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APPENDIX E – ARCHITECTURE FLOW DESCRIPTIONS

Table E1 – Architecture Flow Descriptions

Architecture Flow Name	Architecture Flow Description	Flow Type
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.	Request
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.	Information
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.	Information
emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.	Information
emergency dispatch response	Request for additional emergency dispatch information (e.g., a suggested route) and provision of en route status.	Information
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.	Information
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.	Information
environmental sensors control	Data used to configure and control environmental sensors.	Request
equipment maintenance status	Current status of field equipment maintenance actions.	Information
external reports	Traffic and incident information that is collected by the media through a variety of mechanisms (e.g., radio station call-in programs, air surveillance).	Information
field device status	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.	Information
field equipment status	Identification of field equipment requiring repair and known information about the associated faults.	Information

Table E1 – Architecture Flow Descriptions (continued)

Architecture Flow Name	Architecture Flow Description	Flow Type
freeway control data	Control commands and operating parameters for ramp meters, mainline metering/lane controls and other systems associated with freeway operations.	Information
freeway control status	Current operational status and operating parameters for ramp meters, mainline metering/lane controls and other control equipment associated with freeway operations.	Information
hazmat information (extended)	Information about a particular hazmat load including nature of the load and unloading instructions. May also include hazmat vehicle route and route update information.	Information
hazmat spill notification	This data flow is used by the Commercial Vehicle Enforcement Agency to contact other emergency response organizations when incidents occur that result in a release of hazardous material. The Traffic Management Subsystem, upon notification by the Carrier Enforcement, can act as a central repository for hazmat information, and notify other pertinent agencies. Ideally, this information will include the vehicle location as well as identifying the carrier. The information may be provided as a response to a real-time query or proactively by the source.	Information
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.	Information
hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations	Information
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.	Information
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation	Request
hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.	Information
incident command information	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.	Information
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.	Information

Table E1 – Architecture Flow Descriptions (continued)

Architecture Flow Name	Architecture Flow Description	Flow Type
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.	Request
incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.	Information
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.	Information
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).	Information
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.	Information
infrastructure monitoring sensor control	Data used to configure and control infrastructure monitoring sensors.	Request
infrastructure monitoring sensor data	Data read from infrastructure-based sensors that monitor the condition of pavement, bridges, culverts, signs, and other roadway infrastructure.	Information
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.	Information
maint and constr dispatch information	Information used to dispatch maintenance and construction vehicles, equipment, and crews. This information includes routing information, traffic information, road restrictions, incident information, environmental information, decision support information, maintenance schedule data, dispatch instructions, personnel assignments, and corrective actions.	Information
maint and constr dispatch status	Current maintenance and construction status including work data, operator status, crew status, and equipment status.	Information
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.	Request
maint and constr resource response	Current status of maintenance and construction resources including availability and deployment status.	Information

Table E1 – Architecture Flow Descriptions (continued)

Architecture Flow Name	Architecture Flow Description	Flow Type
maint and constr vehicle location data	The current location and related status (e.g., direction and speed) of the maintenance/construction vehicle.	Information
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).	Information
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.	Information
media information request	Request from the media for current transportation information.	Request
railroad advisories	Real-time notification of railway-related incident or advisory.	Information
railroad schedules	Train schedules, maintenance schedules, and other information from the railroad that supports forecast of HRI closures.	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.	Information
remote surveillance control (extended)	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.	Information
request for road network conditions	Request for traffic information, road conditions, surface weather conditions, incident information, and other road network status. The request specifies the region/route of interest, the desired effective time period, and other parameters that allow preparation of a tailored response. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.	Request
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.	Information
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.	Request

Table E1 – Architecture Flow Descriptions (continued)

Architecture Flow Name	Architecture Flow Description	Flow Type
road network conditions	Current and forecasted traffic information, road and weather conditions, 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
road weather information	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.	Information
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.	Information
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.	Information
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).	Information
roadway treatment system control	Control data for remotely located, automated devices, that affect the roadway surface (e.g. de-icing applications).	Information
roadway treatment system status	Current operational status of automated roadway treatment devices (e.g., anti-icing systems).	Information
signal control data	Information used to configure and control traffic signal systems.	Information
signal control status	Status of surface street signal controls.	Information
track status	Current status of the wayside equipment and notification of an arriving train.	Information
traffic 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.	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, 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.	Information

Table E1 – Architecture Flow Descriptions (continued)

Architecture Flow Name	Architecture Flow Description	Flow Type
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).	Information
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.	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.	Information
traffic sensor control	Information used to configure and control traffic sensor systems.	Information
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	Information
traveler information	Traveler information comprised of traffic status, advisories, incidents, payment information and many other travel-related data updates and confirmations.	Information
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.	Information
video surveillance control	Information used to configure and control video surveillance systems.	Information
weather information	Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.).	Information
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.	Information
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.	Information
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.	Information