Nashville Area

Regional ITS Architecture

Regional ITS Architecture Report

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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
AD	Archived Data
AMBER	America's Missing: Broadcast Emergency Response
APTA	American Public Transportation Association
APTS	Advanced Public Transportation System
ASTM	American Society for Testing and Materials
ATIS	Advanced Traveler Information System
ATMS	Advanced Traffic Management System
AVL	Automated Vehicle Location
CCTV	Closed Circuit Television
CVISN	Commercial Vehicle Information Systems and Networks
CVO	Commercial Vehicle Operations
DMS	Dynamic Message Sign
DSRC	Dedicated Short Range Communication
EM	Emergency Management
EMA	Emergency Management Agency
EMS	Emergency Medical Services
EOC	Emergency Operations Center
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HAR	Highway Advisory Radio
HAZMAT	Hazardous Materials
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation System
IVR	Interactive Voice Response
LRTP	Long-Range Transportation Plan
MC	Maintenance and Construction

LIST OF ACRONYMS

MCHRA	Mid-Cumberland Human Resource Agency
MOU	Memorandum of Understanding
MTA	Metropolitan Transit Authority
NEMA	National Electrical Manufacturers Association
NOAA	National Oceanic and Atmospheric Administration
NTCIP	National Transportation Communications for ITS Protocol
PSAP	Public Safety Answering Point
RTA	Regional Transportation Authority
RTMS	Remote Traffic Microwave Sensor
RWIS	Road Weather Information System
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible and Efficient Transportation Equity Act – A Legacy for Users
SDO	Standards Development Organization
TDOT	Tennessee Department of Transportation
TEA-21	Transportation Equity Act for the 21st Century
TEMA	Tennessee Emergency Management Agency
TIP	Transportation Improvement Program
THP	Tennessee Highway Patrol
TITAN	Tennessee Integrated Traffic Analysis Network
TMC	Transportation Management Center
TOC	Traffic Operations Center
TraCS	Traffic and Criminal Software
TSIS	TDOT SmartWay Information System
USDOT	United States Department of Transportation
VIVDS	Video Image Vehicle Detection Systems
WAVE	Wireless Access in Vehicular Environments

1. INTRODUCTION

1.1 Project Overview

The Nashville Area Regional Intelligent Transportation System (ITS) Architecture was developed in 2003 by the Tennessee Department of Transportation (TDOT) and the Nashville Area Metropolitan Planning Organization (MPO). Since that time the Nashville Area has seen the implementation of a number of significant ITS programs and projects including the TDOT Region 3 SmartWay ITS in Nashville, which provides freeway management capabilities for a majority of the urban freeway system in Nashville, and several local traffic operations centers (TOCs) that operate municipal traffic signal systems in the throughout the Region. Regional ITS architectures are living documents and need to be continuously updated in order for them to accurately reflect the ITS needs, plans, and visions within a region. In October 2009 the Nashville Area MPO, in coordination with TDOT, began the process of updating the Nashville Area Regional ITS Architecture with the goal of completing the update by June 2010.

A regional ITS architecture provides a framework for implementing ITS projects, encourages interoperability and resource sharing among agencies, identifies applicable standards to apply to projects, and allows for cohesive long-range planning among regional stakeholders. ITS architectures allow stakeholders to plan for what they want their system to look like in the long-term and then break out the system into smaller pieces that can be implemented as funding permits. A regional ITS architecture is also necessary to satisfy the ITS conformity requirements first established in the Transportation Equity Act for the 21st Century (TEA-21) highway bill and continued in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) bill passed in 2005. In response to Section 5206(e) of TEA-21, the Federal Highway Administration (FHWA) issued a final rule and the Federal Transit Administration (FTA) issued a final policy that required regions implementing any ITS project to have an ITS architecture in place by April 2005. After this date, any ITS projects must show conformance with their regional ITS architecture in order to be eligible for funding from FHWA or FTA. In order to show this conformance, it is important that any region deploying ITS have an updated regional ITS architecture in place.

The Nashville Area Regional ITS Architecture update included all of the geographic area and agencies as the Nashville Area MPO. In addition, stakeholder recommended that the Nashville Area Regional ITS Architecture boundaries be expanded to include all of Robertson County because several cities that are part of the Nashville Area MPO are located within Robertson County. Stakeholders developed the Regional ITS Architecture based on a 20-year vision of how they wanted to implement and operate ITS in the Nashville Region. In addition to the Regional ITS Architecture, a separate ITS Deployment Plan was developed to identify and prioritize specific ITS projects recommended for the Region in order to implement the ITS Architecture.

The Nashville Area Regional ITS Architecture and the ITS Deployment Plan were both developed with significant input from local, state, and federal officials. A series of four workshops were held to solicit input from stakeholders and ensure that the plans reflected the unique needs of the Region. Copies of the draft reports were provided to all stakeholders. The Regional ITS Architecture and Deployment Plan developed reflects an accurate snapshot of existing ITS deployments and future ITS plans in the Region. Needs and priorities of the Region will change over time and in order to remain effective this plan should be periodically reviewed and updated.

1.2 Document Overview

The Nashville Area Regional ITS Architecture report is organized into five key sections:

Section 1 – Introduction

This section provides an overview of the National ITS Architecture requirements, the Nashville Area Regional ITS Architecture, and the key features and stakeholders in the Nashville Area.

Section 2 – Regional ITS Architecture Development Process

This section provides an overview of the key steps involved in developing the ITS architecture for the Nashville Area as well as an overview of the Turbo Architecture database and reports.

Section 3 – Regional Needs and Inventory

This section contains a summary of regional needs that are related to ITS for the Nashville Area as well as a description of the stakeholders and ITS elements in the Region. Elements are grouped based on the owner, such as Metro Nashville or the Metropolitan Transit Authority (MTA), and their current status is listed as either existing or planned in the Region.

Section 4 – Regional ITS Architecture

This section describes how the National ITS Architecture was customized to meet the ITS needs, plans, and visions for the Nashville Area. The ITS market packages that were selected for the Region are included in this section and interconnects are presented, including the "sausage diagram" showing the relationships of the key subsystems and elements in the Region. Functional requirements and standards that apply to the Region, as indicated by the Regional ITS Architecture, are presented. Operational concepts identifying stakeholder roles and responsibilities have been prepared and potential agreements to support the sharing of data and resources have been identified.

Section 5 – Use and Maintenance of the Regional ITS Architecture

This section describes how the Regional ITS Architecture can be use to show architectural conformance of ITS projects in the planning or design phase. A process for maintaining the Regional ITS Architecture and submitting requested changes to the Regional ITS Architecture is also presented.

The Nashville Area Regional ITS Architecture also contains five appendices:

- Appendix A – Market Package Definitions;
- Appendix B – Customized Market Packages;
- Appendix C – Element Functions;
- Appendix D – Stakeholder Database; and
- Appendix E – Architecture Maintenance Documentation Form.

1.3 Nashville Area

1.3.1 Geographic Boundaries

The geographic boundaries were defined for the Nashville Area Regional ITS Architecture using the boundaries of the Nashville Area MPO plus the remainder of Robertson County. The MPO boundaries include all of Davidson, Rutherford, Sumner, Williamson, and Wilson Counties as well as parts of Robertson and Maury Counties. Robertson County is not

completely included within the MPO boundaries at the current time but the stakeholder group involved in the development of the Nashville Regional ITS Architecture decided to include all of Robertson County as part of the geographic boundaries for the ITS architecture. The geographic boundaries of the Nashville Area MPO are shown in **Figure 1**. Other than Robertson County, the boundaries shown in **Figure 1** are identical to the geographic boundaries of the Regional ITS Architecture.

When developing the stakeholder group, the project team coordinated with the Nashville Area MPO to invite the appropriate city, county, regional, state and federal agencies.

