APPENDIX A – MARKET PACKAGE DEFINITIONS

Market Package	Market Package Name	Description
Traffic Management Service Area		
ATMS01	Network Surveillance	Includes traffic detectors, CCTV cameras, other surveillance equipment, supporting field equipment, and fixed point-to-point communications to transmit the collected data back to a traffic management center.
ATMS02	Traffic Probe Surveillance	Provides an alternative approach for surveillance of the roadway network. Probe vehicles are tracked and the vehicle's position and speed information is utilized to determine road network conditions such as average speed and congestion conditions.
ATMS03	Surface Street Control	Provides the central control and monitoring equipment, communication links, and signal control equipment that support local street and/or arterial traffic management. This market package is consistent with typical urban traffic signal control systems.
ATMS04	Freeway Control	Provides the communications and roadside equipment to support ramp control, lane controls, and interchange control for freeways. This market package is consistent with typical urban traffic freeway control systems. Also includes the capability to utilize surveillance information for detection of incidents.
ATMS05	HOV Lane Management	Manages HOV lanes by coordinating freeway ramp meters and connector signals with HOV lane usage signals. Vehicle occupancy detectors may be installed to verify HOV compliance and notify enforcement agencies of violations.
ATMS06	Traffic Information Dissemination	Provides driver information using roadway equipment such as dynamic message signs or highway advisory radio. Information can include traffic and road conditions, closure and detour information, incident information, emergency alerts, disaster traveler information, and driver advisories. This package also covers the sharing of traffic information with media, transit, emergency management, and other service providers.
ATMS07	Regional Traffic Management	Sharing of traffic information and control among traffic management centers to support a regional management strategy. This package relies principally on roadside instrumentation of each traffic management jurisdiction and provides the communications links and cooperative control strategies that enable integrated interjurisdictional traffic management. The nature of optimization and extent of information and control sharing is determined through working arrangements between jurisdictions
ATMS08	Traffic Incident Management System	Manages both unexpected incidents and planned events so that the impact to the transportation network and traveler safety is minimized. This market package includes incident detection capabilities through roadside surveillance devices as well as notification from other agencies. It supports traffic operations personnel in developing an appropriate response in coordination with emergency management, maintenance and construction management, and other incident response personnel.
ATMS09	Traffic Forecast and Demand Management	Includes advanced algorithms, processing, and mass storage capabilities that support historical evaluation, real-time assessment, and forecasts of the roadway network performance and link travel times.
ATMS10	Electronic Toll Collection	Provides toll operators with the ability to collect tolls electronically and detect and process violations. The toll tags and roadside readers that these systems use could also be used to collect road use statistics for highway authorities.
ATMS11	Emissions Monitoring and Management	Monitors individual vehicle emissions and provides general air quality monitoring using distributed sensors to collect the data. The gathered information can be used to implement environmentally sensitive travel demand management programs, policies, and regulations.
ATMS12	Roadside Lighting System Control	Manages electrical lighting systems by monitoring operational conditions and using the lighting controls to vary the amount of light provided along the roadside.
ATMS13	Standard Railroad Grade Crossing	Manages highway traffic at highway-rail intersections (HRIs) where rail operational speeds are less than 80 mph. Passive and active warning signs are supported.
ATMS14	Advanced Railroad Grade Crossing	Manages highway traffic at highway-rail intersections (HRIs) where operational speeds are greater than 80 mph. Augments Standard Railroad Grade Crossing market package with additional safety features to mitigate the risks associated with higher rail speeds.

Market Package	Market Package Name	Description
Traffic Management Service Area (continued)		
ATMS15	Railroad Operations Coordination	Provides an additional level of strategic coordination between freight rail operations and traffic management centers. Information shared could include train schedules, maintenance schedules, or any other anticipated HRI closures.
ATMS16	Parking Facility Management	Provides enhanced monitoring and management of parking facilities. Market package assists in the management of parking operations, coordinates with transportation authorities, and supports electronic collection of parking fees.
ATMS17	Regional Parking Management	Supports coordination between parking facilities to enable regional parking management strategies.
ATMS18	Reversible Lane Management	Provides for the management of reversible lane facilities and includes the field equipment, physical lane access controls, and associated control electronics.
ATMS19	Speed Monitoring	Monitors the speeds of vehicles traveling through a roadway system.
ATMS20	Drawbridge Management	Supports systems that manage drawbridges at rivers and canals and other multimodal crossings. Includes control devices as well as traveler information systems.
ATMS21	Roadway Closure Management	Closes roadways to vehicular traffic when driving conditions are unsafe, maintenance must be performed, or other situations. Market package covers general road closures applications. Specific closure systems that are used at railroad grade crossings, drawbridges, reversible lanes, etc. are covered by other market packages.
Emergency Management Service Area		
EM01	Emergency Call-Taking and Dispatch	Provides basic public safety call-taking and dispatch services. Includes emergency vehicle equipment, equipment used to receive and route emergency calls, wireless communications, and coordination between emergency management agencies.
EM02	Emergency Routing	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. Includes signal preemption and priority applications.
EM03	Mayday and Alarms Support	Allows the user 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.
EM04	Roadway Service Patrols	Supports the roadway service patrol vehicles that aid motorists, offering rapid response to minor incidents (flat tire, accidents, or out of gas) to minimize disruption to traffic. This market package monitors service patrol vehicle locations and supports vehicle dispatch.
EM05	Transportation Infrastructure Protection	Includes the monitoring of transportation infrastructure (bridges, tunnels and management centers) for potential threats (acts of nature, terrorist attacks, or other incidents causing damage to the infrastructure) using sensors and surveillance equipment and barriers and safeguard systems to preclude an incident, control access during and after an incident, or mitigate the impact of an incident.
EM06	Wide-Area Alert	Uses ITS driver and traveler information systems to alert the public in emergency situations such as child abductions, severe weather, civil emergencies, or other situations that pose a threat to life and property.
EM07	Early Warning System	Monitors and detects potential, looming, and actual disasters including natural, technological, and man-made disasters.
EM08	Disaster Response and Recovery	Enhances the ability of the surface transportation system to respond to and recover from disasters. Supports coordination of emergency response plans including evacuation plans, provides enhanced access to the scene and better information about the transportation system in the vicinity of the disaster, and maintains situation awareness.

Market Package	Market Package Name	Description
Emergency Management Service Area (continued)		
EM09	Evacuation and Reentry Management	Supports evacuation of the general public from a disaster area and manages subsequent reentry to the disaster area. This market package supports both anticipated, well-planned, and orderly evacuations such as for a hurricane as well as sudden evacuations with little or no time for preparation or public warning such as a terrorist act. Employs a number of strategies to maximize capacity along an evacuation route including coordination with transit.
EM10	Disaster Traveler Information	Use of 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.
Maintenance and Construction Management Service Area		
MC01	Maintenance and Construction Vehicle and Equipment Tracking	Tracks the location of maintenance and construction vehicles and other equipment to ascertain the progress of their activities. This market package requires on-board tracking devices for maintenance and construction vehicles and a location tracking map to be maintained.
MC02	Maintenance and Construction Vehicle Maintenance	Performs vehicle maintenance scheduling and manages both routine and corrective maintenance activities. Includes on-board sensors capable of automatically performing diagnostics.
MC03	Road Weather Data Collection	Collects current road weather conditions using data collected from environmental sensors deployed on and about the roadway.
MC04	Weather Information Processing and Distribution	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. to allow system operators to make decisions on corrective actions to take.
MC05	Roadway Automated Treatment	Automatically treats a roadway section based on environmental or atmospheric conditions. Includes the sensors that detect adverse conditions, automated treatment (such as anti-icing chemicals), and associated driver information systems.
MC06	Winter Maintenance	Monitors environmental conditions and weather forecasts and uses the information to schedule winter maintenance activities.
MC07	Roadway Maintenance and Construction	Supports numerous services for scheduled and unscheduled maintenance and construction on a roadway system or right-of-way. Environmental conditions information is also received from various weather sources to aid in scheduling maintenance and construction activities.
MC08	Work Zone Management	Directs activity in work zones by controlling traffic through portable dynamic message signs and informing other groups of activity for better coordination management. Also provides speed and delay information to motorists prior to the work zone.
MC09	Work Zone Safety Monitoring	Includes systems that improve work crew safety and reduce collisions between the motoring public and maintenance and construction vehicles. Detects vehicle intrusions in work zones and warns workers and drivers of safety hazards when encroachment occurs.
MC10	Maintenance and Construction Activity Coordination	Supports the dissemination of maintenance and construction activity to centers that can utilize it as part of their operations. (i.e., traffic management, transit, emergency management)
MC11	Environmental Probe Surveillance	Collects data from vehicles in the road network that can be used to directly measure or infer current environmental conditions.
MC12	Infrastructure Monitoring	Monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure using both fixed and vehicle-based infrastructure monitoring sensors. Monitors vehicle probes used to determine current pavement conditions.

Market Package	Market Package Name	Description
Public Transportation Service Area		
APTS01	Transit Vehicle Tracking	Monitors current transit vehicle location using an automated vehicle location system. Location data may be used to determine real time schedule adherence and update the transit system's schedule in real time.
APTS02	Transit Fixed-Route Operations	Performs vehicle routing and scheduling, operator assignment, and system monitoring for fixed-route and flexible-route transit services.
APTS03	Demand Response Transit Operations	Performs vehicle routing and scheduling, operator assignment, and system monitoring for demand responsive transit services.
APTS04	Transit Fare Collection Management	Manages transit fare collection on-board transit vehicles and at transit stops using electronic means. Allows the use of a traveler card or other electronic payment device.
APTS05	Transit Security	Provides for the physical security of transit passengers and transit vehicle operators. Includes on-board security cameras and panic buttons.
APTS06	Transit Fleet Management	Supports automatic transit maintenance scheduling and monitoring for both routine and corrective maintenance.
APTS07	Multi-modal Coordination	Establishes two way communications between multiple transit and traffic agencies to improve service coordination.
APTS08	Transit Traveler Information	Provides transit users at transit stops and on board transit vehicles with ready access to transit information. Services include stop annunciation, imminent arrival signs, and real-time transit schedule displays. Systems that provide custom transit trip itineraries and other tailored transit information services are also represented by this market package.
APTS09	Transit Signal Priority	Determines the need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations to improve on-time performance of the transit system.
APTS10	Transit Passenger Counting	Counts the number of passengers entering and exiting a transit vehicle using sensors mounted on the vehicle and communicates the collected passenger data back to the management center.
Commercial Vehicle Operations Service Area		
CVO01	Fleet Administration	Provides the capabilities to manage a fleet of commercial vehicles. Vehicle routing and tracking as well as notification of emergency management of any troublesome route deviations (such as a HAZMAT vehicle) are part of this market package.
CVO02	Freight Administration	Tracks the movement of cargo and monitors the cargo condition. Connection between freight shippers and depots allows tracking from source to destination.
CVO03	Electronic Clearance	Provides for automatic clearance at roadside check facilities. Allows a good driver/vehicle/carrier to pass roadside facilities at highway speeds using transponders and dedicated short range communications to the roadside.
CVO04	CV Administrative Processes	Provides for electronic application, processing, fee collection, issuance, and distribution of CVO credentials and tax filing.
CVO05	International Border Electronic Clearance	Provides for automated clearance at international border crossings. Processes entry documentation for vehicle, cargo, and driver; checks compliance with regulations; and reports the results for passing across an international border.
CVO06	Weigh-In-Motion	Provides for high speed weigh-in-motion with or without automated vehicle identification capabilities.
CVO07	Roadside CVO Safety	Provides for automated roadside safety monitoring and reporting. Automates commercial vehicle safety inspections at roadside check facilities.
CVO08	On-board CVO and Freight Safety and Security	Provides for on-board commercial vehicle safety monitoring and reporting as well as roadside support for reading on-board safety data via tags.
CVO09	CVO Fleet Maintenance	Supports maintenance of CVO fleet vehicles with on-board monitoring equipment and automated vehicle location capabilities.
CVO10	HAZMAT Management	Integrates incident management capabilities with commercial vehicle tracking to assure effective treatment of HAZMAT material and incidents.

Market Package	Market Package Name	Description
Commercial Vehicle Operations Service Area (continued)		
CVO11	Roadside HAZMAT Security Detection and Mitigation	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.
CVO12	CV Driver Security Authentication	Provides the ability for fleet and freight management to detect when an unauthorized commercial vehicle driver attempts to drive a vehicle based on stored identity information. If an unauthorized driver has been detected the commercial vehicle can be disabled.
CVO13	Freight Assignment Tracking	Provides for the planning and tracking of the commercial vehicle, the freight equipment, and the commercial vehicle driver for consistency with the planned assignment.
Traveler Information Service Area		
ATIS01	Broadcast Traveler Information	Collects information on traffic conditions, travel advisories, public transportation, toll and parking facilities, incidents, roadway maintenance and construction, air quality, and weather and broadly disseminates this information through existing infrastructures (radio, cell phones, etc).
ATIS02	Interactive Traveler Information	Provides tailored information in response to a traveler request. 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.
ATIS03	Autonomous Route Guidance	Using vehicle location and other information, this market package enables route planning and detailed route guidance based on static, stored information.
ATIS04	Dynamic Route Guidance	Offers advanced route planning and guidance that is responsive to current conditions.
ATIS05	ISP Based Trip Planning and Route Guidance	Offers the user pre-trip route planning and en-route guidance services. Routes may be based on static or real time network conditions.
ATIS06	Transportation Operations Data Sharing	Collects, processes, and stores current information on traffic and travel conditions and other information about the current state of the transportation network and makes the information available to transportation system operators.
ATIS07	Yellow Pages and Reservation	Provides yellow pages and reservations services to the user.
ATIS08	Dynamic Ridesharing	Provides dynamic ridesharing/ride matching services to travelers.
ATIS09	In-Vehicle Signing	Supports the distribution of traffic and travel advisory information to drivers through in-vehicle devices.
ATIS10	VII Traveler Information	Provides location specific information to travelers in vehicles using Vehicle Infrastructure Integration (VII). These devices use dedicated short range communications to deliver real-time traveler information to vehicles as they pass the VII roadside equipment along their route.
Archived Data Management Service Area		
AD1	ITS Data Mart	Provides a focused archive that houses data collected and owned by a single agency or other organization, typically covering a single transportation mode and one jurisdiction.
AD2	ITS Data Warehouse	Includes all the data collection and management capabilities of the ITS Data Mart and adds the functionality to allow collection of data from multiple agencies and data sources across modal and jurisdictional boundaries.
AD3	ITS Virtual Data Warehouse	Provides the same broad access to multimodal, multidimensional data from varied 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.

Market Package	Market Package Name	Description
Vehicle Safety Service Area		
AVSS01	Vehicle Safety Monitoring	Diagnoses critical components of the vehicle and warns the driver of potential dangers. On-board sensors will determine the vehicle's condition, performance, and on-board safety data and display that information to the driver.
AVSS02	Driver Safety Monitoring	Determines the driver's condition and warns the driver of potential dangers. On-board sensors will determine the driver's condition, performance, and on-board safety data and display that information to the driver.
AVSS03	Longitudinal Safety Monitoring	Uses on-board safety sensors and collision sensors to monitor the areas in front of and behind the vehicle and present warnings to the driver about potential hazards.
AVSS04	Lateral Safety Warning	Uses on-board safety sensors and collision sensors to monitor the areas to the sides of the vehicle and present warnings to the driver about potential hazards.
AVSS05	Intersection Safety Warning	Determines the probability of a collision in an equipped intersection (either highway-highway or highway-rail) and provides 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 ATIS09 – In-Vehicle Signing market package.
AVSS06	Pre-Crash Restraint Deployment	Provides in-vehicle sensors to monitor the vehicle's local environment (lateral and longitudinal gaps, weather, and roadway conditions), determine collision probability, and deploy a pre-crash safety system.
AVSS07	Driver Visibility Improvement	Enhances the driver visibility using an enhanced vision system. On-board display hardware is needed.
AVSS08	Advanced Vehicle Longitudinal Control	Automates the speed and headway control functions on board the vehicle utilizing safety sensors and collision sensors combined with vehicle dynamics processing to control the throttle and brakes. Requires on-board sensors to measure longitudinal gaps and a processor for controlling the vehicle speed.
AVSS09	Advanced Vehicle Lateral Control	Automates the steering control on board the vehicle utilizing safety sensors and collision sensors combined with vehicle dynamics processing to control the steering. Requires on-board sensors to measure lane position and lateral deviations and a processor for controlling the vehicle steering.
AVSS10	Intersection Collision Avoidance	Determines the probability of an intersection collision and provides timely warnings to approaching vehicles so that avoidance actions can be taken. This market package builds on the intersection collision warning infrastructure and in-vehicle equipment and adds equipment in the vehicle that can take control of the vehicle in emergency situations.
AVSS11	Automated Highway System	Enables "hands-off" operation of the vehicle on the automated portion of the highway system. Implementation requires lateral lane holding, vehicle speed and steering control, and automated highway system check-in and check-out.
AVSS12	Cooperative Vehicle Safety Systems	Enhances the on-board longitudinal and lateral warning stand-alone systems by exchanging messages wirelessly with other surrounding vehicles. Vehicles send out information concerning their location, speed, and direction to any surrounding vehicles. Special messages from approaching emergency vehicles may also be received and processed.

APPENDIX B – CUSTOMIZED BRISTOL-KINGSPORT OVERLAP MARKET PACKAGES

APPENDIX B

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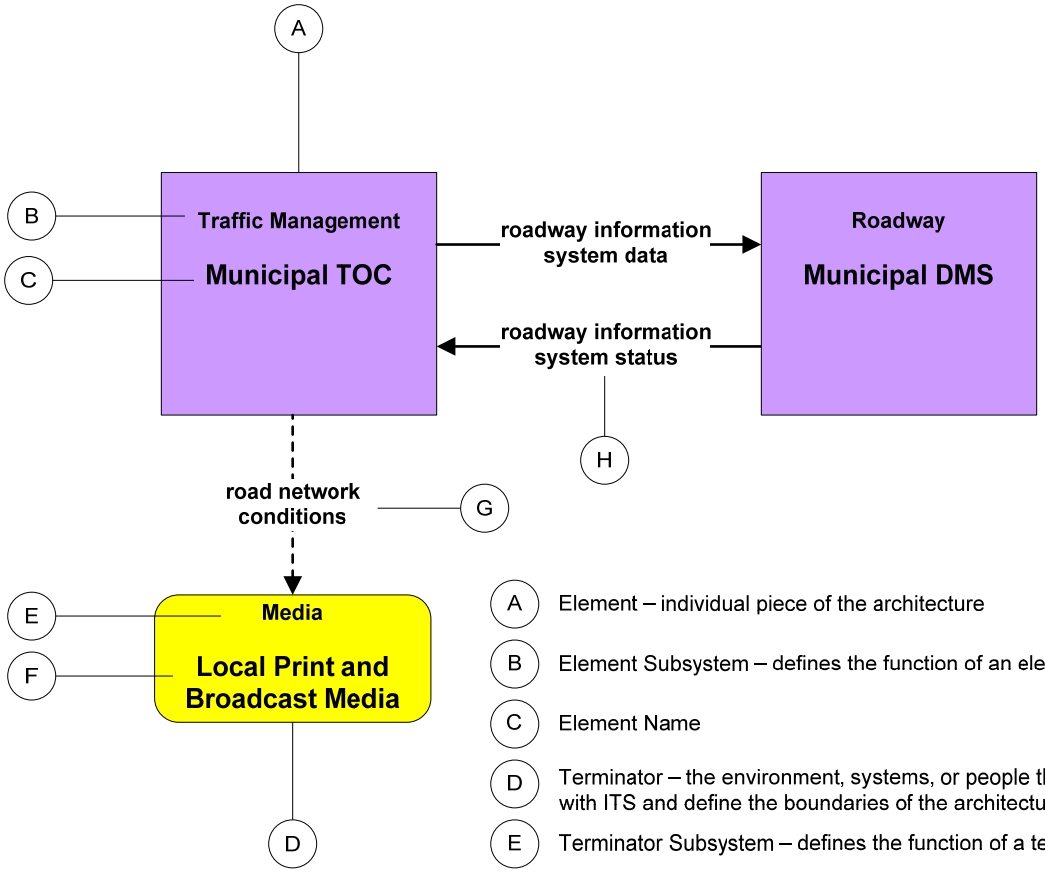
APPENDIX B

MARKET PACKAGE DIAGRAM COMPONENT AND TERMINOLOGY KEY



A – Element – individual piece of the architecture

B – Element Subsystem – defines the function of an element

C – Element Name

D – Terminator – the environment, systems, or people that interface with ITS and define the boundaries of the architecture

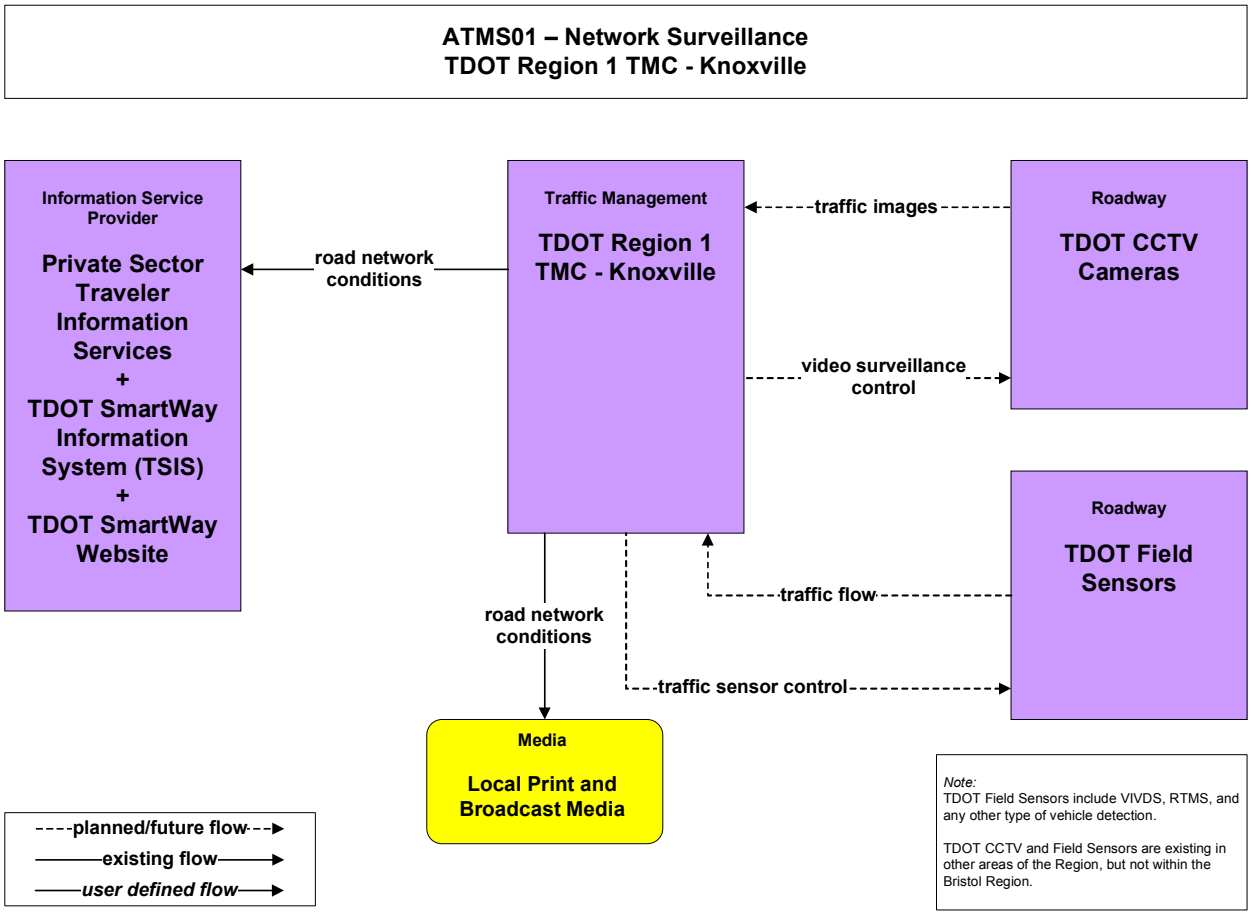
E – Terminator Subsystem – defines the function of a terminator

F – Terminator Name

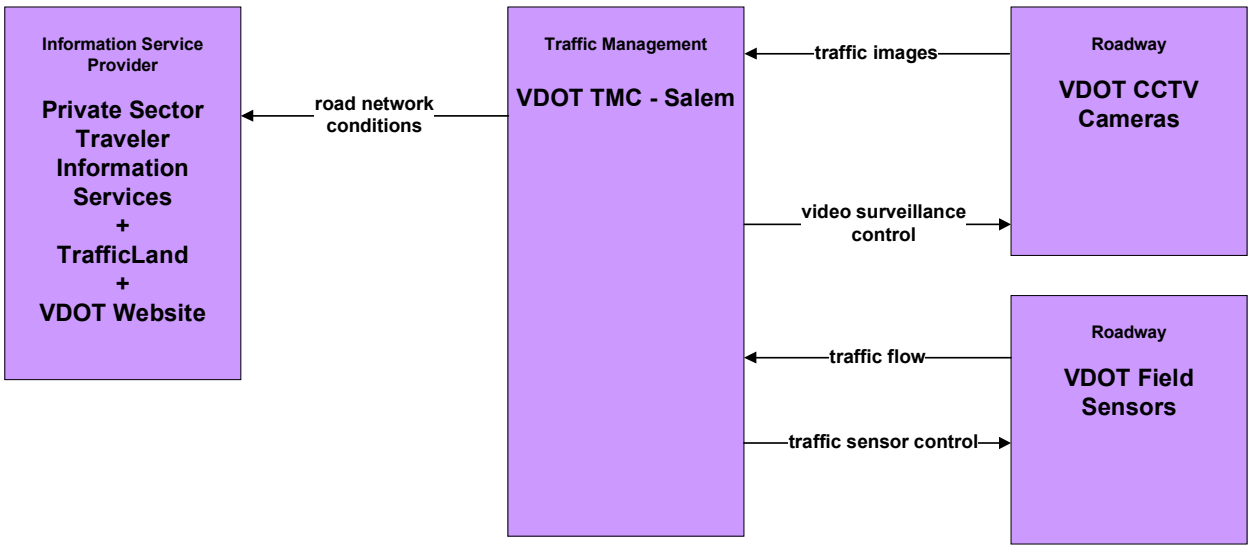
G – Future/Planned Architecture Flow – data that will be exchanged between subsystems and terminators in the future

H – Existing Architecture Flow – data that is currently exchanged between subsystems and terminators

Advanced Traffic Management System



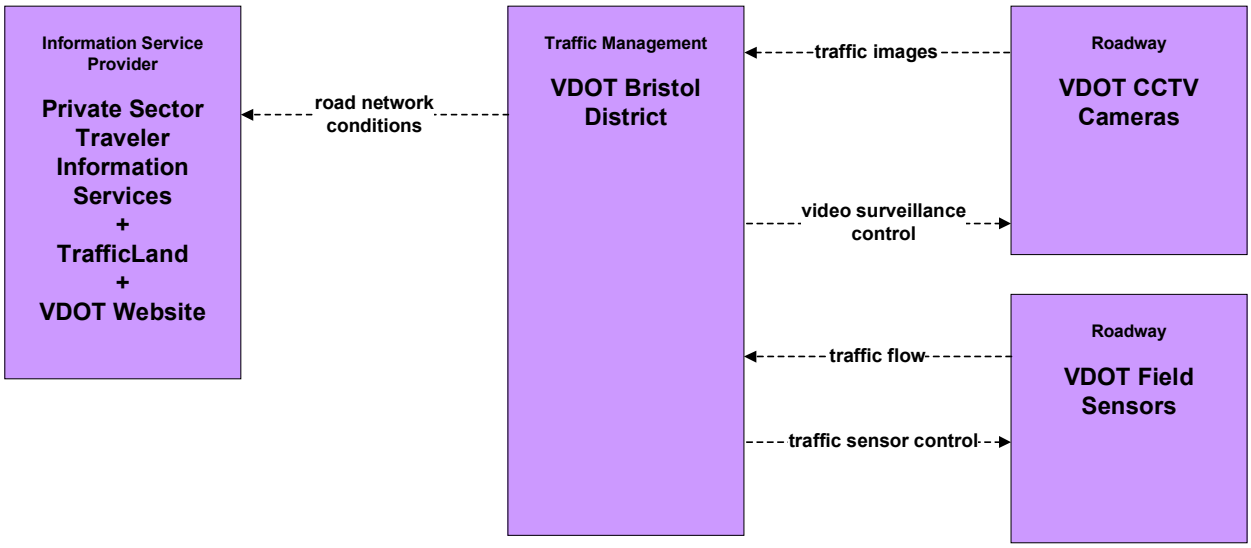
ATMS01 – Network Surveillance
VDOT TMC - Salem



----planned/future flow-->
————existing flow————>
——*user defined flow*——>

Note:
VDOT Field Sensors include VIVDS, RTMS, and any other type of vehicle detection.

ATMS01 – Network Surveillance
VDOT Bristol District



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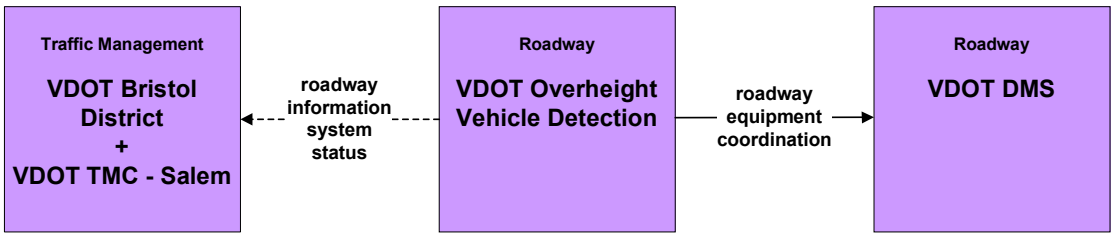
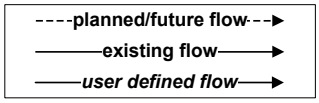
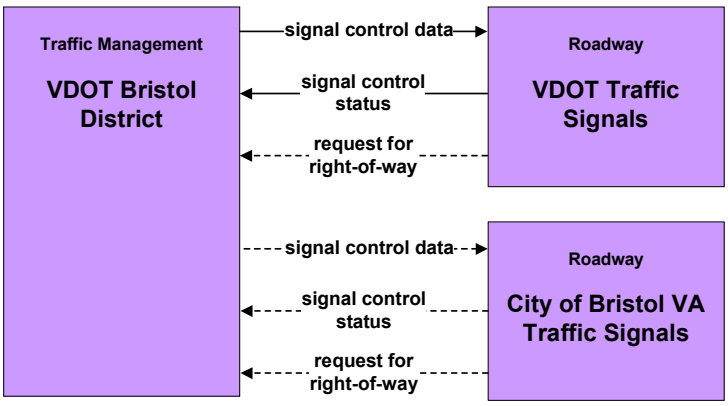
Note:
VDOT Field Sensors include VIVDS, RTMS, and any other type of vehicle detection.

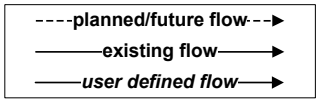
ATMS01 – Network Surveillance
VDOT Overheight Vehicle Detection



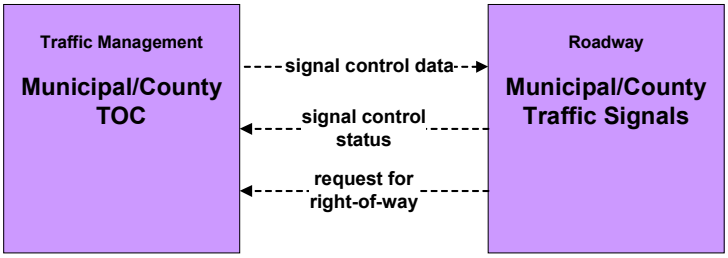


ATMS03 – Surface Street Control
VDOT Signal System





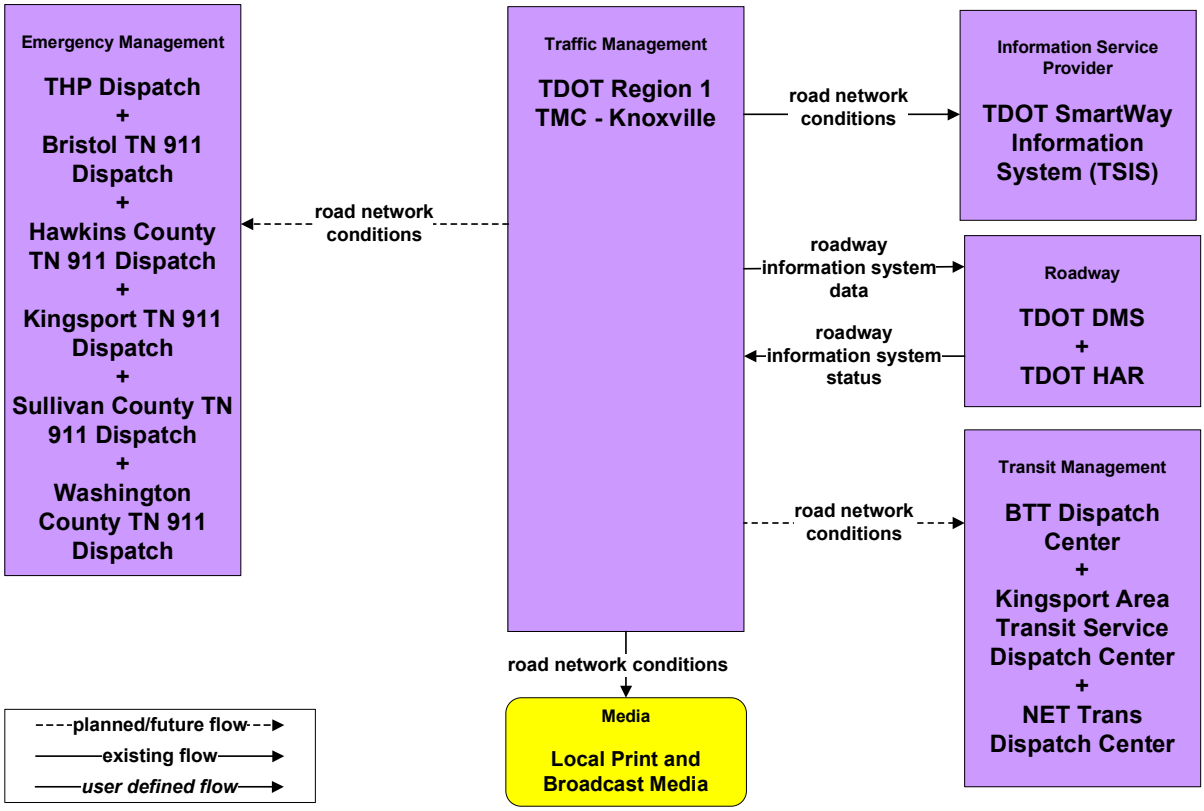
ATMS03 – Surface Street Control
Municipal/County Signal System



Note:
Municipal/County includes Sullivan County TN, Hawkins County TN, Scott County VA, Mt Carmel TN, Church Hill TN, Weber City VA, and Gate City VA

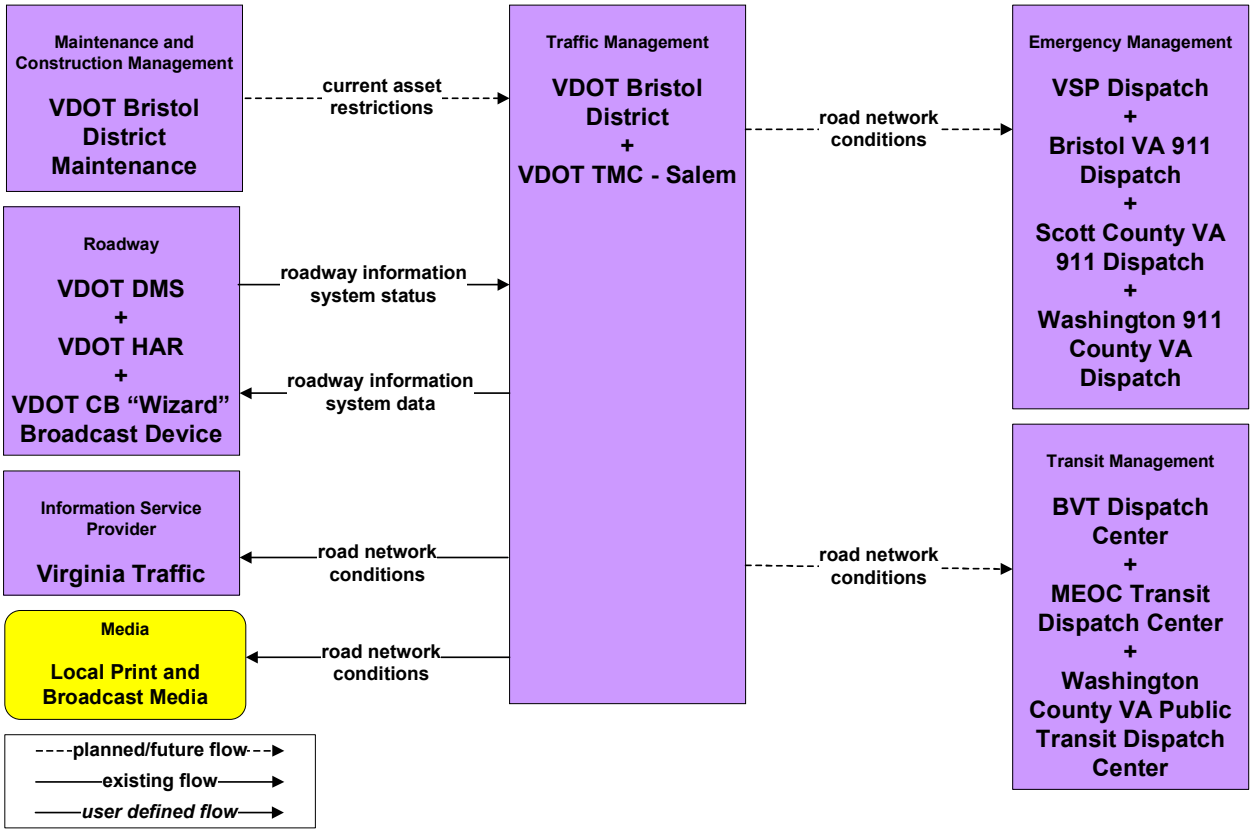
planned/future flow
existing flow
user defined flow

ATMS06 – Traffic Information Dissemination
TDOT Region 1 TMC - Knoxville

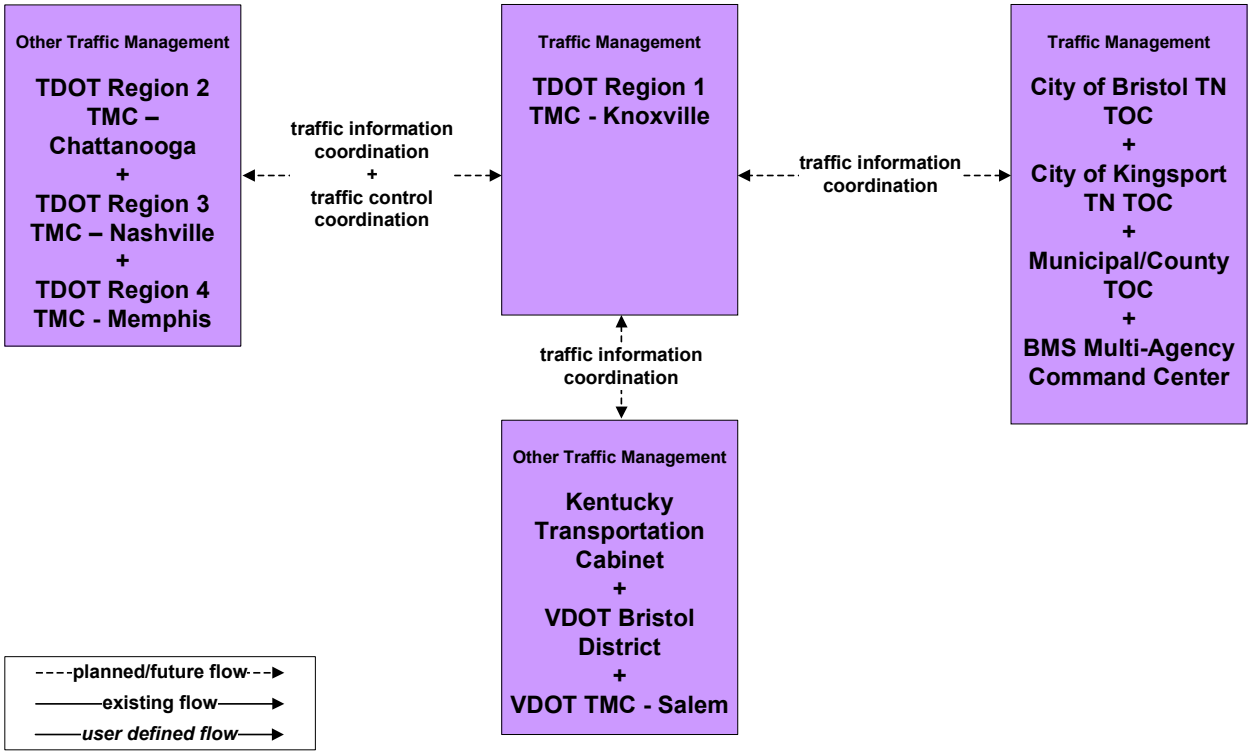


planned/future flow
existing flow
user defined flow

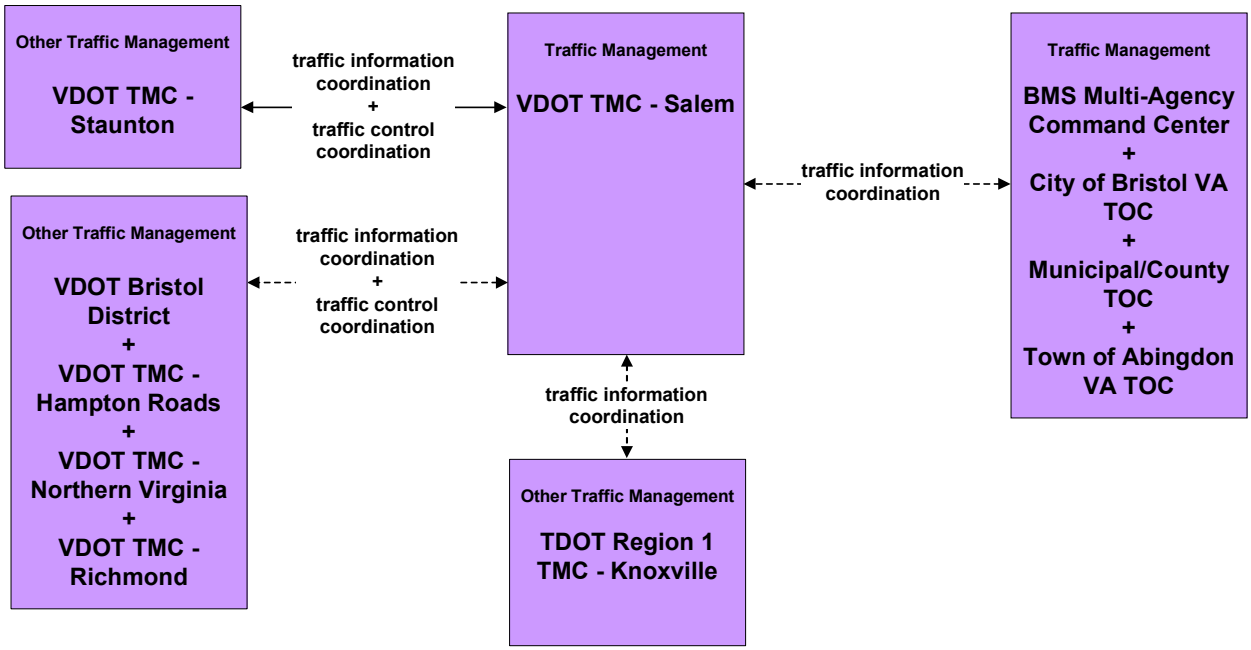
ATMS06 – Traffic Information Dissemination
VDOT Bristol District



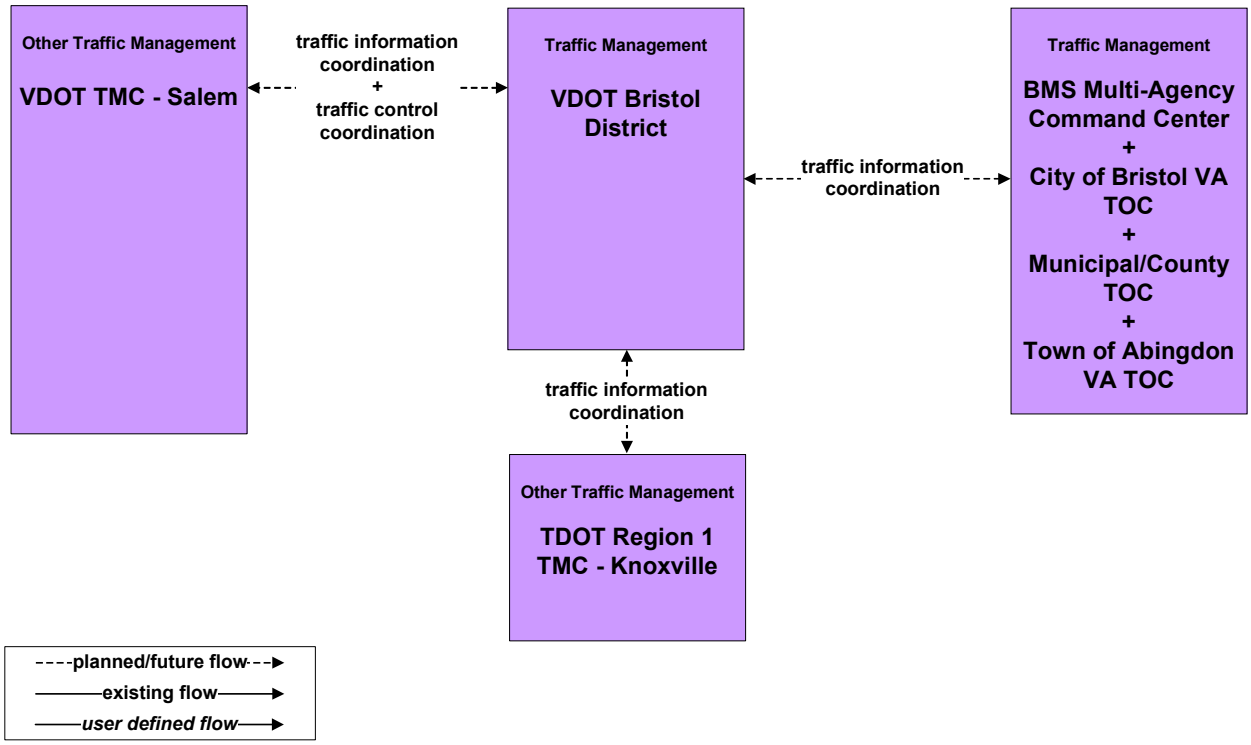
ATMS07 - Regional Traffic Management
TDOT Region 1 TMC - Knoxville



