schedules for each vehicle by utilizing vehicle tracking data from a prerequisite vehicle tracking equipment package. In addition, it provides information to proper service personnel to support maintenance activities and records and verifies that maintenance work was performed.
Transit Vehicle Operator Scheduling	This equipment package automates and supports the assignment of transit vehicles and operators to enhance the daily operation of a transit service. It provides the capability to assign operators to routes or service areas in a fair manner while minimizing labor and overtime services, considering operator preferences and qualifications, and automatically tracking and validating the number of work hours performed by each individual operator. This operator scheduling function is often performed at a Transit Garage facility.
Traveler Secure Area Sensor Monitoring	This equipment package includes sensors that monitor conditions of secure areas that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). The equipment package monitors areas for environmental threats (e.g., chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), intrusion and motion, and object detection.

Equipment Package	Description
Traveler Secure Area Surveillance	This equipment package manages surveillance equipment that monitors secure areas in the transportation system that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). This package collects the images and audio inputs at the secure area and provides the surveillance information to the Emergency Management Subsystem. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Field Secure Area Surveillance equipment package.
Traveler Telephone Information	This equipment package services voice-based traveler requests for information that supports traveler telephone information systems like 511. The equipment package takes requests for traveler information, which could be voice-formatted traveler requests, dual-tone multifrequency (DTMF)-based requests, or a simple traveler information request, and returns the requested traveler information in the proper format. In addition to servicing requests for traveler information, this equipment package also collects and forwards alerts and advisories to traveler telephone information systems.
Vehicle Intersection Collision Warning	This equipment package detects an impending collision in an intersection prior to crash impact and notifies the driver of the presence of potentially hazardous situations and need for immediate collision avoidance action. This equipment package includes the on-board sensors that detect potential hazards and equipment that communicates with the infrastructure to identify intersection safety issues identified by field equipment at the intersection.
Vehicle Location Determination	This equipment package determines current location of the vehicle using GPS or similar location referencing capability and provides this information to other equipment packages that use the location information to provide various ITS services.
Vehicle Mayday I/F	This equipment package provides the capability for drivers or collision detection sensors to report an emergency and summon assistance. This equipment package includes the on-board collision detection sensors, a mechanism for the driver to summon assistance, and two-way communications with a service provider.
Vehicle Probe Support	This equipment package includes capabilities for the probe vehicle to identify its location, measure traffic conditions such as link travel time and speed, and transmit these data to a center or roadside beacons.
Vehicle Toll/Parking Interface	This equipment package includes the on-board systems that pay for tolls and parking electronically. It includes in-vehicle equipment that communicates with the toll/parking plaza (e.g., a tag) and an optional interface to a traveler card to allow use of a common payment medium for all transportation services.
Vehicle Trip Planning and Route Guidance	This equipment package includes the in-vehicle system that coordinates with a traveler information center to provide a personalized trip plan to the driver. The trip plan is calculated by the Information Service Provider based on preferences and constraints supplied by the driver and provided to the driver for confirmation. Reservations and advanced payment may also be processed by this equipment package to confirm the trip plan. Coordination with the Information Service Provider may continue during the trip so that the route plan can be modified to account for new information. Many equipment configurations are possible including in-vehicle systems that provide a basic trip plan to the driver as well as more sophisticated systems that can provide turn by turn guidance to the driver along the route.
Virtual Data Warehouse Services	This equipment package provides capabilities to access "in-place" data from geographically dispersed archives and coordinate information exchange with a local data warehouse. While many of the functions performed by this equipment package are similar to the functions inherent in other archived data management subsystem equipment packages (e.g. data management, fusion, analysis) this equipment package also provides the specialized publishing, directory services, and transaction management functions associated with coordinating remote archives. In addition, this equipment package performs functions on an as-needed basis, thereby negating the need to maintain the comprehensive set of data from the remote archives in the local data warehouse.

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