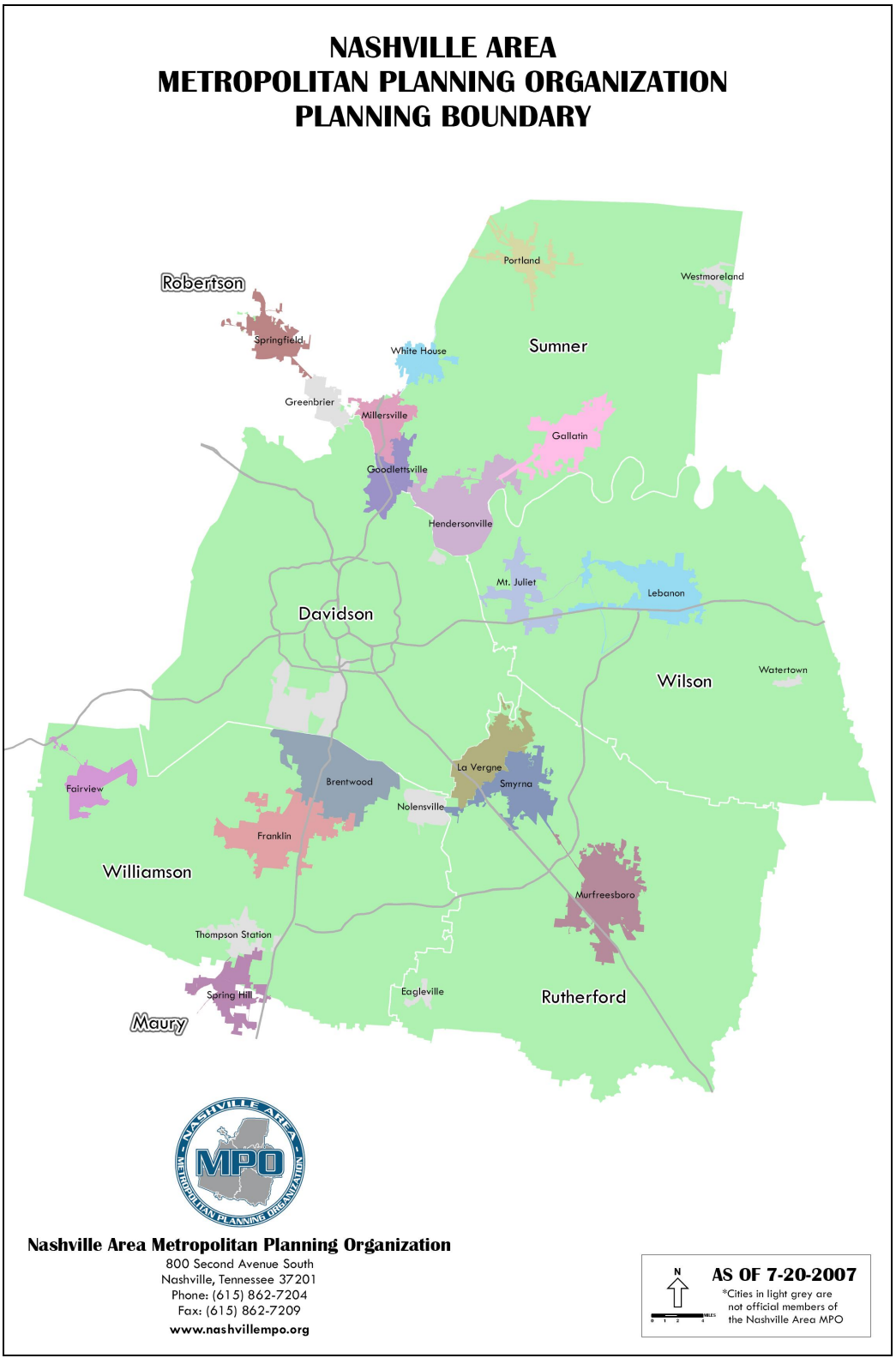

Figure 1 – Nashville Area MPO Boundaries

1.3.2 Transportation Infrastructure

The Nashville Area is served by a number of significant State and Federal highways. The primary access control facilities include I-24, I-40, I-65, I-440, US 31E, and SR 155. High Occupancy Vehicle (HOV) lanes have been added to many of the more congested corridors including I-40, I-65, and I-24. HOV lanes are not barrier controlled and High Occupancy Toll (HOT) lanes do not exist.

Historically congestion has been associated with travelers commuting in and out of the downtown area. More recently, the growth of several cities surrounding Nashville and the establishment of large employment and retail centers in those cities has made congestion less predictable and more widespread throughout the region.

In Davidson County, fixed route and paratransit services are provided in Metropolitan Transit Authority (MTA). In 2009 the MTA also introduced bus rapid transit service. The City of Franklin also offers transit service. Franklin Transit provides trolley service on several fixed route schedules but will deviate up to ¾ of a mile if a request is made by phone. Throughout the entire Nashville Area Regional ITS Architecture boundary area demand response service is provided by the Mid-Cumberland Human Resource Agency (MCHRA). The MCHRA serves a total of 13 counties.

The Regional Transportation Authority (RTA) serves a 9 county area and provides services that include express bus, park and ride lots, and HOV lanes. The RTA also operates the Music City Star, a regional rail service that operates between Nashville and Lebanon Monday through Friday.

1.3.3 Nashville Region ITS Initiatives and Activities

The Nashville Area has undertaken several deployments of ITS programs throughout the Region. These programs have come from multiple agencies and cover multiple transportation modes as well. Some multi-agency participation has been present on some of these ITS initiatives. The following are some of the larger ITS initiatives underway or existing within the Nashville Area:

- **TDOT SmartWay Program** – TDOT's SmartWay Program includes freeway closed circuit television (CCTV) cameras, dynamic message signs (DMS), vehicle detectors, and a traffic management center (TMC) that operates 7 days per week. A majority of the urban freeway systems is currently covered or will be covered in the future by the SmartWay system. The SmartWay Program is active in providing incident management and traveler information throughout the Region and coordinates with other TDOT SmartWay TMCs in Memphis, Chattanooga, and Knoxville to share traffic information that may have an impact on operations outside of the Region.
- **TDOT HELP** – The TDOT HELP program provides motorist assistance throughout the Region on assigned routes throughout the Nashville Area. The HELP program trucks assist motorists with minor repairs such as flat tire changes, fuel, and push services to move disabled vehicles out of the through lanes. HELP operators also assist with traffic control and detours during major incidents and may be requested to assist with traffic management for special events.
- **Incident Management Task Force** – TDOT and the Nashville Area MPO currently lead an Incident Management Task Force that focuses on issued related to the management of crashes on freeways. The Task Force is made up of representatives from police and fire departments, emergency medical series, state and local

transportation departments, towing and recovery companies, environmental agencies, and hazardous spill and containment companies. The Incident Management Task Force provides a forum for these agencies to review responses to incidents and promote better communication and cooperation.

- **Municipal Traffic Management Centers and ITS Deployments** – Several cities within the Region have deployed ITS, to assist with arterial traffic management. These include Metro Nashville and the Cities of Franklin, Brentwood and Murfreesboro, which all have active traffic operations centers (TOCs) used for monitoring their traffic signal systems. Franklin, Brentwood and Murfreesboro also have CCTV cameras deployed within their cities that can be monitored from the TOC.
- **511 Traveler Information Number** – TDOT currently operates a statewide traveler information number that provides real-time traveler information throughout the state. Information is put into 511 through the TDOT SmartWay Information System (TSIS), which is updated by the TDOT SmartWay TMC operators and the Tennessee Highway Patrol (THP) dispatchers. 511 information can also be accessed through a 511 website and several social media sites such as Twitter and Facebook.

1.3.4 Project Participants

Due to the fact that ITS often transcends traditional transportation infrastructure, it is important to involve a wide range of local, state, and federal stakeholders in the ITS architecture development and visioning process. Input from these stakeholders is a critical part of defining the interfaces, integration needs, and overall vision for ITS in a region. In the Nashville Area stakeholders that participated included not just representatives from transportation and public transit agencies, but also stakeholders that represented public safety, health, and aviation.

Table 1 contains a listing of stakeholders in the Nashville Area who have participated in the project workshops or provided input to the study team as to the needs and issues that should be considered as part of the Regional ITS Architecture. Other stakeholders that were invited to participate but were not able to attend were provided minutes of workshops and notified when copies of reports were available for review on the project website to encourage their participation as much as possible. A complete listing of stakeholders invited to participate in the project and workshop attendance records is included in the stakeholder database in **Appendix D**.