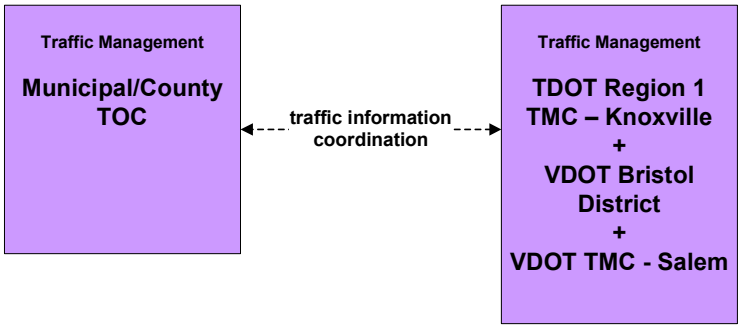
ATMS07 - Regional Traffic Management
VDOT TMC – Salem

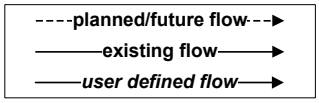


ATMS07 - Regional Traffic Management
VDOT Bristol District

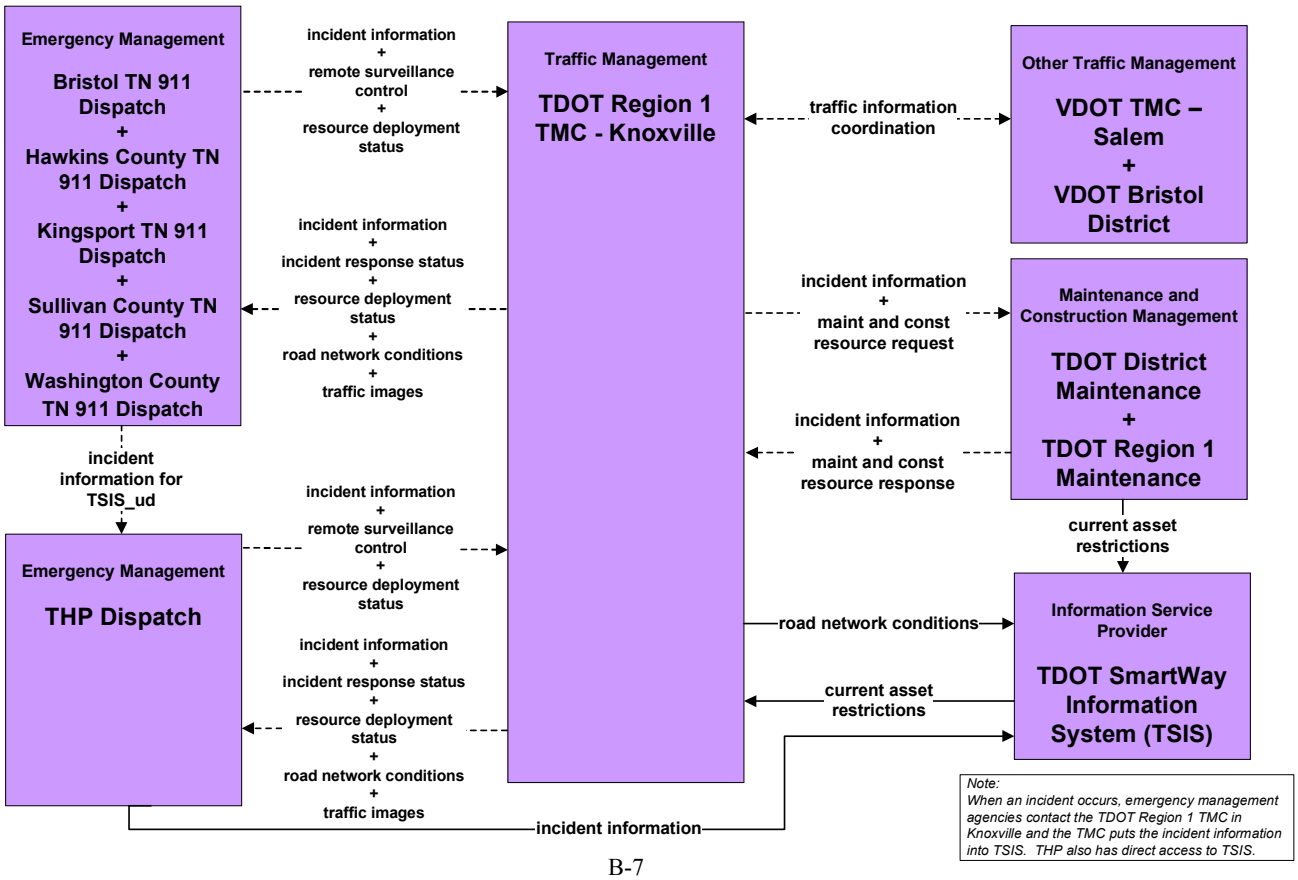


ATMS07 – Regional Traffic Management
Municipal/County

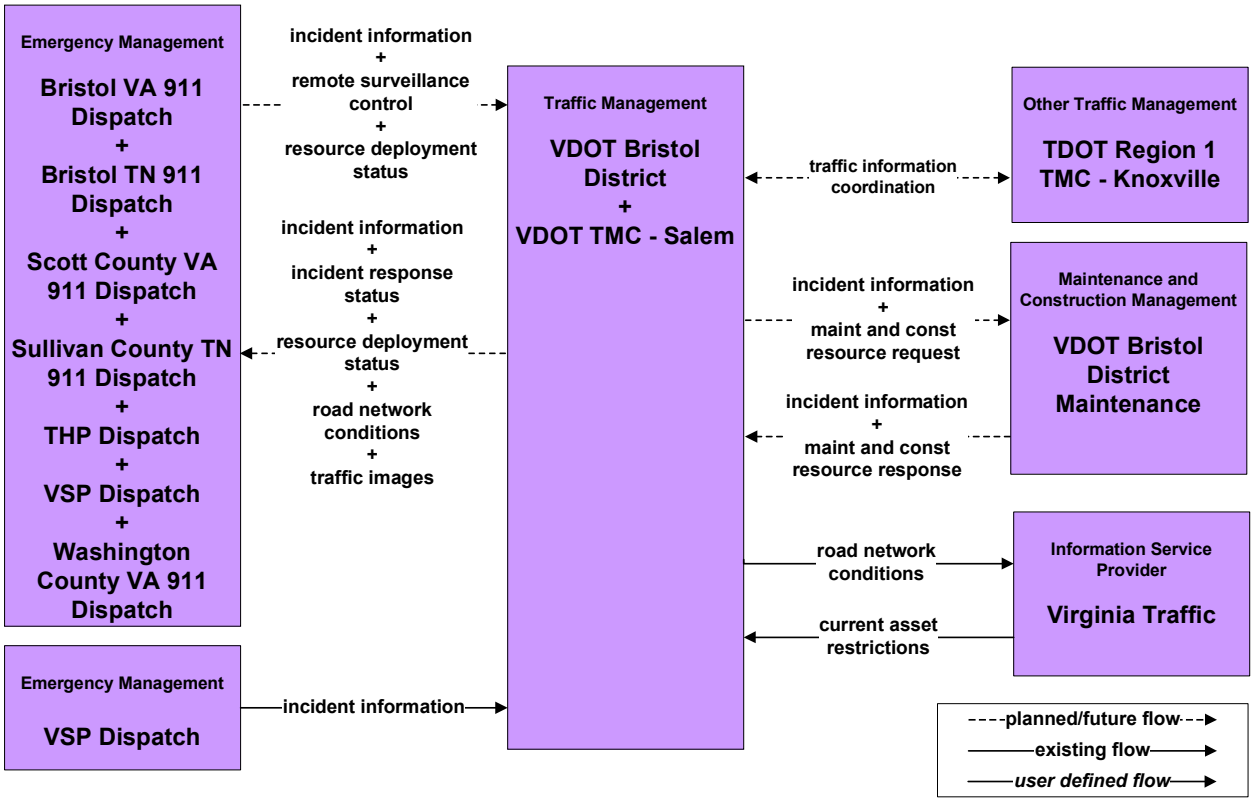




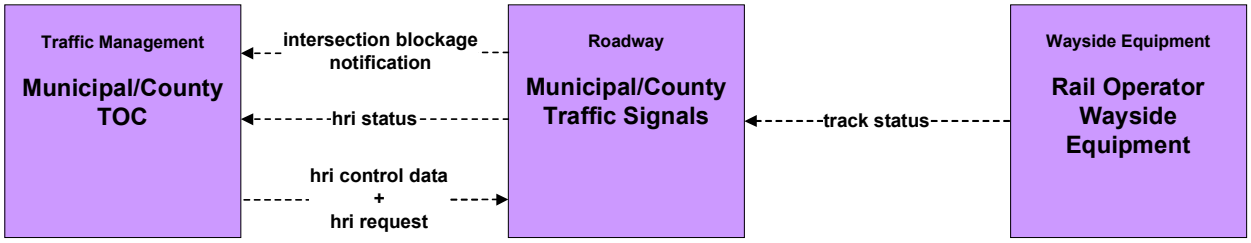
ATMS08 - Traffic Incident Management System
TDOT Region 1 TMC - Knoxville

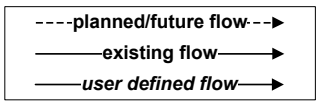


ATMS08 - Traffic Incident Management System
VDOT TMC – Salem and Bristol District

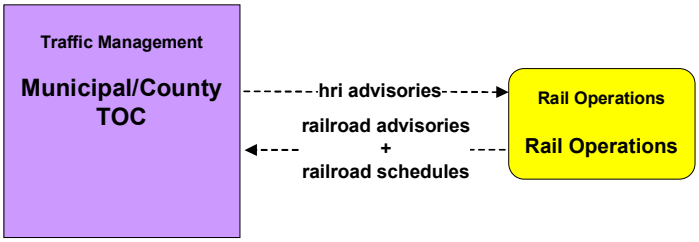


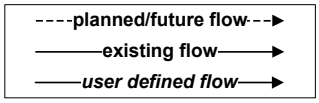
ATMS13 – Standard Railroad Grade Crossing
Municipal/County



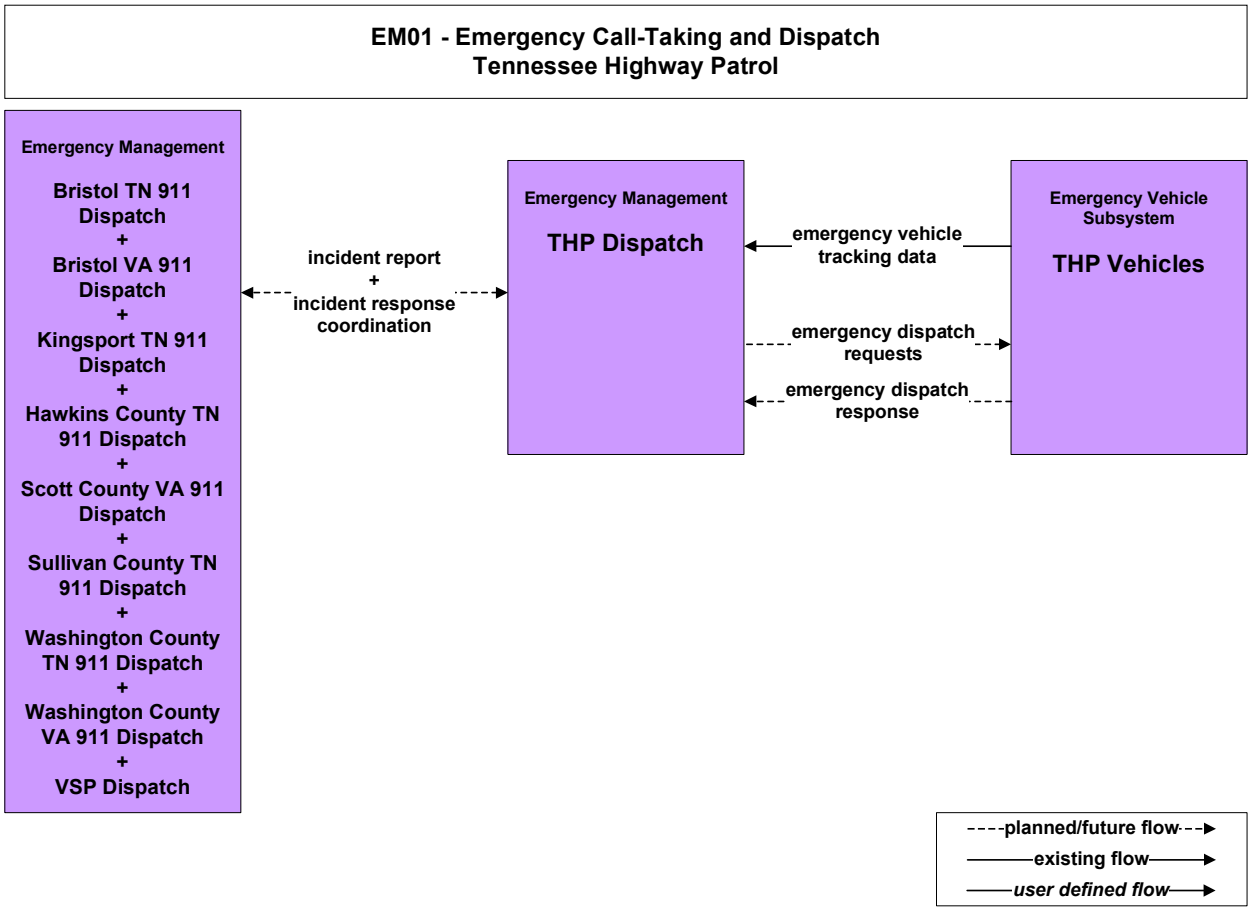


ATMS15 – Railroad Operations Coordination
Municipal/County

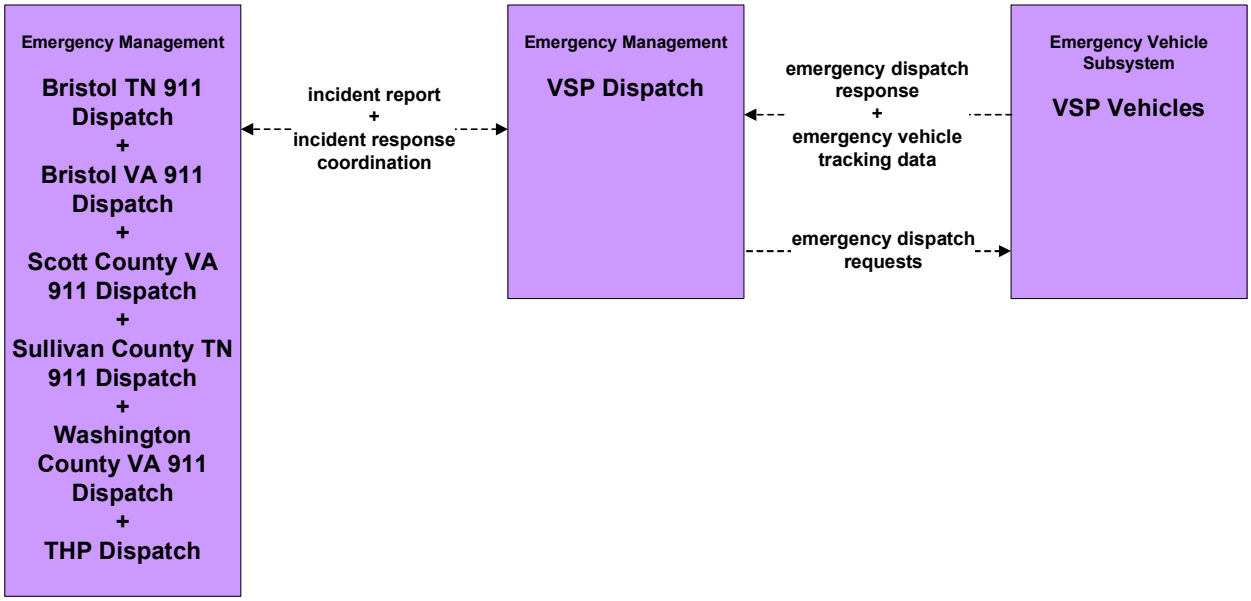




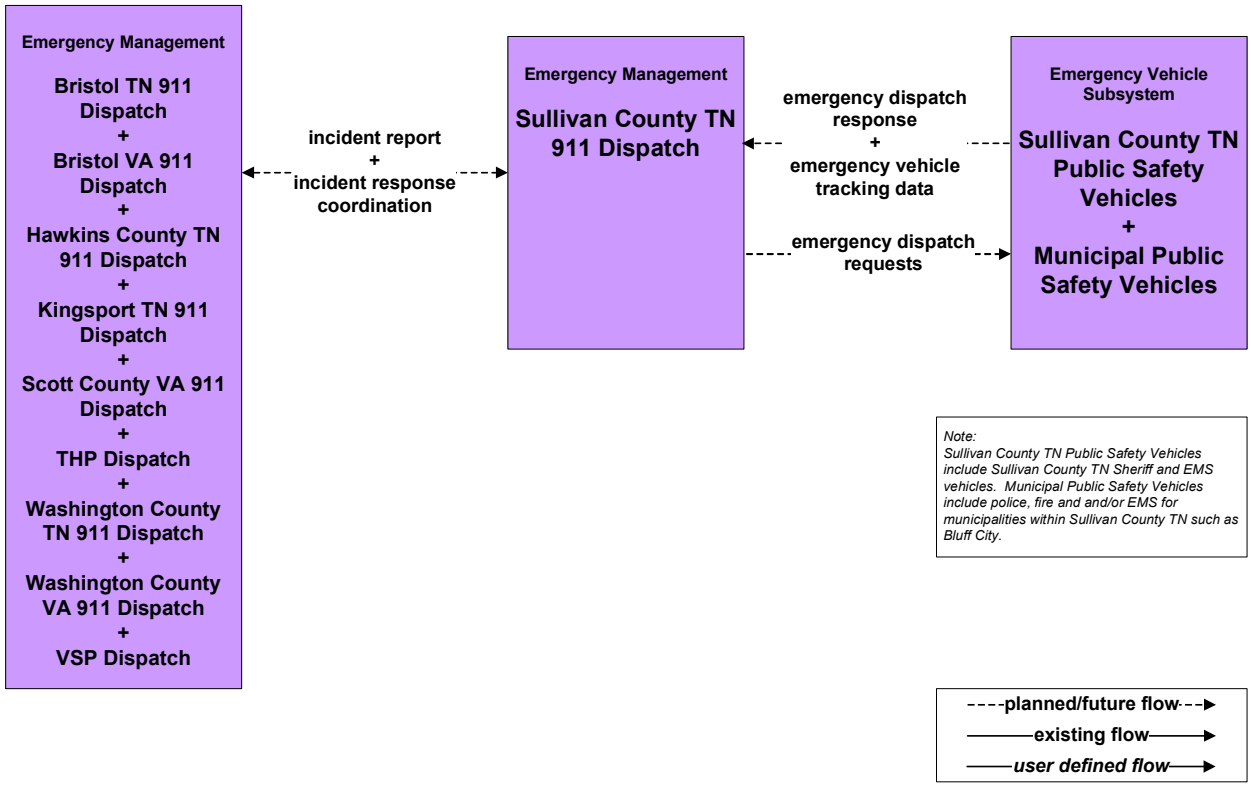
Emergency Management



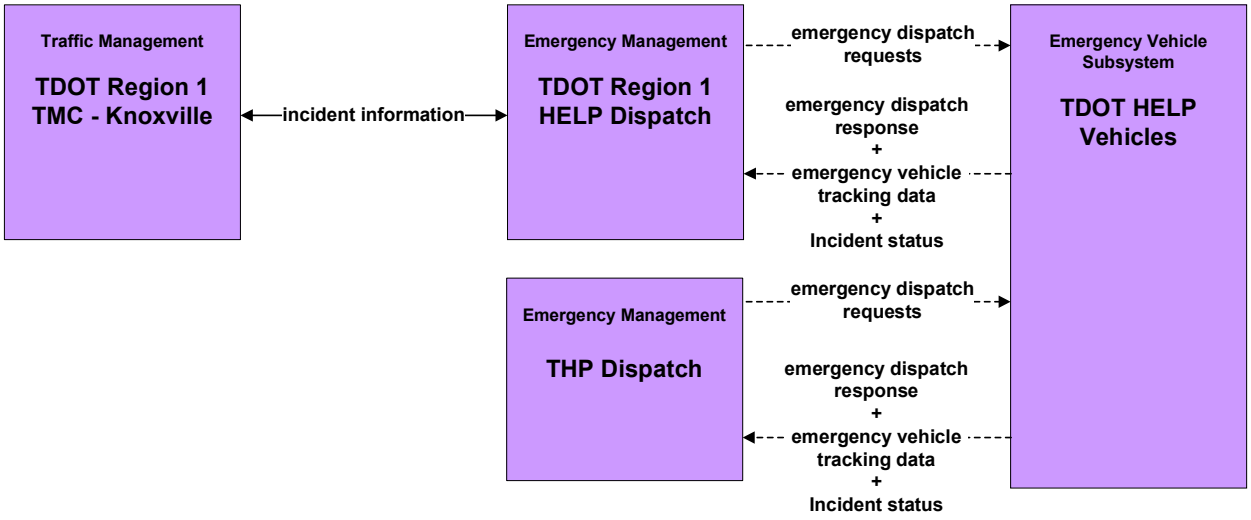
EM01 - Emergency Call-Taking and Dispatch
Virginia State Police



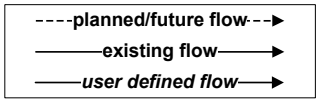
EM01 - Emergency Call-Taking and Dispatch
Sullivan County TN 911 Dispatch



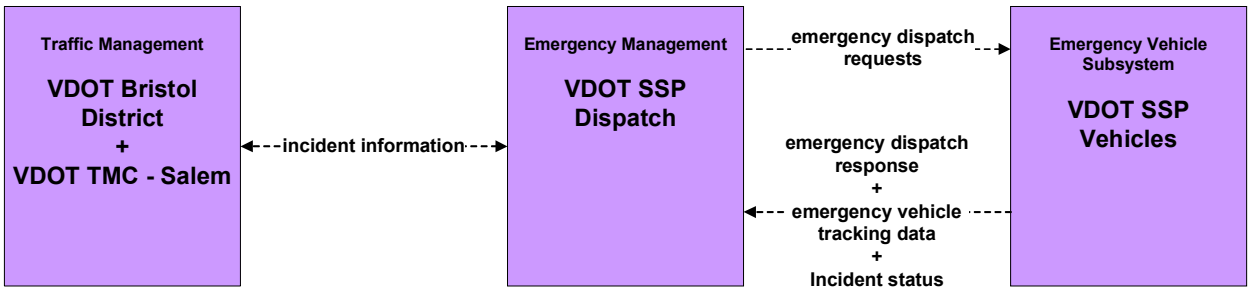
EM04 - Roadway Service Patrols
HELP



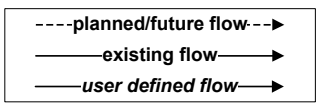
Note:
HELP Dispatch is located in the TDOT Region 1 TMC in Knoxville. HELP vehicles come to Bristol during special events, such as NASCAR races at the Bristol Motor Speedway, and are dispatched by THP during the event. Stakeholders identified a need for permanent presence of HELP vehicles in the Bristol and Kingsport Regions.

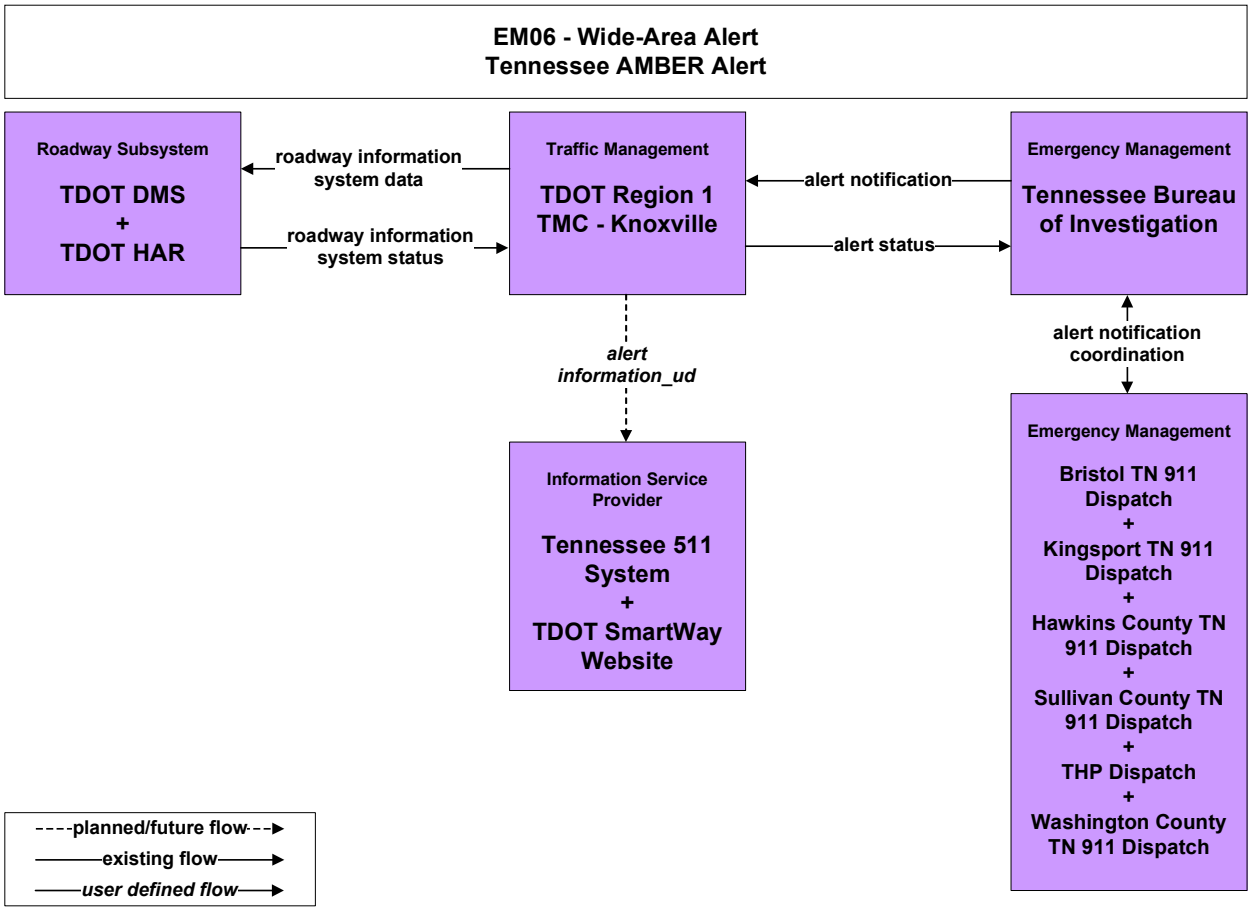


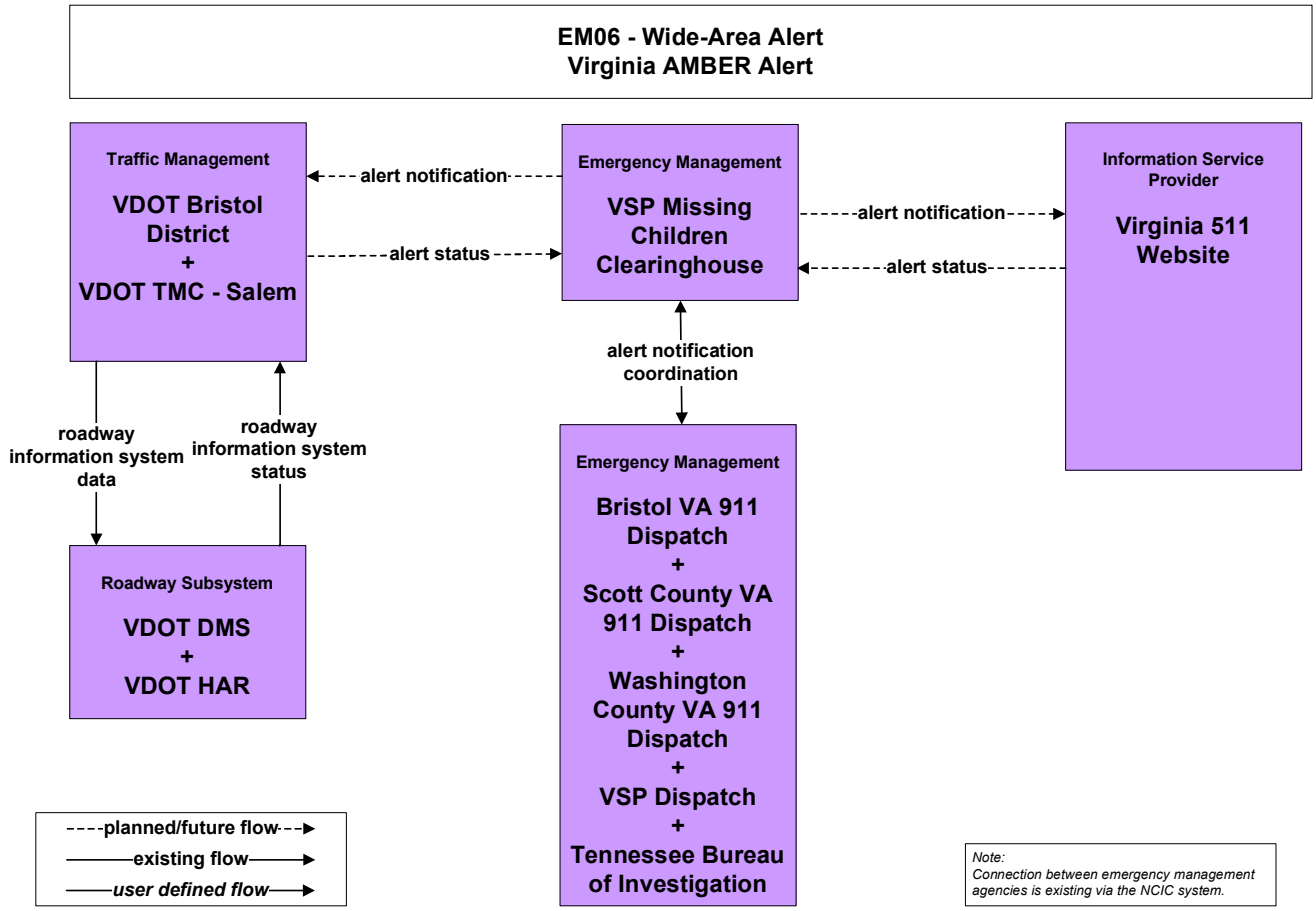
EM04 - Roadway Service Patrols
VDOT Safety Service Patrol

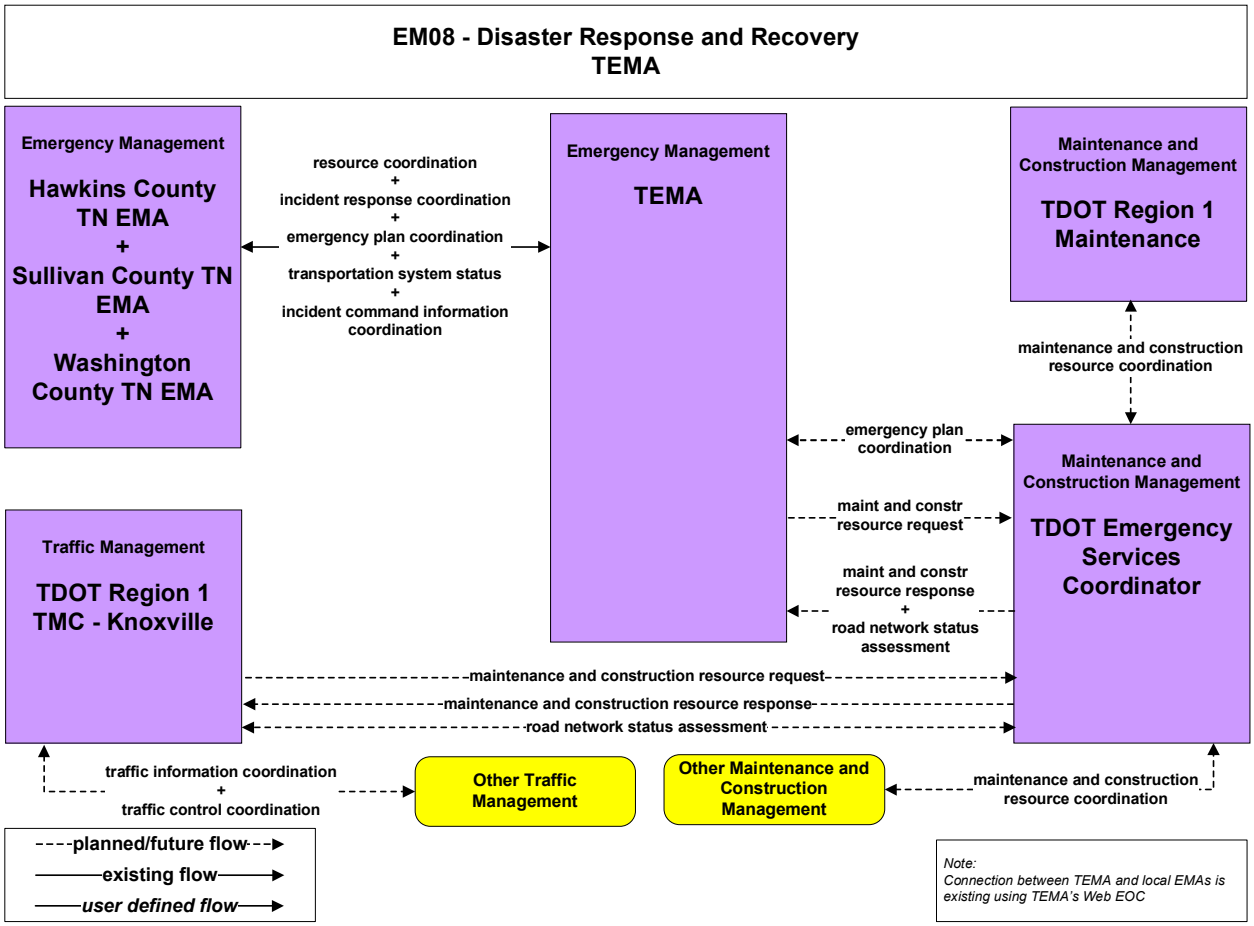


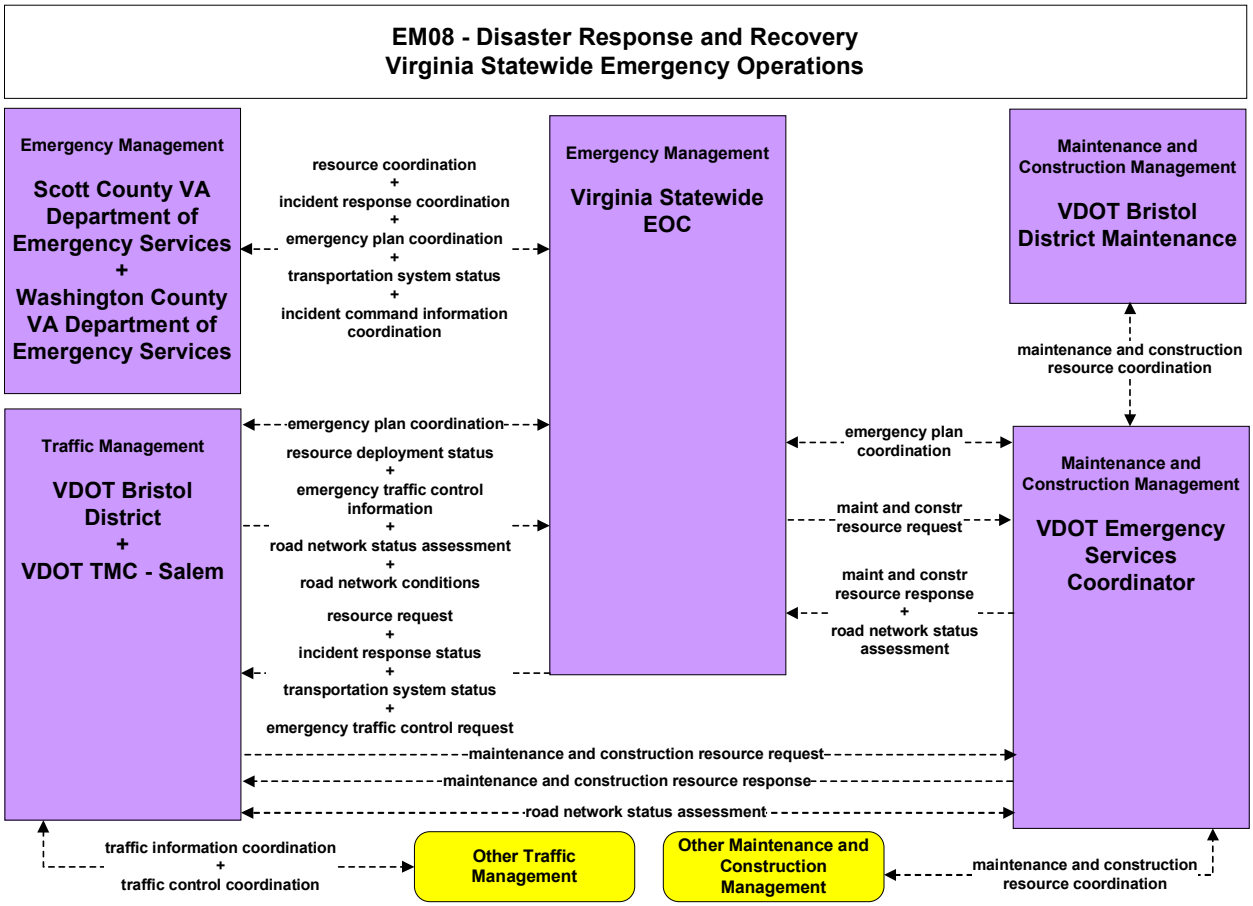
Note:
SSP trucks come to the Bristol Region during special events such as NASCAR. Stakeholders identified a need for permanent presence of SSP trucks in the Bristol Region.



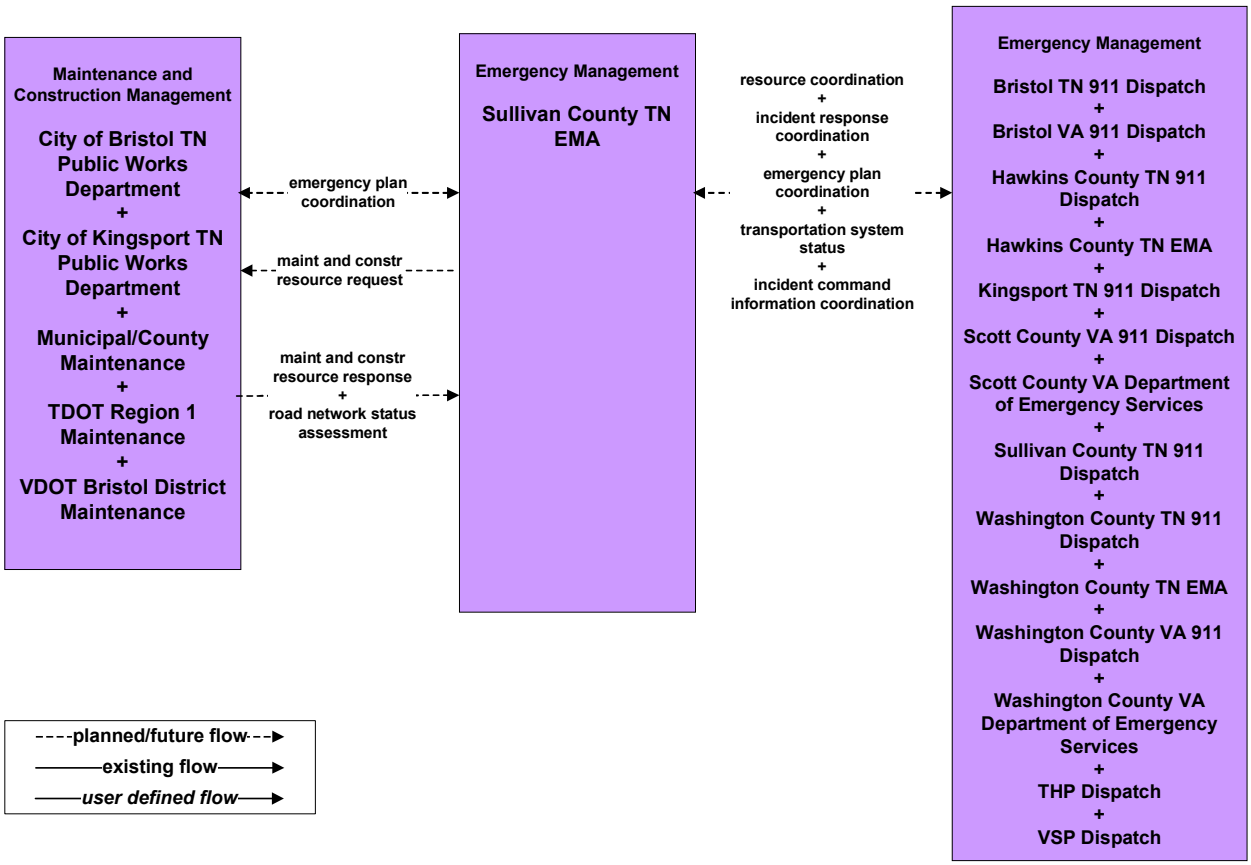

EM06 - Wide-Area Alert
Tennessee AMBER Alert
Roadway Subsystem
TDOT DMS
+
TDOT HAR
roadway information system data
roadway information system status
Traffic Management
TDOT Region 1 TMC - Knoxville
alert notification
alert status
Emergency Management
Tennessee Bureau of Investigation
alert information_ud
alert notification coordination
Information Service Provider
Tennessee 511 System
+
TDOT SmartWay Website
Emergency Management
Bristol TN 911 Dispatch
+
Kingsport TN 911 Dispatch
+
Hawkins County TN 911 Dispatch
+
Sullivan County TN 911 Dispatch
+
THP Dispatch
+
Washington County TN 911 Dispatch
planned/future flow
existing flow
user defined flow


EM06 - Wide-Area Alert
Virginia AMBER Alert
Traffic Management
VDOT Bristol District
+
VDOT TMC - Salem
alert notification
alert status
Emergency Management
VSP Missing Children Clearinghouse
alert notification
alert status
Information Service Provider
Virginia 511 Website
alert notification coordination
roadway information system data
roadway information system status
Roadway Subsystem
VDOT DMS
+
VDOT HAR
Emergency Management
Bristol VA 911 Dispatch
+
Scott County VA 911 Dispatch
+
Washington County VA 911 Dispatch
+
VSP Dispatch
+
Tennessee Bureau of Investigation
planned/future flow
existing flow
user defined flow
Note:
Connection between emergency management agencies is existing via the NCIC system.