Table 1 – Nashville Area Stakeholder Agencies and Contacts

Stakeholder Agency	Address	Contact
City of Franklin	109 3rd Avenue South Franklin, TN 37064-3731	Kevin Comstock
City of Franklin	109 3rd Avenue South Franklin, TN 37064-3731	Carl Baughman
City of Gallatin Fire Department	119 GFD Memorial Blvd. Gallatin, TN 37066	William Crook
City of Lebanon	200 North Castle Heights Ave., Suite 300 Lebanon, TN 37087	Magi Tilton
City of Mt. Juliet Public Works	2425 N. Mt. Juliet Road Mt. Juliet, TN 37122	Marlin Keel, P.E.
City of Murfreesboro Police	302 South Church Street Murfreesboro, TN 37130-3732	Glen Chrisman
City of Nashville Police Department	200 James Robertson Parkway Nashville, TN 37219-6399	Ronal Serpas
Federal Highway Administration – Tennessee Division	404 BNA Drive Building 200, Suite 508 Nashville, TN 37217	Don Gedge
Federal Highway Administration – Tennessee Division	404 BNA Driven Building 200, Suite 508 Nashville, TN 37217	Britta Stein
Franklin Transit Authority	708 Columbia Avenue Franklin, TN 37065	Sue Connor
Gallatin Police Department	130 W Franklin St. Gallatin, TN 37066	Bill Vahldiek
Metro Nashville Emergency Communications Center	2060 15th Ave S Nashville, TN 37212	Duane Philips
Metro Nashville Public Works	720 South 5th Street Nashville, TN 37206	Jonathan Cleghon
Metro Nashville Public Works	720 South 5th Street Nashville, TN 37206	Robert Weithofer
Mid-Cumberland Human Resource Agency Public Transit	1101 Kermit Drive, Suite 300 Nashville, TN 37217	Jeff Simpson
Mid-Cumberland Human Resource Agency Public Transit	1101 Kermit Drive, Suite 300 Nashville, TN 37217	Cheryl Hunter
Mid-Cumberland Human Resource Agency Public Transit	1101 Kermit Drive, Suite 300 Nashville, TN 37217	Jeff Pancirov
Nashville Area Metropolitan Planning Organization	Metro Office Building 800 Second Avenue South Nashville, Tennessee 37201	Michael Skipper
Nashville Area Metropolitan Planning Organization	Metro Office Building 800 Second Avenue South Nashville, Tennessee 37201	Max Baker
Nashville Metropolitan Transit Authority	130 Nestor Street Nashville, TN 37210	Andy Zimmerman

Table 1 – Nashville Area Stakeholder Agencies and Contacts (continued)

Stakeholder Agency	Address	Contact
Nashville Metropolitan Transit Authority	130 Nestor Street Nashville, TN 37210	Robert Greene
TDOT – Community Relations Division	505 Deaderick St. Suite 700, James K. Polk Building Nashville, TN 37243-0332	Luanne Grandinetti
TDOT – Community Relations Division	505 Deaderick St. Suite 700, James K. Polk Building Nashville, TN 37243-0332	John Hall
TDOT – Design Division	505 Deaderick St. Suite 1300, James K. Polk Building Nashville, TN 37243	Jeff Jones
TDOT – Long Range Planning Division	505 Deaderick St. Suite 900, James K Polk Bldg Nashville, TN 37243-0334	Mike Presley
TDOT – Long Range Planning Division	505 Deaderick St. Suite 900, James K Polk Bldg Nashville, TN 37243-0334	Terry Gladden
TDOT – Project Planning Division	505 Deaderick St. Suite 1000, James K. Polk Building Nashville, Tennessee 37243-0344	Steve Allen
TDOT – Region 3	6603 Centennial Blvd. Nashville, TN 37243-0360	Ali Farhangi
TDOT – Region 3	6603 Centennial Blvd. Nashville, TN 37243-0360	Ray Hallavant
Town of Smyrna	315 South Lowry Street Smyrna, TN 37167	Kevin Rigsby
Town of Smyrna Public Works	315 South Lowry Street Smyrna, TN. 37167	David King
Williamson County Emergency Management Agency	1320 West Main, Suite B-30 Franklin, TN 37064	Mike Thompson
Wilson County	228 E. Main St. Room 5, Wilson County Courthouse Lebanon, TN 37087	Tom Brashear

2. REGIONAL ITS ARCHITECTURE UPDATE PROCESS

The update of the Regional ITS Architecture and Deployment Plan for the Nashville Area relied heavily on stakeholder input to ensure that the architecture reflected local needs. A series of four workshops was held with stakeholders to gather input, and draft documents were made available to stakeholders for review and comment.

The process followed for the Nashville Area was designed to ensure that stakeholders could provide input and review for the development of the Region's ITS Architecture and Deployment Plan. **Figure 2** illustrates the process followed.

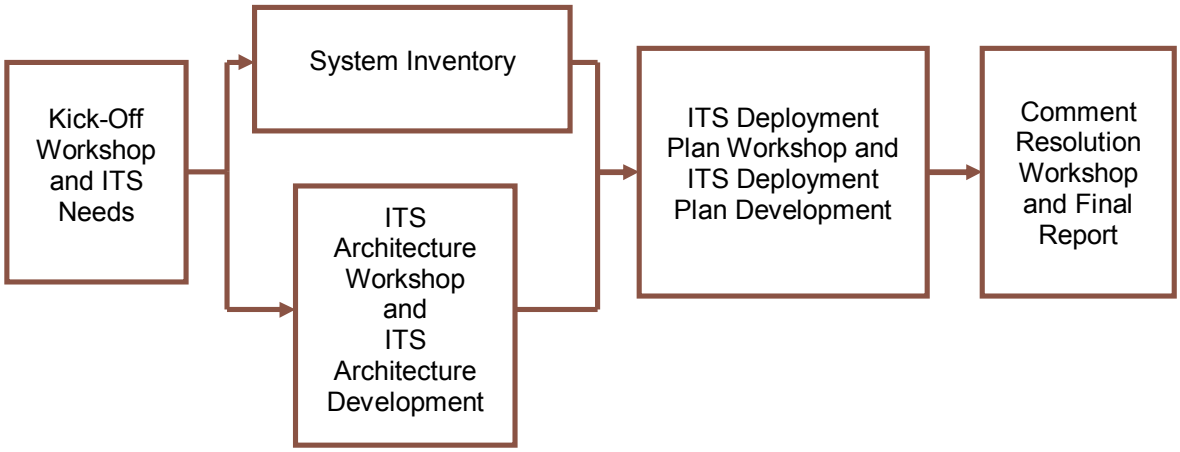

Figure 2 – Nashville Area Regional ITS Architecture and Deployment Plan Development Process

2.1 Stakeholder Workshops

A total of four workshops with stakeholders over a period of eight months were held to update the Nashville Area Regional ITS Architecture and Deployment Plan. These workshops included:

- Kick-Off Workshop;
- Regional ITS Architecture Development Workshop;
- ITS Deployment Plan Workshop;
- Comment Resolution Workshop;

Key components of the process are described below:

Task 1 – Kick-Off Workshop and ITS Needs: A stakeholder group was identified that included representatives from regional transportation, public works, public safety, and emergency management agencies. The group was invited to the project Kick-Off Workshop where ITS needs for the Region were identified and dates for upcoming workshops agreed upon.

Task 2 – System Inventory: Collecting information for the system inventory began at the Kick-Off Workshop through discussions with the stakeholders to determine existing and planned ITS elements in the Region. After the Kick-Off Workshop, follow-up calls and additional research was conducted complete the system inventory.

Task 3 – ITS Architecture Workshop and ITS Architecture Development: The purpose of the Regional ITS Architecture Workshop was to review the system inventory with stakeholders and update the Nashville Area Regional ITS Architecture. Training on the National ITS Architecture was integrated into the workshop so that key elements of the architecture, such as market packages, could be explained prior to the selection and editing of these elements. Stakeholders reviewed the market packages that are currently available in the National ITS Architecture as well as those that were included in the 2003 Nashville Regional ITS Architecture. A consensus was reached on which market packages to include in the 2010 update and then the selected market packages were customized for the Region.

The result of the Regional ITS Architecture Workshop was an ITS architecture for the Nashville Area that included a system inventory, interconnect diagram, customized market packages, functional requirements, and relevant ITS standards. Following the workshop, a Draft Regional ITS Architecture document was prepared and sent to stakeholders for review and comment.

Task 4 – ITS Deployment Plan Workshop and ITS Deployment Plan Development: A draft project listing for the Region was presented to stakeholders at the Regional ITS Deployment Plan Workshop. Stakeholders were asked to provide input on the recommended projects, responsible agencies, associated costs, and deployment timeframe. Following the workshop, a Draft Regional ITS Deployment Plan document was prepared and sent to stakeholders for review and comment.

Task 5 – Comment Resolution Workshop and Final Report: A Comment Resolution Workshop was held with stakeholders to review comments on the Draft Regional ITS Architecture and Draft Regional ITS Deployment Plan, and discuss how the Regional ITS Architecture should be used and maintained. Comments were addressed and a Final Draft Regional ITS Architecture and Final Draft Regional ITS Deployment Plan were developed and sent to stakeholders for a second round of comments before the final reports were developed. In addition, an Executive Summary was also developed as well as a Turbo Architecture database. Project documents were made available to all stakeholders on the project website. Hard copies of the final documents as well as an electronic copy of the Turbo Architecture database for the Nashville Area were also sent to representatives from the Nashville Area MPO, TDOT Long Range Planning Division, and the FHWA Tennessee Division Office.

2.2 Turbo Architecture

Turbo Architecture Version 4.1 was used to develop the Nashville Area Regional ITS Architecture. Turbo Architecture is a software application that was developed by the United States Department of Transportation (USDOT) to be used as a tool for documenting and maintaining ITS architectures. Version 4.1 of Turbo Architecture was released in March 2009 and was developed to support Version 6.1 of the National ITS Architecture. Use of the Turbo Architecture software in development of the regional ITS architectures is recommended by both the FHWA and the FTA.

In the Nashville Area, the Turbo Architecture database that was developed was based on the ITS market packages which are provided in **Appendix B** of this report. The ITS market packages provide a graphical representation of the services stakeholders in the Region would like ITS to provide. In each market package the elements, such as a TMC or a CCTV camera, and the data that is shared between them are shown. Turbo Architecture allows the Region to document all of the elements and data flows that exist or are planned in the Region. Turbo Architecture also allows the user to quickly access any standards that are associated with the data flows as well as generate reports and diagrams to assist in reviewing the data. Some examples of the useful

reports and diagrams that may be generated using the Turbo Architecture software are included in **Table 2**.

Table 2 – Turbo Architecture Report and Diagrams

Report or Diagram Name	Functions
Stakeholder Report	Provides a description of the stakeholder and the associated elements for each stakeholder in the Regional ITS Architecture.
Inventory Report	Provides a description and status for each element in the Regional ITS Architecture.
Market Packages Report	Identifies each of the market packages selected for the Region and the elements associated with each market package.
Functional Requirements Report	Identifies the functions that each element provides.
Interconnect Report	Identifies for each element all of the other elements that are connected and the status of each connection.
Standards Activities Report	Identifies relevant standards associated with each of the data flows used in the Regional ITS Architecture.
Subsystem Diagram	Identifies the subsystems from the National ITS Architecture that are included in the Regional ITS Architecture.
Interconnect Diagrams	Identifies for each element all of the other elements that are connected and the status of each connection. The Interconnect Diagrams can be customized to show all elements in the Regional ITS Architecture or a single element can be selected so that only the connections it has with other elements are shown. Interconnect Diagrams can also be viewed by individual market packages to view all of the elements and connections in each market package.
Flow Diagrams	Flow Diagrams are similar to Interconnect Diagrams; however, the actual data flows that are part of each connection between elements are also shown.

Turbo Architecture saves data in Microsoft Access compatible data files. Turbo Architecture files can be accessed using Microsoft Access, although use of Access will not provide nearly the same amount of capabilities as accessing the files using the Turbo Architecture software. With the release of Version 4.1 of Turbo Architecture, the USDOT began offering the Turbo Architecture software free of charge and provides a link for downloading the software on the National ITS Architecture website. At the time this report was written that site was located at www.iteris.com/itsarch/ and Version 4.1 was the most recent version available.

3. REGIONAL NEEDS AND INVENTORY

3.1 Regional Needs

Regional needs that could be addressed by ITS were identified by stakeholders in the Nashville Area Regional ITS Architecture workshops held in October and December of 2009 and March of 2010. In addition, the Nashville Area MPO 2030 Long Range Transportation Plan (LRTP) was reviewed to determine other regional needs that could possibly be addressed in some way through ITS.

Within the 2030 LRTP there were five goals that were defined for the plan, each with a corresponding set of objectives. Two of the goals had objectives that could be met in whole or in part through the use of ITS. These goals and there corresponding objectives that are related to ITS are summarized below.

2030 Goal 3 – Reduce Congestion: Apply traffic management techniques that increase transportation system capacity and minimize disruptions to normal operation, such as traffic surveillance and control systems, motorist information systems, computerized and coordinated signal systems, incident management, ITS, and reversible lanes.

2030 Goal 4 – Relationship between Transportation, Air Quality, and Energy Conservation: Implement measures, where appropriate, to improve operating efficiency and reduce idling time such as incident management, motorist information systems, and coordinated traffic signal operation.

The needs identified through the Regional ITS Architecture development process as well as the 2030 LRTP provided guidance for determining which market packages should be included in the architecture. Stakeholders identified ITS needs for the Nashville Area in the following areas:

- Traffic Management;
- Traveler Information;
- Emergency Management; and
- Archived Data Management.

In addition to the above areas, during discussions of specific ITS market packages for the Region stakeholders also identified market packages in the areas of Public Transportation Management, Maintenance and Construction Management, and Commercial Vehicles Operations.

In Section 4.1.4 a complete list of regional needs is presented along with the ITS market packages that have been recommended for the Region to consider implementing or expanding (if the market package currently exists.) Some of the key needs that were specific to ITS that were identified through the development of the Regional ITS Architecture included:

- Improve information sharing between the TDOT Region 3 SmartWay TMC and the municipal TOCs in the Region;
- Deploy arterial DMS or other roadside traveler information system;
- Develop alternate signal timing plans that can be implemented during incidents, detours, or special events;
- Develop a centralized regional information resource for traffic information;
- Expand the TDOT SmartWay 511 traveler information system by adding incident and closure information for arterial roadways;

- Improve coordination with the THP to share more real-time information between the TDOT Region 3 SmartWay TMC and THP;
- Improve emergency management coordination, especially along jurisdictional boundaries to speed incident response;
- Provide real-time maintenance and construction management information from traffic management to public safety and emergency management agencies to support quick dispatch of first responders; and
- Provide emergency management with access to CCTV camera feeds on MDTs.

3.2 Regional Inventory

The inventory and needs documented at the Kick-Off Workshop are the starting point for developing an ITS architecture for the Region. These ITS systems and components are used to customize the National ITS Architecture and create the Regional ITS Architecture for the Nashville Area.

When developing customized elements, the stakeholder group agreed to create individual traffic, maintenance, and emergency management elements for the larger cities and all of the counties in the Region. Smaller cities were generally covered under elements named as Municipal elements. These elements acted as placeholders in the Regional ITS Architecture for small municipalities that do not have ITS deployed at this time but may add ITS elements in the future. This documentation allows those communities to be included in the Regional ITS Architecture, and therefore eligible to use federal funding on potential future ITS deployments provided those deployments conform to the Regional ITS Architecture, even if there are no specific plans for ITS implementation at this time.

3.2.1 Stakeholders

Each element included in the Nashville Area Regional ITS Architecture is associated with a stakeholder agency. A listing of stakeholders as identified in the Nashville Regional ITS Architecture can be found in **Table 3** along with a description of the stakeholder.

Table 3 – Nashville Area Stakeholder Descriptions

Stakeholder	Stakeholder Description
Alabama DOT	Alabama Department of Transportation. Responsible for the construction, maintenance, and operation of state roadways in Alabama.
City of Brentwood	Municipal government for the City of Brentwood. Covers all city departments including those that deal with traffic and public safety.
City of Franklin	Municipal government for the City of Franklin. Covers all city departments including those that deal with traffic and public safety.
City of Gallatin	Municipal government for the City of Gallatin. Covers all city departments including those that deal with traffic and public safety.
City of Hendersonville	Municipal government for the City of Hendersonville. Covers all city departments including those that deal with traffic and public safety.
City of La Vergne	Municipal government for the City of La Vergne. Covers all city departments including those that deal with traffic and public safety.
City of Lebanon	Municipal government for the City of Lebanon. Covers all city departments including those that deal with traffic and public safety.
City of Mt. Juliet	Municipal government for the Mt. Juliet. Covers all city departments including those that deal with traffic and public safety.
City of Murfreesboro	Municipal government for the City of Murfreesboro. Covers all city departments including those that deal with traffic and public safety.
City of Smyrna	Municipal government for the City of Smyrna. Covers all city departments including those that deal with traffic and public safety.
City of Spring Hill	Municipal government for the City of Spring Hill. Covers all city departments including those that deal with traffic and public safety.
Commercial Vehicle Operators	Operators of commercial vehicles.
Financial Institution	Institution that handles exchange of money for transit electronic fare collection.
Franklin Transit	Responsible for fixed route and paratransit service in the City of Franklin.
Kentucky Transportation Cabinet	Responsible for the construction, maintenance, and operation of state roadways in Kentucky.
MCHRA	Mid-Cumberland Human Resource Agency. Provides curb to curb rural public transit services in 12 middle Tennessee counties including Robertson, Sumner, Wilson, Williamson and Rutherford counties in the Nashville Region.
Media	Local media outlets including television stations, newspapers, radio stations and their associated websites.
Metro Nashville	Government for the City of Nashville and Davidson County. Covers all departments including those that deal with traffic and public safety.
MTA	Metropolitan Transit Authority. Responsible for fixed route and paratransit service in the Nashville metropolitan area.
Municipal and County Emergency Management Stakeholder Group	Stakeholder group made up Emergency Management Agencies from the following: Metro Nashville; Cities of Franklin, Gallatin, Hendersonville, La Vergne, Lebanon, Mt. Juliet, Murfreesboro, Smyrna, and all other municipalities not specifically called out in the Regional ITS Architecture; Robertson, Rutherford, Sumner, Wilson and Williamson Counties