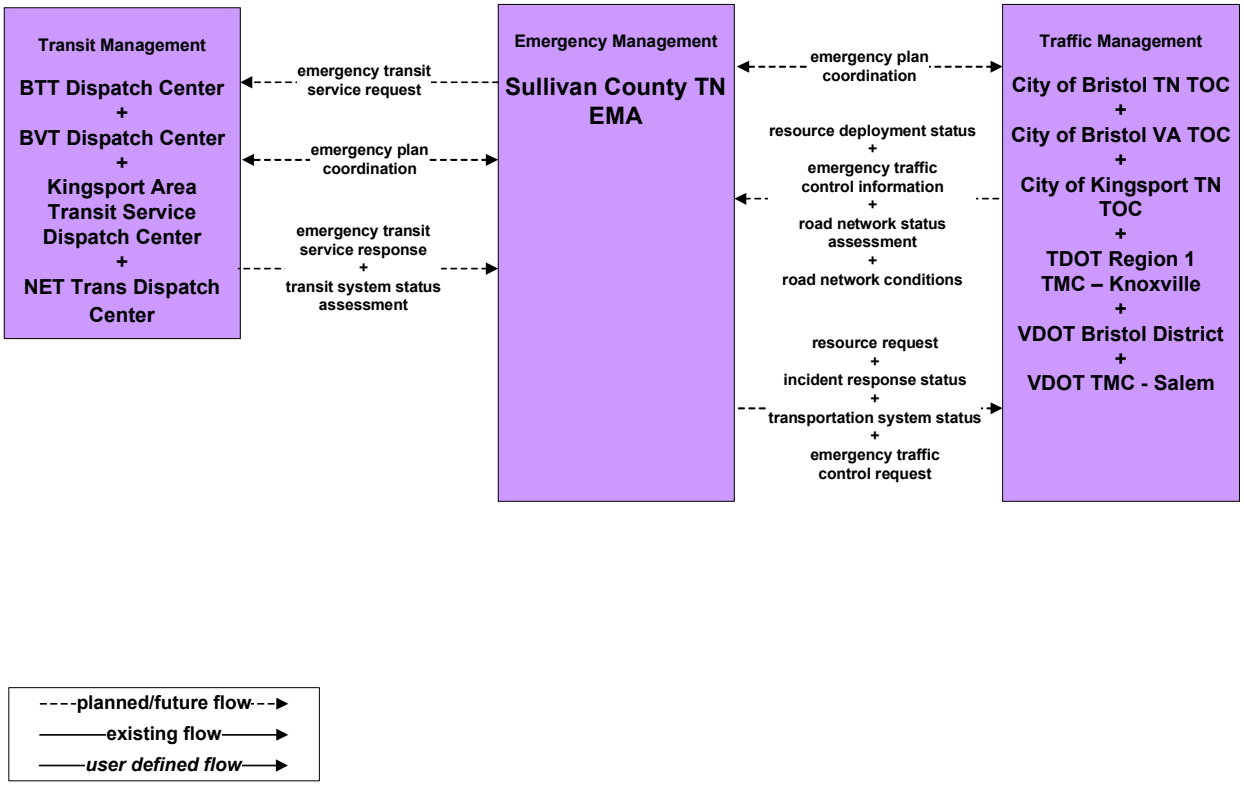

EM08 - Disaster Response and Recovery
TEMA
Emergency Management
Hawkins County TN EMA
+
Sullivan County TN EMA
+
Washington County TN EMA
resource coordination
+
incident response coordination
+
emergency plan coordination
+
transportation system status
+
incident command information coordination
Emergency Management
TEMA
Maintenance and Construction Management
TDOT Region 1 Maintenance
maintenance and construction resource coordination
emergency plan coordination
maint and constr resource request
maint and constr resource response
+
road network status assessment
Maintenance and Construction Management
TDOT Emergency Services Coordinator
Traffic Management
TDOT Region 1 TMC - Knoxville
maintenance and construction resource request
maintenance and construction resource response
road network status assessment
traffic information coordination
+
traffic control coordination
Other Traffic Management
Other Maintenance and Construction Management
maintenance and construction resource coordination
planned/future flow
existing flow
user defined flow
Note:
Connection between TEMA and local EMAs is existing using TEMA's Web EOC


EM08 - Disaster Response and Recovery
Virginia Statewide Emergency Operations
Emergency Management
Scott County VA Department of Emergency Services
+
Washington County VA Department of Emergency Services
resource coordination
+
incident response coordination
+
emergency plan coordination
+
transportation system status
+
incident command information coordination
Emergency Management
Virginia Statewide EOC
Maintenance and Construction Management
VDOT Bristol District Maintenance
maintenance and construction resource coordination
Traffic Management
VDOT Bristol District
+
VDOT TMC - Salem
emergency plan coordination
resource deployment status
+
emergency traffic control information
+
road network status assessment
+
road network conditions
resource request
+
incident response status
+
transportation system status
+
emergency traffic control request
emergency plan coordination
maint and constr resource request
maint and constr resource response
+
road network status assessment
Maintenance and Construction Management
VDOT Emergency Services Coordinator
maintenance and construction resource request
maintenance and construction resource response
road network status assessment
traffic information coordination
+
traffic control coordination
Other Traffic Management
Other Maintenance and Construction Management
maintenance and construction resource coordination

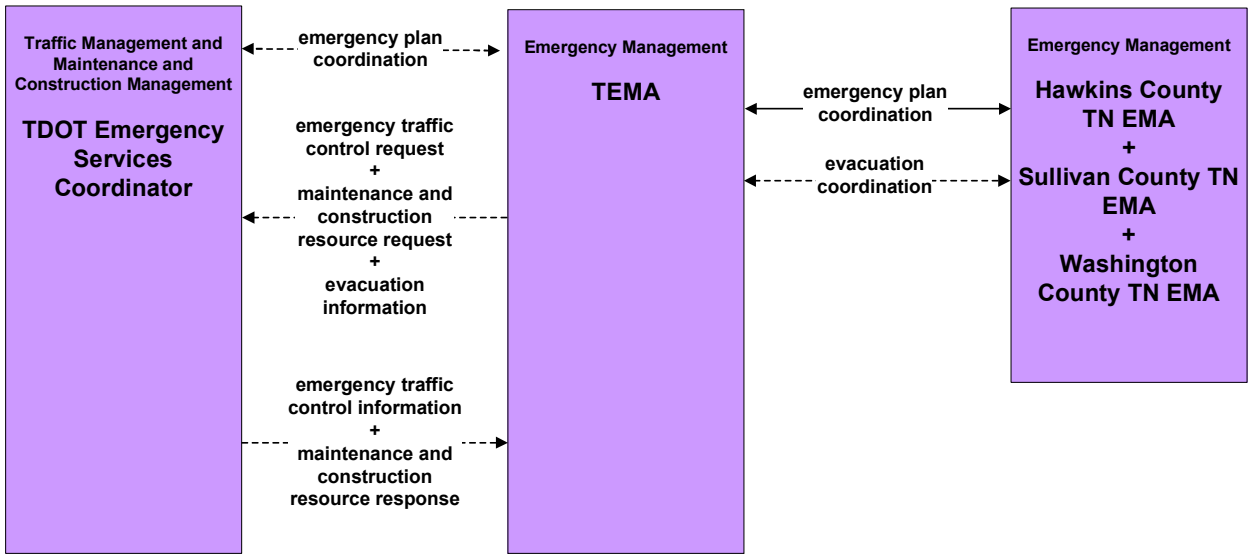
EM08 - Disaster Response and Recovery
Sullivan County TN EMA (1 of 2)

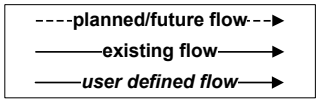


EM08 - Disaster Response and Recovery
Sullivan County TN EMA (2 of 2)

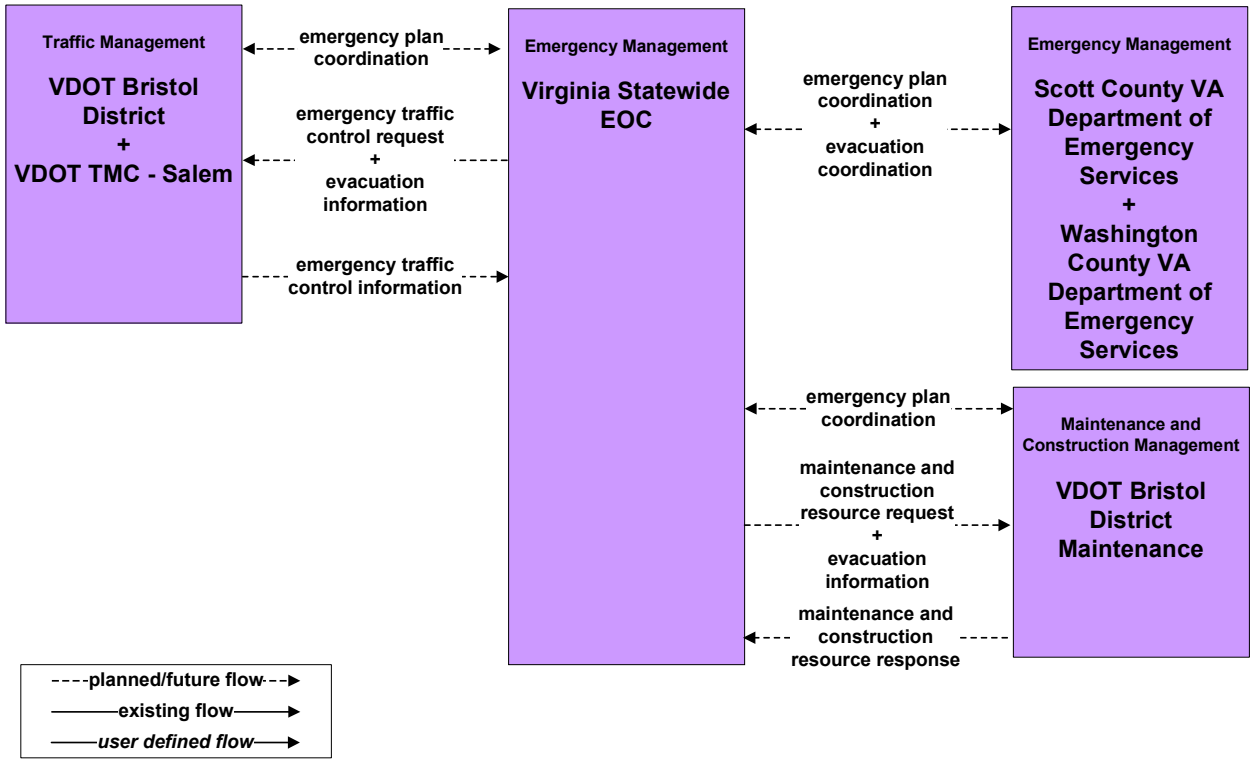


EM09 - Evacuation and Reentry Management
TEMA

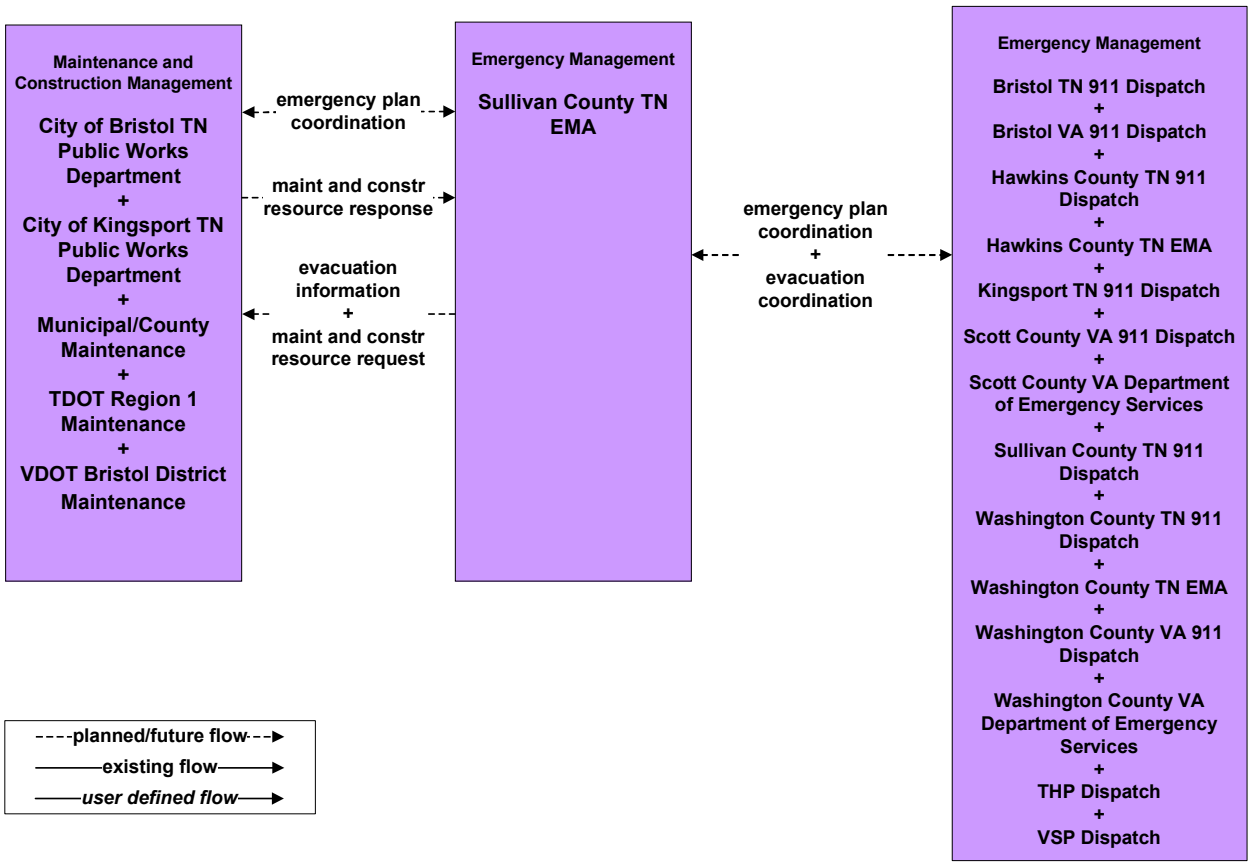




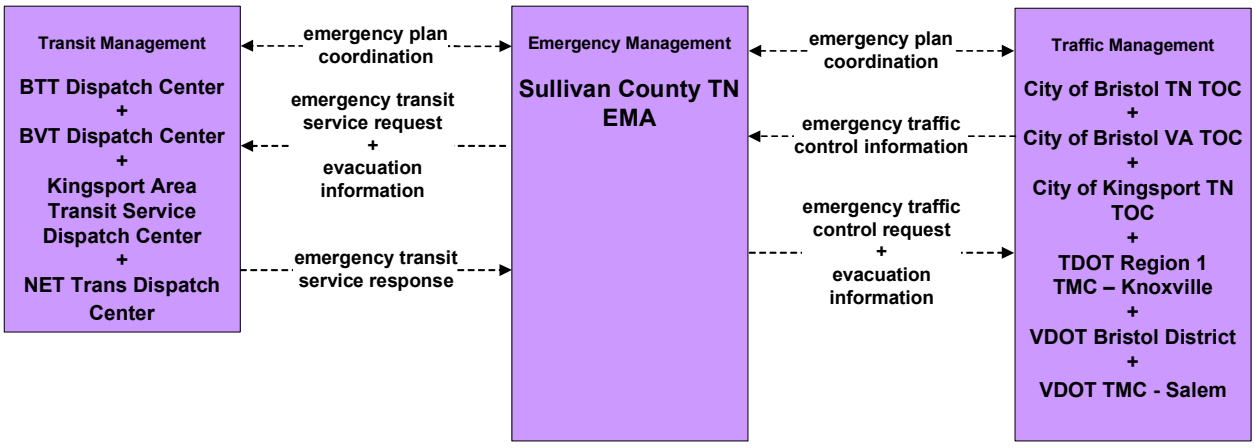
EM09 - Evacuation and Reentry Management
Virginia Statewide EOC



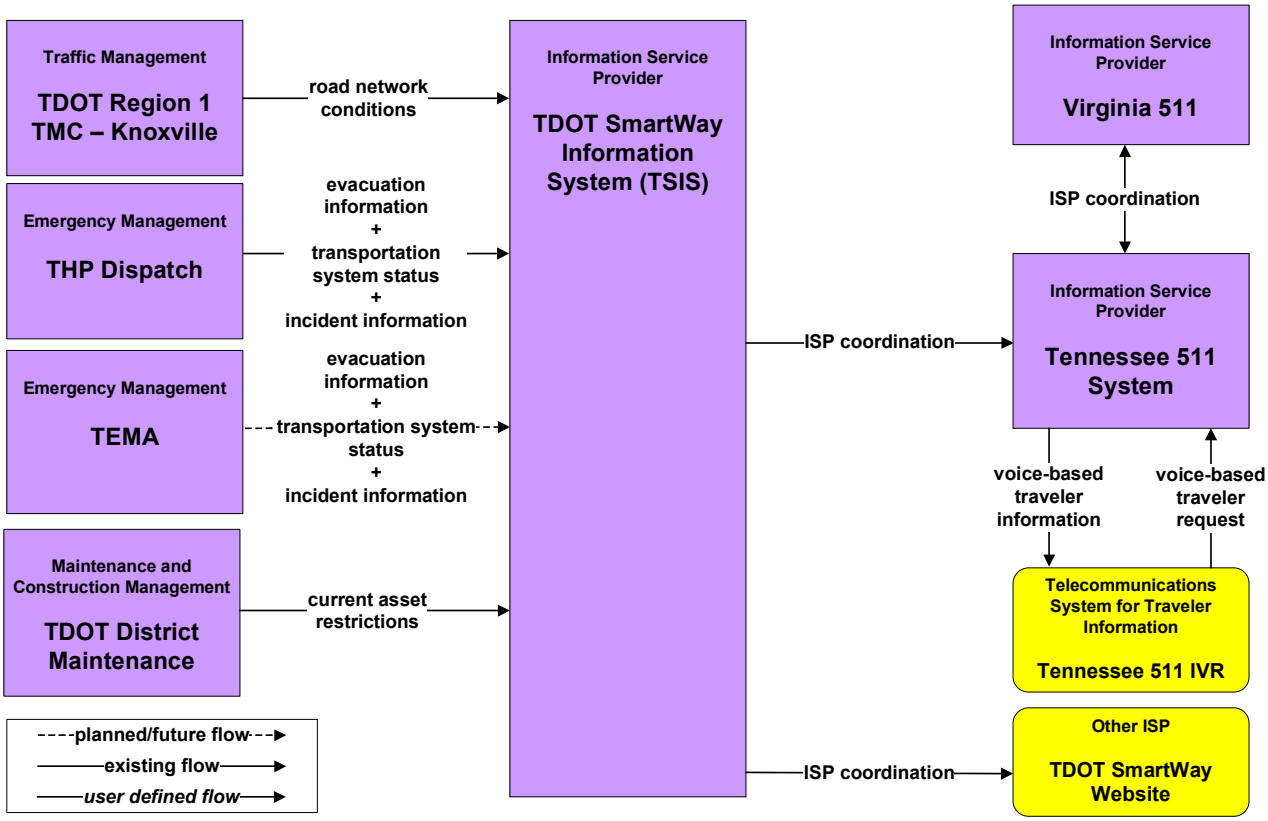
EM09 - Evacuation and Reentry Management
Sullivan County TN EMA (1 of 2)



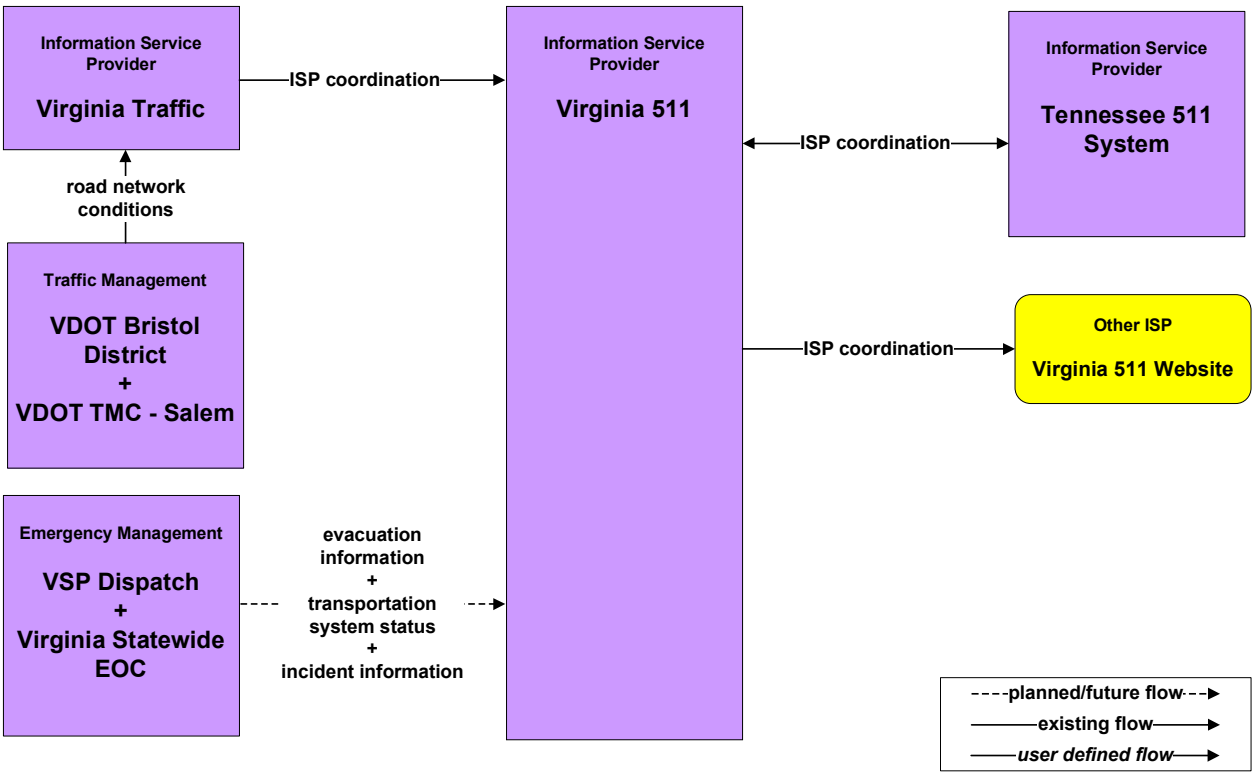
EM09 - Evacuation and Reentry Management
Sullivan County TN EMA (2 of 2)



EM10 – Disaster Traveler Information
Tennessee 511 and TSIS

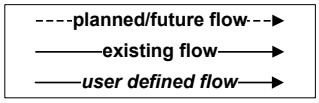


EM10 – Disaster Traveler Information
Virginia 511

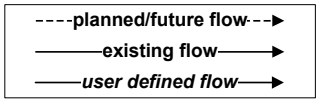


Maintenance and Construction Management

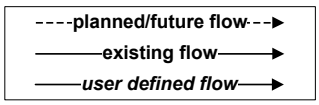
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
TDOT District Maintenance



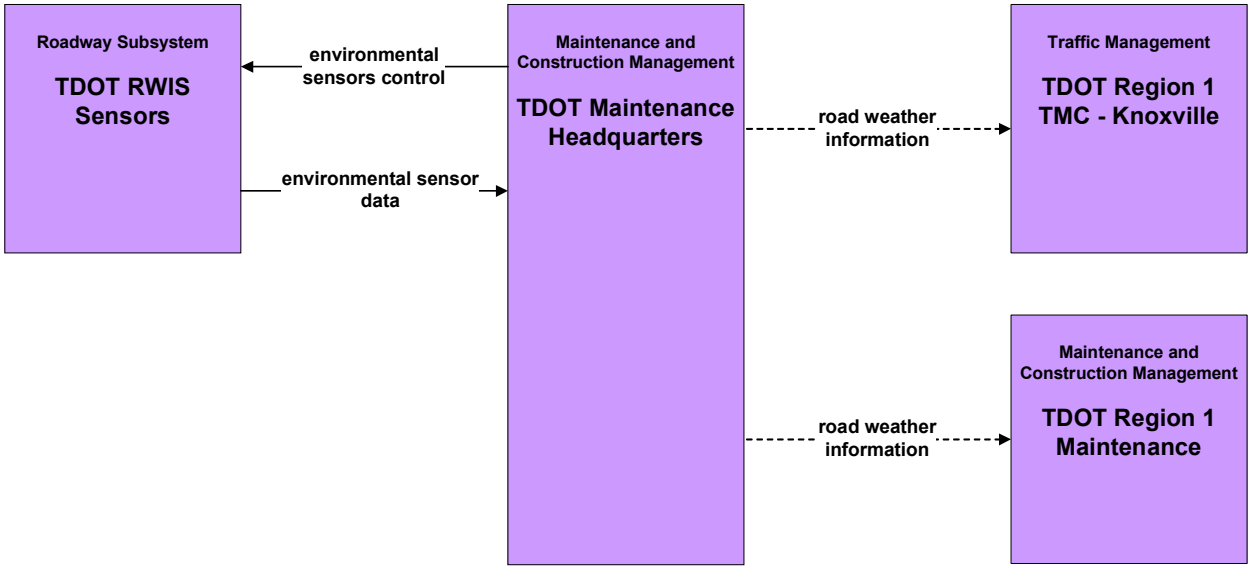
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
VDOT Bristol District Maintenance

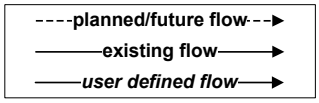


MC01 – Maintenance and Construction Vehicle and Equipment Tracking
Municipal/County Maintenance

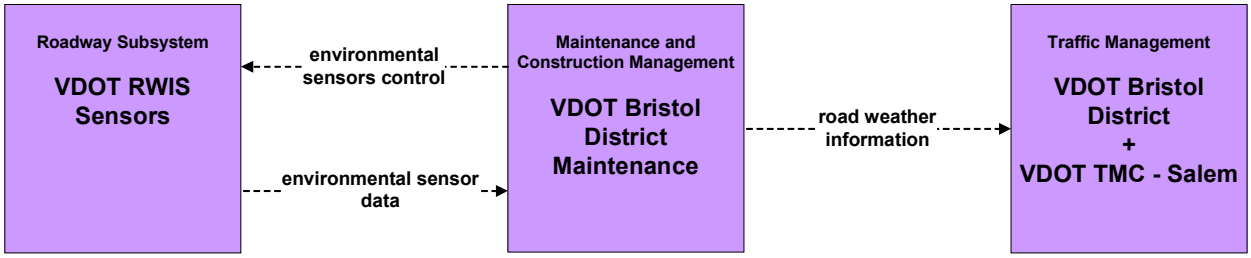


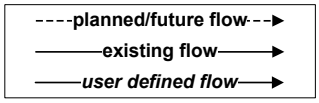
MC03 – Road Weather Data Collection
TDOT RWIS



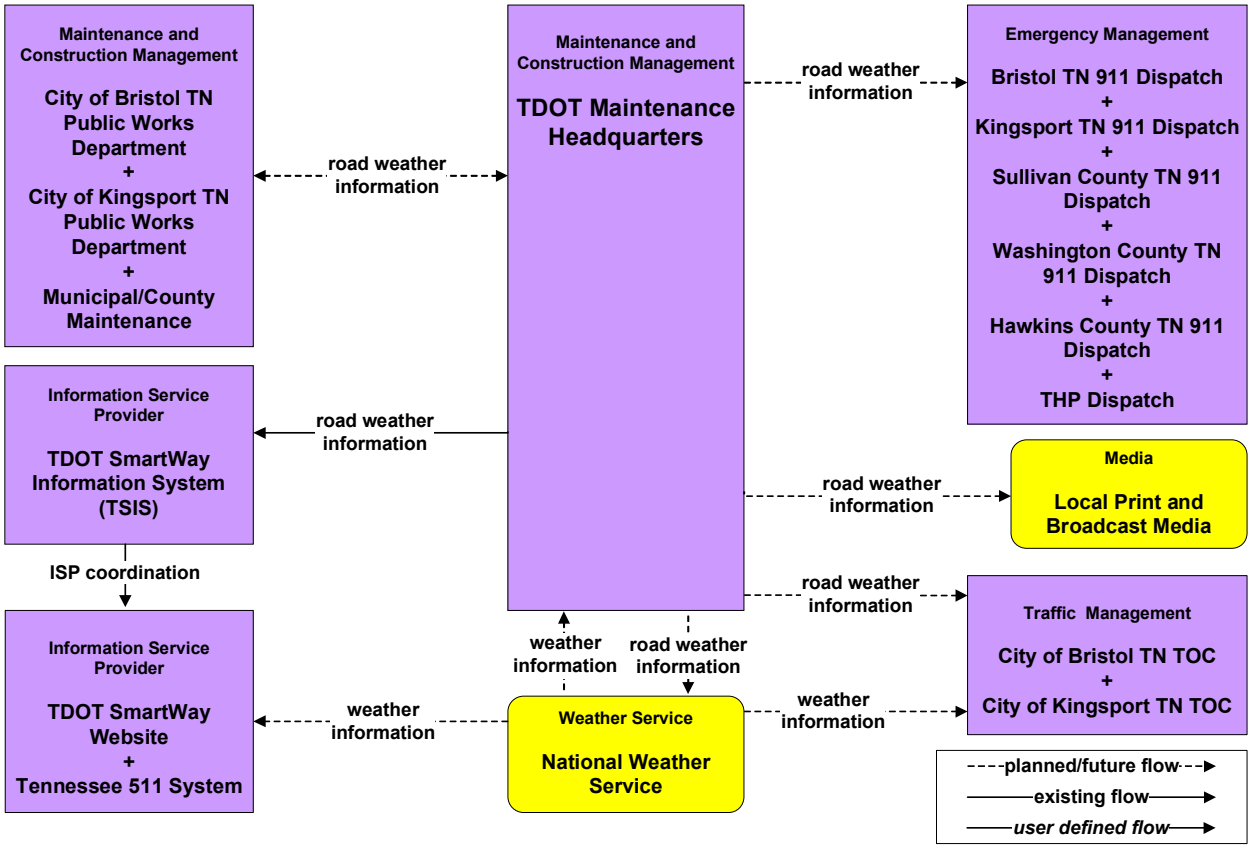


MC03 – Road Weather Data Collection
VDOT RWIS

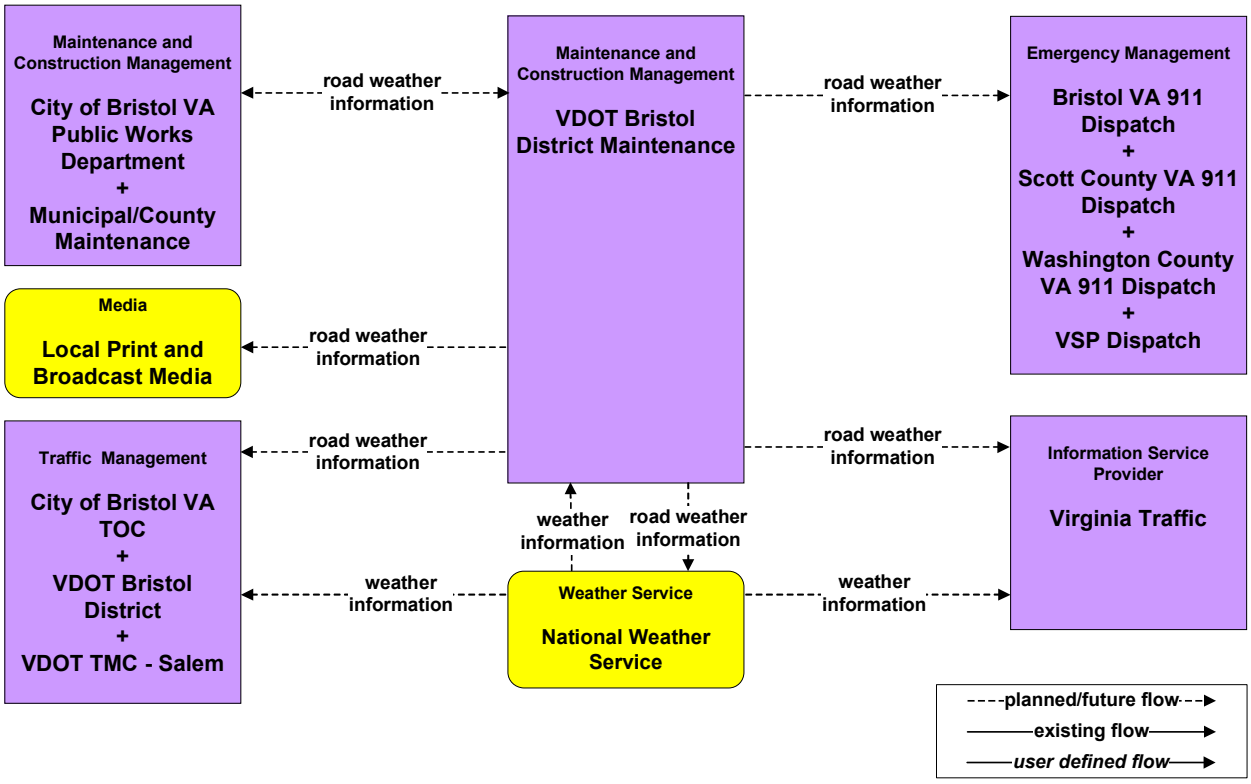




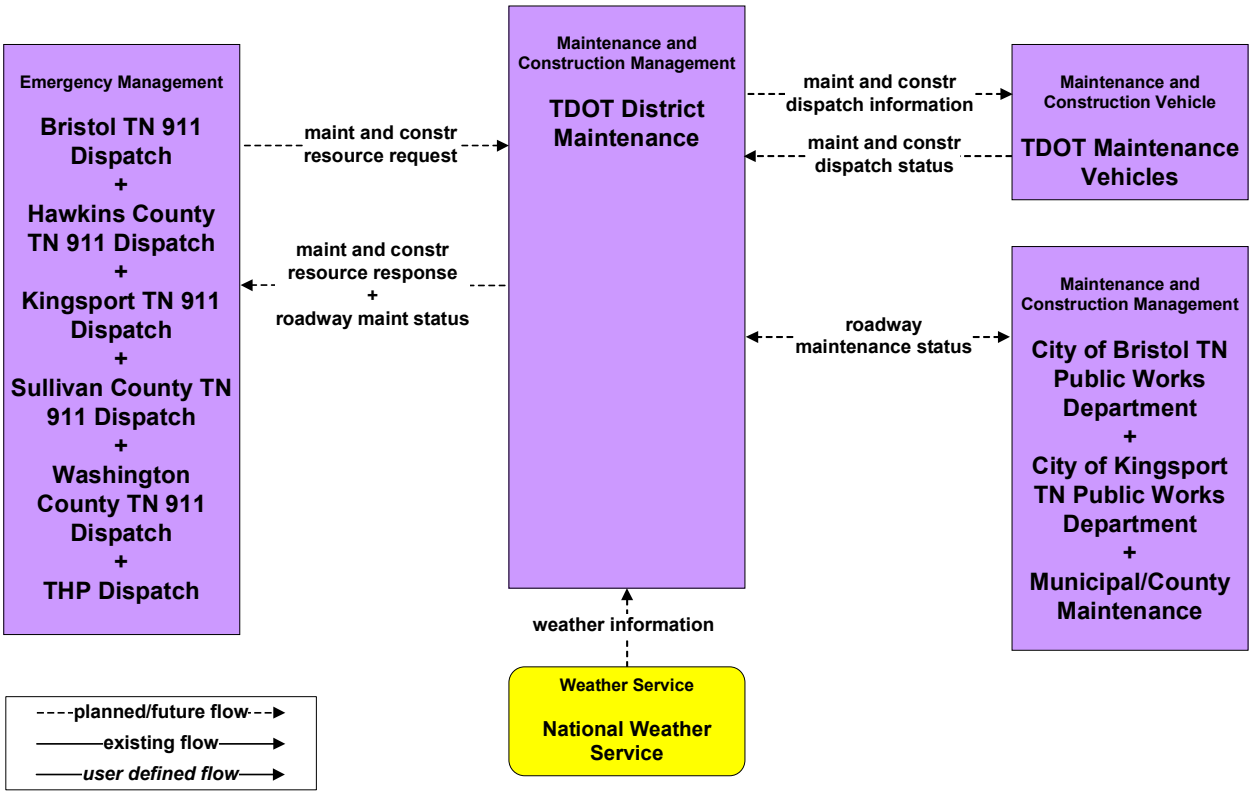
MC04 – Weather Information Processing and Distribution
TDOT Region 1 Maintenance



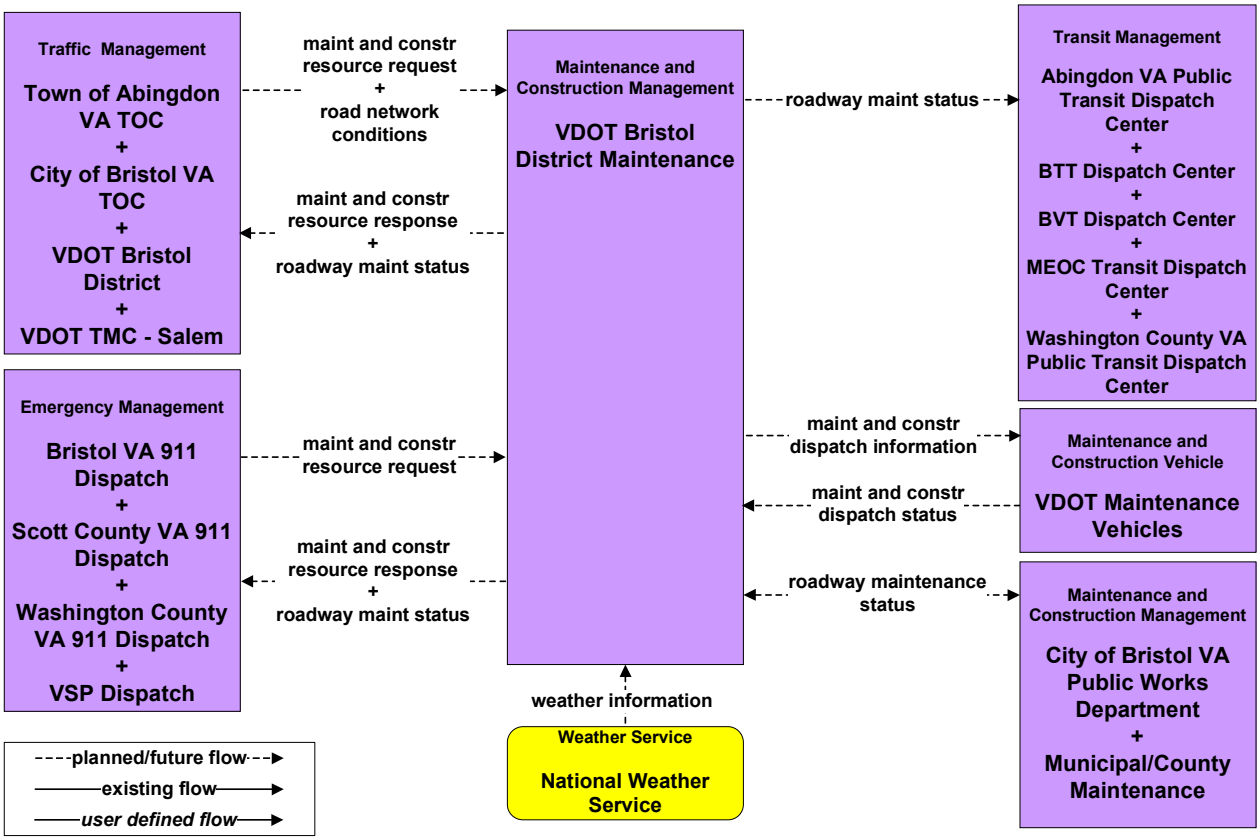
MC04 – Weather Information Processing and Distribution
VDOT Bristol District Maintenance

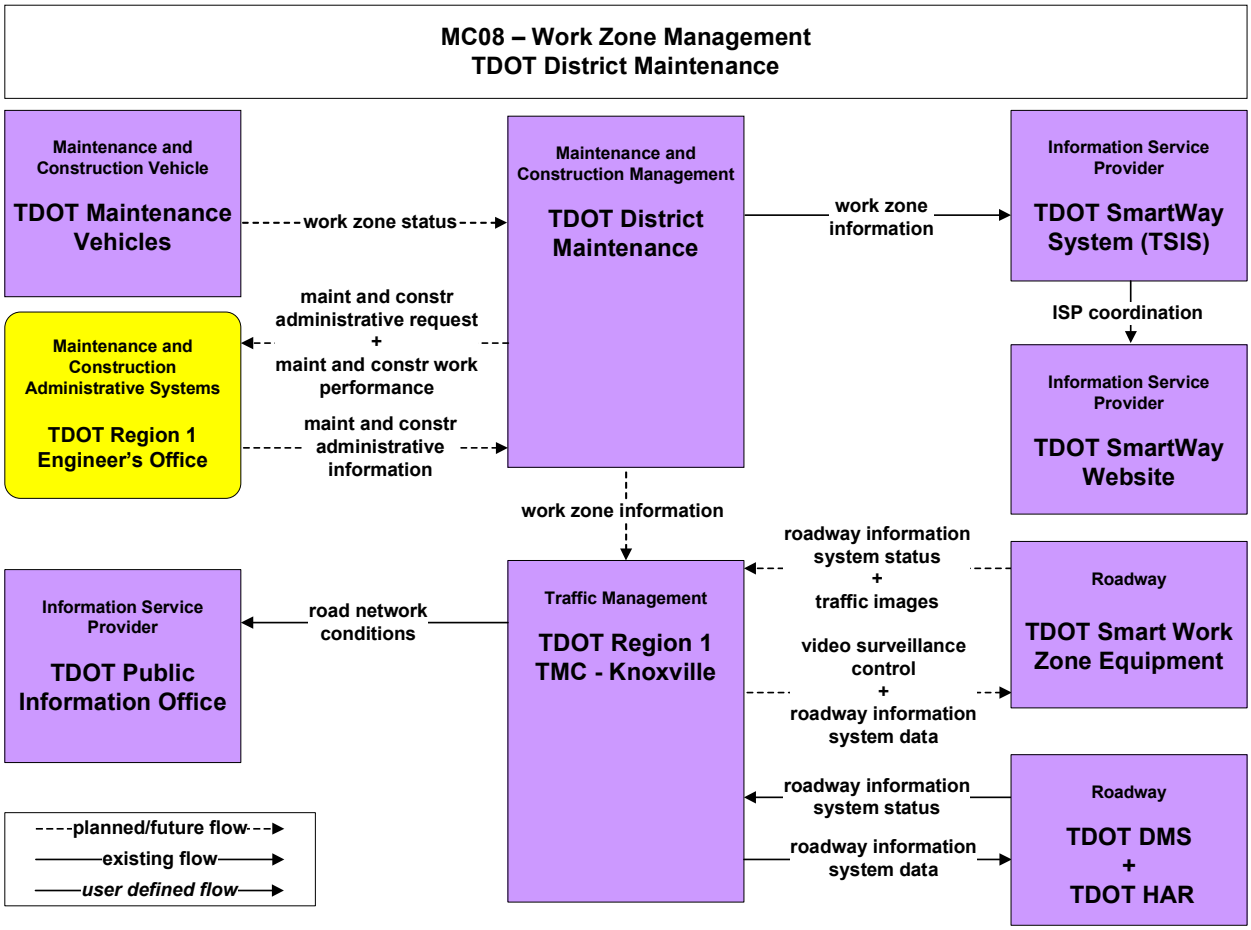


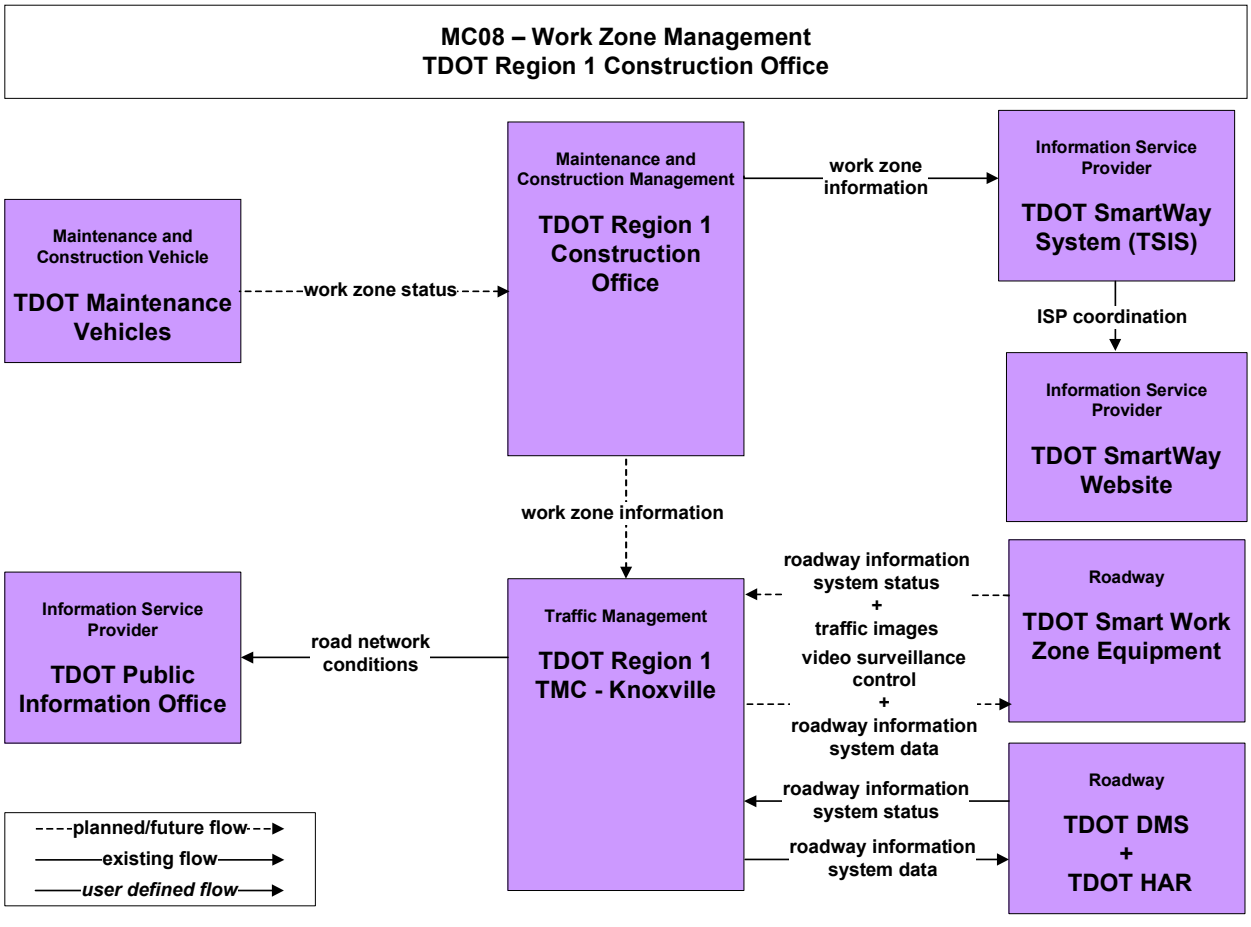
MC06 – Winter Maintenance
TDOT

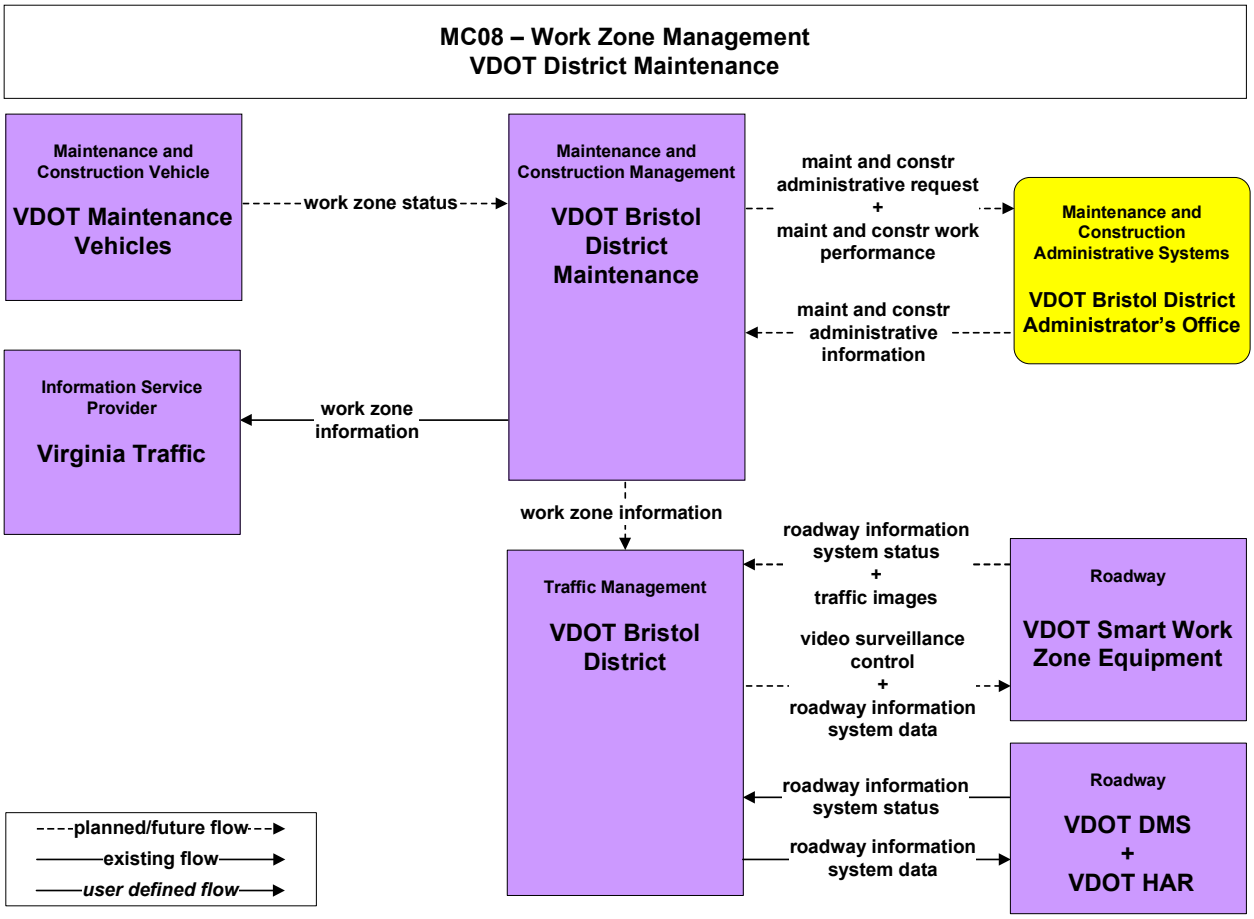


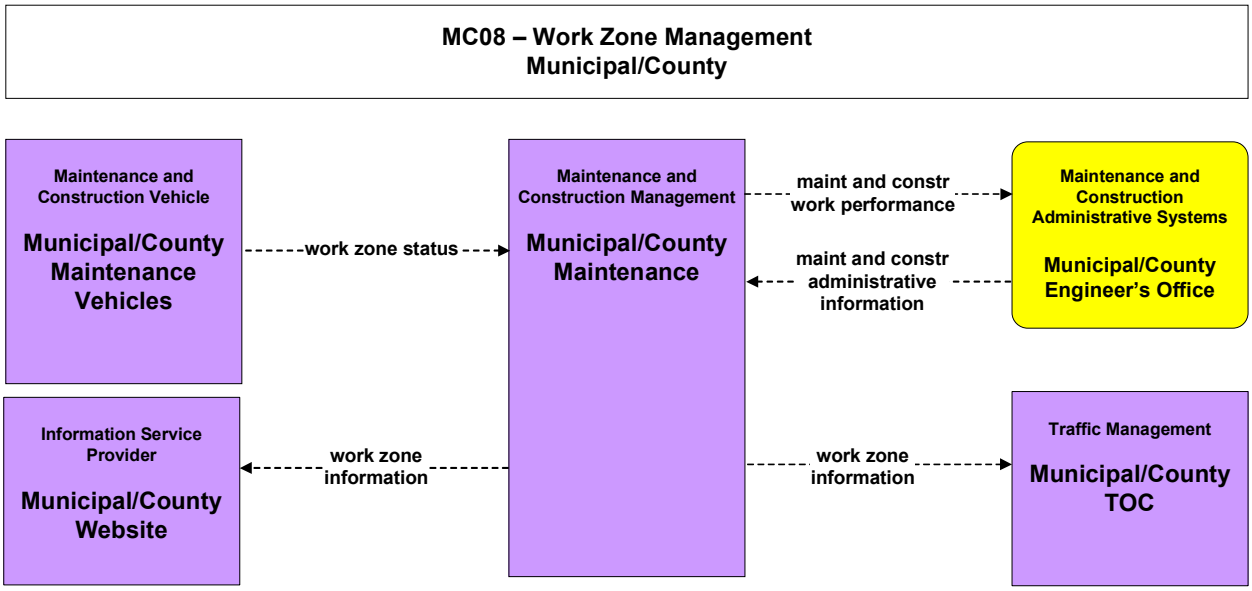
MC06 – Winter Maintenance
VDOT



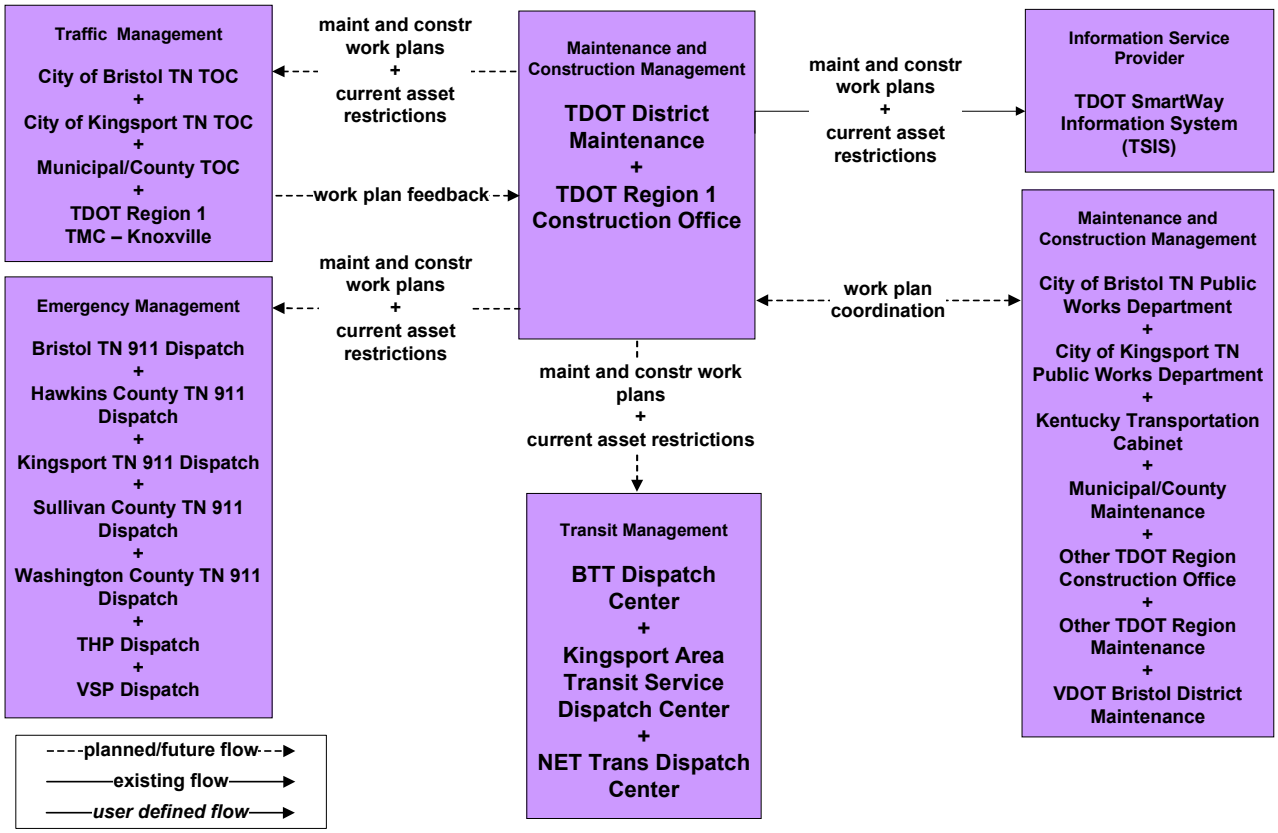

MC08 – Work Zone Management
TDOT District Maintenance
Maintenance and Construction Vehicle
TDOT Maintenance Vehicles
work zone status
Maintenance and Construction Management
TDOT District Maintenance
work zone information
Information Service Provider
TDOT SmartWay System (TSIS)
ISP coordination
Information Service Provider
TDOT SmartWay Website
maint and constr administrative request
+
maint and constr work performance
Maintenance and Construction Administrative Systems
TDOT Region 1 Engineer's Office
maint and constr administrative information
work zone information
roadway information system status
+
traffic images
Roadway
TDOT Smart Work Zone Equipment
Information Service Provider
TDOT Public Information Office
road network conditions
Traffic Management
TDOT Region 1 TMC - Knoxville
video surveillance control
+
roadway information system data
roadway information system status
roadway information system data
Roadway
TDOT DMS
+
TDOT HAR
planned/future flow
existing flow
user defined flow