Table 3 – Nashville Area Stakeholder Descriptions (continued)

Stakeholder	Stakeholder Description
Municipal/County Government	Government for various municipalities and counties within the Region that are not specifically called out in the Regional ITS Architecture. Covers all departments including those that deal with traffic and public safety.
Nashville Area MPO	Metropolitan Planning Organization for the Nashville Area. Responsible for regional transportation planning.
NOAA	The National Oceanic and Atmospheric Administration gathers weather information and issues severe weather warnings.
Other Agencies	Stakeholder group made up of a wide variety of agencies. The associated elements are groups of agencies or providers that do not have a primary stakeholder agency.
Private Information Provider	Private sector business responsible for the gathering and distribution of traveler information. This service is typically provided on a subscription basis.
Private Service Provider	Private businesses providing transportation related service.
Rail Operators	Companies that operate rail systems including the dispatch and control of trains and the maintenance and operations of railroad tracks.
Rover	Transit agency operating in the City of Murfreesboro. Currently Rover only operates fixed route service. Mid-Cumberland Human Resource Agency provides paratransit service within the City.
RTA	Regional Transportation Authority. Provides transit service in a 9 county area and includes express bus, park and ride lots, HOV lanes, and regional rail service.
Rutherford County	Government for Rutherford County. Includes all county departments including the Sheriff's Office and Highway Department as well as the Rutherford County Emergency Management Agency.
Sumner County	Government for Sumner County. Includes all county departments including the Sheriff's Office and Highway Department as well as the Sumner County Emergency Management Agency.
System Users	All of the users of the transportation system.
TDOT	Tennessee Department of Transportation. Responsible for the construction, maintenance, and operation of state roadways in Tennessee.
TEMA	Tennessee Emergency Management Agency. Responsible for emergency operations during a disaster or large scale incident.
Tennessee Bureau of Investigation	Statewide law enforcement agency responsible for issuing statewide AMBER Alerts in Tennessee.
Tennessee Department of Health and Human Services	State department that manages funding for medical transportation services.
THP	Tennessee Highway Patrol. Responsible for the statewide enforcement of traffic safety laws as well as commercial vehicle regulations.
Williamson County	Government for Williamson County. Includes all county departments including the Sheriff's Office and Highway Department as well as the Williamson County Emergency Management Agency.
Wilson County	Government for Wilson County. Includes all county departments including the Sheriff's Office and Highway Department as well as the Wilson County Emergency Management Agency.

3.2.2 ITS Elements

The ITS inventory is documented in the Regional ITS Architecture as elements. **Table 4** sorts the inventory by stakeholder so that each stakeholder can easily identify and review all of the architecture elements associated with their agency. The table includes the status of the element. In many cases an element classified as existing might still need to be enhanced to attain the service level desired by the Region.

The naming convention used for elements in the Nashville Area Regional ITS Architecture is consistent with the naming convention used in the Statewide ITS Architecture. This consistency provides seamless connections between the Regional and Statewide ITS Architecture.

Table 4 – Nashville Area Inventory of ITS Elements

Stakeholder	Element Name	Element Description	Status
Alabama DOT	Alabama DOT	Alabama Department of Transportation. Responsible for the construction, maintenance, and operation of state roadways in Alabama.	Existing
City of Brentwood	City of Brentwood CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Existing
	City of Brentwood DMS	Dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Planned
	City of Brentwood Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Brentwood Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors (, or traditional loops.	Existing
	City of Brentwood Fire Vehicles	City of Brentwood Fire Department vehicles.	Existing
	City of Brentwood Maintenance Vehicles	City of Brentwood vehicles used in maintenance operations.	Existing
	City of Brentwood Police Vehicles	City of Brentwood Police Department vehicles.	Existing
	City of Brentwood Portable DMS	Portable dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Planned
	City of Brentwood Rail Notification System	Roadway equipment used to alert motorists that a crossing is currently blocked by a train.	Planned
	City of Brentwood Smart Work Zone Equipment	Portable ITS equipment that can be used in work zones to more efficiently manage traffic and provide traveler information. Includes portable closed circuit television cameras, vehicle detection, and dynamic message signs.	Planned
	City of Brentwood TOC	Traffic operations center for the City of Brentwood. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of Brentwood.	Existing
	City of Brentwood Traffic Signals	Traffic signal system operated and maintained by the City of Brentwood.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
City of Brentwood (continued)	City of Brentwood Website	Website for the City of Brentwood. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Franklin	City of Franklin CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Existing
	City of Franklin DMS	Dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Planned
	City of Franklin Email Notification System	Subscription based email notification system for distribution of traffic and roadway maintenance information.	Existing
	City of Franklin Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Franklin Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	City of Franklin Fire Vehicles	City of Franklin Fire Department vehicles.	Existing
	City of Franklin Incident Response Vehicles	Vehicles used for incident management and motorist assistance as part of an arterial incident management program.	Planned
	City of Franklin Police Department	Police department for the City of Franklin. The emergency dispatch functions for the Police Department are included in the Franklin 911 Dispatch. Non-emergency functions include the collection of crash data.	Existing
	City of Franklin Police Vehicles	City of Franklin Police Department vehicles.	Existing
	City of Franklin Portable DMS	Portable dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Existing
	City of Franklin Rail Notification System	Roadway equipment used to alert motorists that a crossing is currently blocked by a train.	Planned
	City of Franklin Reversible Lane Equipment	Lane control signals are other traffic control devices used in the operation of reversible lanes.	Existing
	City of Franklin RWIS	Road weather information system sensors to monitor weather conditions at the roadway.	Planned

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
City of Franklin (continued)	City of Franklin Smart Work Zone Equipment	Portable ITS equipment that can be used in work zones to more efficiently manage traffic and provide traveler information. Includes portable closed circuit television cameras, vehicle detection, and dynamic message signs.	Planned
	City of Franklin Speed Monitoring Equipment	Field equipment used for monitoring roadway speeds.	Planned
	City of Franklin TOC	Traffic operations center for the City of Franklin. Responsible for the operation of the traffic signal system, closed circuit television cameras, and any other ITS infrastructure deployed by the City of Franklin.	Existing
	City of Franklin Traffic Signals	Traffic signal system operated and maintained by the City of Franklin.	Existing
	City of Franklin Website	Website for the City of Franklin. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Gallatin	City of Gallatin CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	City of Gallatin Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Gallatin Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	City of Gallatin Fire Vehicles	City of Gallatin Fire Department vehicles.	Existing
	City of Gallatin Police Vehicles	City of Gallatin Police Department vehicles.	Existing
	City of Gallatin Portable DMS	Portable dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Planned
	City of Gallatin Rail Notification System	Roadway equipment used to alert motorists that a crossing is currently blocked by a train.	Planned
	City of Gallatin TOC	Traffic operations center for the City of Gallatin. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs , and any other ITS infrastructure deployed by the City of Gallatin.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
City of Gallatin (continued)	City of Gallatin Traffic Signals	Traffic signal system operated and maintained by the City of Gallatin.	Existing
	City of Gallatin Website	Website for the City of Gallatin. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Hendersonville	City of Hendersonville CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Existing
	City of Hendersonville Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Hendersonville Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	City of Hendersonville Fire Vehicles	City of Hendersonville Fire Department vehicles.	Existing
	City of Hendersonville Police Vehicles	City of Hendersonville Police Department vehicles.	Existing
	City of Hendersonville Rail Notification System	Roadway equipment used to alert motorists that a crossing is currently blocked by a train.	Planned
	City of Hendersonville TOC	Traffic operations center for the City of Hendersonville. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of Hendersonville.	Planned
	City of Hendersonville Traffic Signals	Traffic signal system operated and maintained by the City of Hendersonville.	Existing
	City of Hendersonville Website	Website for the City of Hendersonville. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of La Vergne	City of La Vergne CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	City of La Vergne Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
City of La Vergne (continued)	City of La Vergne Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	City of La Vergne Fire Vehicles	City of La Vergne Fire Department vehicles.	Existing
	City of La Vergne Police Vehicles	City of La Vergne Police Department vehicles.	Existing
	City of La Vergne TOC	Traffic operations center for the City of La Vergne. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of La Vergne.	Planned
	City of La Vergne Traffic Signals	Traffic signal system operated and maintained by the City of La Vergne.	Existing
	City of La Vergne Website	Website for the City of La Vergne. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Lebanon	City of Lebanon CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	City of Lebanon Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Lebanon Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Planned
	City of Lebanon Fire Vehicles	City of Lebanon Fire Department vehicles.	Existing
	City of Lebanon Police Vehicles	City of Lebanon Police Department vehicles.	Existing
	City of Lebanon Portable DMS	Portable dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Planned
	City of Lebanon TOC	Traffic operations center for the City of Lebanon. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of Lebanon.	Existing
	City of Lebanon Traffic Signals	Traffic signal system operated and maintained by the City of Lebanon.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
City of Lebanon (continued)	City of Lebanon Website	Website for the City of Lebanon. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Mt. Juliet	City of Mt. Juliet CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	City of Mt. Juliet Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Mt. Juliet Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	City of Mt. Juliet Fire Vehicles	City of Mt. Juliet Fire Department vehicles.	Planned
	City of Mt. Juliet Police Vehicles	City of Mt. Juliet Police Department vehicles.	Existing
	City of Mt. Juliet TOC	Traffic operations center for the City of Mt. Juliet. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of Mt. Juliet.	Existing
	City of Mt. Juliet Traffic Signals	Traffic signal system operated and maintained by the City of Mt. Juliet.	Existing
	City of Mt. Juliet Website	Website for the City of Mt. Juliet. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Murfreesboro	City of Murfreesboro CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Existing
	City of Murfreesboro DMS	Dynamic message signs for traffic information dissemination operated by the City of Murfreesboro.	Planned
	City of Murfreesboro Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Murfreesboro Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
City of Murfreesboro (continued)	City of Murfreesboro Fire Vehicles	City of Murfreesboro Fire Department vehicles.	Existing
	City of Murfreesboro Police Vehicles	City of Murfreesboro Police Department vehicles.	Existing
	City of Murfreesboro Rail Notification System	Roadway equipment used to alert motorists that a crossing is currently blocked by a train.	Planned
	City of Murfreesboro TOC	Traffic operations center for the City of Murfreesboro. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of Murfreesboro.	Existing
	City of Murfreesboro Traffic Signals	Traffic signal system operated and maintained by the City of Murfreesboro.	Existing
	City of Murfreesboro Website	Website for the City of Murfreesboro. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Smyrna	City of Smyrna CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	City of Smyrna Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Smyrna Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	City of Smyrna Fire Vehicles	City of Smyrna Fire Department vehicles.	Existing
	City of Smyrna Police Vehicles	City of Smyrna Police Department vehicles.	Existing
	City of Smyrna Portable DMS	Portable dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Planned
	City of Smyrna TOC	Traffic operations center for the City of Smyrna. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of Smyrna.	Existing
	City of Smyrna Traffic Signals	Traffic signal system operated and maintained by the City of Smyrna.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
City of Smyrna (continued)	City of Smyrna Website	Website for the City of Smyrna. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
City of Spring Hill	City of Spring Hill CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	City of Spring Hill Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the City and dispatching emergency responders.	Existing
	City of Spring Hill Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	City of Spring Hill Fire Vehicles	City of Spring Hill Fire Department vehicles.	Existing
	City of Spring Hill Police Vehicles	City of Spring Hill Police Department vehicles.	Existing
	City of Spring Hill TOC	Traffic operations center for the City of Spring Hill. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by the City of Spring Hill.	Planned
	City of Spring Hill Traffic Signals	Traffic signal system operated by the City of Spring Hill.	Existing
	City of Spring Hill Website	Website for the City of Spring Hill. Includes information on City departments and in the future it is envisioned that the website may have real-time information about roadway conditions, including traffic images.	Existing
Commercial Vehicle Operators	Commercial Vehicles	Privately owned commercial vehicles traveling within the Region.	Existing
Financial Institution	Financial Service Provider	Service provider that handles exchange of money for transit electronic payment collection.	Existing
Franklin Transit	Franklin Transit Authority Data Archive	Transit data archive for Franklin Transit. Used by the National Transit Database, Federal Transit Administration, and TDOT Office of Public Transportation.	Existing
	Franklin Transit Authority Dispatch	Transit dispatch center responsible for the tracking, scheduling, and dispatching of fixed route and paratransit vehicles operated by Franklin Transit.	Existing
	Franklin Transit Authority Facility CCTV Camera Surveillance	Closed circuit television camera surveillance at transit transfer centers or other transit facilities.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
Franklin Transit (continued)	Franklin Transit Authority Fixed Route Vehicles	Franklin Transit fixed route vehicles.	Existing
	Franklin Transit Authority Kiosks	Kiosks for dissemination of transit traveler information. Kiosks can also be used for the purchase and recharging of electronic fare payment cards.	Existing
	Franklin Transit Authority Paratransit Vehicles	Franklin Transit vehicles that provide transit means for disabled passengers.	Existing
	Franklin Transit Authority Website	Website for Franklin Transit. Includes information on Franklin Transit services and in the future it is envisioned that the website will have real-time bus arrival information.	Existing
Kentucky Transportation Cabinet	Kentucky Transportation Cabinet	The Kentucky Transportation Cabinet is responsible for the construction, maintenance, and operation of state roadways in Kentucky.	Existing
MCHRA	MCHRA IVR System	Mid-Cumberland Human Resource Agency interactive voice response system. The interactive portion of the system is not yet operational, but an automated reminder system for scheduled trips or notification of service disruptions is.	Existing
	MCHRA Transit Data Archive	Mid-Cumberland Human Resource Agency transit ridership statistics used by the National Transit Database, FTA, and TDOT Office of Public Transportation.	Existing
	MCHRA Transit Dispatch	Mid-Cumberland Human Resource Agency dispatch for curb to curb rural public transit services in 12 middle Tennessee Counties including Robertson, Sumner, Wilson, Williamson and Rutherford counties in the Nashville Region.	Existing
	MCHRA Transit Facility CCTV Camera Surveillance	Mid-Cumberland Human Resource Agency closed circuit television camera surveillance at transit transfer centers or other transit facilities.	Planned
	MCHRA Transit Vehicles	Mid-Cumberland Human Resource Agency demand response vehicle fleet.	Existing
	MCHRA Website	Mid-Cumberland Human Resource Agency transit website. Includes information on services and in the future it is envisioned that the website will have real-time information about regional transit services and the ability to make trip requests online.	Existing
Media	City of Murfreesboro CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	Local Print and Broadcast Media	Local media that provide traffic or incident information to the public.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
Metro Nashville	City of Nashville Fire and EMS Vehicles	City of Nashville Fire Department and Emergency Medical Services vehicles serving the City of Nashville.	Existing
	Metro Nashville	Government for that City of Nashville and Davidson County. Covers all departments including those that deal with traffic and public safety.	Existing
	Metro Nashville CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	Metro Nashville DMS	Dynamic message signs for traffic information dissemination operated by Metro Nashville.	Planned
	Metro Nashville Email Notification System	Subscription based notification service for the distribution of emergency management and traffic management information.	Existing
	Metro Nashville Emergency Services Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within Davidson County and dispatching emergency responders or transferring the call to the appropriate municipal emergency dispatch.	Existing
	Metro Nashville Engineers Office	Responsible for the administration of Metro Nashville maintenance and construction projects.	Existing
	Metro Nashville Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	Metro Nashville Incident Response Vehicles	Vehicles used for incident management and motorist assistance as part of an arterial incident management program.	Existing
	Metro Nashville Maintenance Vehicles	Metro Nashville vehicles used in maintenance operations.	Existing
	Metro Nashville OEM	Office of Emergency Management for the City of Nashville and Davidson County. The OEM plays daily role in traffic incident management as well as operating the EOC during large scale emergencies.	Existing
	Metro Nashville Police Department	Police department for Metro Nashville. The emergency dispatch functions for the Police Department are included in the Metro Nashville Emergency Services Dispatch. Non-emergency functions include the collection of crash data and enforcement of speed limits and commercial vehicles.	Existing
	Metro Nashville Police Vehicles	Metro Nashville Police Department vehicles.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
Metro Nashville (continued)	Metro Nashville Portable DMS	Portable dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Existing
	Metro Nashville Public Works Department	Department that oversees the maintenance of streets, sidewalks, and roadway right-of-way.	Existing
	Metro Nashville Rail Notification System	Roadway equipment used to alert motorists that a crossing is currently blocked by a train.	Planned
	Metro Nashville Reversible Lane Equipment	Lane control signals are other traffic control devices used in the operation of reversible lanes.	Existing
	Metro Nashville RWIS	Road weather information system sensors to monitor weather conditions at the roadway.	Existing
	Metro Nashville Speed Monitoring Equipment	Field equipment used for monitoring roadway speeds.	Planned
	Metro Nashville TOC	Traffic operations center for Metro Nashville. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by Metro Nashville.	Existing
	Metro Nashville Traffic Signals	Traffic signal system operated and maintained by Metro Nashville.	Existing
	Metro Nashville Website	Website that includes information on Metro Nashville departments. In the future it is envisioned that the website would have real-time information about roadway conditions.	Existing
MTA	MTA Data Archive	Metropolitan Transit Authority transit ridership statistics used by the National Transit Database, FTA, and TDOT Office of Public Transportation.	Existing
	MTA Dispatch	Metropolitan Transit Authority dispatch for transit service in Nashville and portions of Davidson County. MTA operates fixed route buses, paratransit service, and park and ride facilities for MTA riders, carpoolers and vanpoolers.	Existing
	MTA Email Notification System	Metropolitan Transit Authority subscription based email notification system for dissemination of route disruption or delay information.	Planned
	MTA Facility CCTV Camera Surveillance	Metropolitan Transit Authority closed circuit television camera surveillance at transit transfer centers or other transit facilities.	Existing
	MTA Fixed Route Vehicles	Metropolitan Transit Authority fixed route vehicles. Includes neighborhood routes, downtown trolleys, bus rapid transit, and any other fixed route service.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
MTA (continued)	MTA Kiosks	Metropolitan Transit Authority kiosks for dissemination of transit traveler information. Kiosks can also be used for the purchase and recharging of electronic fare payment cards.	Existing
	MTA Paratransit Vehicles	Metropolitan Transit Authority paratransit vehicles.	Existing
	MTA Transit Website	Metropolitan Transit Authority website. Includes information on MTA services and in the future it is envisioned that the website will have real-time information about regional transit services.	Existing
Municipal and County Emergency Management Stakeholder Group	All Municipal and County Emergency Dispatch Agencies	Group of emergency management agencies that includes the following: Metro Nashville Emergency Services Dispatch, City of Franklin Emergency Dispatch, City of Gallatin Emergency Dispatch, City of Hendersonville Emergency Dispatch, City of La Vergne Emergency Dispatch, City of Lebanon Emergency Dispatch, City of Mt. Juliet Emergency Dispatch, City of, Murfreesboro Emergency Dispatch, City of Smyrna Emergency Dispatch, Rutherford County Emergency Dispatch, Sumner, County EMS Dispatch, Sumner County PSAP (Sheriff), Wilson County PSAP, Wilson County EMA Dispatch, Williamson, County Emergency Dispatch, and Municipal Public Safety Dispatch	Existing
	All Municipal and County Public Safety Vehicles	Vehicles used by City and County law enforcement.	Existing
Municipal/County Government	Municipal CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Planned
	Municipal Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Planned
	Municipal Public Safety Dispatch	Responsible for the dispatch of municipal public safety vehicles.	Existing
	Municipal Public Safety Vehicles	Vehicles used by public safety in Municipal County, including the Municipal County Sheriff's Office.	Existing
	Municipal TOC	Traffic operations centers responsible for the operation of municipal signal systems and any other municipal ITS infrastructure.	Planned
	Municipal Traffic Signals	Municipal traffic signal systems within the Nashville Region.	Existing
	Municipal/County Engineers Office	Municipal/County Engineer's office is responsible for administration of maintenance and construction projects within the Region as well as communicating work zone information to the public through the Public Information Office.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
Municipal/County Government (continued)	Municipal/County Maintenance	Department that oversees the maintenance of streets, sidewalks, and roadway right-of-way.	Existing
	Municipal/County Maintenance Vehicles	Vehicles used by Municipal/County maintenance departments in maintenance and construction activities.	Existing
	Municipal/County Portable DMS	Portable dynamic message signs used for traffic information dissemination during maintenance and construction activities, special events, or incidents.	Planned
	Municipal/County RWIS	Road weather information system sensors to monitor weather conditions at the roadway.	Planned
	Municipal/County Website	Municipal or county website that includes information on agency departments. In the future it is envisioned that the website would have real-time information about roadway conditions.	Existing
	Other Davidson County Emergency Dispatch Agencies	Group of emergency management agencies in Davidson County that includes the following: City of Oak Hill, City of Berry Hill, City of Forest Hills, City of Lakewood, City of Belle Meade, City of Goodlettsville, Vanderbilt University Police Department, Tennessee State Police Department, and BNA Airport Police	Existing
Nashville Area MPO	Nashville Area MPO Data Archive	Archive of regional transportation data used in planning.	Planned
NOAA	National Weather Service	Provides official US weather, marine, fire, and aviation forecasts, warnings, meteorological products, climate forecasts, and information about meteorology.	Existing
Other Agencies	Electronic Fare Payment Card	Medium for collection of transit fares electronically.	Existing
	Local School Bus Dispatch	Recipient of road weather condition information.	Existing
	Other Maintenance and Construction Management	Additional maintenance and construction operations agencies with which information is shared for coordination in an emergency situation.	Existing
	Other Traffic Management	Additional traffic management agencies with which information is shared for coordination in an emergency situation.	Existing
	Private Transportation Providers	Private providers of transportation services in the Region such as taxis and intercity bus service.	Existing
Private Information Provider	Online Routing Service Provider	Third party routing service, such as Google Transit, that uses transit route and schedule information to provide personalized transit trip planning.	Existing
	Private Probe Data Provider	Private provider of aggregated vehicle probe data for monitoring of road network conditions.	Planned