MC08 – Work Zone Management
TDOT Region 1 Construction Office
Maintenance and Construction Vehicle
TDOT Maintenance Vehicles
work zone status
Maintenance and Construction Management
TDOT Region 1 Construction Office
work zone information
Information Service Provider
TDOT SmartWay System (TSIS)
ISP coordination
Information Service Provider
TDOT SmartWay Website
work zone information
roadway information system status
+
traffic images
Roadway
TDOT Smart Work Zone Equipment
Information Service Provider
TDOT Public Information Office
road network conditions
Traffic Management
TDOT Region 1 TMC - Knoxville
video surveillance control
+
roadway information system data
roadway information system status
roadway information system data
Roadway
TDOT DMS
+
TDOT HAR
planned/future flow
existing flow
user defined flow

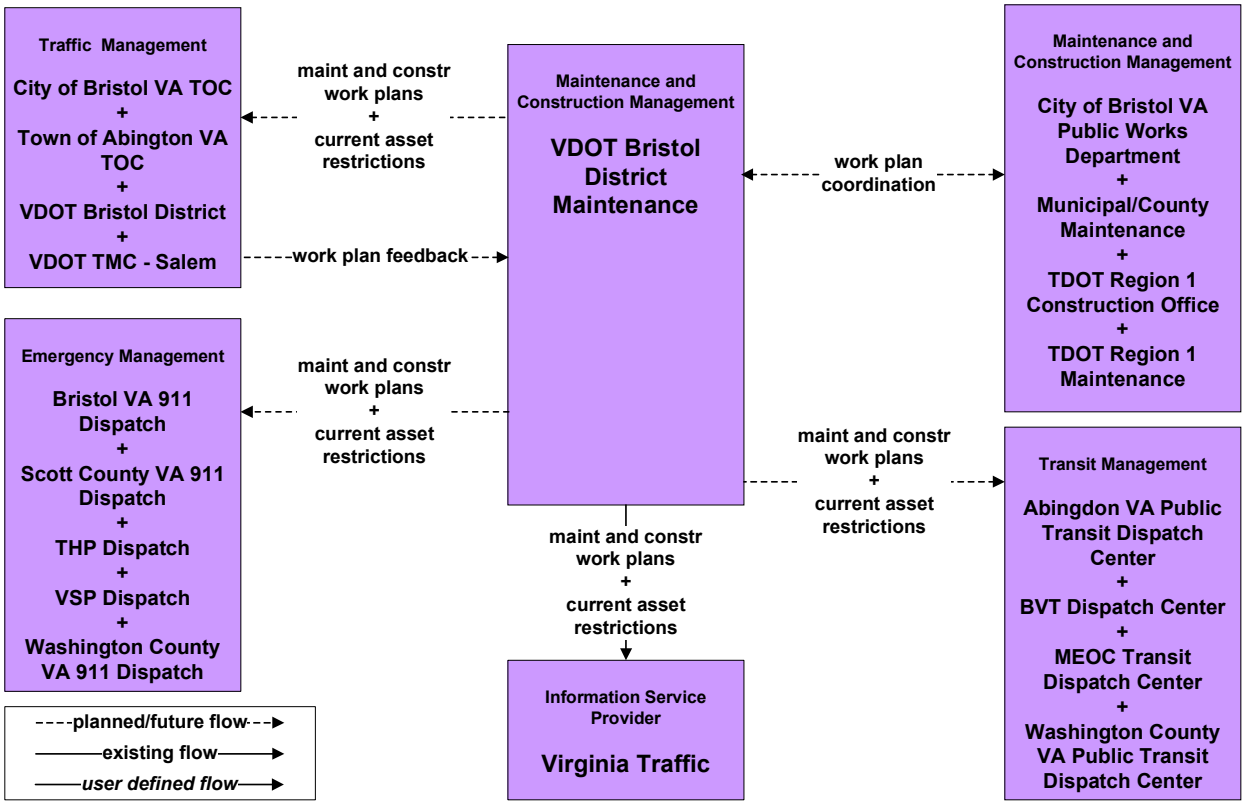

MC08 – Work Zone Management
VDOT District Maintenance
Maintenance and Construction Vehicle
VDOT Maintenance Vehicles
work zone status
Maintenance and Construction Management
VDOT Bristol District Maintenance
maint and constr administrative request
+
maint and constr work performance
Maintenance and Construction Administrative Systems
VDOT Bristol District Administrator's Office
maint and constr administrative information
Information Service Provider
Virginia Traffic
work zone information
work zone information
Traffic Management
VDOT Bristol District
roadway information system status
+
traffic images
Roadway
VDOT Smart Work Zone Equipment
video surveillance control
+
roadway information system data
roadway information system status
roadway information system data
Roadway
VDOT DMS
+
VDOT HAR
planned/future flow
existing flow
user defined flow


MC08 – Work Zone Management
Municipal/County
Maintenance and Construction Vehicle
Municipal/County Maintenance Vehicles
work zone status
Maintenance and Construction Management
Municipal/County Maintenance
maint and constr work performance
Maintenance and Construction Administrative Systems
Municipal/County Engineer's Office
maint and constr administrative information
Information Service Provider
Municipal/County Website
work zone information
work zone information
Traffic Management
Municipal/County TOC
planned/future flow
existing flow
user defined flow

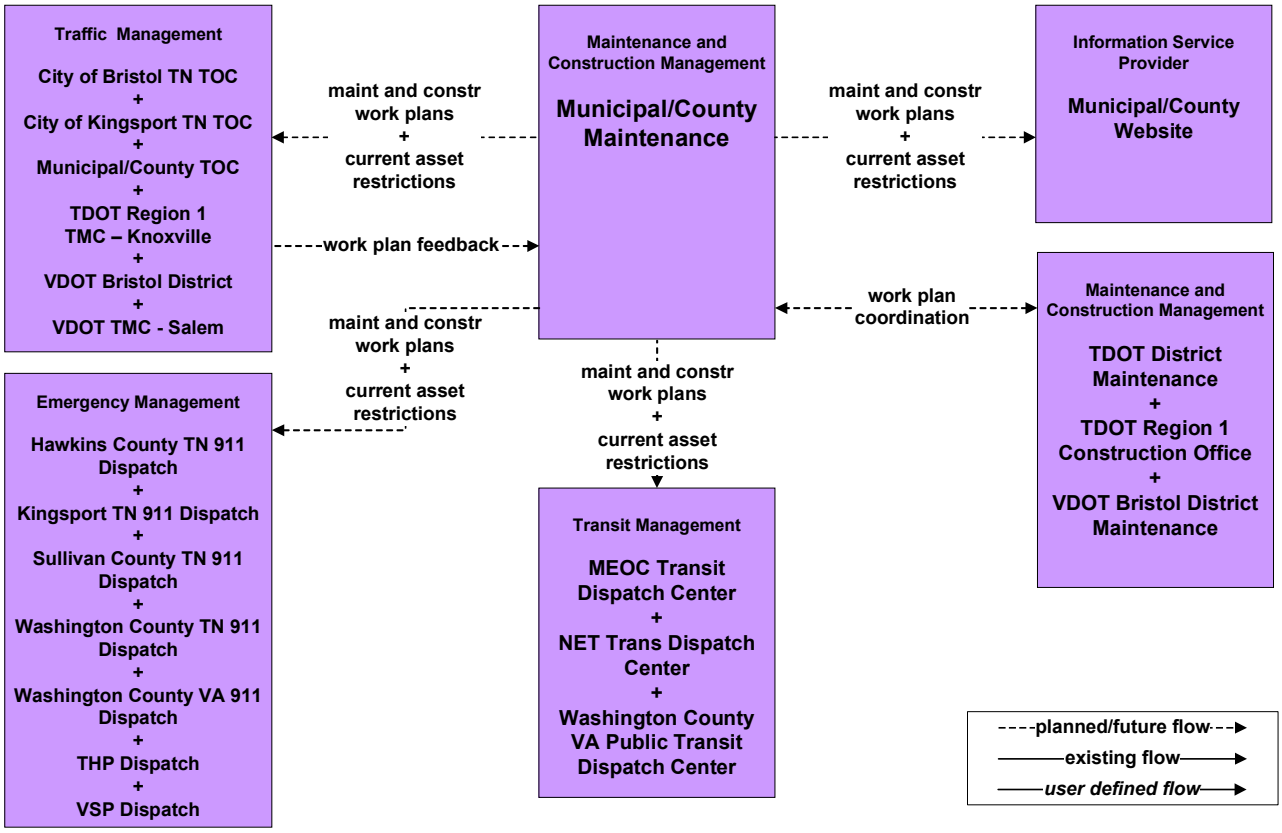
MC10 – Maintenance and Construction Activity Coordination
TDOT



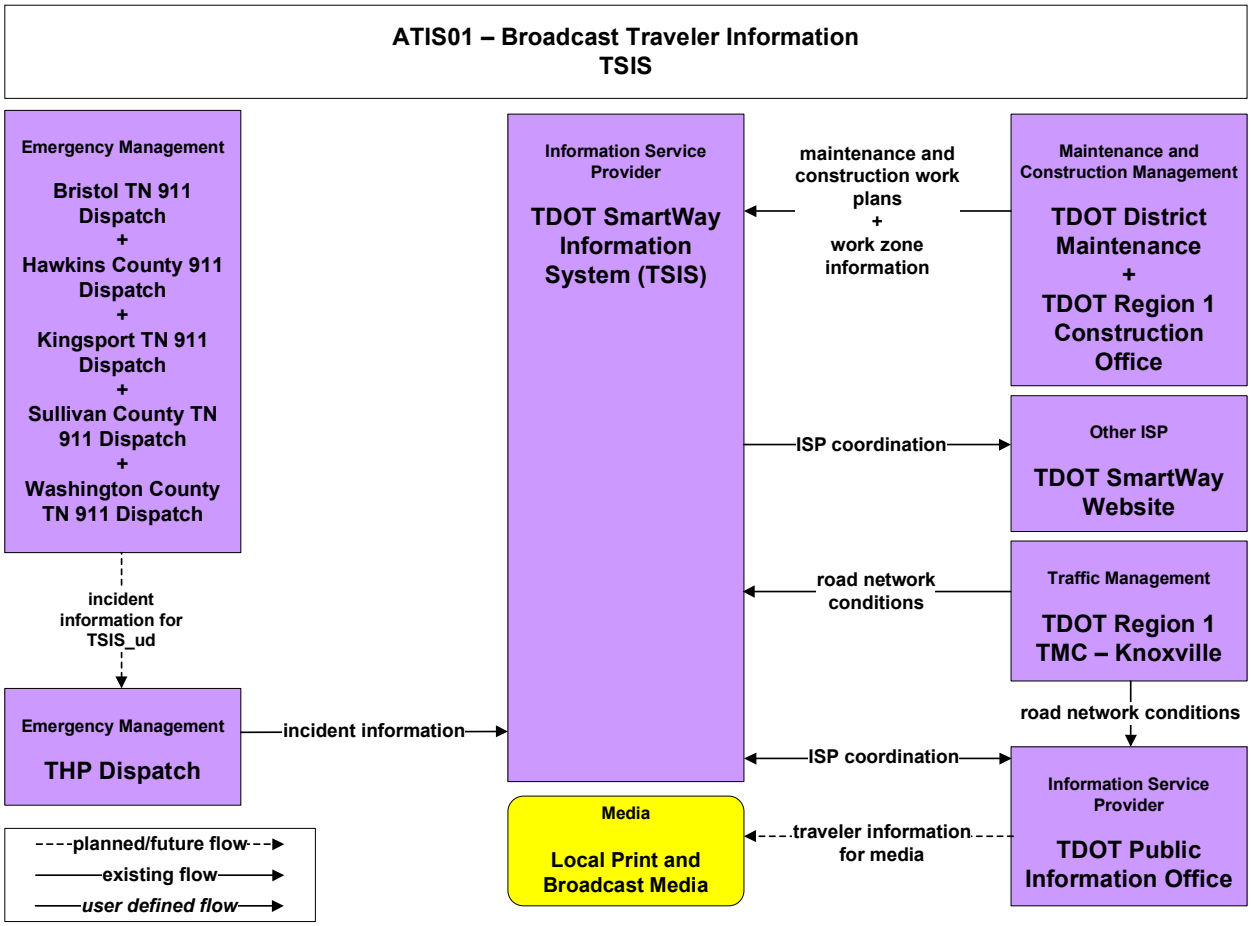
MC10 – Maintenance and Construction Activity Coordination
VDOT



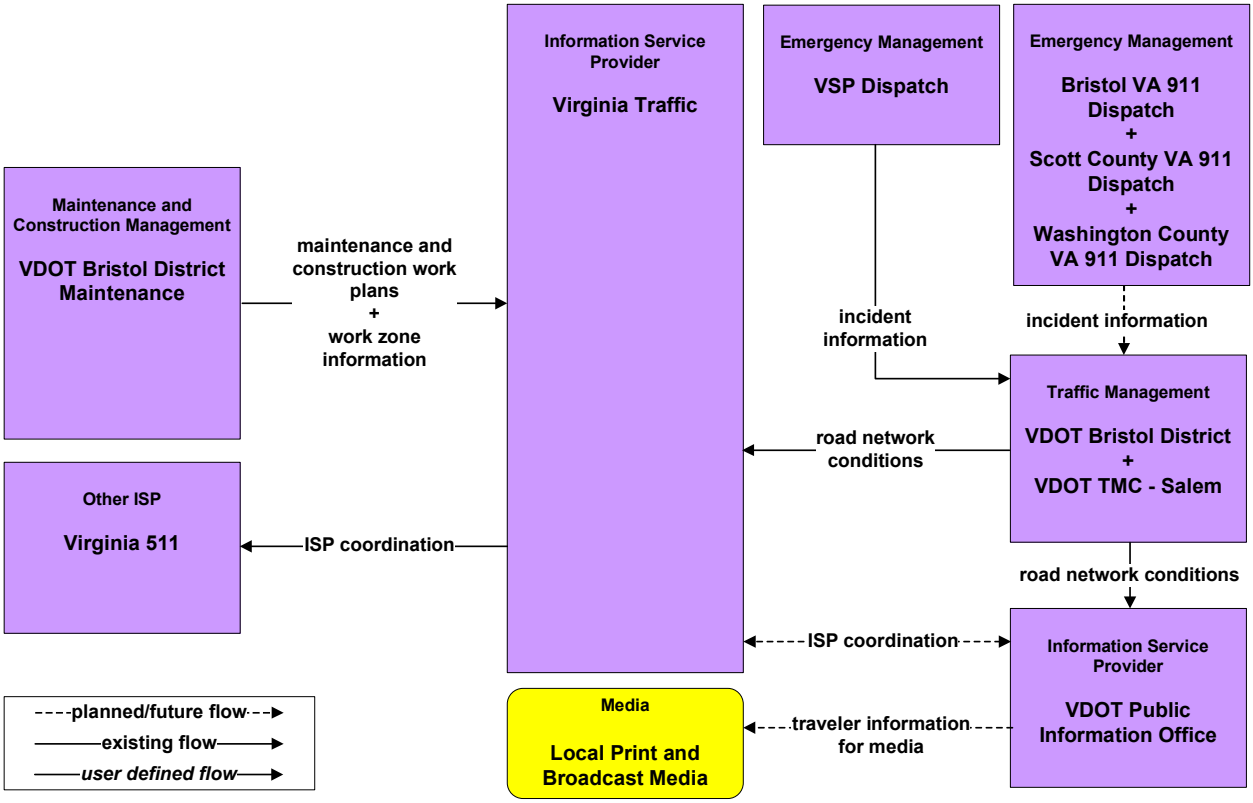
MC10 – Maintenance and Construction Activity Coordination
Municipal/County



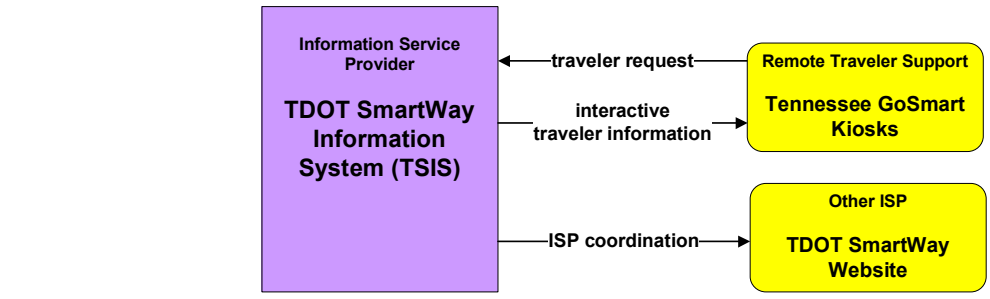
Advanced Traveler Information System



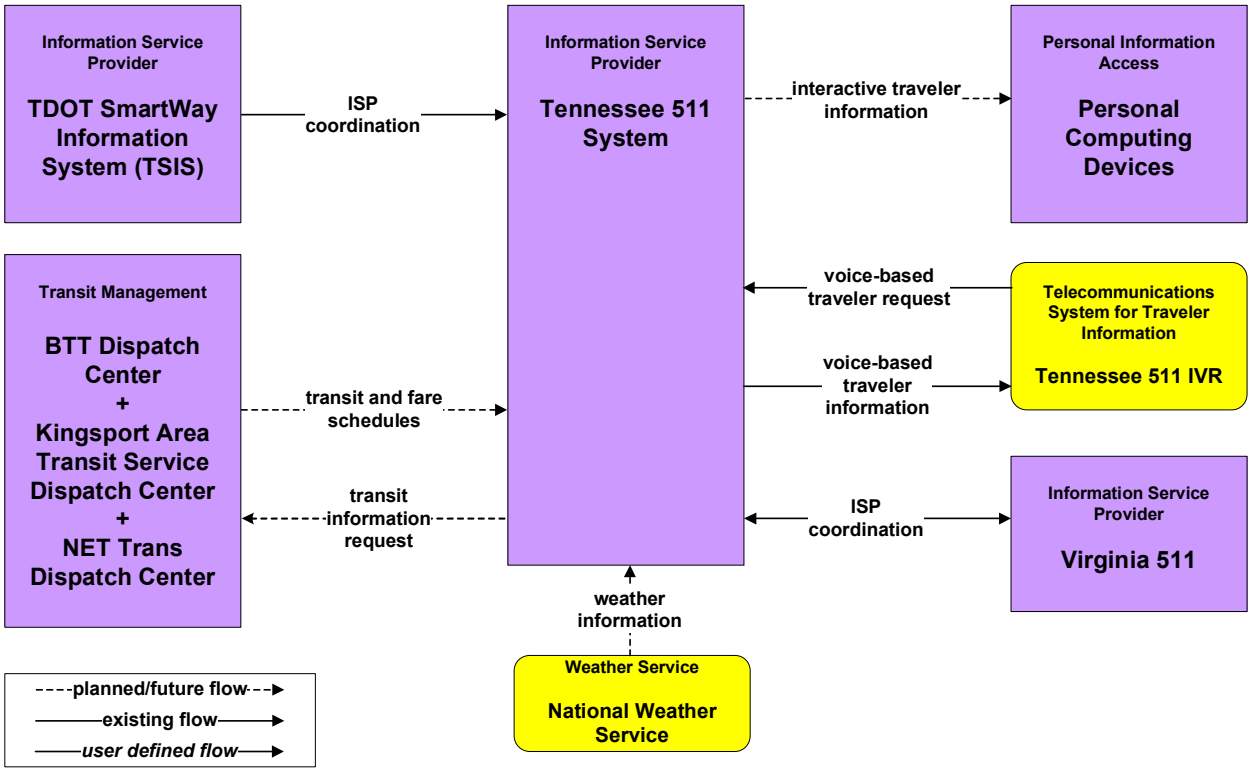
ATIS01 – Broadcast Traveler Information
Virginia Traffic



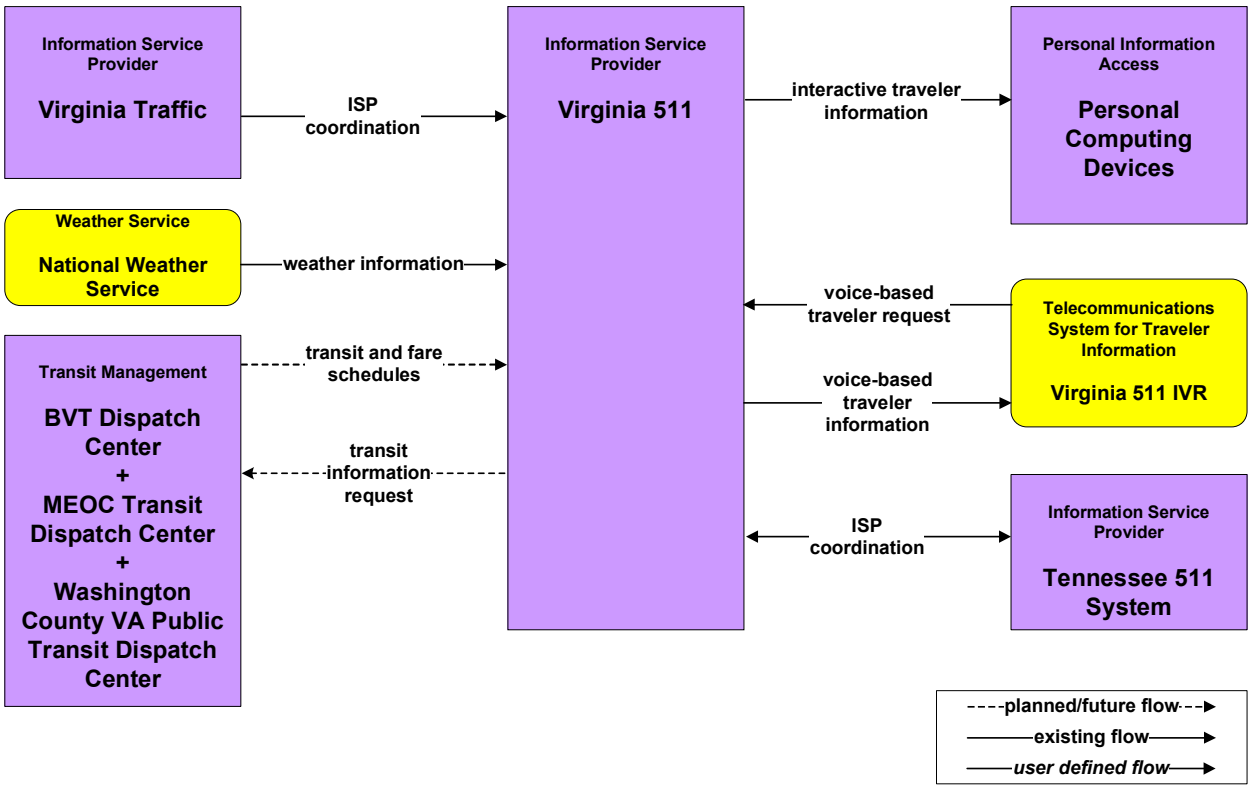
ATIS02 – Interactive Traveler Information
Tennessee GoSmart Kiosks and TDOT SmartWay Website



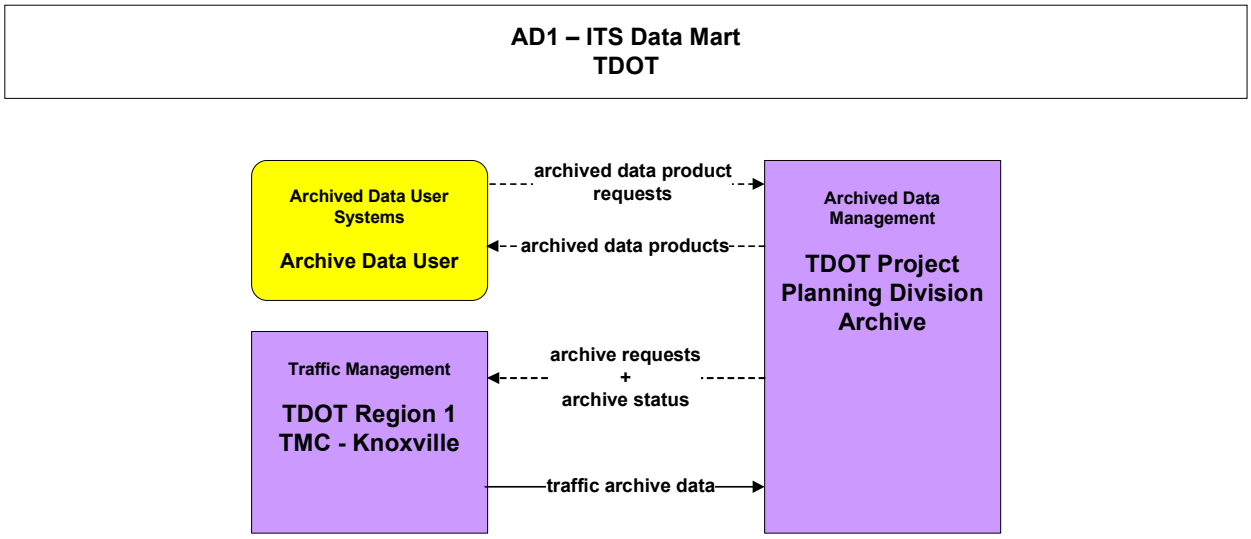
ATIS02 – Interactive Traveler Information
Tennessee 511



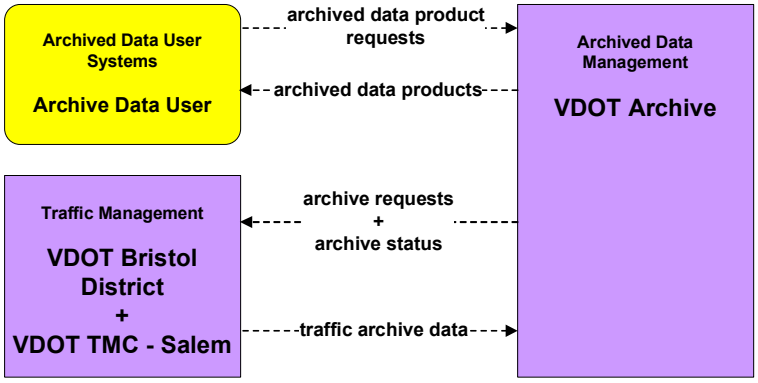
ATIS02 – Interactive Traveler Information
Virginia 511

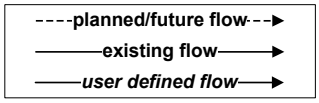


Archived Data

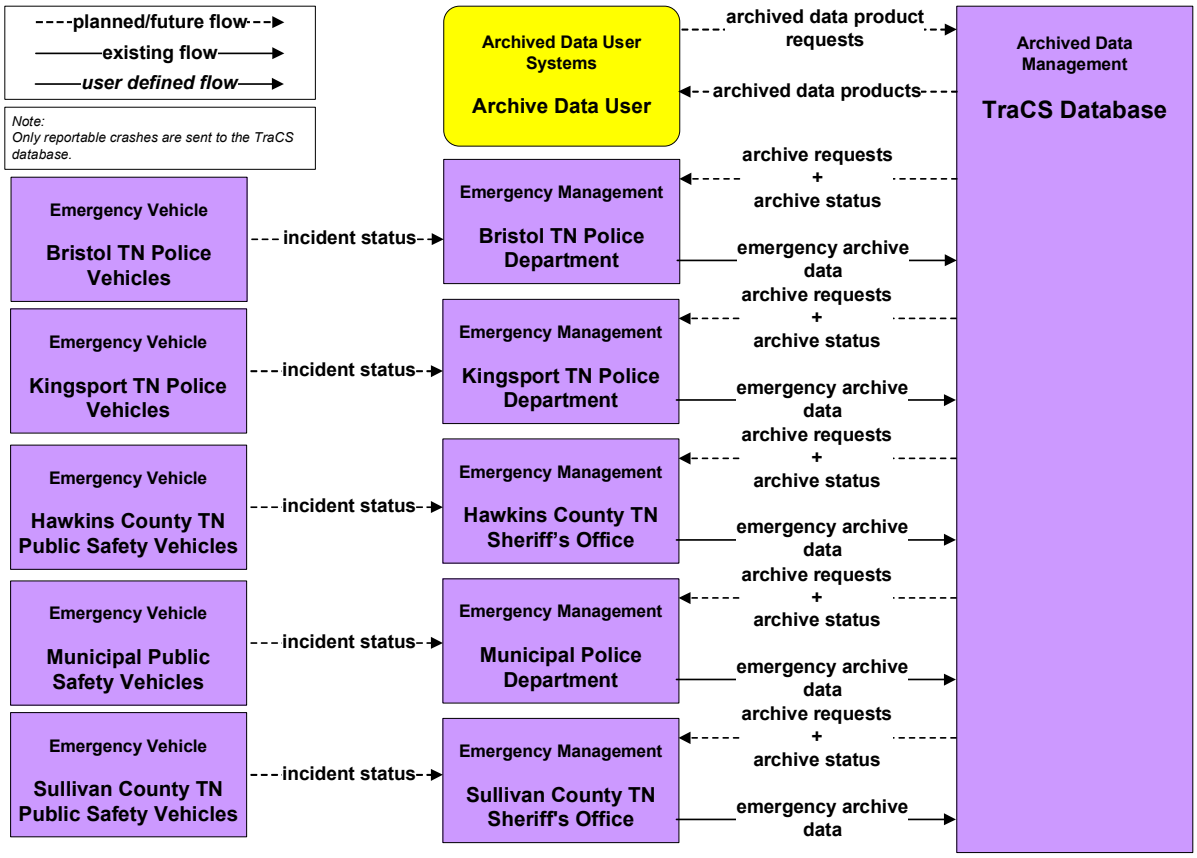


AD1 – ITS Data Mart
VDOT

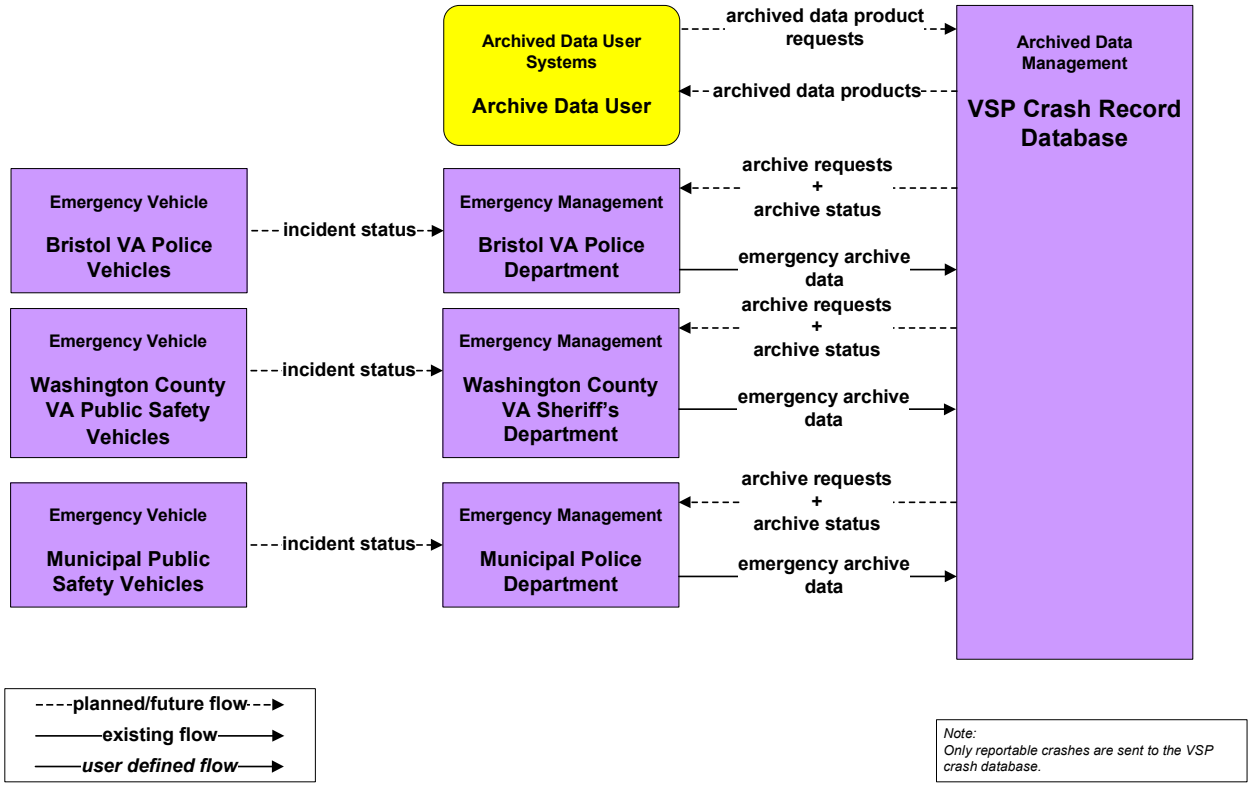




AD1 – ITS Data Mart
TraCS



AD1 – ITS Data Mart
VSP Crash Record Database



Note:
Only reportable crashes are sent to the VSP crash database.

APPENDIX C – CUSTOMIZED BRISTOL REGION MARKET PACKAGES

APPENDIX C

LIST OF FIGURES

ATMS01 – Network Surveillance: City of Bristol TN C-1
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ATMS01 – Network Surveillance: Town of Abingdon VA C-2
ATMS01 – Network Surveillance: Bristol Motor Speedway Operations – Tennessee C-3
ATMS01 – Network Surveillance: Bristol Motor Speedway Operations – Virginia C-3
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ATMS03 – Surface Street Control: City of Bristol VA Signal System C-4
ATMS03 – Surface Street Control: Town of Abingdon VA Signal System C-5
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ATMS13 – Standard Railroad Grade Crossing: Town of Abingdon VA C-12
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ATMS15 – Railroad Operations Coordination: City of Bristol VA C-13
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MC10 – Maintenance and Construction Activity Coordination: City of Bristol VA C-23

APPENDIX C

LIST OF FIGURES

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APTS02 – Transit Fixed-Route Operations: Bristol VA Transit C-27
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APTS03 – Demand Response Transit Operations: Washington County VA Public Transit C-29
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APTS04 – Transit Fare Collection Management: Bristol TN Transit C-30
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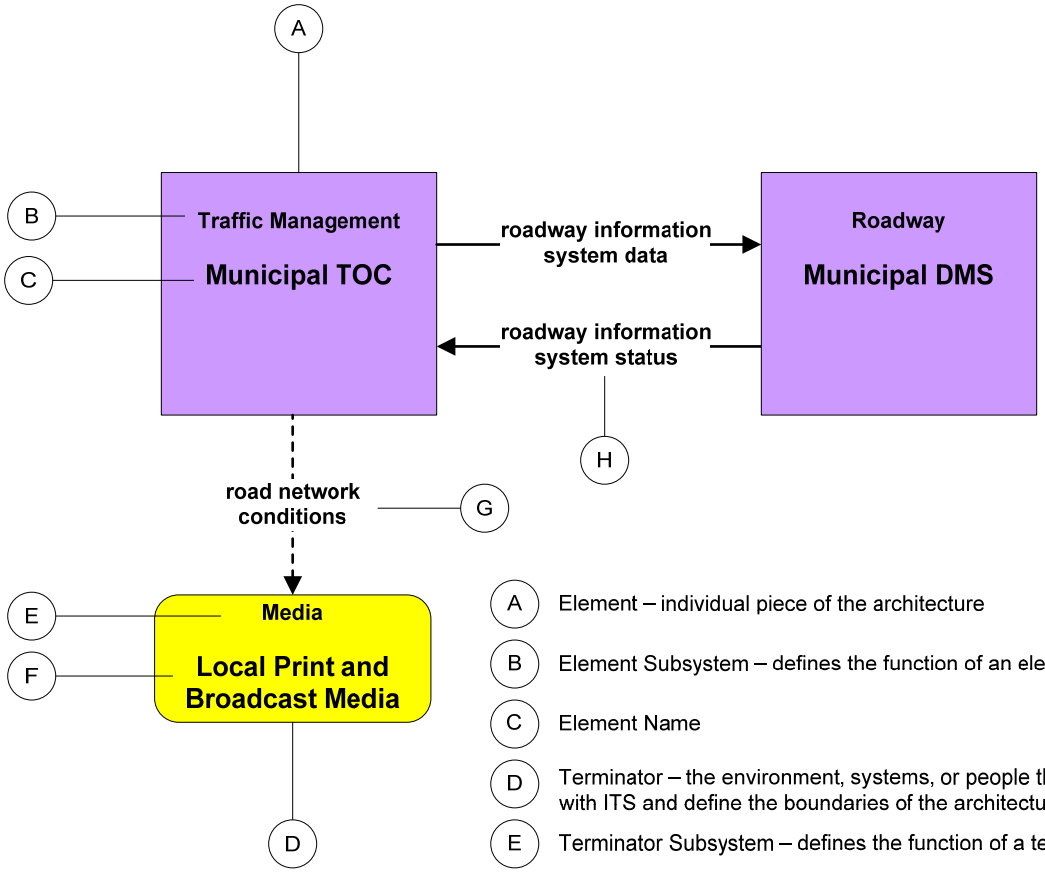
APPENDIX C

MARKET PACKAGE DIAGRAM COMPONENT AND TERMINOLOGY KEY



A – Element – individual piece of the architecture

B – Element Subsystem – defines the function of an element

C – Element Name

D – Terminator – the environment, systems, or people that interface with ITS and define the boundaries of the architecture

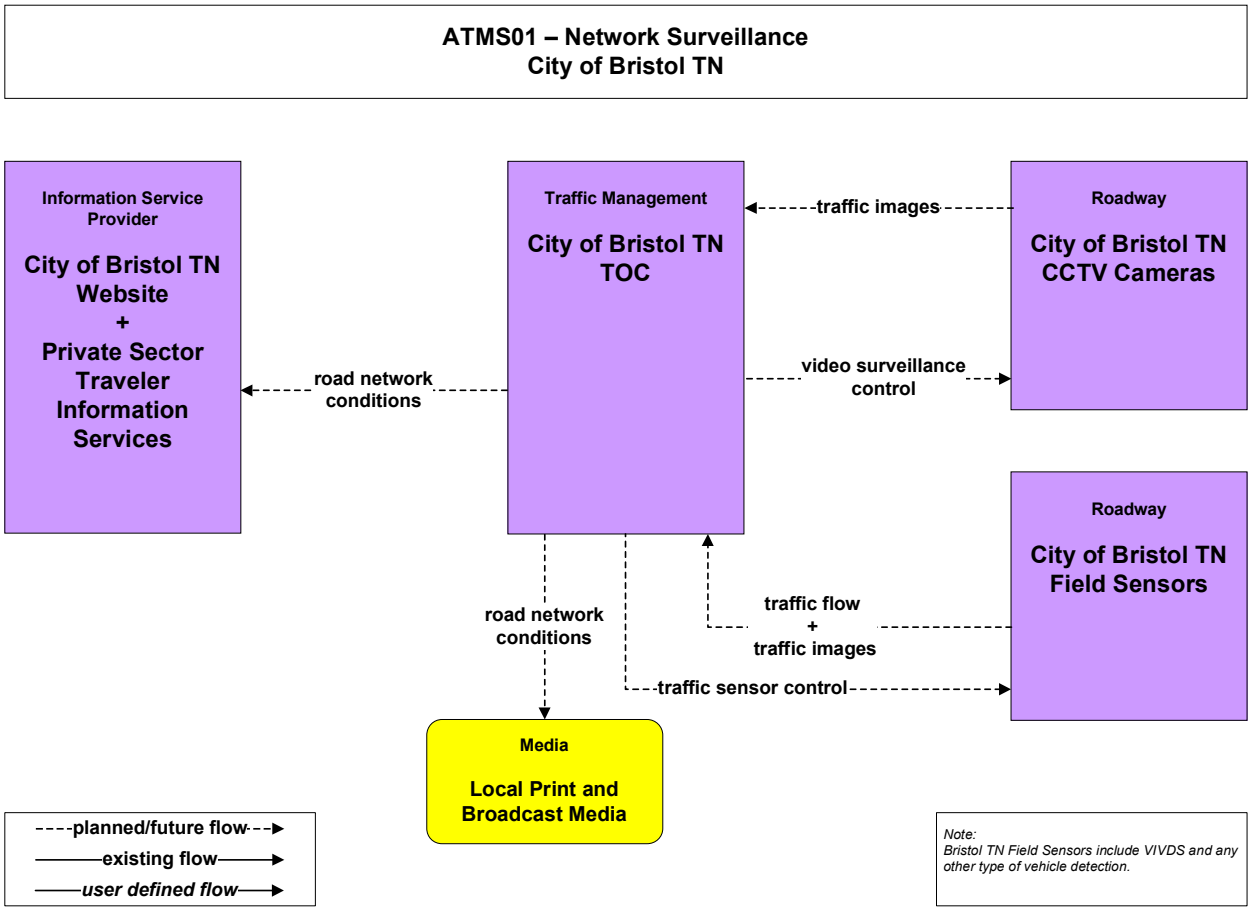
E – Terminator Subsystem – defines the function of a terminator

F – Terminator Name

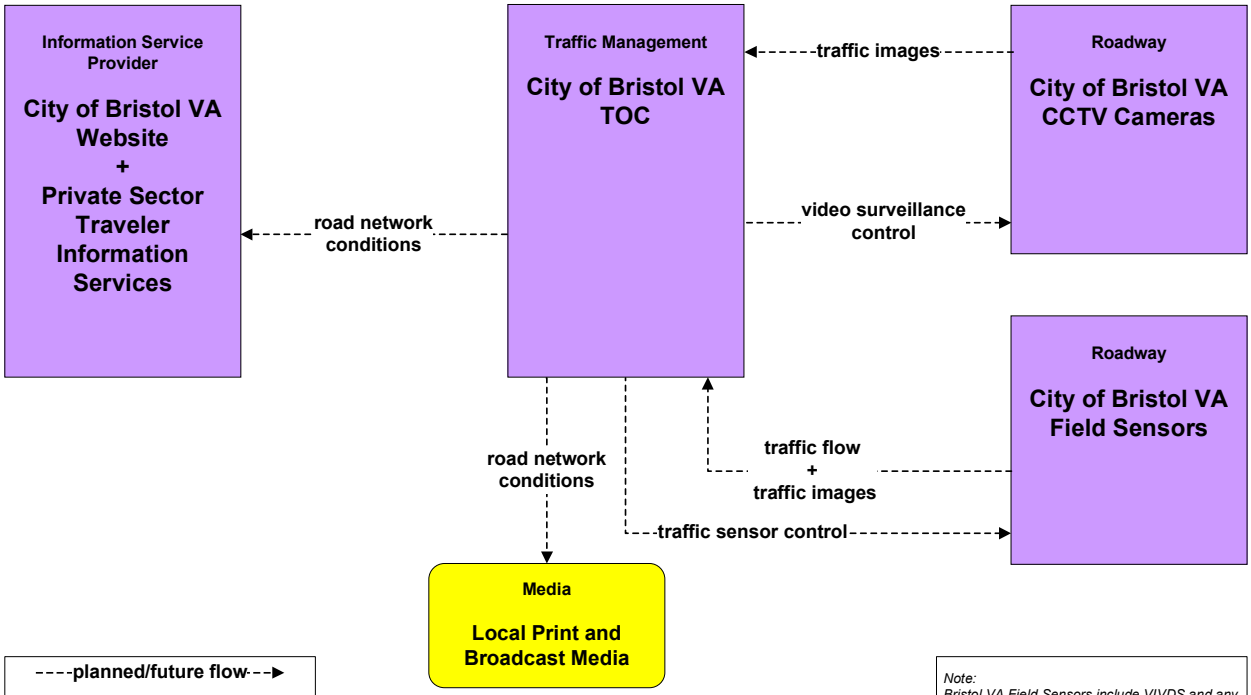
G – Future/Planned Architecture Flow – data that will be exchanged between subsystems and terminators in the future

H – Existing Architecture Flow – data that is currently exchanged between subsystems and terminators

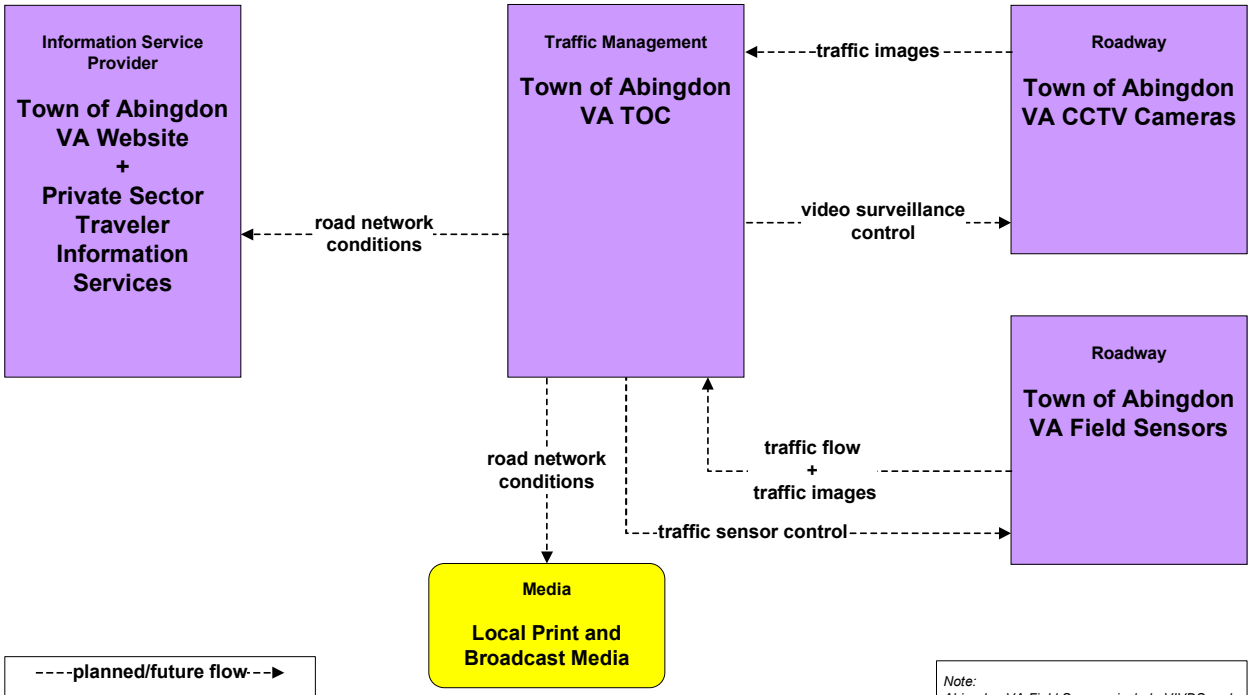
Advanced Traffic Management System



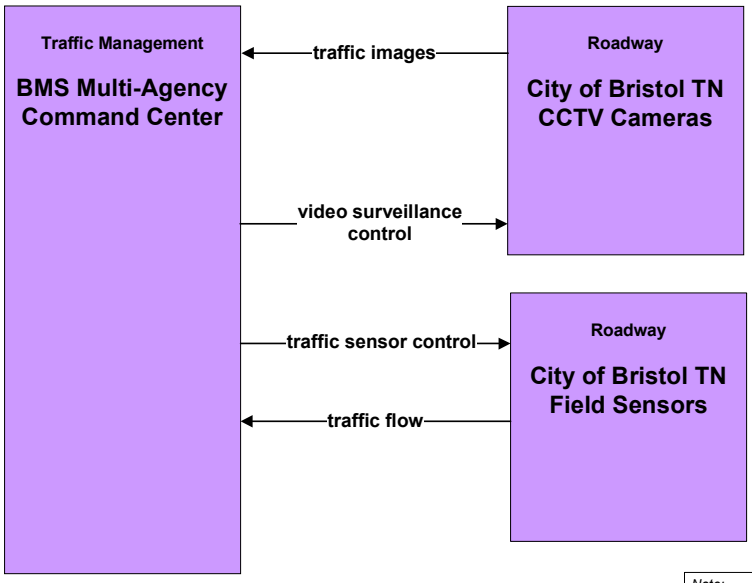
ATMS01 – Network Surveillance
City of Bristol VA



ATMS01 – Network Surveillance
Town of Abingdon VA



ATMS01 – Network Surveillance
Bristol Motor Speedway Operations - Tennessee

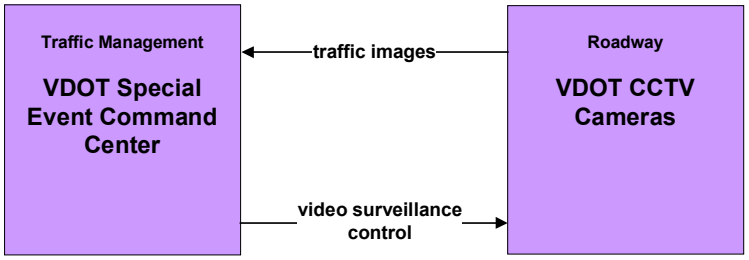


Note:
CCTV cameras shown as existing in this instance are used only during BMS events and primarily for crowd surveillance although several of them can be positioned to view adjacent roadways.

Note:
Coordination between BMS Multi-Agency Command Center and VDOT Special Event Management Command Center is shown in ATMS07.

- - - -planned/future flow- - -▶
———existing flow———▶
———*user defined flow*———▶

ATMS01 – Network Surveillance
Bristol Motor Speedway Operations - Virginia

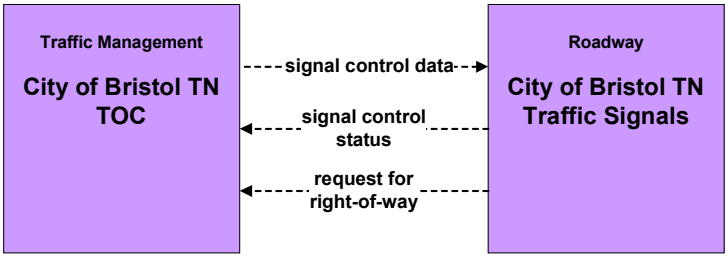


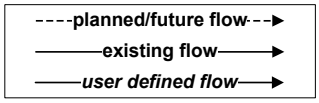
Note:
Coordination between BMS Multi-Agency Command Center and VDOT Special Event Management Command Center is shown in ATMS07.

Note:
CCTV cameras in this instance are portable devices deployed in the Bristol area on race weekends.

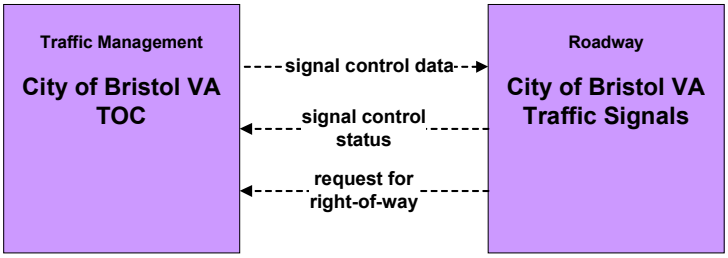
- - - -planned/future flow- - -▶
———existing flow———▶
———*user defined flow*———▶

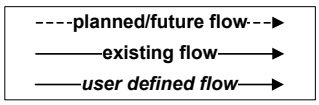
ATMS03 – Surface Street Control
City of Bristol TN Signal System



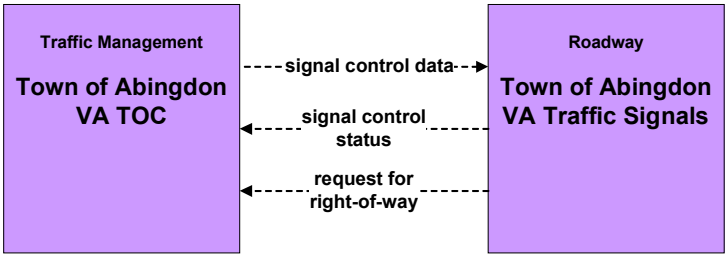


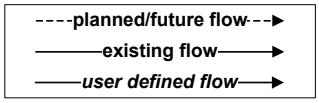
ATMS03 – Surface Street Control
City of Bristol VA Signal System



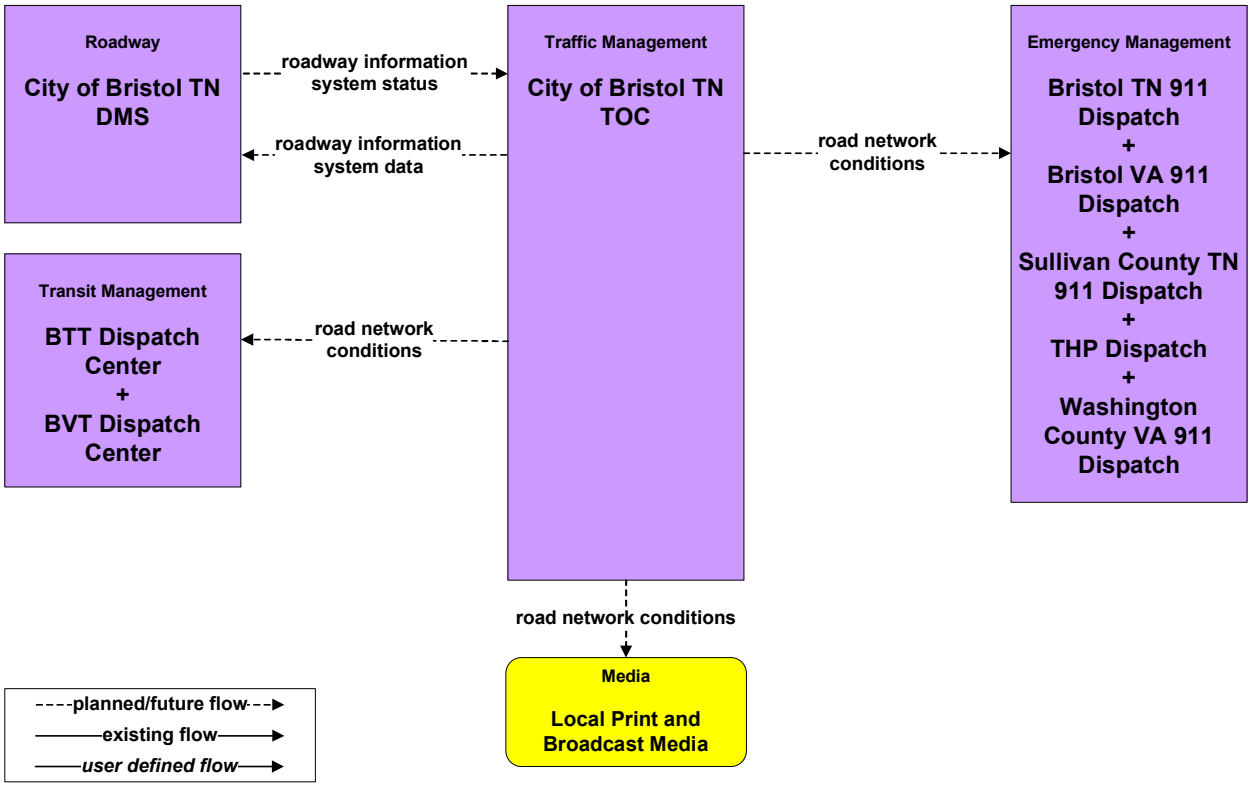


ATMS03 – Surface Street Control
Town of Abingdon VA Signal System

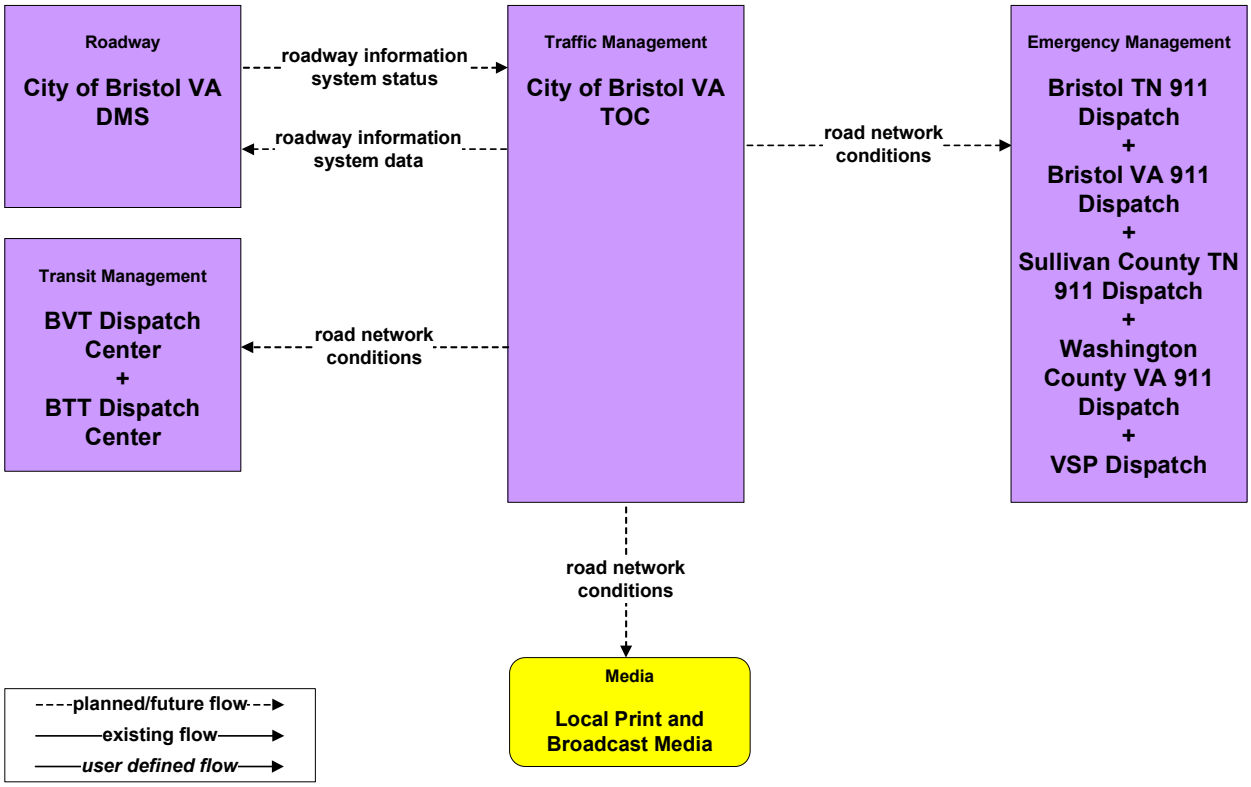




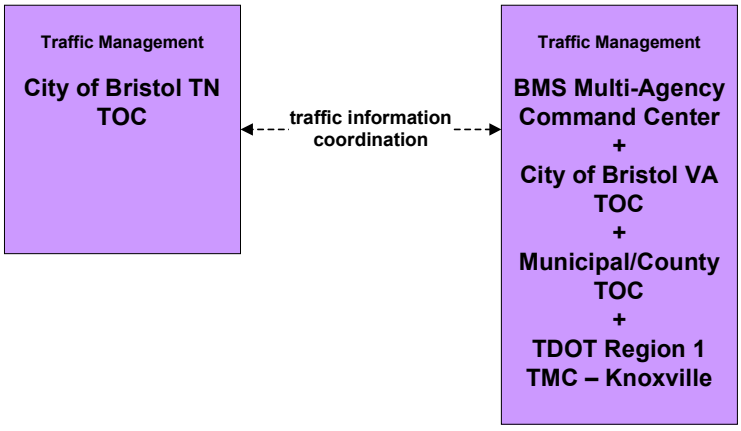
ATMS06 – Traffic Information Dissemination
City of Bristol TN



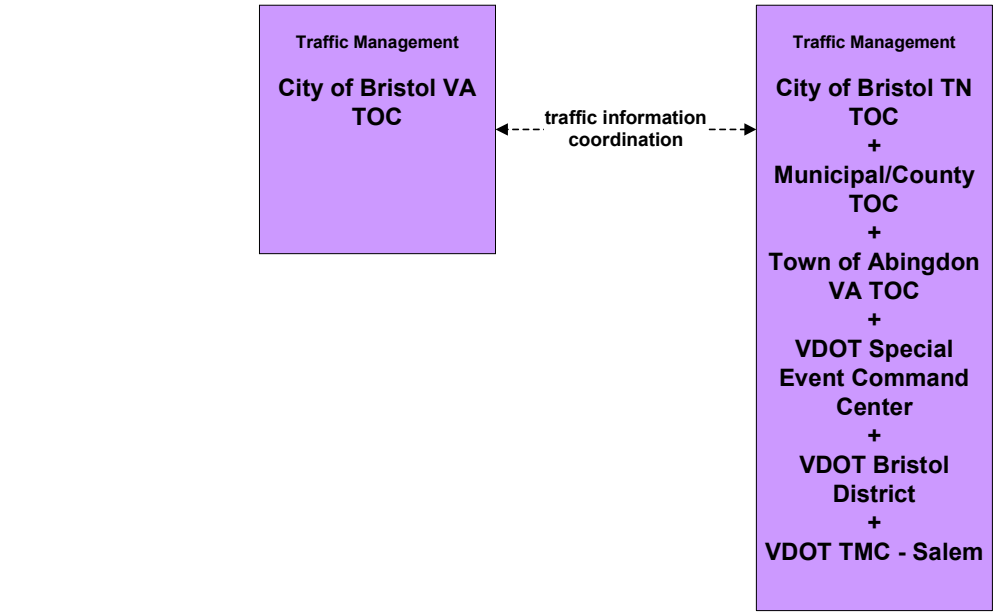
ATMS06 – Traffic Information Dissemination
City of Bristol VA

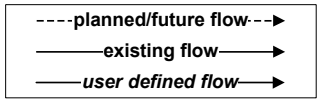


ATMS07 – Regional Traffic Management
City of Bristol TN

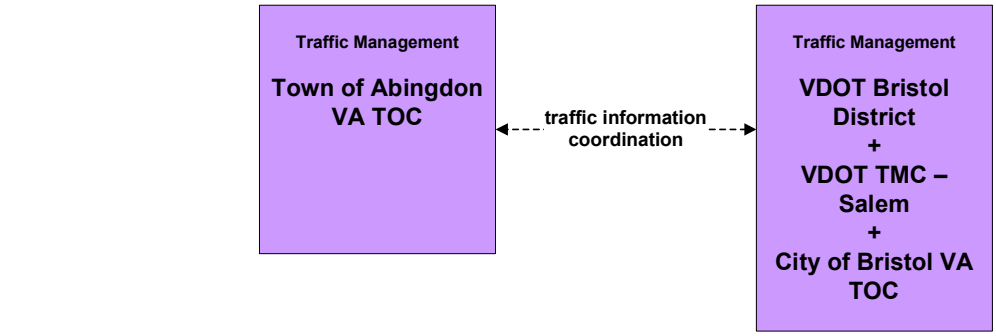


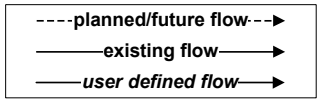
ATMS07 – Regional Traffic Management
City of Bristol VA



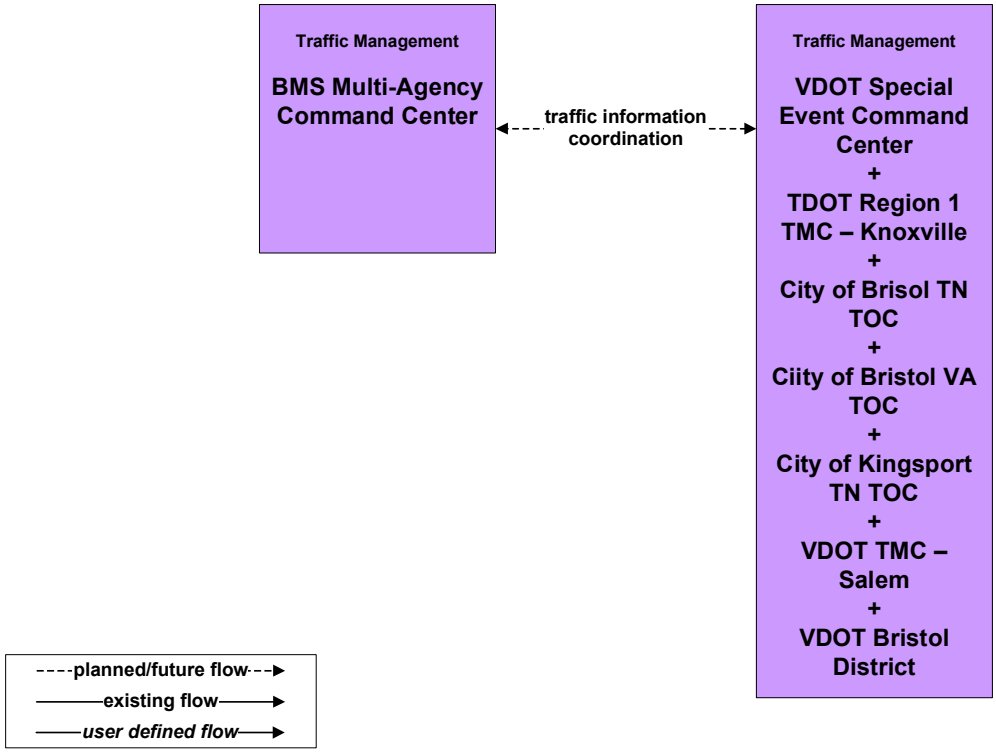


ATMS07 – Regional Traffic Management
Town of Abingdon VA

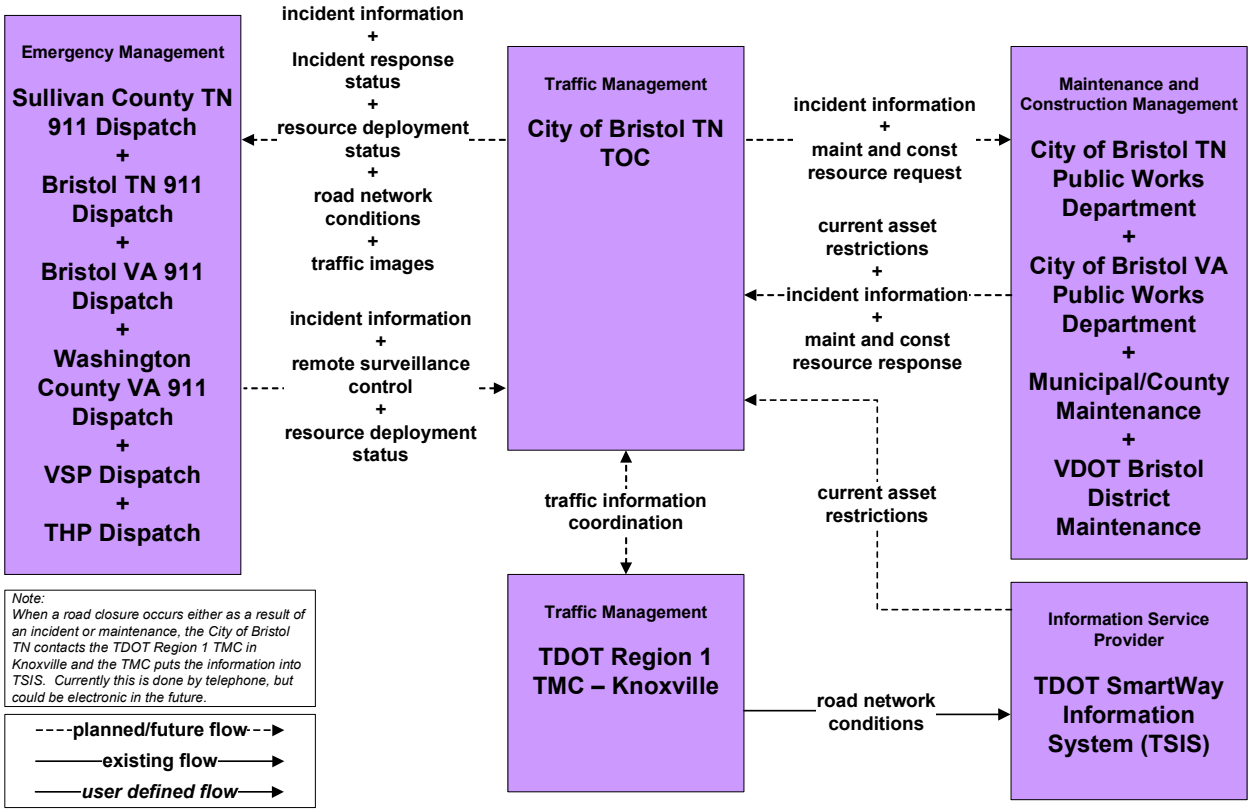




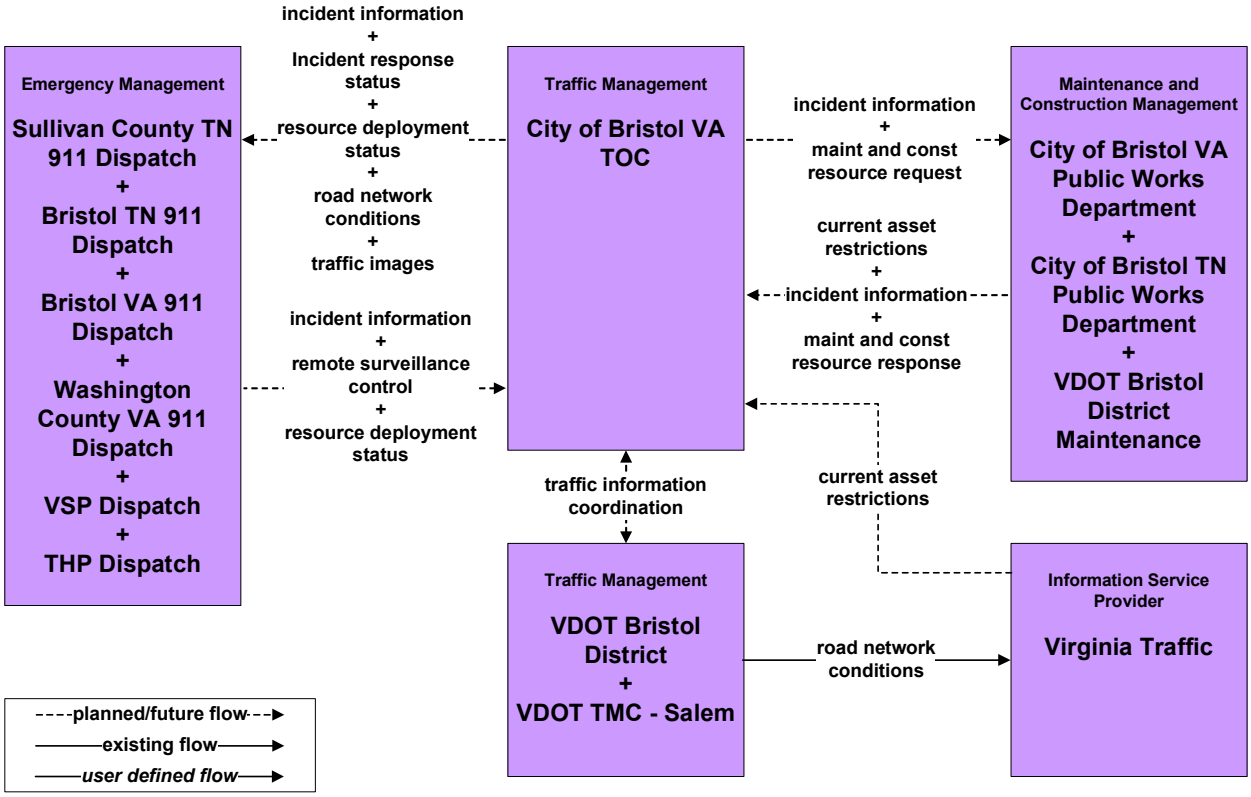
ATMS07 – Regional Traffic Management
Bristol Motor Speedway Operations



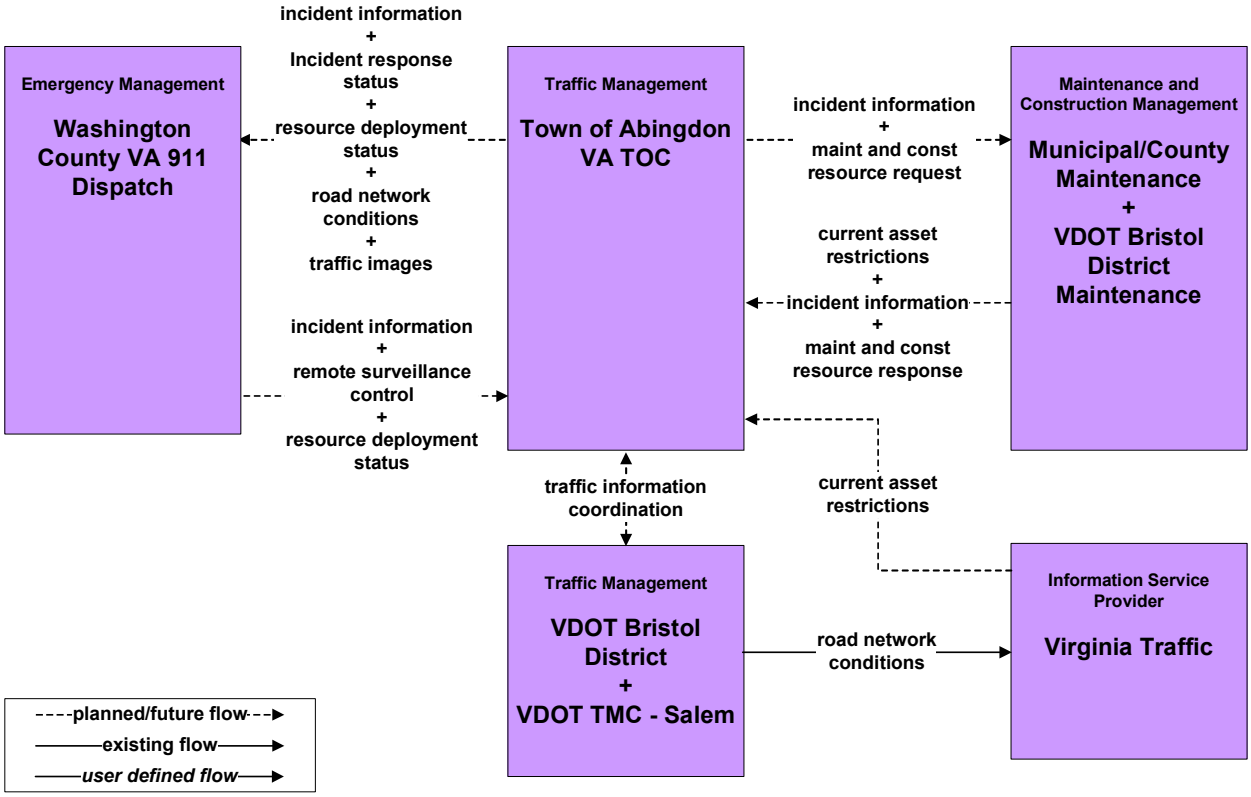
ATMS08 - Traffic Incident Management System
City of Bristol TN



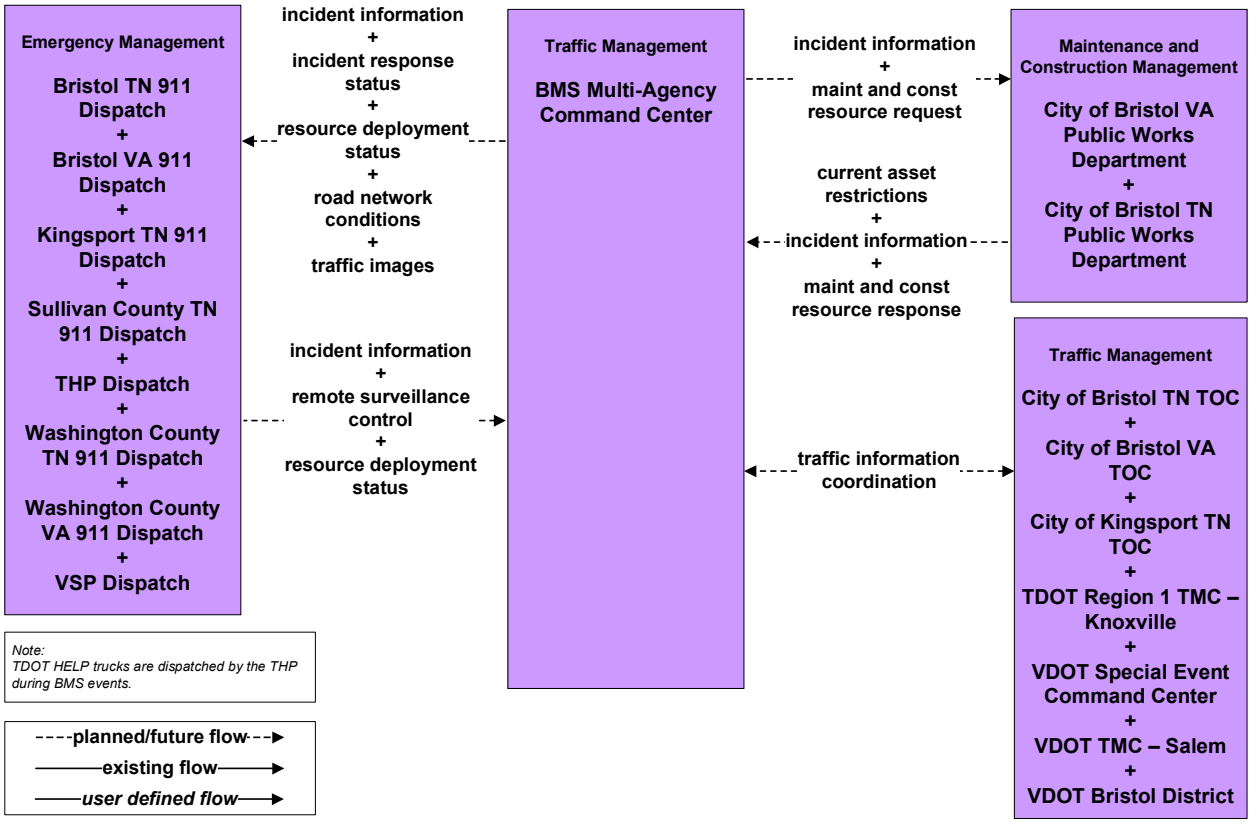
ATMS08 - Traffic Incident Management System
City of Bristol VA



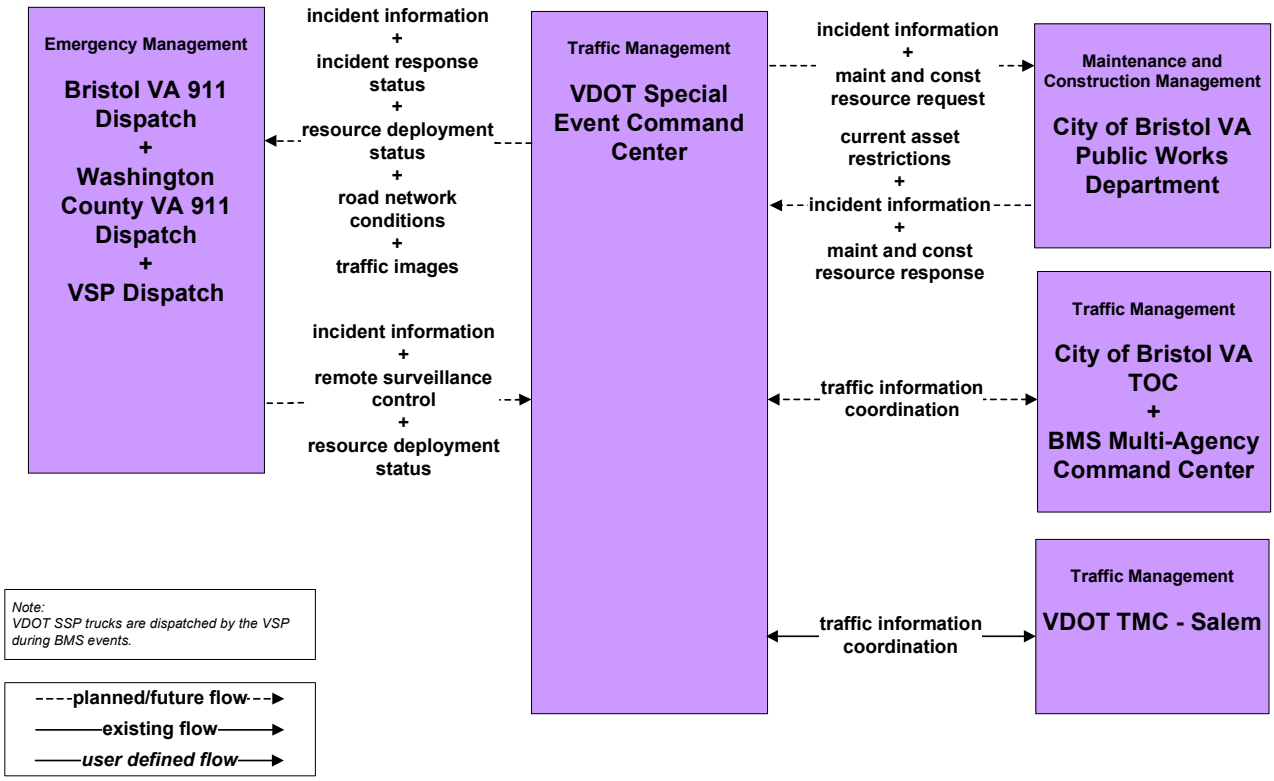
ATMS08 - Traffic Incident Management System
Town of Abingdon VA



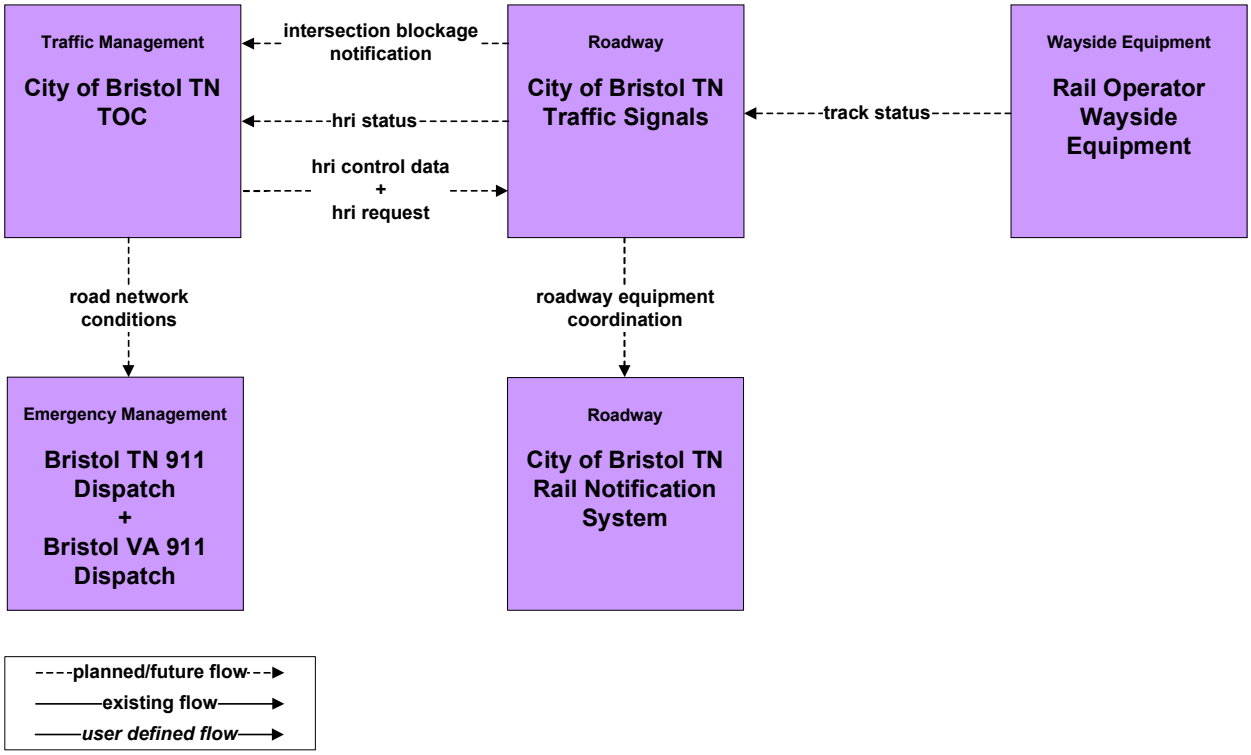
ATMS08 - Traffic Incident Management System
Bristol Motor Speedway Operations - Tennessee



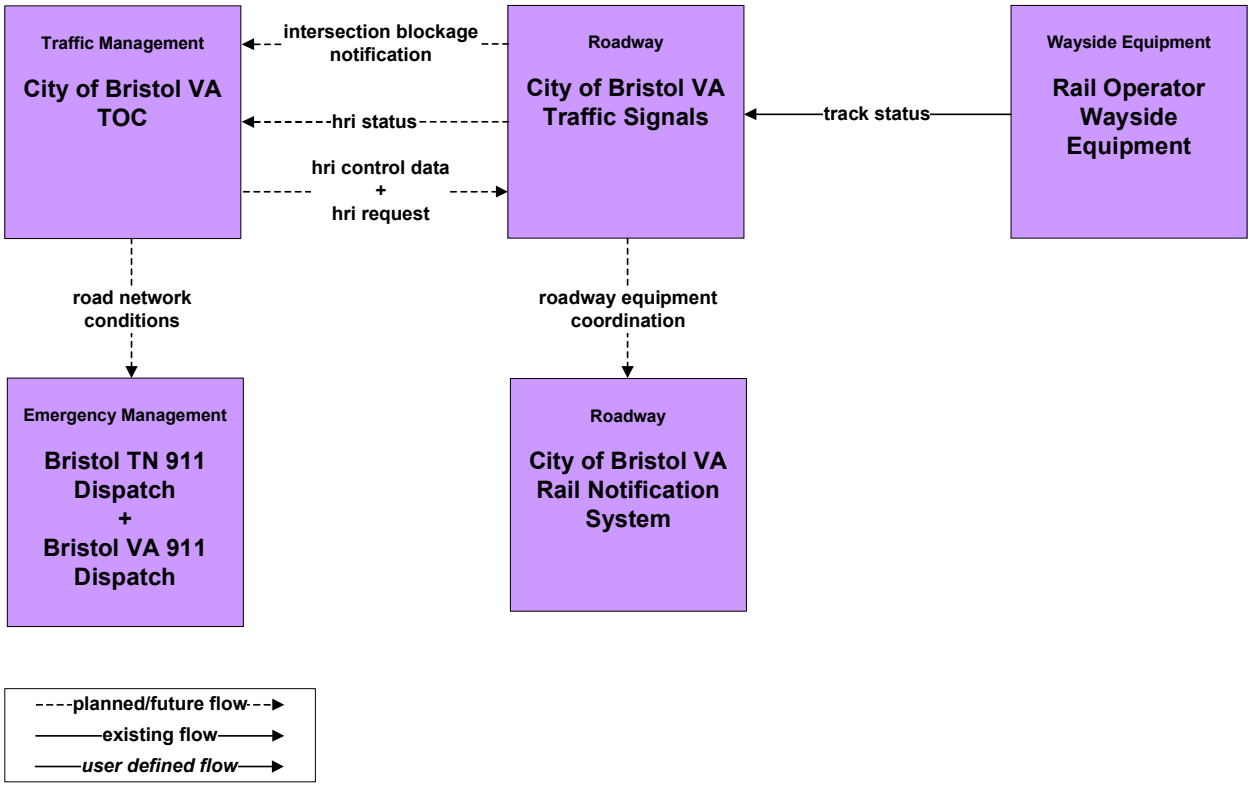
ATMS08 - Traffic Incident Management System
Bristol Motor Speedway Operations - Virginia



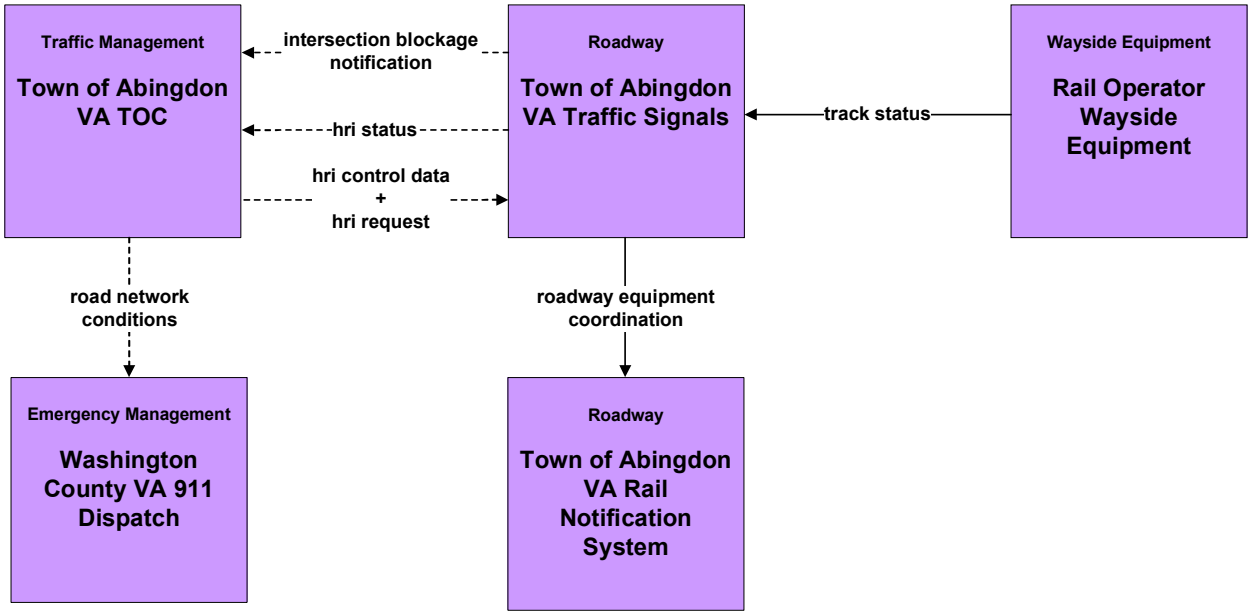
ATMS13 – Standard Railroad Grade Crossing
City of Bristol TN