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
Private Information Provider (continued)	Private Sector Traveler Information Services	Traveler information service operated by a private entity.	Existing
	Social Networking Services	Subscription based services operated by private providers that provide an option for real-time traveler information dissemination. Examples of such services include Facebook or Twitter.	Existing
Private Service Provider	Inter-City Commuter Bus Service	Commuter bus service operated by private bus service providers.	Existing
Rail Operators	Rail Operator Wayside Equipment	Equipment located along the tracks including railroad crossing gates, bells, and lights as well as the interface to the traffic signal controller indicating the presence of a train.	Existing
Rover	Rover Fixed Route Vehicles	Rover transit fixed route vehicles.	Existing
	Rover Kiosks	Kiosks for dissemination of transit traveler information. Kiosks can also be used for the purchase and recharging of electronic fare payment cards.	Planned
	Rover Transit Data Archive	Transit ridership statistics used by the National Transit Database, FTA, and TDOT Office of Public Transportation.	Planned
	Rover Transit Dispatch	Fixed route transit service in the City of Murfreesboro. Paratransit services are provided by MCHRA Transit.	Existing
	Rover Transit Facility CCTV Camera Surveillance	Closed circuit television camera surveillance at transit transfer centers or other transit facilities.	Planned
	Rover Website	Website for Rover Transit. Includes information on Rover services and in the future it is envisioned that the website will have real-time bus arrival information.	Existing
RTA	RTA Data Archive	Transit ridership statistics used by the National Transit Database, FTA, and TDOT Office of Public Transportation.	Existing
	RTA Dispatch	The Regional Transportation Authority operates regional express bus routes between Nashville and surrounding areas. RTA also operates the Music City Star Regional Rail.	Existing
	RTA Express Buses	Regional express route serving areas surrounding Nashville that connects to the Nashville MTA system.	Existing
	RTA Facility CCTV Camera Surveillance	Closed circuit television camera surveillance at transit transfer centers or other transit facilities.	Planned
	RTA Regional Rail	Commuter rail service operated by RTA.	Existing
	RTA Website	Website for the Regional Transportation Authority. Includes information on RTA services and in the future it is envisioned that the website will have real-time information about regional transit services.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
Rutherford County	Rutherford County EMA	Emergency management agency for Rutherford County. Responsible for disaster planning for the County and operating the emergency operations center (EOC).	Existing
	Rutherford County Emergency Dispatch	911 Public Safety Answering Point responsible for answering all 911 calls made within the county and dispatching emergency responders.	Existing
	Rutherford County EMS Vehicles	Rutherford County Emergency Management Services vehicles.	Existing
	Rutherford County Sheriff Vehicles	Rutherford County Sheriff's Office vehicles.	Existing
	Rutherford County Traffic Signals	Traffic signal system operated by Rutherford County.	Existing
Sumner County	Sumner County EMA	Emergency management agency for Sumner County. Responsible for disaster planning for the County and operating the emergency operations center.	Existing
	Sumner County EMS Dispatch	Responsible for dispatch of Sumner County emergency medical services vehicles.	Existing
	Sumner County EMS Vehicles	Sumner County emergency medical services vehicles.	Existing
	Sumner County PSAP	911 Public Safety Answering Point (PSAP) responsible for answering all 911 calls made within the county and dispatching emergency responders.	Existing
	Sumner County Sheriff Vehicles	Sumner County Sheriff's Office vehicles.	Existing
	Sumner County TOC	Traffic operations center for the Sumner County. Responsible for the operation of the traffic signal system, closed circuit television cameras, dynamic message signs, and any other ITS infrastructure deployed by Sumner County.	Existing
	Sumner County Traffic Signals	Traffic signal system operated and maintained by Sumner County.	Existing
System Users	Archive Data User	Users that request information from the data archive systems.	Existing
	Personal Computing Devices	Computing devices that travelers use to access public information.	Existing
	Private Vehicle	Private vehicles used by travelers.	Existing
	Traveler	User of the transportation system.	Existing
	Vehicle Operator	Operators of commercial vehicles.	Existing
TDOT	TDOT CCTV Cameras	Closed circuit television cameras for traffic surveillance and incident management.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
TDOT (continued)	TDOT District Maintenance	Office that handles most of the routine roadway maintenance and responds to incidents when services are requested by local emergency management.	Existing
	TDOT DMS	Dynamic message signs for traffic information dissemination.	Existing
	TDOT Emergency Services Coordinator	Coordinator responsible for managing the Tennessee Department of Transportation response in a large scale incident or disaster in which the Tennessee Emergency Management Agency (TEMA) activates the state emergency operations center.	Existing
	TDOT Field Sensors	Roadway equipment used to detect vehicle volumes and/or speeds. Includes equipment such as video image vehicle detection systems, remote traffic microwave sensors, or traditional loops.	Existing
	TDOT HAR	Highway advisory radio for traffic information dissemination.	Existing
	TDOT HELP Vehicles	Roadway service patrol vehicles. Currently operate in the Nashville area only and are dispatched elsewhere in the Region for large incidents.	Existing
	TDOT HOV Lane Field Equipment	Devices, such as lane control signals or dynamic message signs that are used in the operation of the HOV lane system.	Planned
	TDOT Maintenance Headquarters	The Tennessee Department of Transportation maintenance headquarters.	Existing
	TDOT Maintenance Vehicles	The Tennessee Department of Transportation vehicles used in maintenance operations.	Existing
	TDOT Project Planning Division Archive	Data archive for the Project Planning Division. The Division is responsible for traffic data collection and analysis and includes the Short Range Planning Office.	Existing
	TDOT Public Information Office	Office responsible for the dissemination of traffic information to the media and the public.	Existing
	TDOT Ramp Metering Equipment	Roadway equipment used in the operation of a ramp metering system. Includes the signals and any other ITS equipment.	Planned
	TDOT Region 1 TMC - Knoxville	Transportation management center for Region 1, located in Knoxville. Responsible for the operation of the ITS equipment located in Region 1. This includes the freeway management system in Knoxville as well as rural ITS deployments.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
TDOT (continued)	TDOT Region 2 TMC - Chattanooga	Transportation management center for Region 2, located in Chattanooga. Responsible for the operation of the ITS equipment located in Region 2. This includes the freeway management system in Chattanooga as well as rural ITS deployments.	Existing
	TDOT Region 3	TDOT Region 3 is responsible for the administration and operation of the state highway system in 26 counties in central Tennessee.	Existing
	TDOT Region 3 Construction Office	Office responsible for oversight of construction projects in Region 3.	Existing
	TDOT Region 3 Engineers Office	Region 3 Engineer's office is responsible for administration of maintenance and construction projects within the Region as well as communicating work zone information to the public through the Public Information Office.	Existing
	TDOT Region 3 HELP Dispatch	Roadway service patrol dispatch. Currently service is limited to the Nashville area except in the case of a large scale incident.	Existing
	TDOT Region 3 Maintenance	Region 3 maintenance headquarters. Responsible for maintenance operations in the Region; however, most routine maintenance is handled by the District Maintenance Offices. There are several District Maintenance Offices within the Region.	Existing
	TDOT Region 3 TMC - Nashville	Transportation management center for Region 3, located in Nashville. Responsible for the operation of the ITS equipment located in Region 3. This includes the freeway management system in Nashville as well as rural ITS deployments.	Existing
	TDOT Region 4 TMC - Memphis	Transportation management center for Region 4, located in Memphis. Responsible for the operation of the ITS equipment located in Region 4. This includes the freeway management system in Memphis as well as rural ITS deployments.	Existing
	TDOT RWIS Sensors	Road weather information system sensors to monitor weather conditions at the roadway.	Existing
	TDOT Smart Work Zone Equipment	Portable ITS equipment that can be used in work zones to more efficiently manage traffic and provide traveler information. Includes portable closed circuit television cameras, vehicle detection, and dynamic message signs.	Planned