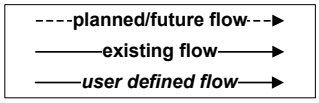


ATMS13 – Standard Railroad Grade Crossing
City of Bristol VA

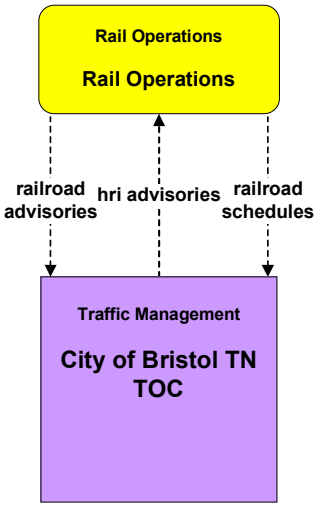


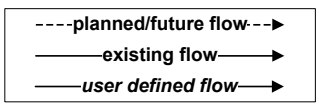
ATMS13 – Standard Railroad Grade Crossing
Town of Abingdon VA



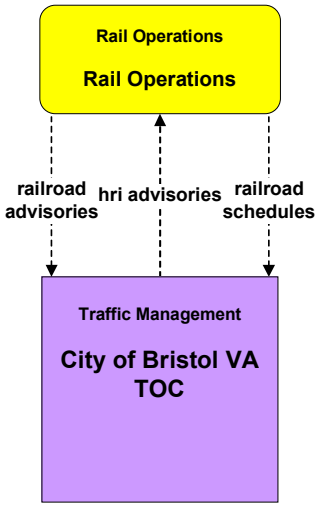


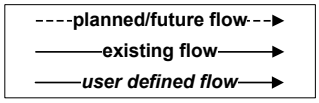
ATMS15 – Railroad Operations Coordination
City of Bristol TN



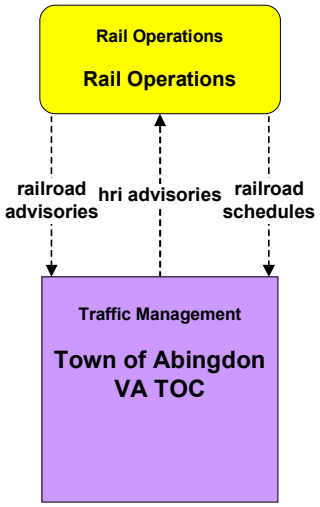


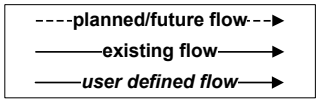
ATMS15 – Railroad Operations Coordination
City of Bristol VA



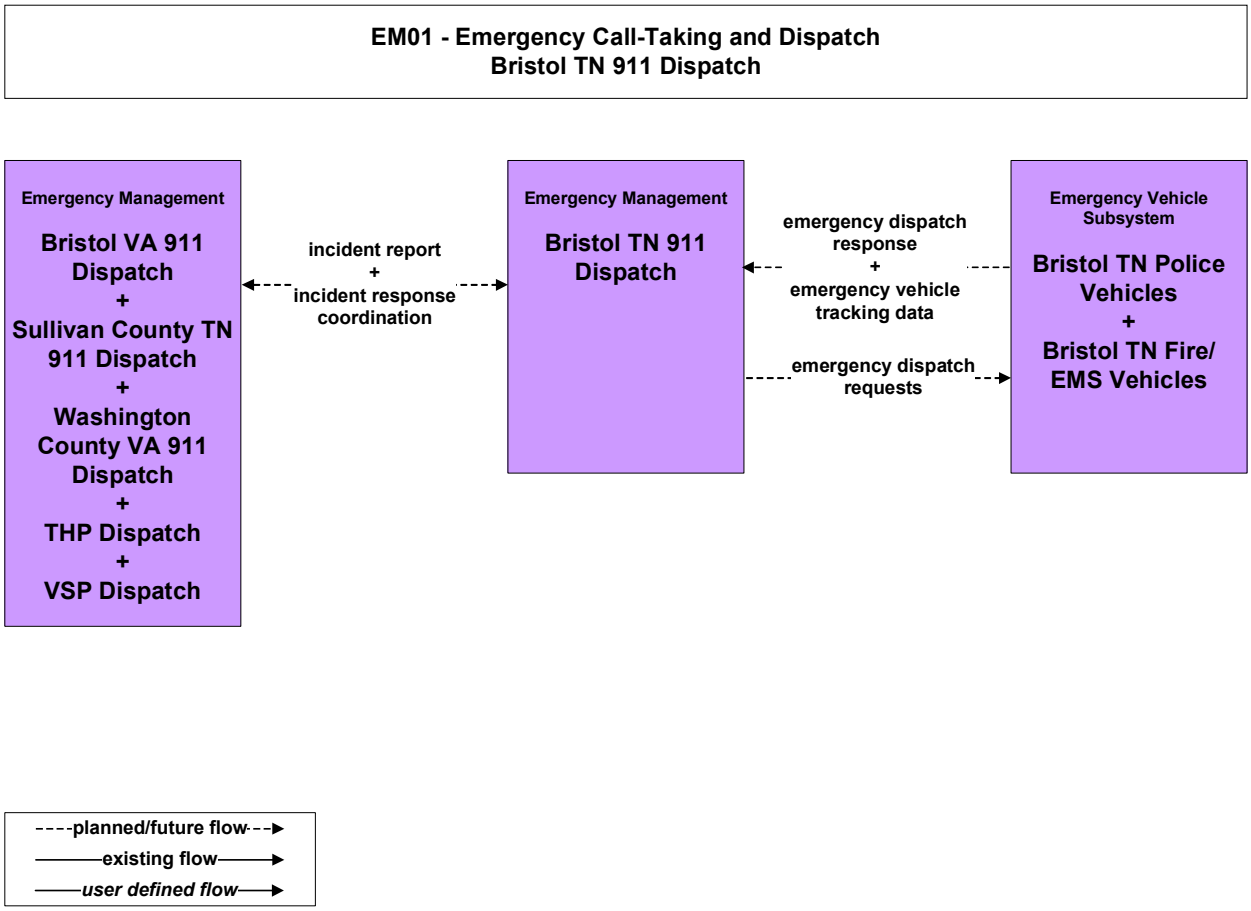


ATMS15 – Railroad Operations Coordination
Town of Abingdon VA

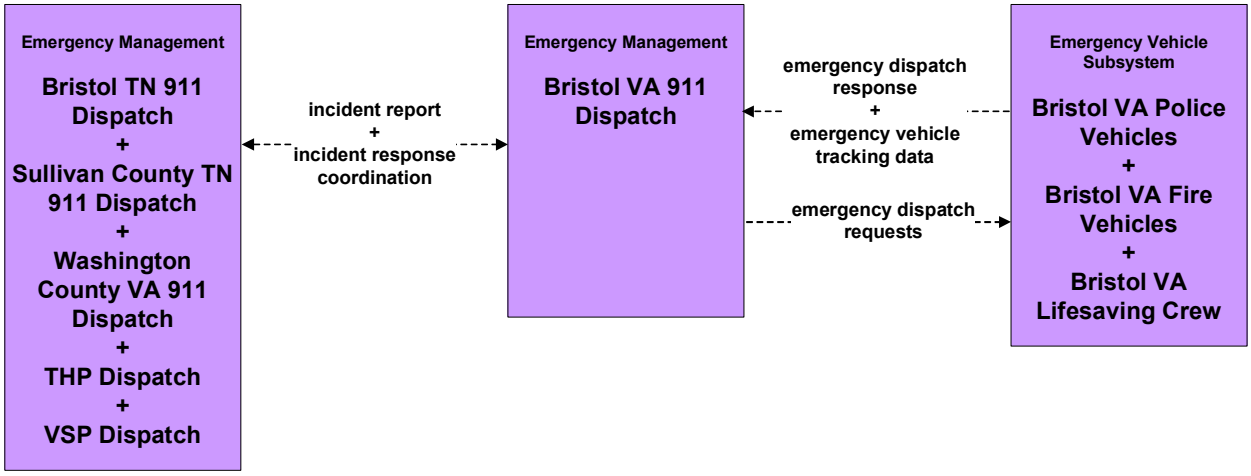


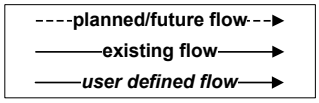


Emergency Management

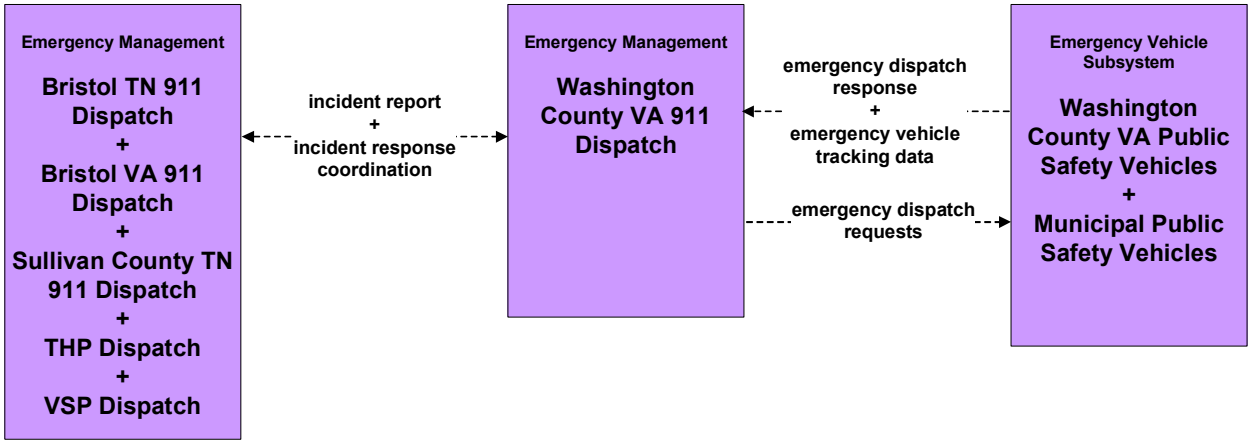


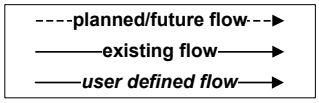
EM01 - Emergency Call-Taking and Dispatch
Bristol VA 911 Dispatch



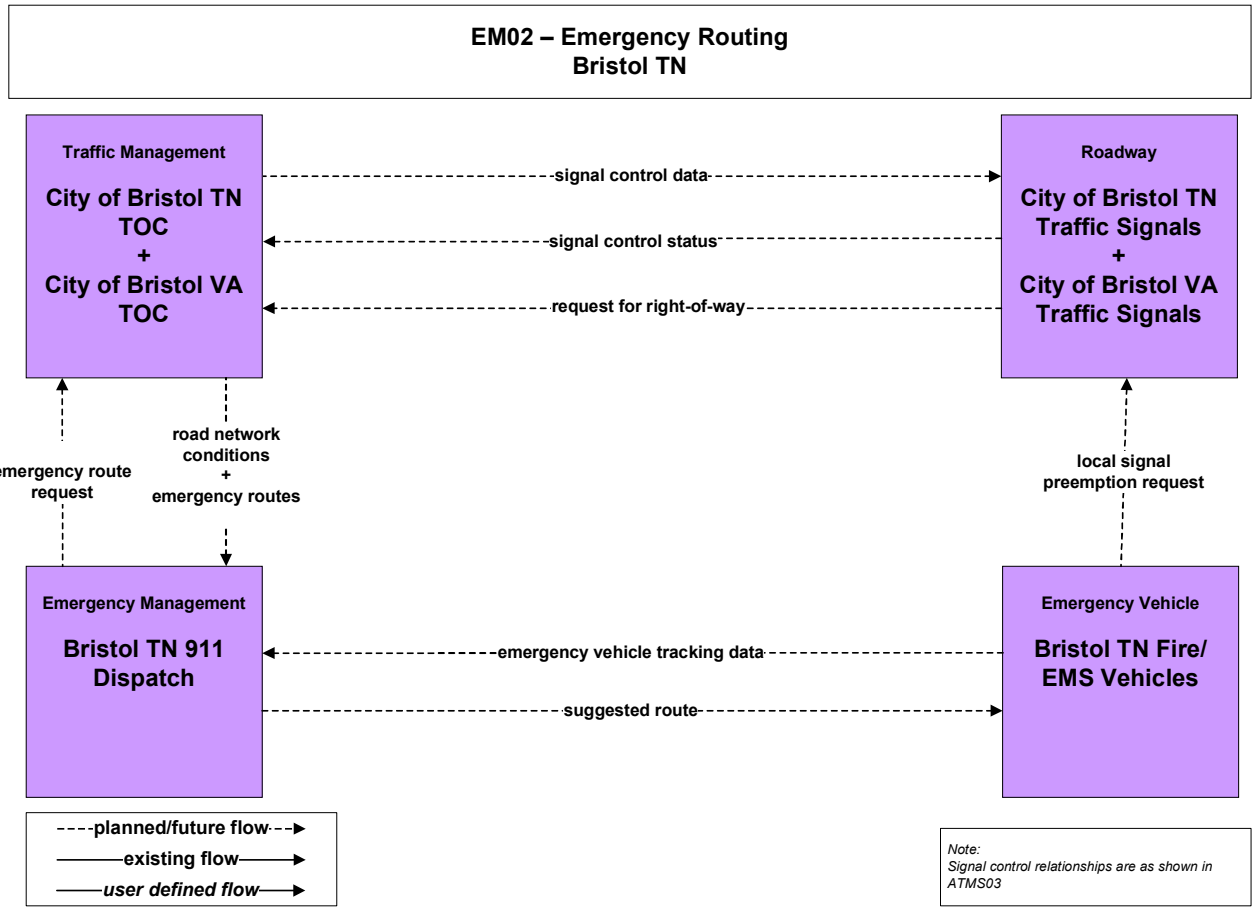


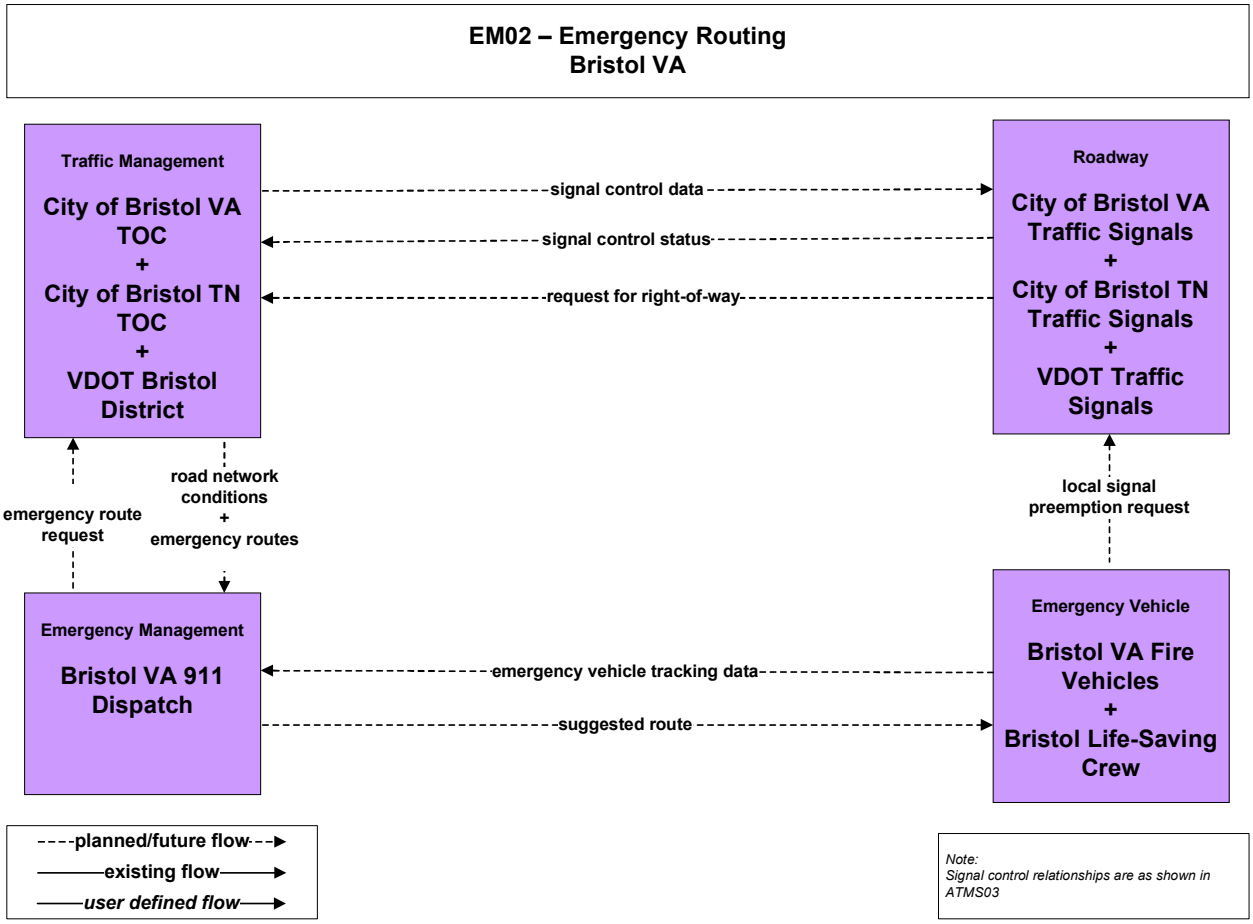
EM01 - Emergency Call-Taking and Dispatch
Washington County VA 911 Dispatch



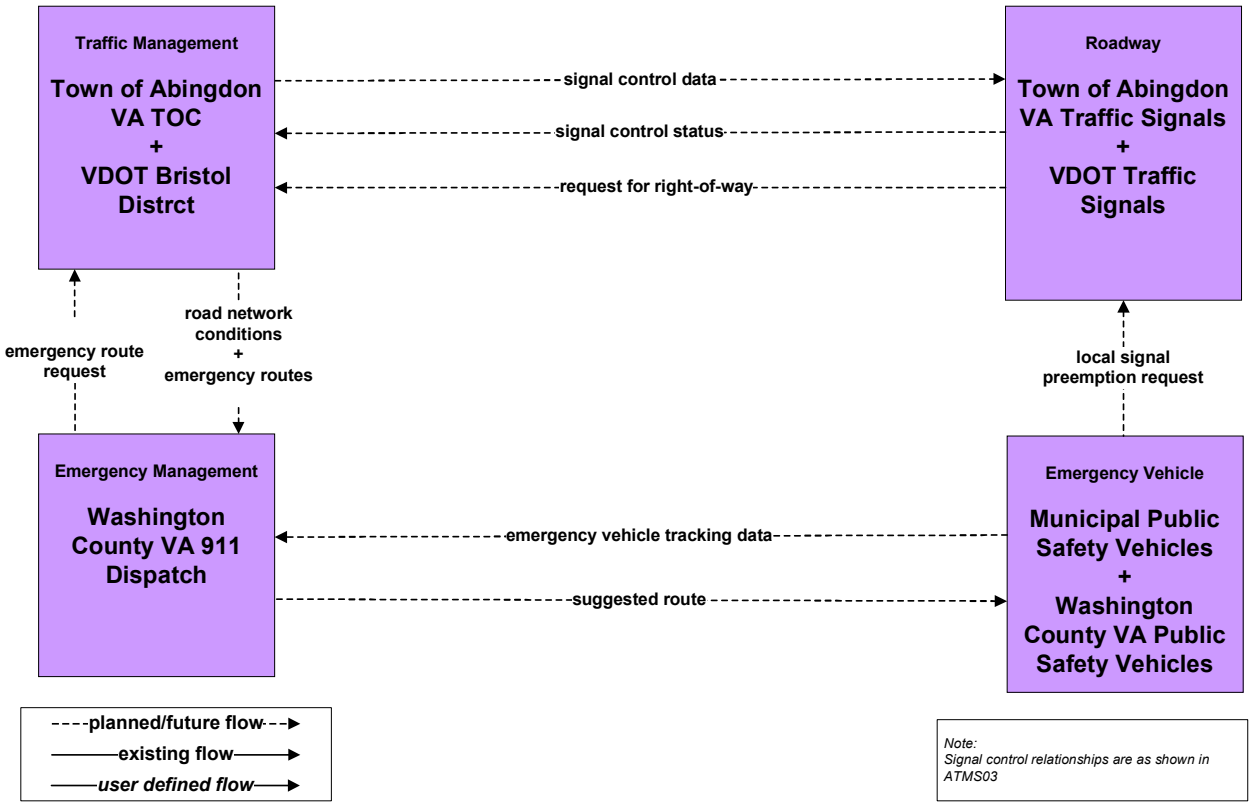


Note:
Washington County Public Safety Vehicles include Washington County Sheriff and EMS vehicles. Municipal Public Safety Vehicles include police, fire and and/or EMS for municipalities within Washington County including Abingdon.

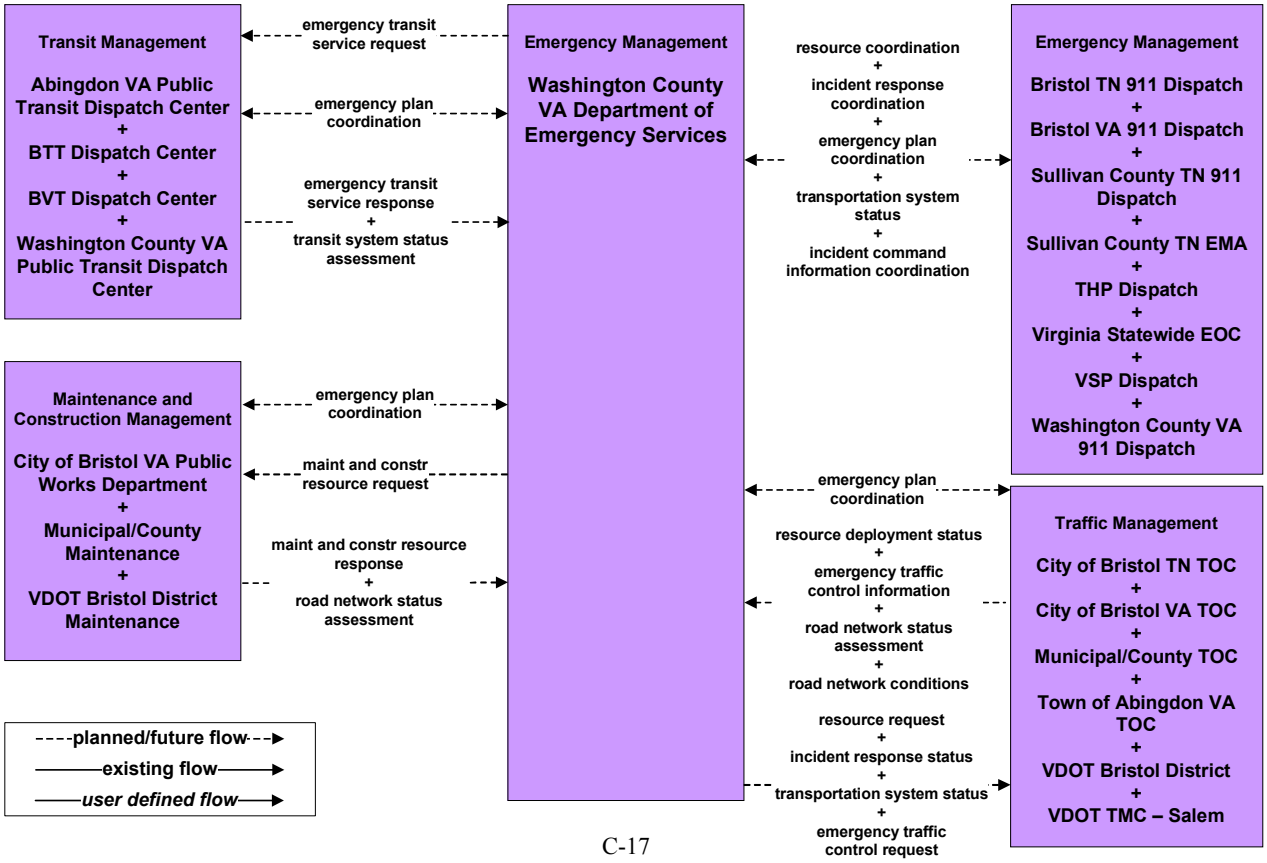

EM02 – Emergency Routing
Bristol TN
Traffic Management
City of Bristol TN TOC
+
City of Bristol VA TOC
Roadway
City of Bristol TN Traffic Signals
+
City of Bristol VA Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
road network conditions
+
emergency routes
local signal preemption request
Emergency Management
Bristol TN 911 Dispatch
Emergency Vehicle
Bristol TN Fire/ EMS Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow
Note:
Signal control relationships are as shown in ATMS03


EM02 – Emergency Routing
Bristol VA
Traffic Management
City of Bristol VA TOC
+
City of Bristol TN TOC
+
VDOT Bristol District
Roadway
City of Bristol VA Traffic Signals
+
City of Bristol TN Traffic Signals
+
VDOT Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
road network conditions
+
emergency routes
local signal preemption request
Emergency Management
Bristol VA 911 Dispatch
Emergency Vehicle
Bristol VA Fire Vehicles
+
Bristol Life-Saving Crew
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow
Note:
Signal control relationships are as shown in ATMS03

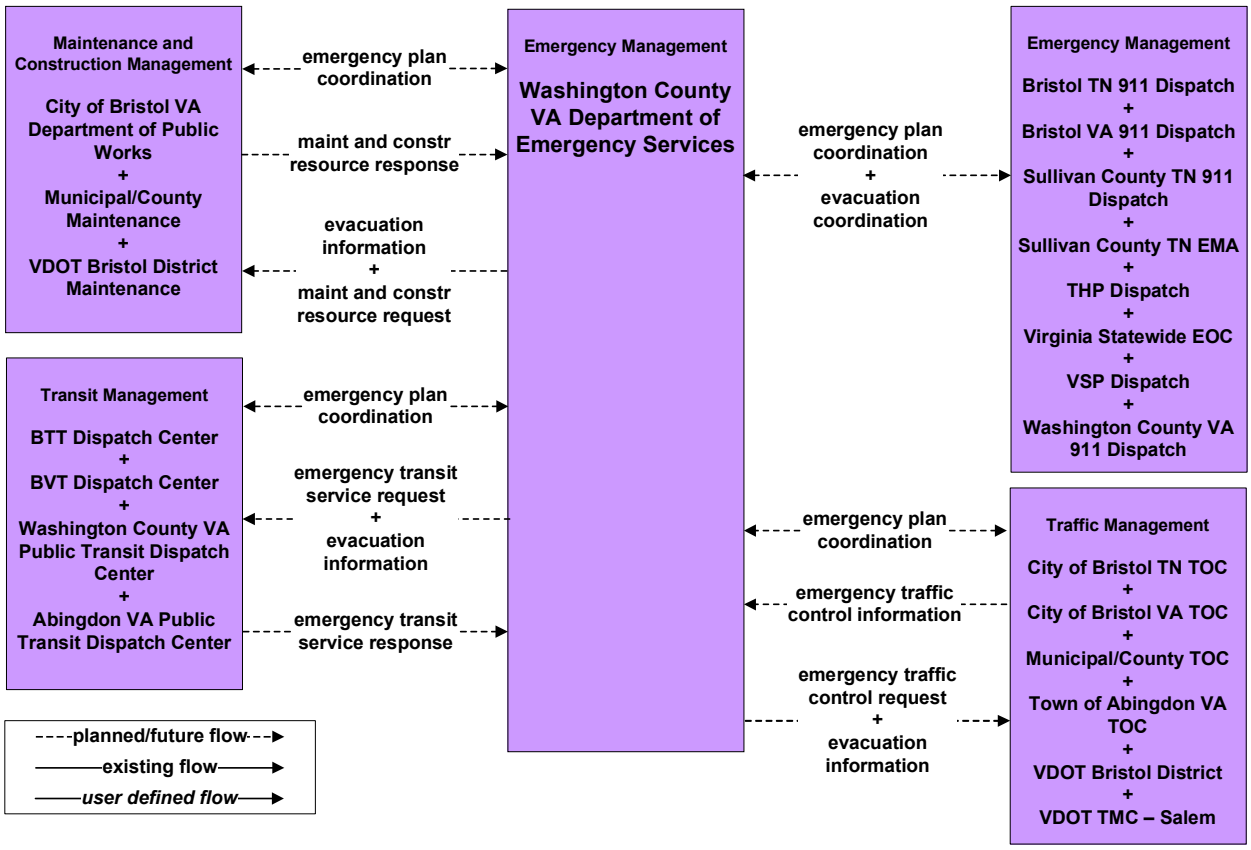
EM02 – Emergency Routing
Abingdon VA



EM08 - Disaster Response and Recovery
Washington County VA Department of Emergency Services

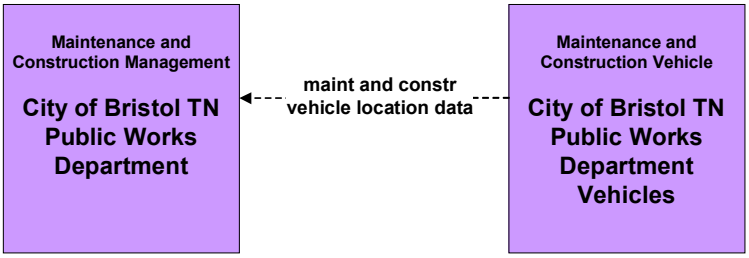


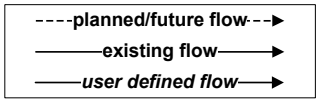
EM09 - Evacuation and Reentry Management
Washington County VA Department of Emergency Services



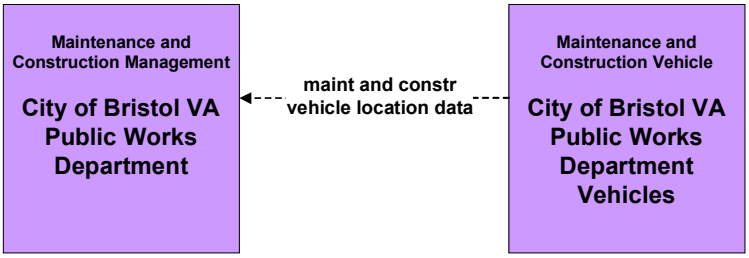
Maintenance and Construction Management

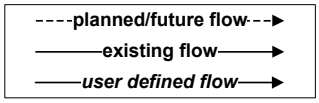
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
City of Bristol TN



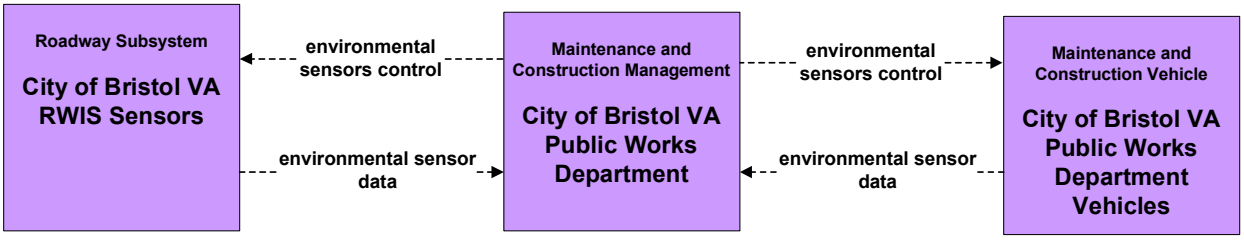


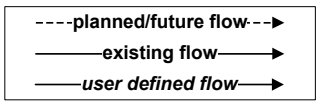
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
City of Bristol VA





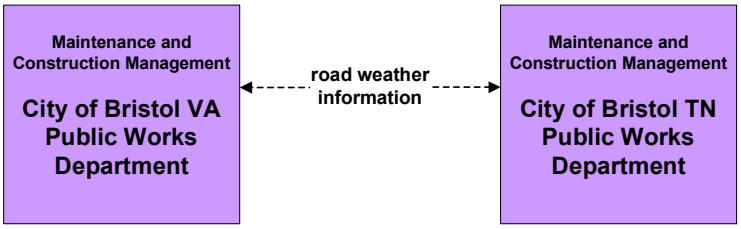
MC03 – Road Weather Data Collection
City of Bristol TN and City of Bristol VA

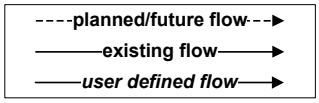




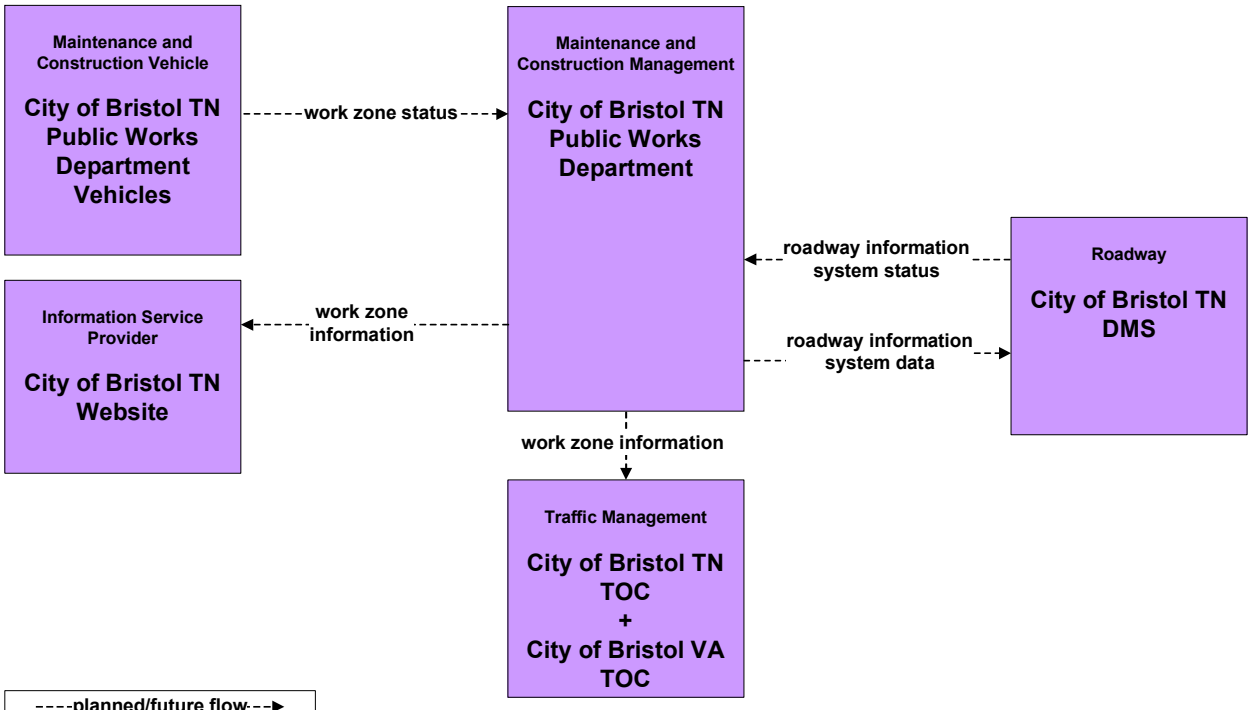
Note:
Temperature sensors are existing on City of Bristol TN maintenance vehicles but the information is currently used for driver decision making and not brought back to dispatch.

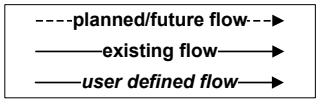
MC04 – Weather Information Processing and Distribution
City of Bristol TN and City of Bristol VA



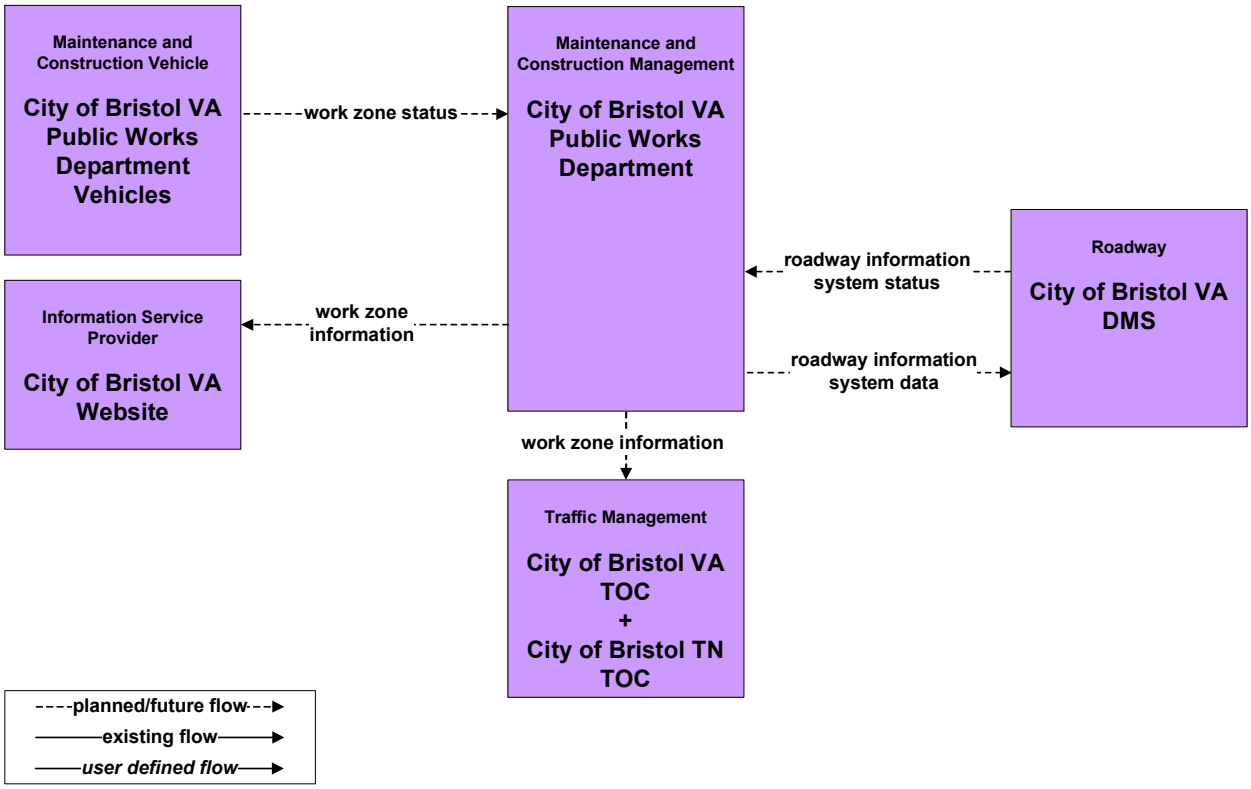


MC08 – Work Zone Management
City of Bristol TN

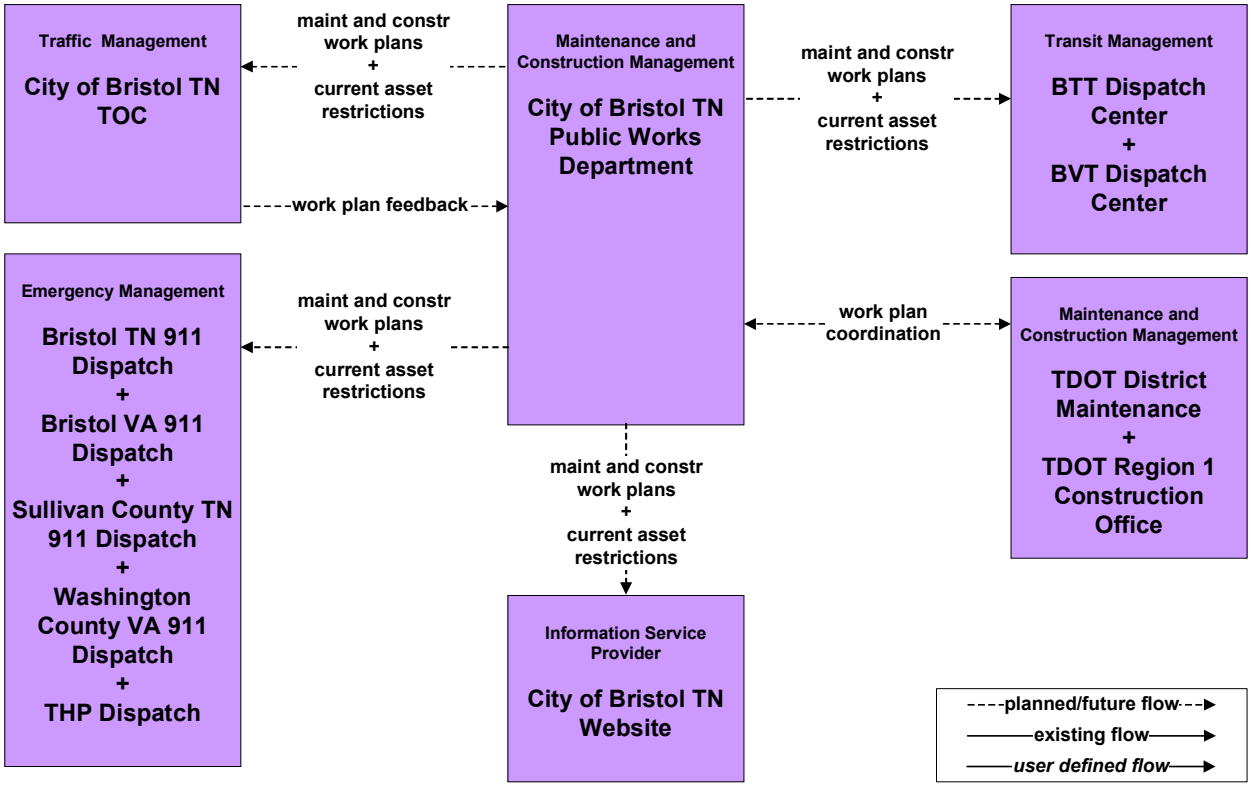




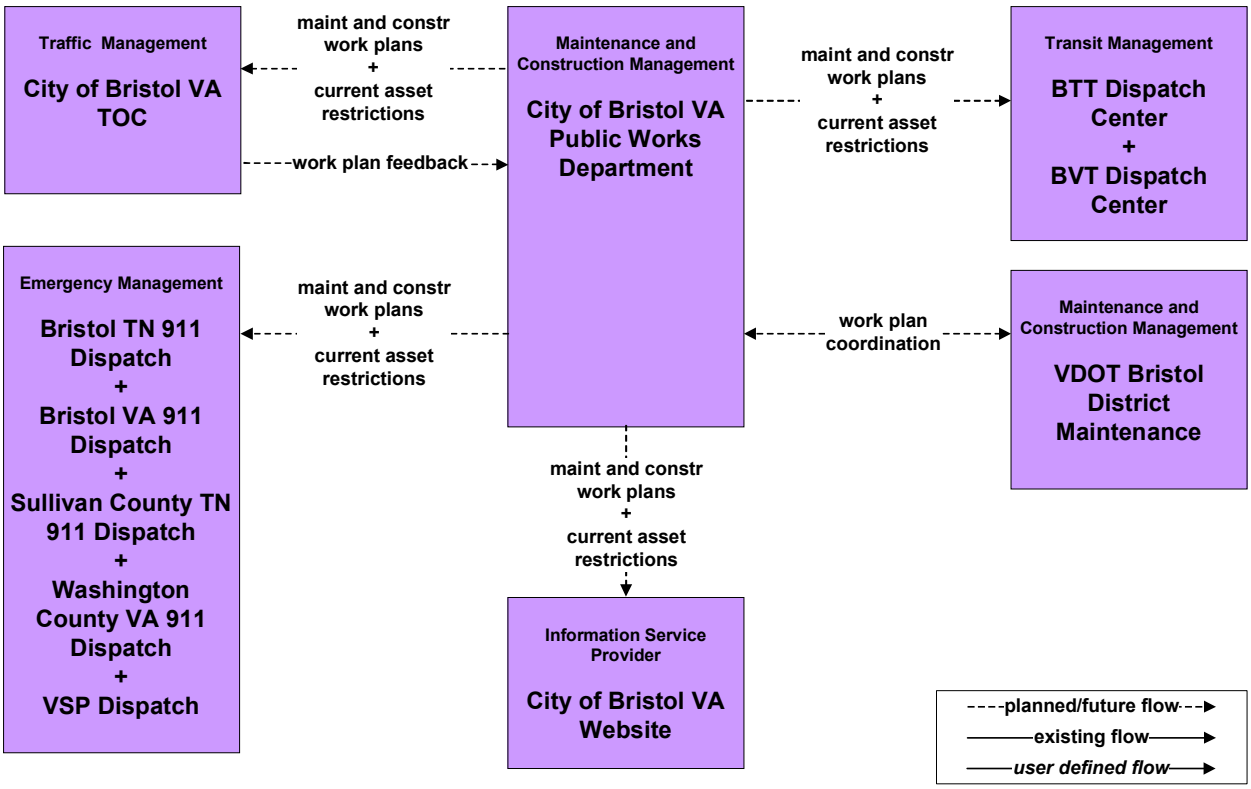
MC08 – Work Zone Management
City of Bristol VA



MC10 – Maintenance and Construction Activity Coordination
City of Bristol TN

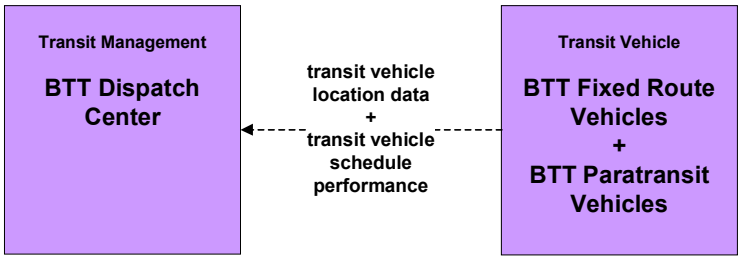


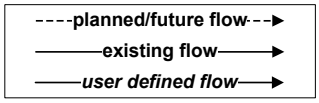
MC10 – Maintenance and Construction Activity Coordination
City of Bristol VA



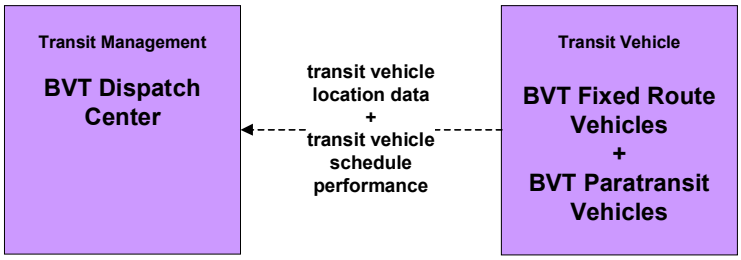
Advanced Public Transportation Systems

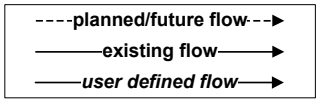
APTS01 – Transit Vehicle Tracking
Bristol TN Transit



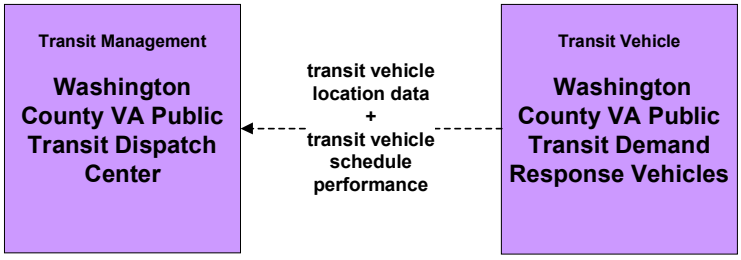


APTS01 – Transit Vehicle Tracking
Bristol VA Transit

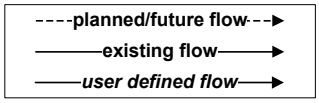




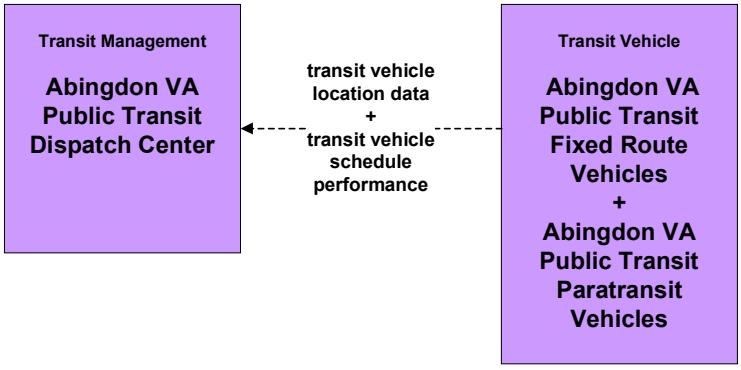
APTS01 – Transit Vehicle Tracking
Washington County VA Public Transit



Note:
The District Three Governmental Cooperative operates Washington County VA Public Transit.



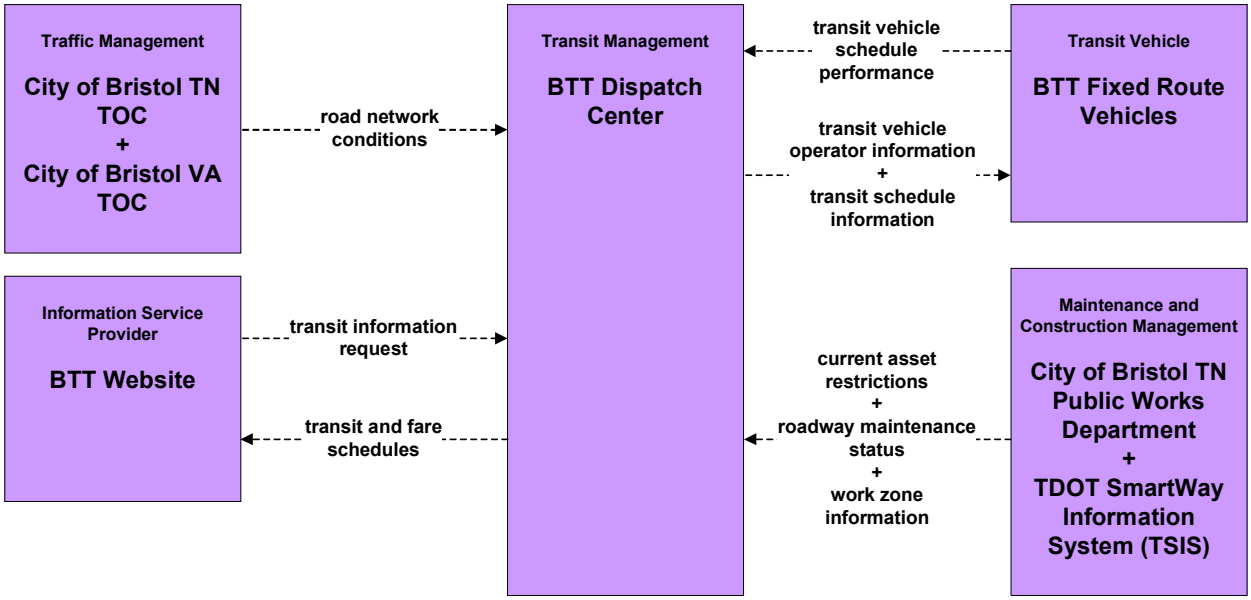
APTS01 – Transit Vehicle Tracking
Abingdon VA Public Transit



Note:
The District Three Governmental Cooperative operates Abingdon VA Public Transit.

----planned/future flow--->
————existing flow————>
——*user defined flow*——>

APTS02 – Transit Fixed-Route Operations
Bristol TN Transit



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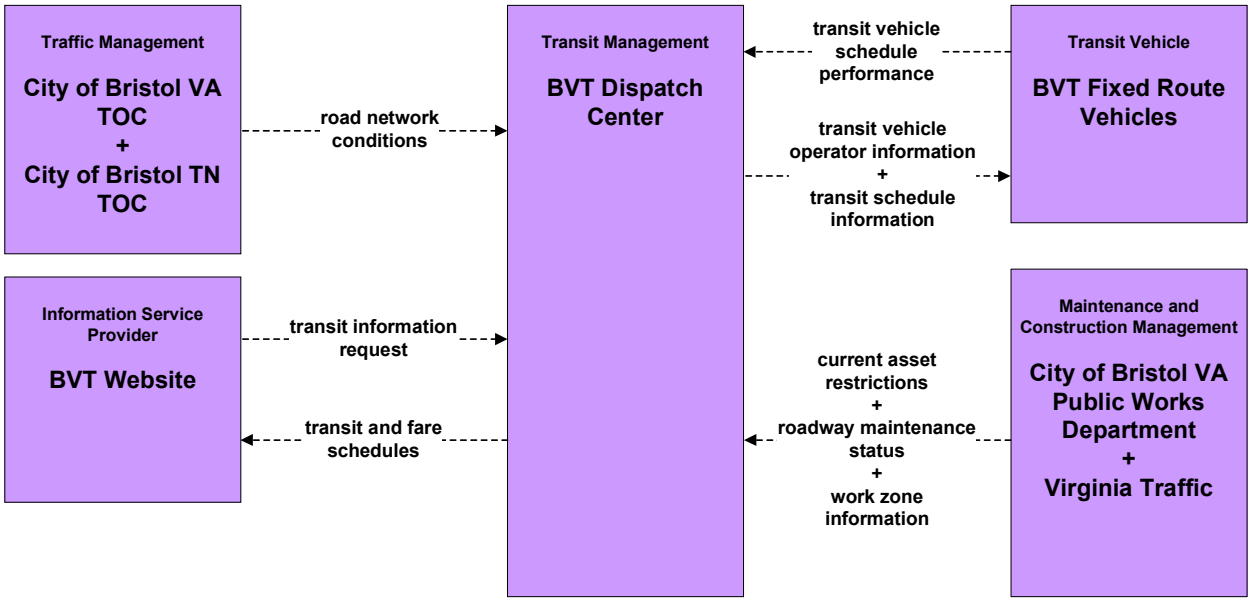
————existing flow————>
——*user defined flow*——>

APTS02 – Transit Fixed-Route Operations
Bristol VA Transit



----planned/future flow-->
————existing flow————>
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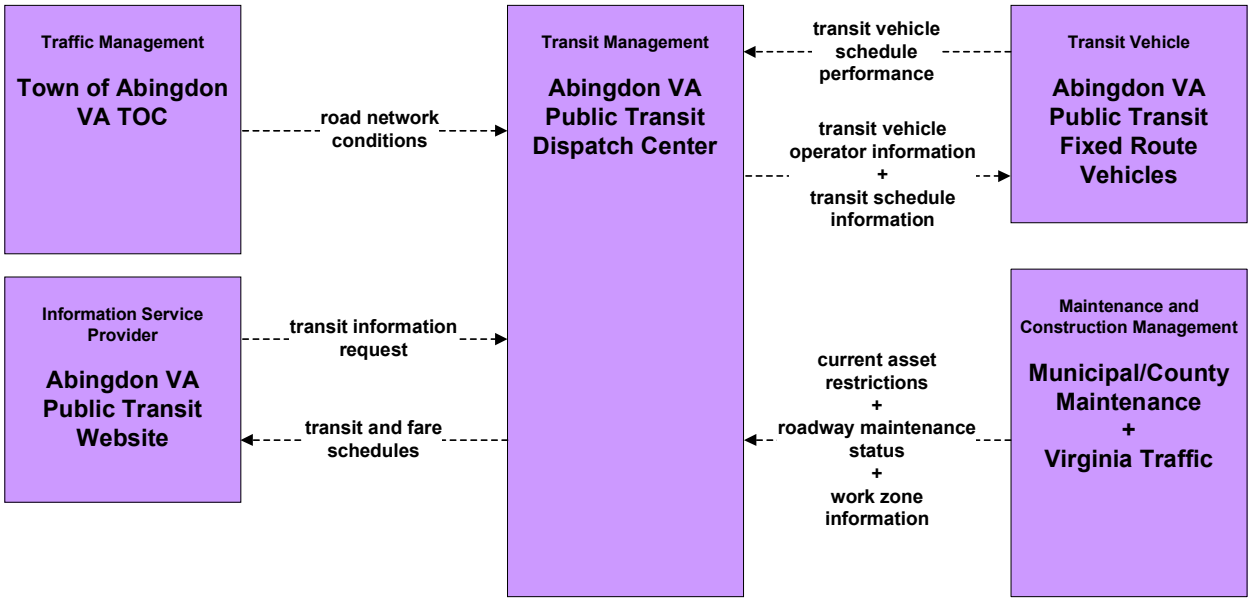
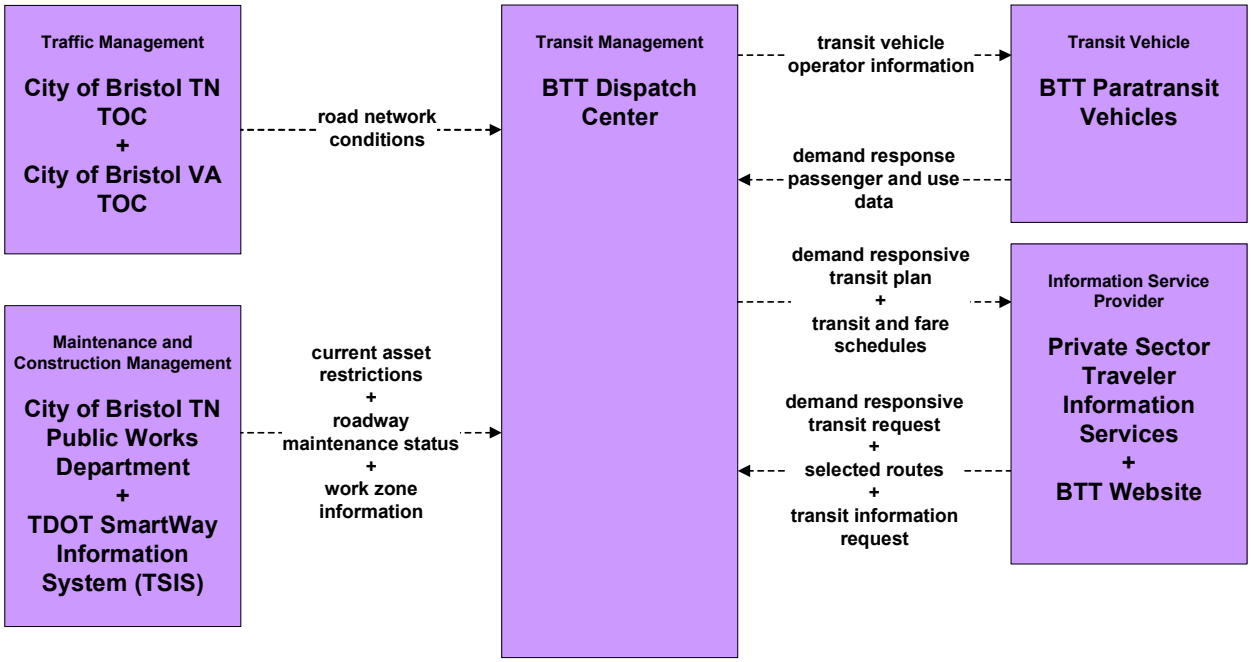
APTS02 – Transit Fixed-Route Operations
Abingdon VA Public Transit



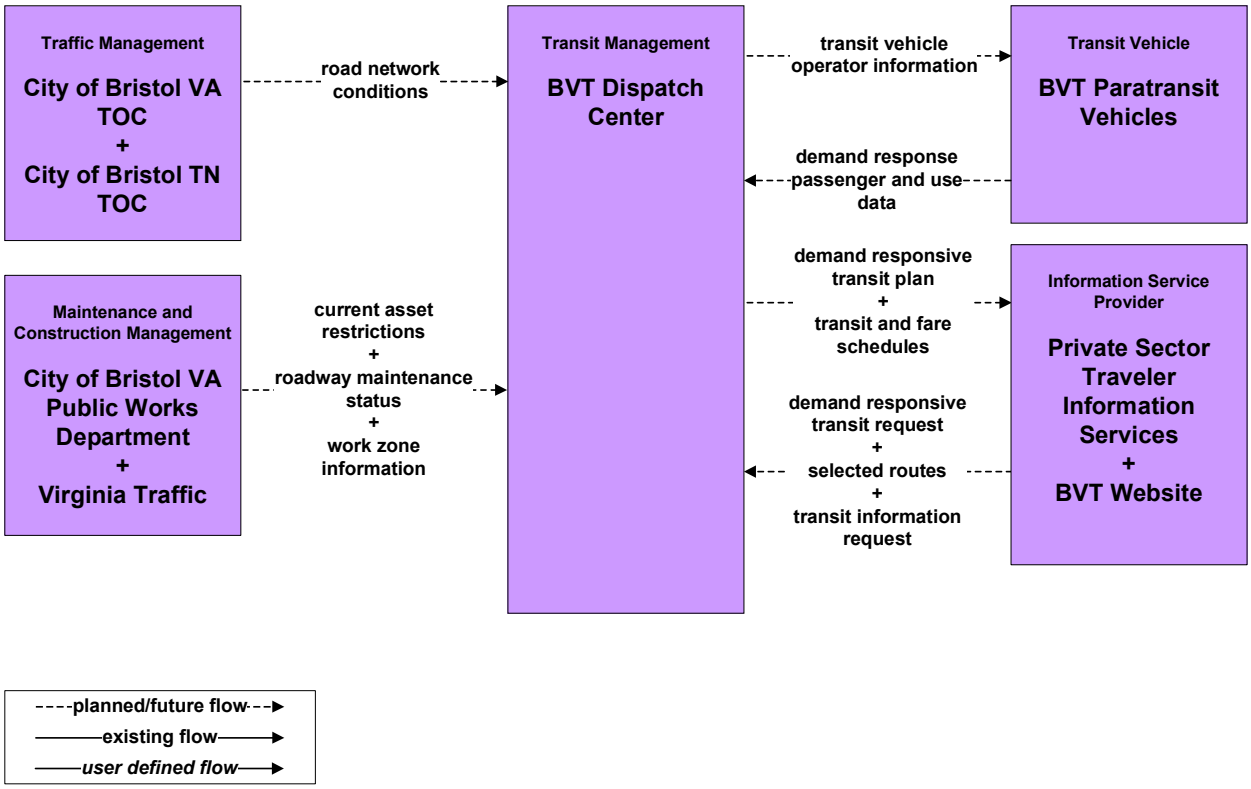
----planned/future flow-->
————existing flow————>
——*user defined flow*——>

Note:
The District Three Governmental Cooperative operates Abingdon VA Public Transit.

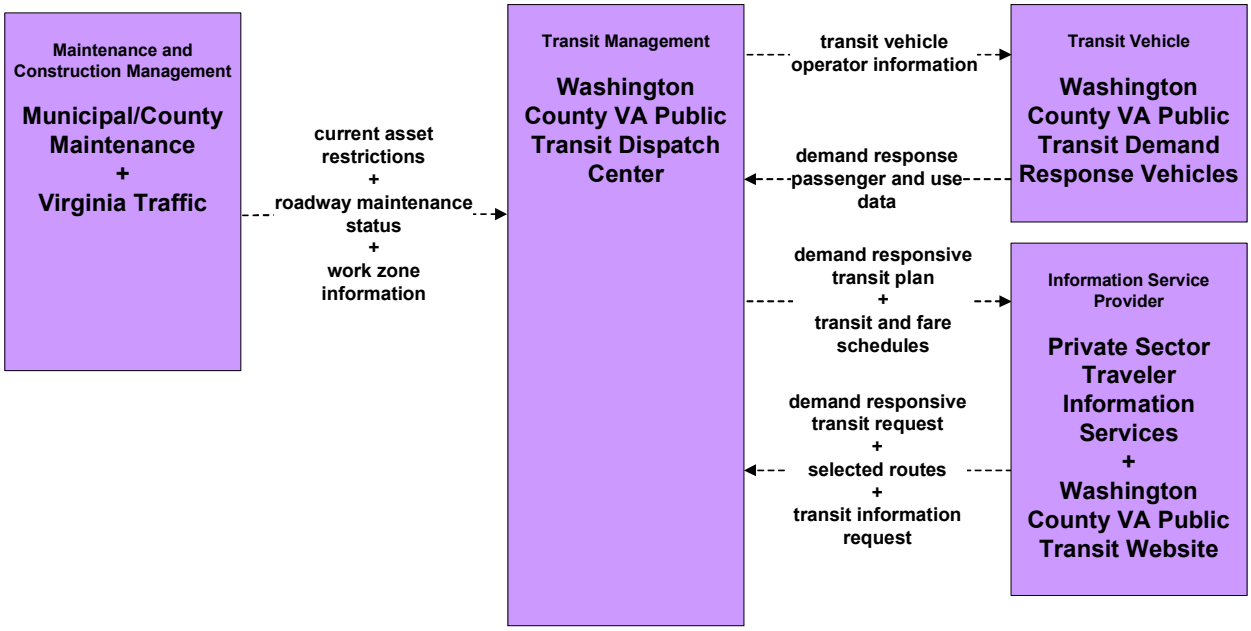
APTS03 – Demand Response Transit Operations
Bristol TN Transit



APTS03 – Demand Response Transit Operations
Bristol VA Transit



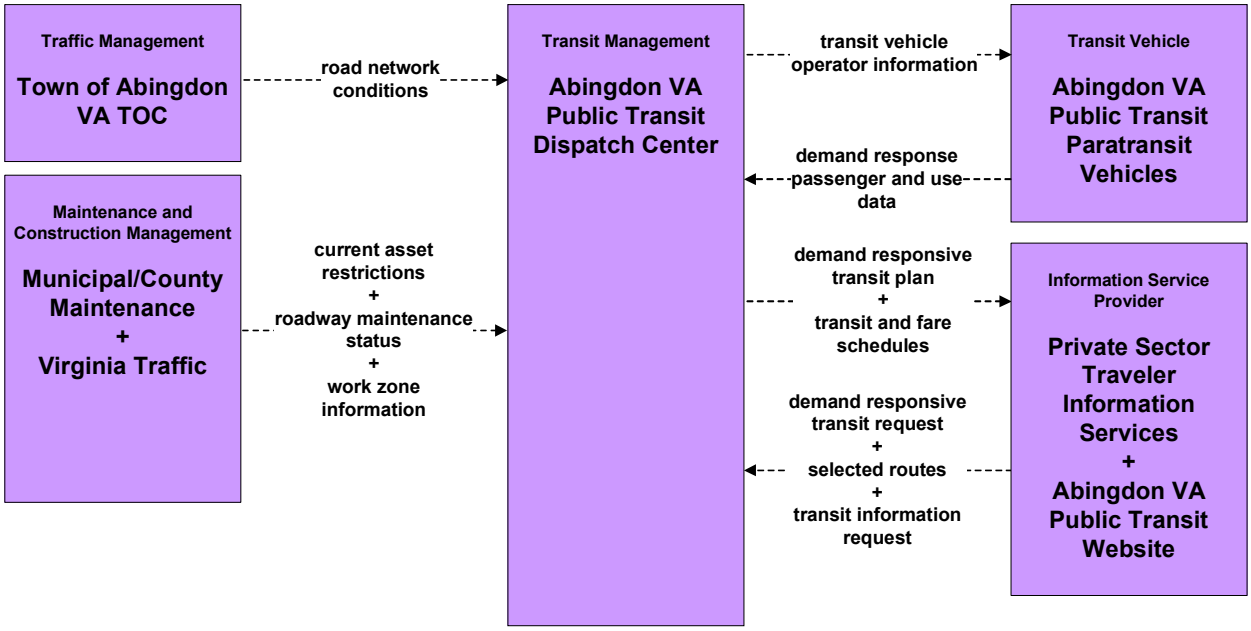
APTS03 – Demand Response Transit Operations
Washington County VA Public Transit



planned/future flow
existing flow
user defined flow

Note:
The District Three Governmental Cooperative operates Washington County VA Public Transit.

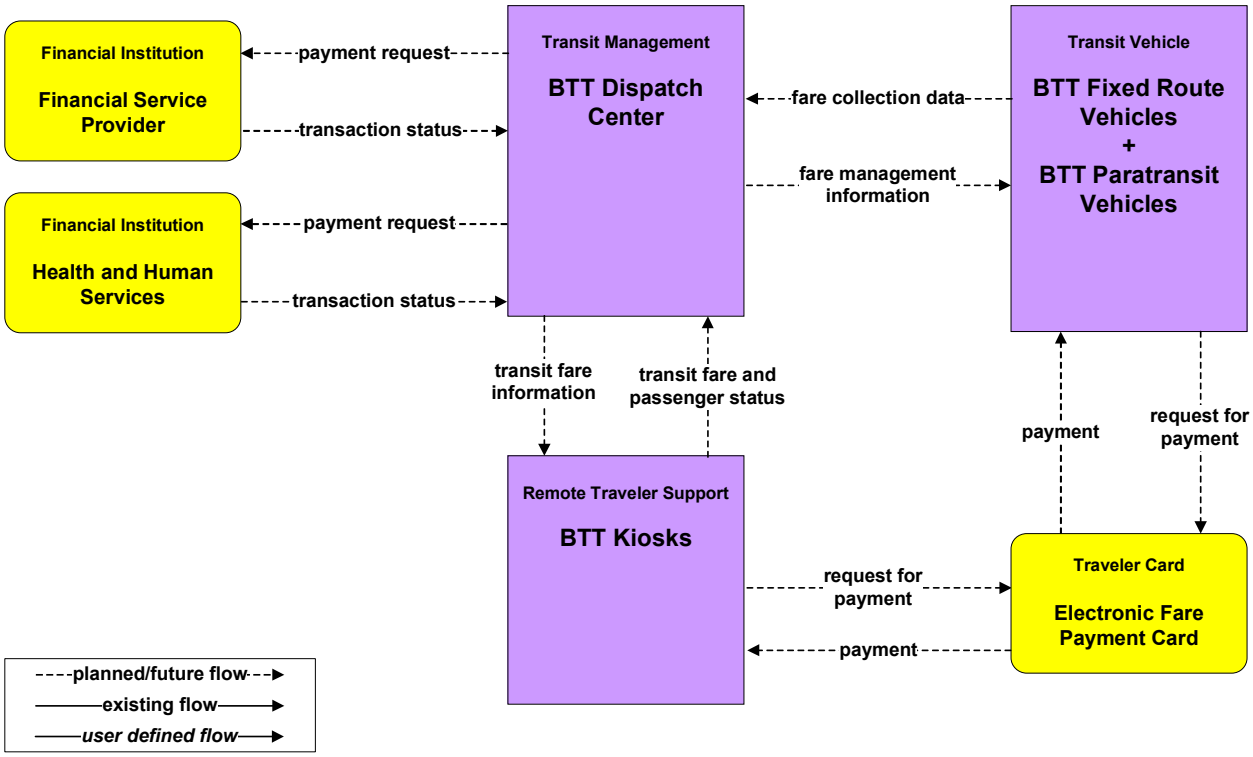
APTS03 – Demand Response Transit Operations
Abingdon VA Public Transit



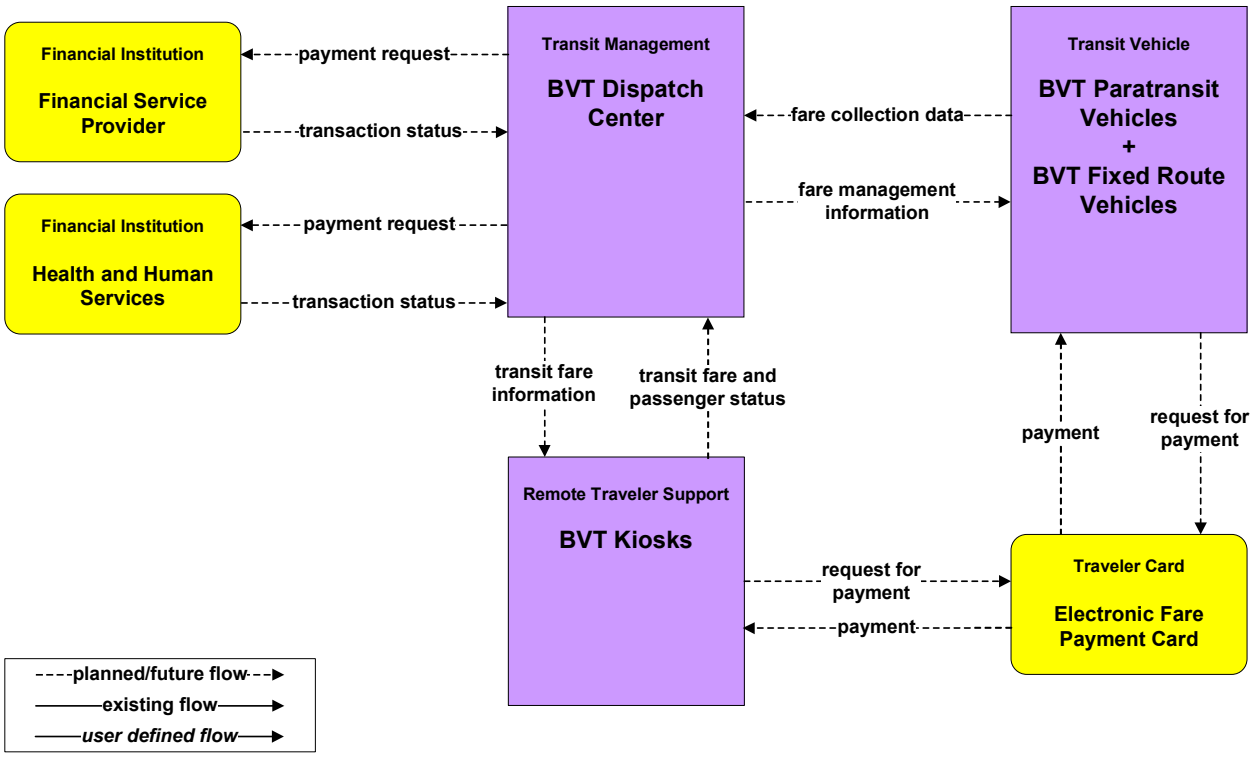
planned/future flow
existing flow
user defined flow

Note:
The District Three Governmental Cooperative operates Abingdon VA Public Transit.

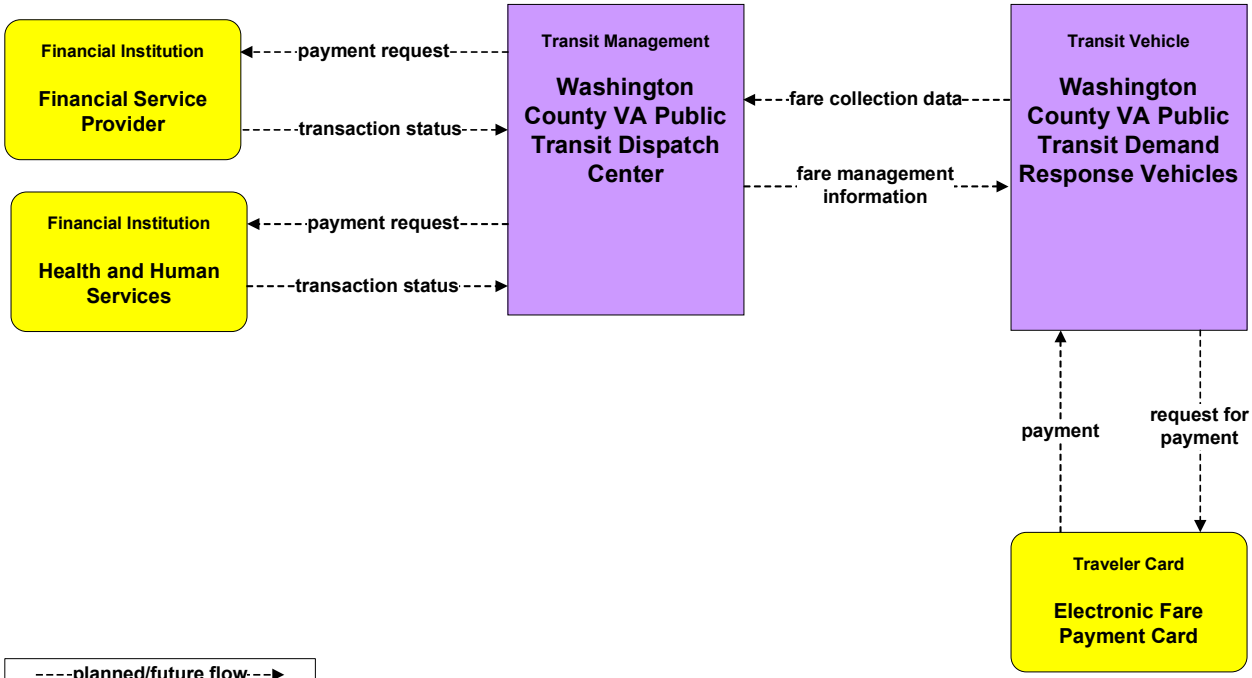
APTS04 – Transit Fare Collection Management
Bristol TN Transit



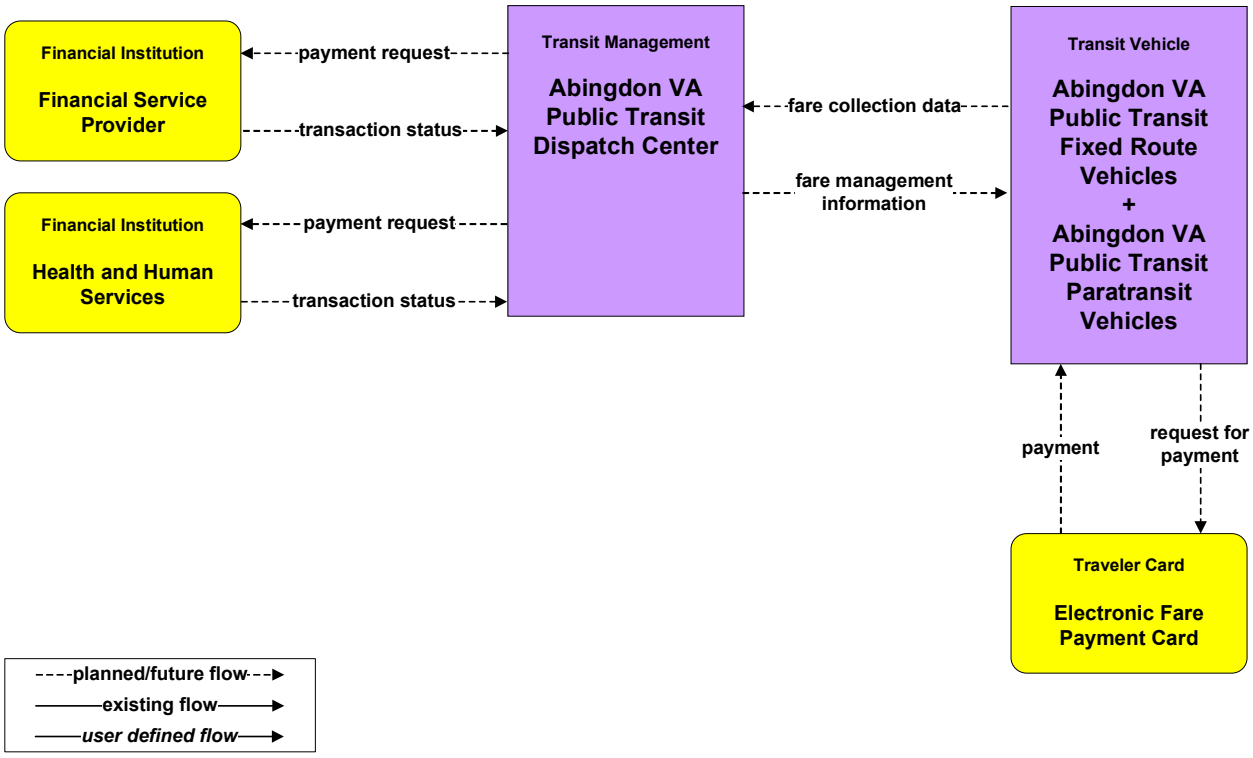
APTS04 – Transit Fare Collection Management
Bristol VA Transit



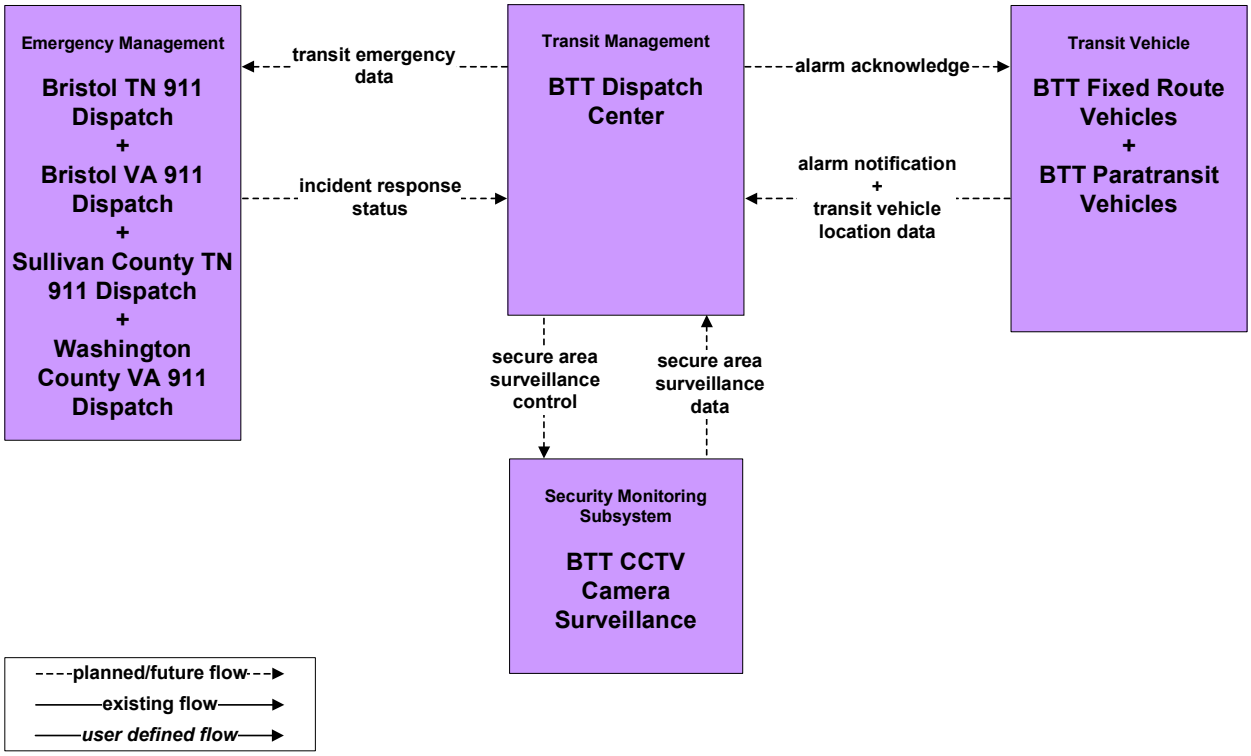
APTS04 – Transit Fare Collection Management
Washington County VA Public Transit



APTS04 – Transit Fare Collection Management
Abingdon VA Public Transit



APTS05 – Transit Security
Bristol TN Transit



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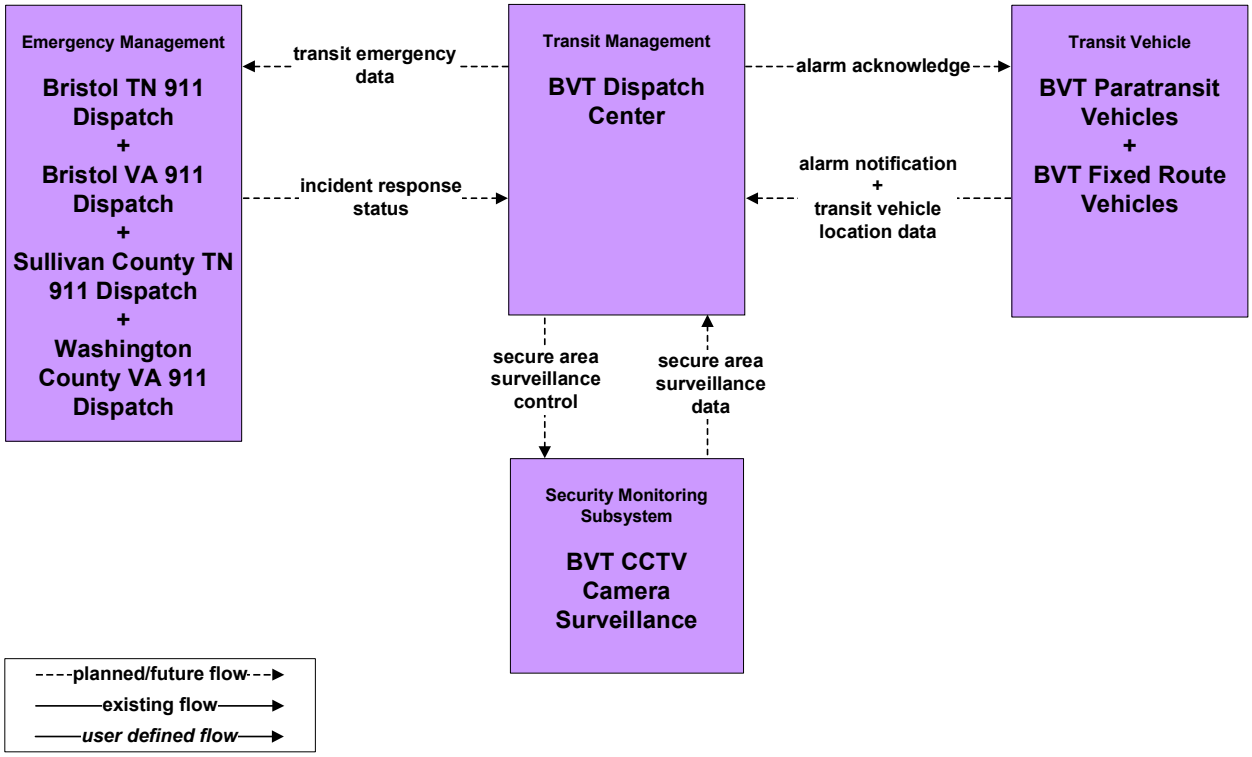
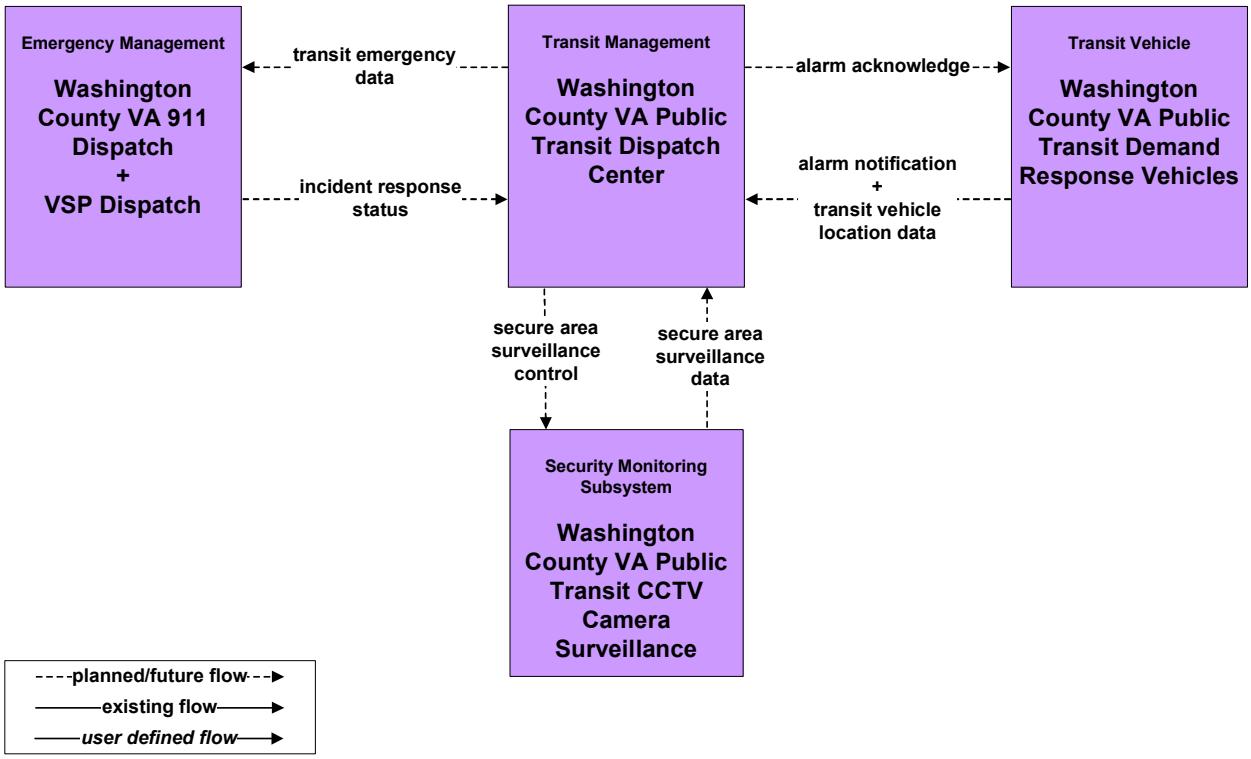
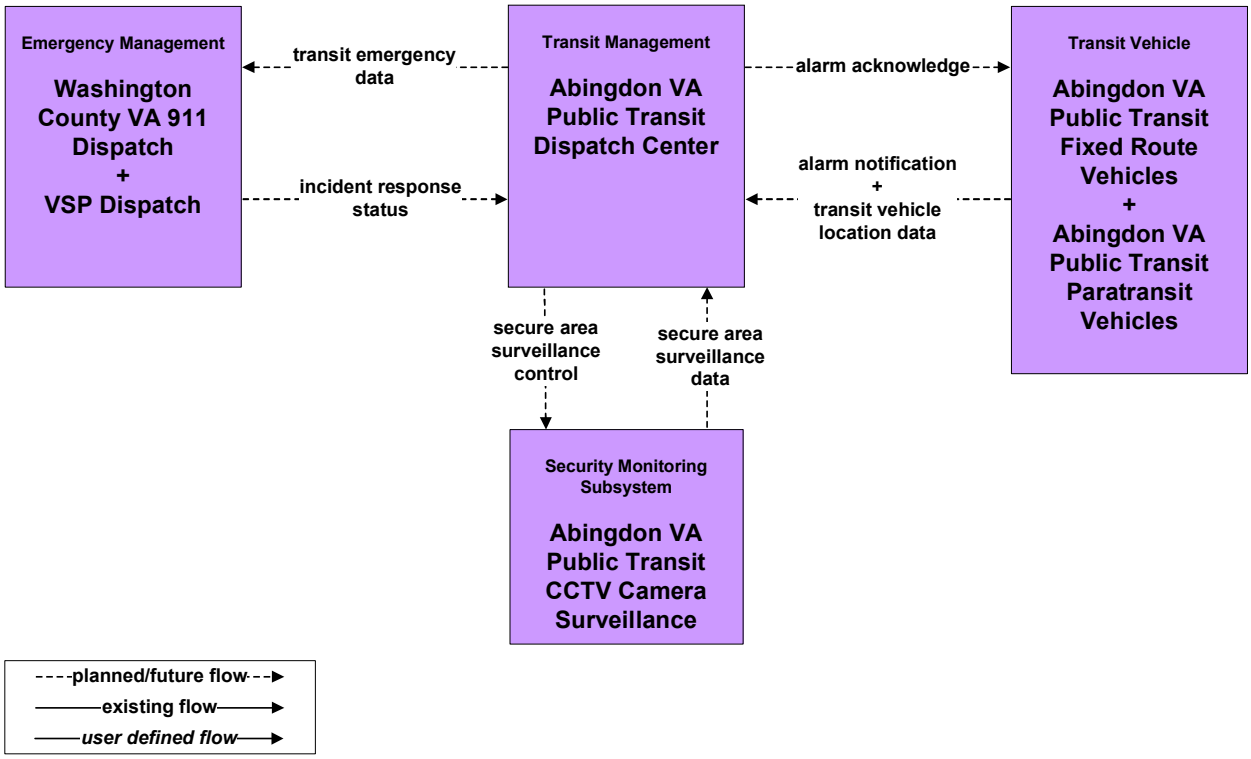
Bristol VA Transit



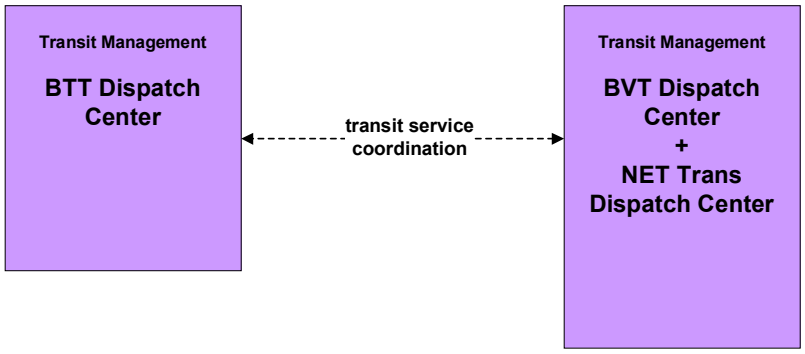
APTS05 – Transit Security
Washington County VA Public Transit

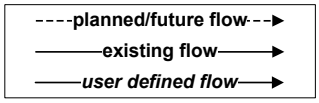


APTS05 – Transit Security
Abingdon VA Public Transit

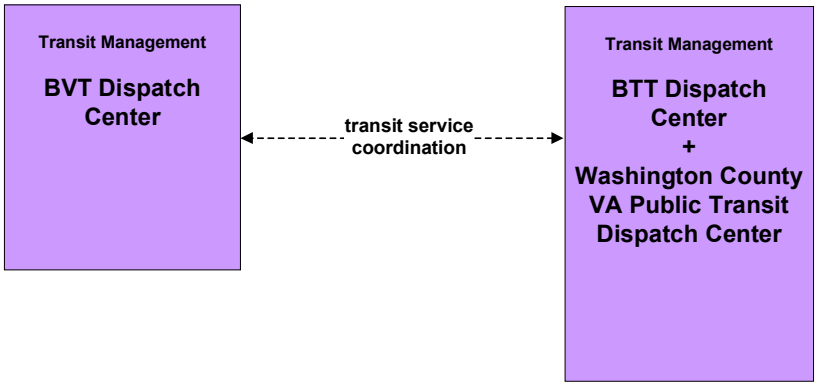


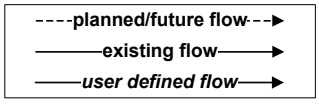
APTS07 – Multi-modal Coordination
Bristol TN Transit



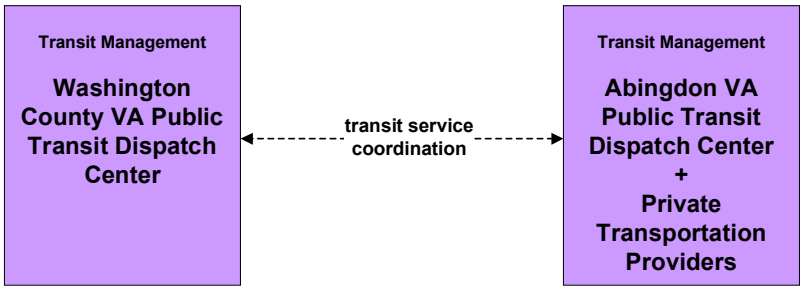


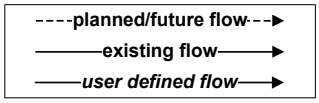
APTS07 – Multi-modal Coordination
Bristol VA Transit



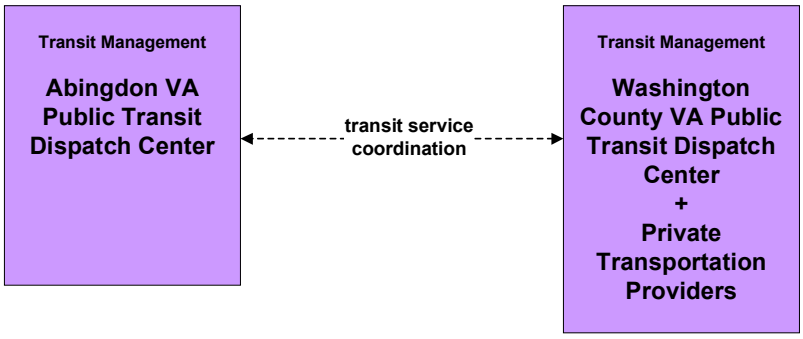


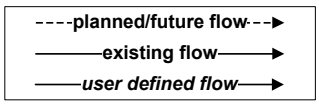
APTS07 – Multi-modal Coordination
Washington County VA Public Transit



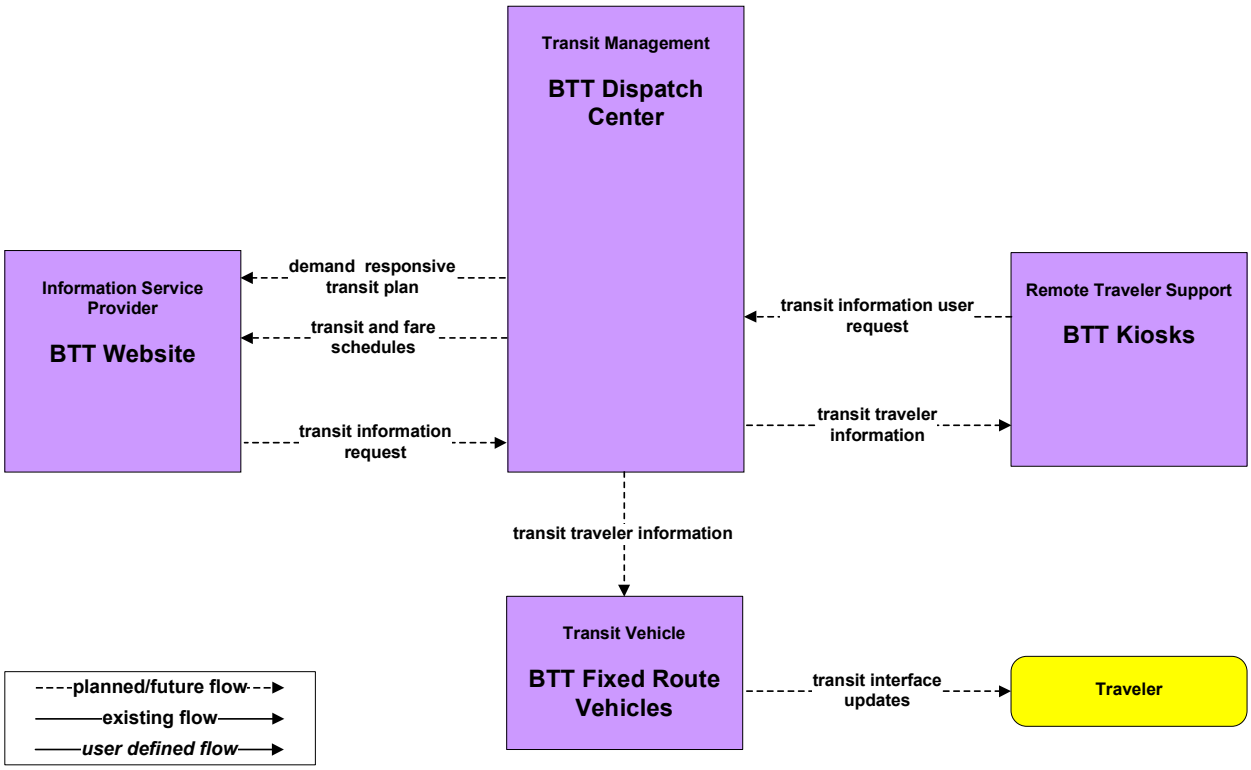


APTS07 – Multi-modal Coordination
Abingdon VA Public Transit

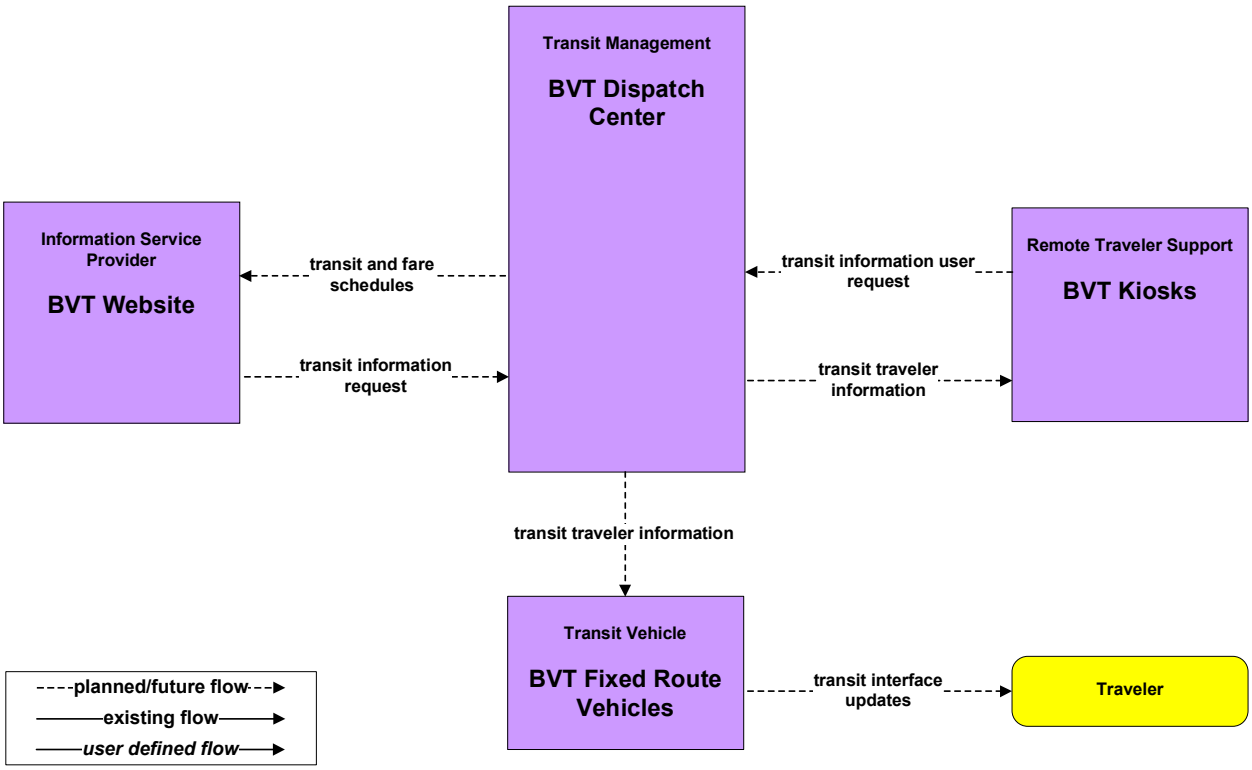




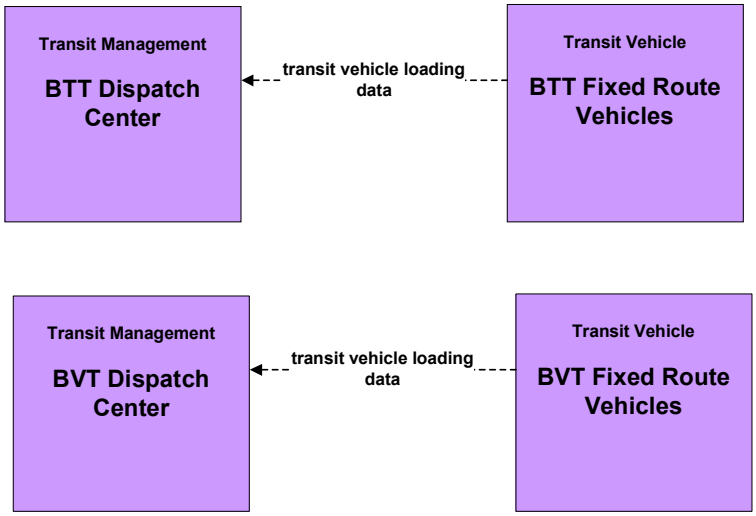
APTS08 – Transit Traveler Information
Bristol TN Transit

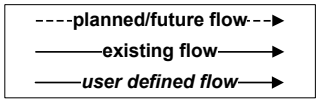


APTS08 – Transit Traveler Information
Bristol VA Transit

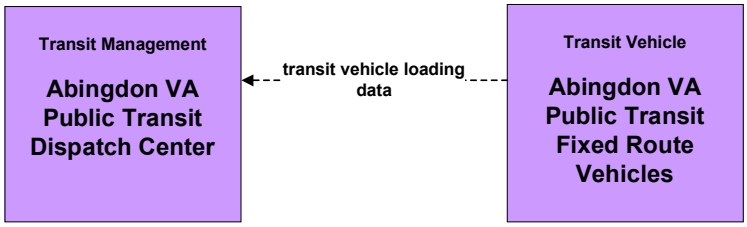


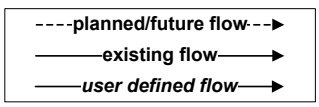
APTS10 – Transit Passenger Counting
Bristol TN Transit and Bristol VA Transit



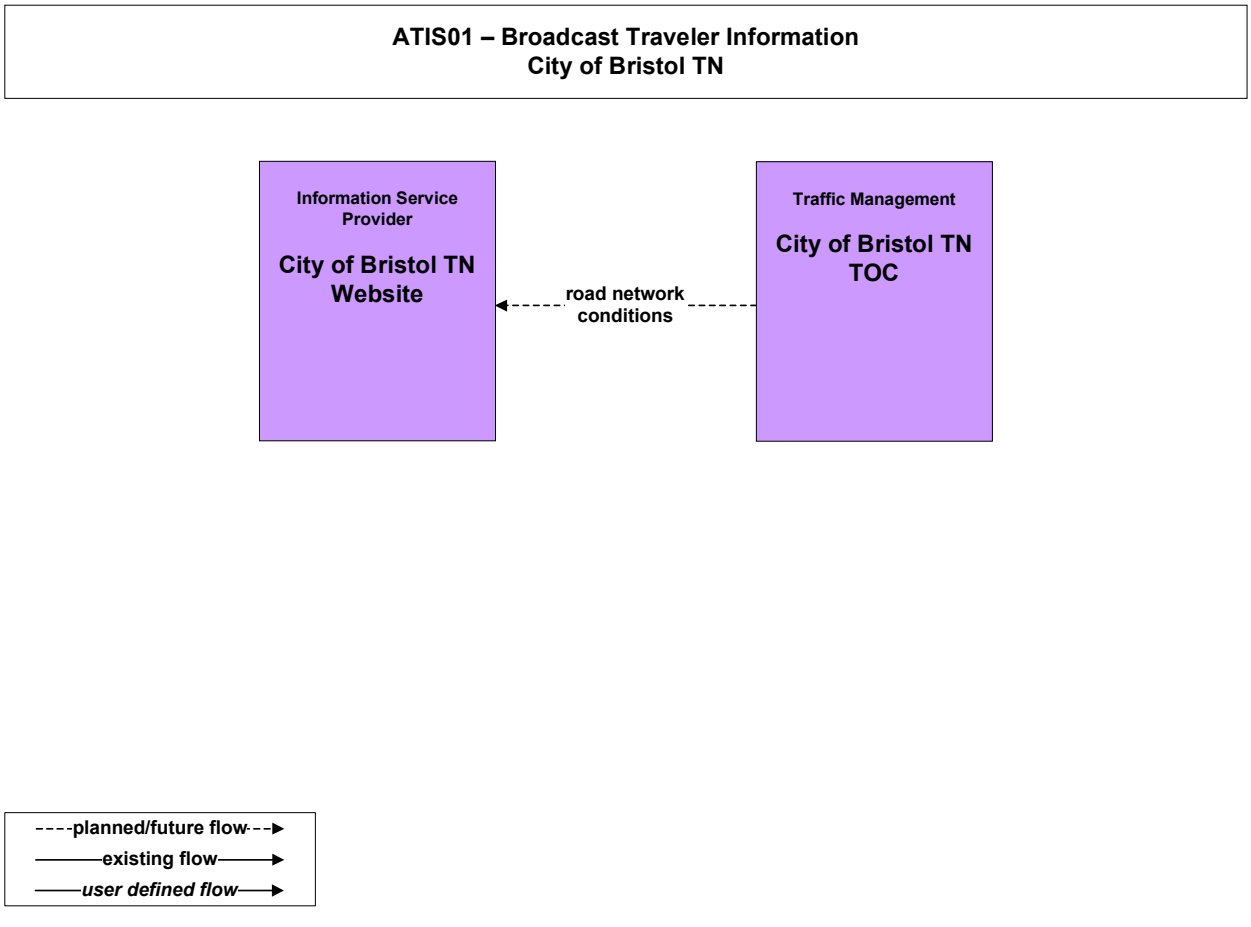


APTS10 – Transit Passenger Counting
Abingdon VA Public Transit

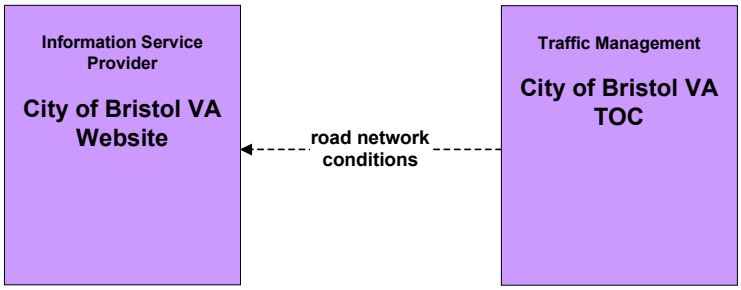


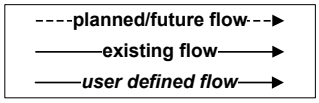


Advanced Traveler Information System

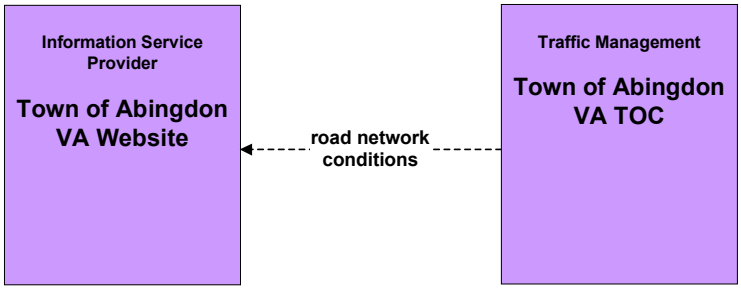


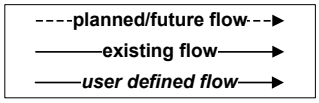
ATIS01 – Broadcast Traveler Information
City of Bristol VA





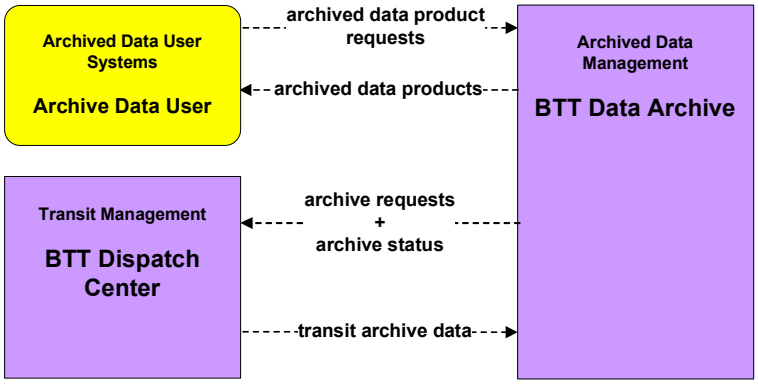
ATIS01 – Broadcast Traveler Information
Town of Abingdon VA





Archived Data

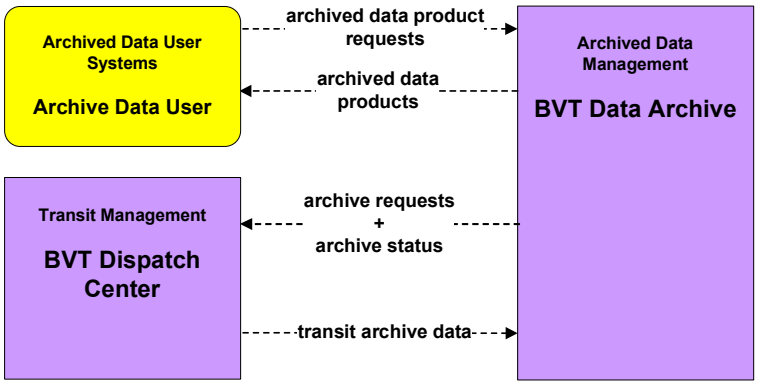
AD1 – ITS Data Mart
Bristol TN Transit



planned/future flow
existing flow
user defined flow

Note:
Data archive used by the National Transit Database, FTA, and TDOT Office of Public Transportation.

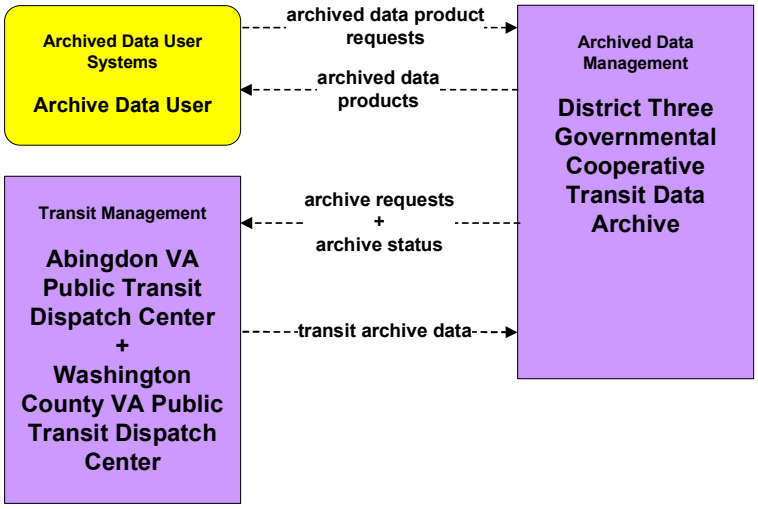
AD1 – ITS Data Mart
Bristol VA Transit



planned/future flow
existing flow
user defined flow

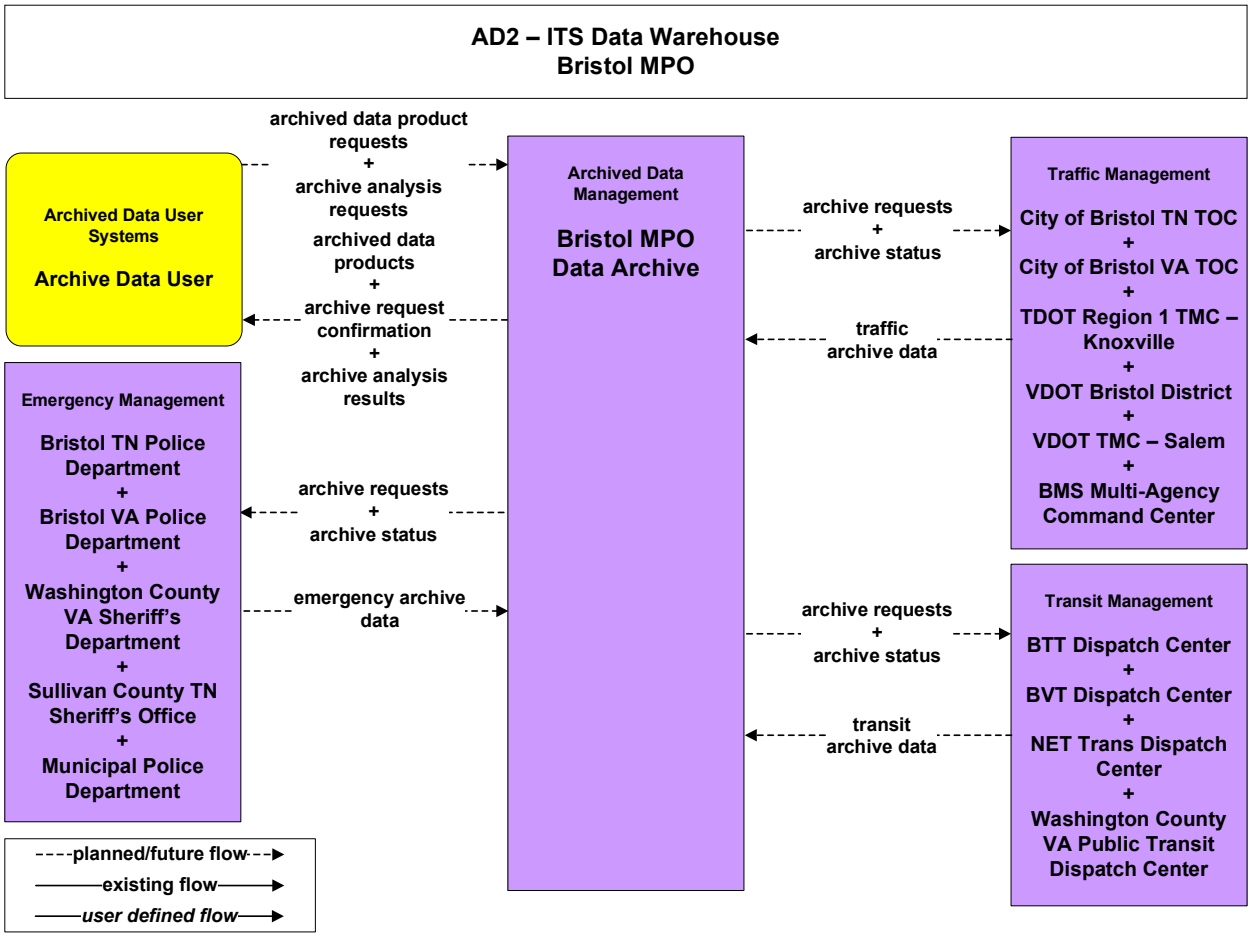
Note:
Data archive used by the National Transit Database, FTA, and VDOT Office of Public Transportation.

AD1 – ITS Data Mart
District Three Governmental Cooperative Transit Data Archive



planned/future flow
existing flow
user defined flow

Note:
Data archive used by the National Transit Database, FTA, and VDOT Office of Public Transportation.


AD2 – ITS Data Warehouse
Bristol MPO
Archived Data User Systems
Archive Data User
archived data product requests
+
archive analysis requests
archived data products
+
archive request confirmation
+
archive analysis results
Archived Data Management
Bristol MPO Data Archive
archive requests
+
archive status
traffic archive data
Traffic Management
City of Bristol TN TOC
+
City of Bristol VA TOC
+
TDOT Region 1 TMC – Knoxville
+
VDOT Bristol District
+
VDOT TMC – Salem
+
BMS Multi-Agency Command Center
Emergency Management
Bristol TN Police Department
+
Bristol VA Police Department
+
Washington County VA Sheriff's Department
+
Sullivan County TN Sheriff's Office
+
Municipal Police Department
archive requests
+
archive status
emergency archive data
archive requests
+
archive status
transit archive data
Transit Management
BTT Dispatch Center
+
BVT Dispatch Center
+
NET Trans Dispatch Center
+
Washington County VA Public Transit Dispatch Center
planned/future flow
existing flow
user defined flow

APPENDIX D – ELEMENT FUNCTIONS

Element Name	Equipment Package (Function)
Abingdon VA Public Transit CCTV Camera Surveillance	Field Secure Area Surveillance
Abingdon VA Public Transit Dispatch Center	Center Secure Area Alarm Support
	Center Secure Area Surveillance
	Transit Center Fare Management
	Transit Center Fixed-Route Operations
	Transit Center Multi-Modal Coordination
	Transit Center Paratransit Operations
	Transit Center Passenger Counting
	Transit Center Security
	Transit Center Vehicle Tracking
	Transit Data Collection
	Transit Evacuation Support
Abingdon VA Public Transit Fixed Route Vehicles	On-board Passenger Counting
	On-board Schedule Management
	On-board Transit Fare Management
	On-board Transit Security
	On-board Transit Trip Monitoring
Abingdon VA Public Transit Paratransit Vehicles	On-board Paratransit Operations
	On-board Transit Fare Management
	On-board Transit Security
	On-board Transit Trip Monitoring
BMS Multi-Agency Command Center	Collect Traffic Surveillance
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
Bristol MPO Data Archive	Government Reporting Systems Support
	ITS Data Repository
Bristol TN 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Emergency Routing
	Incident Command
Bristol TN Fire/EMS Vehicles	On-board EV En Route Support
Bristol TN Police Department	Emergency Data Collection
Bristol TN Police Vehicles	On-board EV En Route Support
Bristol VA 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch

Element Name	Equipment Package (Function)
Bristol VA 911 Dispatch (continued)	Emergency Evacuation Support
	Emergency Response Management
	Emergency Routing
	Incident Command
Bristol VA Fire Vehicles	On-board EV En Route Support
Bristol VA Lifesaving Crew	On-board EV En Route Support
Bristol VA Police Department	Emergency Data Collection
Bristol VA Police Vehicles	On-board EV En Route Support
BTT CCTV Camera Surveillance	Field Secure Area Surveillance
BTT Data Archive	Government Reporting Systems Support
	ITS Data Repository
BTT Dispatch Center	Center Secure Area Alarm Support
	Center Secure Area Surveillance
	Transit Center Fare Management
	Transit Center Fixed-Route Operations
	Transit Center Information Services
	Transit Center Multi-Modal Coordination
	Transit Center Paratransit Operations
	Transit Center Passenger Counting
	Transit Center Security
	Transit Center Vehicle Tracking
	Transit Data Collection
	Transit Evacuation Support
BTT Fixed Route Vehicles	On-board Passenger Counting
	On-board Schedule Management
	On-board Transit Fare Management
	On-board Transit Information Services
	On-board Transit Security
	On-board Transit Trip Monitoring
BTT Kiosks	Remote Transit Fare Management
	Remote Transit Information Services
BTT Paratransit Vehicles	On-board Paratransit Operations
	On-board Transit Fare Management
	On-board Transit Security
	On-board Transit Trip Monitoring
BTT Website	Infrastructure Provided Trip Planning
BVT CCTV Camera Surveillance	Field Secure Area Surveillance
BVT Data Archive	Government Reporting Systems Support
	ITS Data Repository
BVT Dispatch Center	Center Secure Area Alarm Support

Element Name	Equipment Package (Function)
BVT Dispatch Center (continued)	Center Secure Area Surveillance
	Transit Center Fare Management
	Transit Center Fixed-Route Operations
	Transit Center Information Services
	Transit Center Multi-Modal Coordination
	Transit Center Paratransit Operations
	Transit Center Passenger Counting
	Transit Center Security
	Transit Center Vehicle Tracking
	Transit Data Collection
	Transit Evacuation Support
BVT Fixed Route Vehicles	On-board Passenger Counting
	On-board Schedule Management
	On-board Transit Fare Management
	On-board Transit Information Services
	On-board Transit Security
	On-board Transit Trip Monitoring
BVT Kiosks	Remote Transit Fare Management
	Remote Transit Information Services
BVT Paratransit Vehicles	On-board Paratransit Operations
	On-board Transit Fare Management
	On-board Transit Security
	On-board Transit Trip Monitoring
BVT Website	Infrastructure Provided Trip Planning
City of Bristol TN CCTV Cameras	Roadway Basic Surveillance
City of Bristol TN DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
City of Bristol TN Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Bristol TN Public Works Department	MCM Environmental Information Collection
	MCM Environmental Information Processing
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Vehicle Tracking
	MCM Winter Maintenance Management
	MCM Work Activity Coordination
	MCM Work Zone Management
City of Bristol TN Public Works Department Vehicles	MCV Environmental Monitoring
	MCV Vehicle Location Tracking
	MCV Work Zone Support

Element Name	Equipment Package (Function)
City of Bristol TN RWIS Sensors	Roadway Environmental Monitoring
City of Bristol TN TOC	Collect Traffic Surveillance
	HRI Traffic Management
	Rail Operations Coordination
	TMC Environmental Monitoring
	TMC Evacuation Support
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
	TMC Traffic Information Dissemination
	TMC Work Zone Traffic Management
	Traffic Data Collection
	Traffic Maintenance
City of Bristol TN Traffic Signals	Roadway Equipment Coordination
	Roadway Signal Controls
	Roadway Signal Priority
	Standard Rail Crossing
City of Bristol TN Website	Basic Information Broadcast
	ISP Traveler Data Collection
City of Bristol VA CCTV Cameras	Roadway Basic Surveillance
City of Bristol VA DMS	Roadway Equipment Coordination
	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
City of Bristol VA Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Bristol VA Public Works Department	MCM Environmental Information Collection
	MCM Environmental Information Processing
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Vehicle Tracking
	MCM Winter Maintenance Management
	MCM Work Activity Coordination
	MCM Work Zone Management
City of Bristol VA Public Works Department Vehicles	MCV Environmental Monitoring
	MCV Vehicle Location Tracking
	MCV Work Zone Support
City of Bristol VA RWIS Sensors	Roadway Environmental Monitoring
City of Bristol VA TOC	Collect Traffic Surveillance
	HRI Traffic Management

Element Name	Equipment Package (Function)
City of Bristol VA TOC (continued)	Rail Operations Coordination
	TMC Environmental Monitoring
	TMC Evacuation Support
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
	TMC Traffic Information Dissemination
	TMC Work Zone Traffic Management
	Traffic Data Collection
	Traffic Maintenance
City of Bristol VA Traffic Signals	Roadway Equipment Coordination
	Roadway Signal Controls
	Roadway Signal Priority
	Standard Rail Crossing
City of Bristol VA Website	Basic Information Broadcast
	ISP Traveler Data Collection
City of Kingsport TN Public Works Department	MCM Environmental Information Processing
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Winter Maintenance Management
	MCM Work Activity Coordination
City of Kingsport TN TOC	TMC Environmental Monitoring
	TMC Evacuation Support
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
	TMC Work Zone Traffic Management
District Three Governmental Cooperative Transit Data Archive	Government Reporting Systems Support
	ITS Data Repository
Hawkins County TN 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Hawkins County TN EMA	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Hawkins County TN Sheriff's Office	Emergency Data Collection

Element Name	Equipment Package (Function)
Kentucky Transportation Cabinet	TMC Regional Traffic Management
Kingsport Area Transit Service Dispatch Center	Transit Center Multi-Modal Coordination
	Transit Evacuation Support
Kingsport TN 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Kingsport TN Police Department	Emergency Data Collection
MEOC Transit Dispatch Center	Transit Center Multi-Modal Coordination
Municipal Police Department	Emergency Data Collection
Municipal Public Safety Vehicles	On-board EV En Route Support
Municipal/County Maintenance	MCM Environmental Information Processing
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Vehicle Tracking
	MCM Winter Maintenance Management
	MCM Work Activity Coordination
	MCM Work Zone Management
Municipal/County Maintenance Vehicles	MCV Vehicle Location Tracking
	MCV Work Zone Support
Municipal/County TOC	Collect Traffic Surveillance
	HRI Traffic Management
	Rail Operations Coordination
	TMC Evacuation Support
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
	TMC Work Zone Traffic Management
	Traffic Maintenance
Municipal/County Traffic Signals	Roadway Equipment Coordination
	Roadway Signal Controls
	Standard Rail Crossing
NET Trans Dispatch Center	Transit Center Multi-Modal Coordination
	Transit Data Collection
	Transit Evacuation Support
Other TDOT Region Construction Office	MCM Work Activity Coordination
Other TDOT Region Maintenance	MCM Work Activity Coordination
Personal Computing Devices	Personal Interactive Information Reception
Private Transportation Providers	Transit Center Multi-Modal Coordination

Element Name	Equipment Package (Function)
Scott County VA 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch
Sullivan County TN 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Sullivan County TN EMA	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Sullivan County TN Public Safety Vehicles	On-board EV En Route Support
Sullivan County TN Sheriff's Office	Emergency Data Collection
TDOT CCTV Cameras	Roadway Basic Surveillance
TDOT District Maintenance	MCM Incident Management
	MCM Vehicle Tracking
	MCM Winter Maintenance Management
	MCM Work Activity Coordination
	MCM Work Zone Management
TDOT DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
TDOT Emergency Services Coordinator	MCM Incident Management
	MCM Roadway Maintenance and Construction
	TMC Evacuation Support
	TMC Incident Dispatch Coordination/Communication
TDOT Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
TDOT HAR	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
TDOT HELP Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
TDOT Maintenance Headquarters	MCM Environmental Information Collection
	MCM Environmental Information Processing
TDOT Maintenance Vehicles	MCV Vehicle Location Tracking
	MCV Winter Maintenance
	MCV Work Zone Support
TDOT Project Planning Division Archive	Government Reporting Systems Support
	ITS Data Repository
	Traffic Data Collection
TDOT Public Information Office	Basic Information Broadcast
	ISP Traveler Data Collection

Element Name	Equipment Package (Function)
TDOT Region 1 Construction Office	MCM Work Activity Coordination
	MCM Work Zone Management
TDOT Region 1 HELP Dispatch	Service Patrol Management
TDOT Region 1 Maintenance	MCM Environmental Information Collection
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Work Activity Coordination
TDOT Region 1 TMC – Knoxville	Collect Traffic Surveillance
	TMC Environmental Monitoring
	TMC Evacuation Support
	TMC Freeway Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Traffic Information Dissemination
	TMC Work Zone Traffic Management
	Traffic Data Collection
	Traffic Maintenance
TDOT Region 2 TMC – Chattanooga	TMC Regional Traffic Management
TDOT Region 3 TMC – Nashville	TMC Regional Traffic Management
TDOT Region 4 TMC – Memphis	TMC Regional Traffic Management
TDOT RWIS Sensors	Roadway Environmental Monitoring
TDOT Smart Work Zone Equipment	Roadway Work Zone Traffic Control
TDOT SmartWay Information System (TSIS)	Basic Information Broadcast
	Interactive Infrastructure Information
	ISP Emergency Traveler Information
	ISP Traveler Data Collection
	MCM Environmental Information Processing
	MCM Incident Management
	MCM Work Activity Coordination
	MCM Work Zone Management
TDOT SmartWay Website	Basic Information Broadcast
	Interactive Infrastructure Information
	ISP Emergency Traveler Information
	ISP Traveler Data Collection
TEMA	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Tennessee 511 System	Interactive Infrastructure Information
	ISP Emergency Traveler Information

Element Name	Equipment Package (Function)
Tennessee 511 System (continued)	ISP Traveler Data Collection
	Traveler Telephone Information
Tennessee Bureau of Investigation	Emergency Early Warning System
Tennessee GoSmart Kiosks	Remote Interactive Information Reception
THP Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
	Service Patrol Management
THP Vehicles	On-board EV En Route Support
Town of Abingdon VA CCTV Cameras	Roadway Basic Surveillance
Town of Abingdon VA Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
Town of Abingdon VA Rail Notification System	Roadway Traffic Information Dissemination
	Standard Rail Crossing
Town of Abingdon VA TOC	Collect Traffic Surveillance
	HRI Traffic Management
	Rail Operations Coordination
	TMC Evacuation Support
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
	TMC Work Zone Traffic Management
	Traffic Maintenance
Town of Abingdon VA Traffic Signals	Roadway Basic Surveillance
	Roadway Equipment Coordination
	Roadway Signal Controls
	Roadway Signal Priority
	Standard Rail Crossing
Town of Abingdon VA Website	Basic Information Broadcast
	ISP Traveler Data Collection
TraCS Database	Government Reporting Systems Support
	ITS Data Repository
VDOT Archive	Government Reporting Systems Support
	ITS Data Repository
VDOT Bristol District	Collect Traffic Surveillance
	TMC Environmental Monitoring
	TMC Evacuation Support

Element Name	Equipment Package (Function)
VDOT Bristol District (continued)	TMC Freeway Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
	TMC Traffic Information Dissemination
	TMC Work Zone Traffic Management
	Traffic Data Collection
	Traffic Maintenance
VDOT Bristol District Maintenance	MCM Environmental Information Collection
	MCM Environmental Information Processing
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Vehicle Tracking
	MCM Winter Maintenance Management
	MCM Work Activity Coordination
	MCM Work Zone Management
VDOT CB Wizard Broadcast Device	Roadway Traffic Information Dissemination
VDOT CCTV Cameras	Roadway Basic Surveillance
VDOT DMS	Roadway Equipment Coordination
	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
VDOT Emergency Services Coordinator	MCM Incident Management
	MCM Roadway Maintenance and Construction
VDOT Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
VDOT HAR	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
VDOT Maintenance Vehicles	MCV Vehicle Location Tracking
	MCV Winter Maintenance
	MCV Work Zone Support
VDOT Overheight Vehicle Detection	Roadway Basic Surveillance
	Roadway Equipment Coordination
VDOT Public Information Office	Basic Information Broadcast
	ISP Traveler Data Collection
VDOT RWIS Sensors	Roadway Environmental Monitoring
VDOT Smart Work Zone Equipment	Roadway Work Zone Traffic Control
VDOT Special Event Command Center	Collect Traffic Surveillance
	TMC Freeway Management
	TMC Incident Detection

Element Name	Equipment Package (Function)
VDOT Special Event Command Center (continued)	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
VDOT SSP Dispatch	Service Patrol Management
VDOT SSP Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
VDOT TMC – Hampton Roads	TMC Regional Traffic Management
VDOT TMC – Northern Virginia	TMC Regional Traffic Management
VDOT TMC – Richmond	TMC Regional Traffic Management
VDOT TMC – Salem	Collect Traffic Surveillance
	TMC Environmental Monitoring
	TMC Evacuation Support
	TMC Freeway Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Regional Traffic Management
	TMC Signal Control
	TMC Traffic Information Dissemination
	TMC Work Zone Traffic Management
	Traffic Data Collection
	Traffic Maintenance
VDOT TMC – Staunton	TMC Regional Traffic Management
VDOT Traffic Signals	Roadway Basic Surveillance
	Roadway Equipment Coordination
	Roadway Signal Controls
	Roadway Signal Priority
Virginia 511	Basic Information Broadcast
	Interactive Infrastructure Information
	ISP Emergency Traveler Information
	ISP Traveler Data Collection
	Traveler Telephone Information
Virginia 511 Website	ISP Emergency Traveler Information
	ISP Traveler Data Collection
Virginia Statewide EOC	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Virginia Traffic	Basic Information Broadcast
	Interactive Infrastructure Information
	ISP Traveler Data Collection
	MCM Environmental Information Processing

Element Name	Equipment Package (Function)
Virginia Traffic (continued)	MCM Incident Management
	MCM Work Activity Coordination
	MCM Work Zone Management
VSP Crash Record Database	Government Reporting Systems Support
	ITS Data Repository
VSP Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
VSP Missing Children Clearinghouse	Emergency Early Warning System
VSP Vehicles	On-board EV En Route Support
Washington County TN 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Washington County TN EMA	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Washington County VA 911 Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Evacuation Support
	Emergency Response Management
	Emergency Routing
	Incident Command
Washington County VA Department of Emergency Services	Emergency Evacuation Support
	Emergency Response Management
	Incident Command
Washington County VA Public Safety Vehicles	On-board EV En Route Support
Washington County VA Public Transit CCTV Camera Surveillance	Field Secure Area Surveillance
Washington County VA Public Transit Demand Response Vehicles	On-board Paratransit Operations
	On-board Transit Fare Management
	On-board Transit Security
	On-board Transit Trip Monitoring
Washington County VA Public Transit Dispatch Center	Center Secure Area Alarm Support
	Center Secure Area Surveillance
	Transit Center Fare Management
	Transit Center Multi-Modal Coordination

Element Name	Equipment Package (Function)
Washington County VA Public Transit Dispatch Center (continued)	Transit Center Paratransit Operations
	Transit Center Security
	Transit Center Vehicle Tracking
	Transit Data Collection
	Transit Evacuation Support
Washington County VA Sheriff's Department	Emergency Data Collection

APPENDIX E – STAKEHOLDER DATABASE

Bristol Regional ITS Architecture Stakeholder Attendance Record

Invitees			Workshop Attendance			
Organization	First Name	Last Name	Kick-Off	ITS Architecture	ITS Deployment Plan	Comment Resolution
Bristol MPO	Rex	Montgomery	☑	☑	☑	☑
Bristol Tennessee Essential Services	David	Hacker	☐	☐	☐	☐
Bristol TN Emergency Communications District	Virginia	Smelser	☐	☐	☐	☐
Bristol TN Transit System (BTT)	Wes	Ritchie	☐	☐	☐	☐
Bristol VA Sheriff's Office	Jack	Weisenburger	☐	☐	☐	☐
Bristol VA Transit (BVT)	Danny	Hunt	☐	☐	☐	☐
Bristol Virginia Utilities	Pat	Widner	☐	☐	☐	☐
City of Bluff City TN	Robert	Thomas	☐	☐	☐	☐
City of Bristol TN	David	Metzger	☑	☑	☑	☑
City of Bristol TN Fire Department	Dwayne	Honager	☑	☐	☐	☐
City of Bristol TN Police Department	Blaine E.	Wade	☐	☐	☐	☐
City of Bristol TN Police Department	Matt	Austin	☐	☑	☑	☐
City of Bristol TN Public Works	Bill	Sorah	☐	☐	☐	☐
City of Bristol TN Public Works Engineering Division	Tim	Beavers	☐	☐	☐	☐
City of Bristol VA	Jay	Detrick	☑	☑	☑	☐
City of Bristol VA Fire Department	Walt	Ford	☐	☐	☐	☐
City of Bristol VA Police Department	W.H.	Price	☐	☐	☐	☐
City of Bristol VA Police Department	W.A.	Dennison, Jr.	☐	☐	☐	☐
City of Bristol VA Public Works	Jack	Hurlbert	☑	☐	☐	☐

Note: * Indicates stakeholder was part of the Bristol and Kingsport Region

Organization	*First Name*	*Last Name*	*Kick-Off*	*ITS Architecture*	*ITS Deployment Plan*	*Comment Resolution*
City of Johnson City Public Works Department – Traffic Division	Anthony	Todd	☐	☐	☐	☐
FHWA - TN Division	Don	Gedge*	☑	☑	☑	☑
FHWA - VA Division	Daniel	Jenkins*	☐	☐	☐	☐
Johnson City Metropolitan Transportation Planning Organization	Glenn	Berry*	☐	☑	☐	☐
Sullivan County Emergency Management Agency	Jerry	Fleenor*	☐	☐	☐	☐
Sullivan County EMS	Mark	Vance*	☐	☐	☐	☐
Sullivan County Sheriff's Office	Greg	Simcox*	☐	☐	☐	☐
Sullivan County Sheriff's Office	Wayne	Anderson*	☑	☑	☑	☐
Sullivan County Sheriff's Office	Lisa	Christian*	☐	☐	☐	☐
TDOT	Pete	Hiett, P.E.*	☐	☐	☐	☐
TDOT Long-Range Planning Division	Angie	Midgett*	☐	☐	☐	☑
TDOT Long-Range Planning Division	Teresa	Estes*	☐	☐	☐	☐
TDOT Long-Range Planning Division	Deborah	Fleming*	☑	☐	☑	☑
TDOT Long-Range Planning Division	Joseph	Roach*	☑	☑	☑	☑
TDOT Long-Range Planning Division	Ralph	Comer*	☐	☑	☐	☐
TDOT Region 1 - Knoxville SmartWay Center	Andy	Russell*	☐	☐	☐	☐
TDOT Region 1 - Knoxville SmartWay Center	John	Benditz*	☑	☐	☐	☐
TDOT Region 1 - Knoxville SmartWay Center	Mark	Best*	☑	☑	☑	☐
Tennessee Highway Patrol - District 5	Richard "Dean"	Hurley*	☐	☐	☐	☐
Tennessee Highway Patrol - Fall Branch District	Walt	Owenby*	☐	☑	☐	☐
Tennessee Highway Patrol - Fall Branch District	Danny	Talley*	☑	☐	☐	☑
Town of Abingdon VA Fire Department	Joey	Burke	☐	☐	☐	☐

Note: * Indicates stakeholder was part of the Bristol and Kingsport Region

Organization	*First Name*	*Last Name*	*Kick-Off*	*ITS Architecture*	*ITS Deployment Plan*	*Comment Resolution*
Town of Abingdon VA Police Department	Tony	Sullivan	☐	☐	☐	☐
Town of Abingdon VA Public Works Department	David	Brown	☐	☐	☐	☐
Town of Abingdon VA Public Works Department	Jamie	Chafin	☐	☐	☐	☐
Town of Abingdon VA Public Works Department	C.M.	Vernon, Jr.	☐	☐	☐	☐
VDOT	Mike	Lancaster	☑	☐	☐	☐
VDOT - Bristol District	Mike	Phipps	☑	☑	☑	☐
VDOT - Bristol District	Donny	Necessary*	☑	☐	☑	☐
VDOT - Bristol District	Ronnie	Hubble	☐	☑	☐	☐
VDOT - Operations and Securities Division	Chris	Francis	☑	☐	☐	☐
VDOT - Southwestern Region	Tim	Martin	☐	☑	☐	☐
VDOT - Southwestern Region	Ken	King	☐	☑	☐	☐
VDOT SW Regional Operations	Joe	Hamed	☑	☑	☐	☐
Virginia State Police - Area 27 Office	Frank	McMurray	☑	☐	☐	☐
Virginia State Police - Area 27 Office	F.D.	Glick	☐	☐	☐	☐
Virginia State Police - Division 4 Headquarters	Stephen	Childress	☐	☐	☐	☐
Washington County Department of Emergency Services	Mary	Fraysier	☐	☐	☐	☐
Washington County Sheriff's Office	Marty	Berry	☐	☐	☐	☐

Note: * Indicates stakeholder was part of the Bristol and Kingsport Region

APPENDIX F – ARCHITECTURE MAINTENANCE DOCUMENTATION FORM

Bristol Regional ITS Architecture
Architecture Maintenance Documentation Form

Please complete the following questionnaire to document changes to the Bristol Regional ITS Architecture. Modifications will be made during the next update of the Regional ITS Architecture.

Agency	
Agency Contact Person	
Street Address	
City	
State, Zip Code	
Telephone	
Fax	
E-Mail	

Change Information

Please indicate the type of change:

- ☐ Administrative: Basic changes that do not affect the structure of the ITS Architecture
  Examples include: Changes to stakeholder or element name, element status, or data flow status
- ☐ Functional – Single Agency: Structural changes that impact only one agency
  Examples include: Addition of a new market package or modifications to an existing market package that involves only one agency
- ☐ Functional – Multiple Agency: Structural changes that have the potential to impact multiple agencies
  Examples include: Addition of a new market package or modifications to an existing market package that involves multiple agencies; incorporation of a new stakeholder into the Regional ITS Architecture; or implementation of a new transportation mode or service into the Region.

Describe requested change	
What, if any, market packages are impacted by the proposed change? Note: If the proposed change involves creating or modifying a market package please attach a sketch of the new or modified market package.	

Does the proposed change affect any additional stakeholders?	
Has coordination occurred with any impacted stakeholders? Please describe the results. Note: If this proposed change affects one of the market packages that overlap with the Kingsport Region, then the Kingsport MPO should be notified and provided a copy of this change form.	

Please submit change forms to:

Rex Montgomery
Transportation Planning Manager
Bristol MPO
P.O. Box 1189
Bristol, TN 37621

Date Request Filed: _____