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
TDOT (continued)	TDOT SmartWay Information System (TSIS)	TSIS is a statewide roadway conditions database. Currently information can be entered by District and Regional maintenance personnel as well as staff at any of the traffic management centers (TMCs) and the Tennessee Highway Patrol (THP). TSIS feeds the Statewide 511 system and SmartWay website.	Existing
	TDOT SmartWay Website	Website providing road network conditions including incident and construction information and camera views. Much of the data for the website comes from TSIS.	Existing
	TDOT Toll Plazas	Toll plazas used for electronic toll collection on potential future toll roads.	Planned
	Tennessee 511 IVR	Tennessee 511 Interactive Voice Response. TDOT contracts the IVR operation to a vendor. The IVR accepts callers' requests and provides responses to specific traveler information needs. This is the customer interface component of the 511 phone system.	Existing
	Tennessee 511 System	511 traveler information system central server.	Existing
	Tennessee GoSmart Kiosks	Kiosks in rest areas that provide traveler information, including weather, road, and travel conditions.	Existing
TEMA	TEMA	Tennessee Emergency Management Agency. Responsible for managing emergency operations during a disaster or large scale incident.	Existing
Tennessee Bureau of Investigation	Tennessee Fusion Center	Joint center made up of local, state, and federal law enforcement officials for the timely receipt, analysis and dissemination of terrorism information and criminal activity relating to Tennessee.	Existing
	Tennessee Bureau of Investigation	Agency responsible for issuing statewide America's Missing: Broadcast Emergency Response (AMBER) Alerts in Tennessee.	Existing
Tennessee Department of Health and Human Services	Health and Human Services	Agency responsible for providing health related services including the subsidization of transportation to obtain medical services.	Existing
THP	THP CVO Enforcement	Tennessee Highway Patrol commercial vehicle inspection and enforcement.	Existing
	THP Dispatch	Tennessee Highway Patrol dispatch center. There are several THP dispatch centers around the state of Tennessee.	Existing
	THP Truck Weigh and Inspection Station	Commercial vehicle inspection station with the capability to weigh commercial vehicles and evaluate their credentials.	Existing
	THP Vehicles	Tennessee Highway Patrol vehicles.	Existing

Table 4 – Nashville Area Inventory of ITS Elements (continued)

Stakeholder	Element Name	Element Description	Status
THP (continued)	THP Weigh-in-Motion	Tennessee Highway Patrol facilities with the capability to weigh commercial vehicles while they are traveling at highway speeds.	Existing
	TITAN Database	Tennessee Integrated Traffic Analysis Network database. The Tennessee Department of Safety crash record database maintained by THP for the collection of crash record information. TITAN interfaces with the TraCS (Traffic and Criminal Software) system.	Existing
Williamson County	Williamson County EMA	Emergency management agency for Williamson County. Responsible for disaster planning for the County and operating the emergency operations center.	Existing
	Williamson County Emergency Dispatch	Responsible for dispatch of Williamson County Sheriff.	Existing
	Williamson County RWIS	Road weather information system sensors to monitor weather conditions at the roadway.	Existing
	Williamson County Sheriff Vehicles	Williamson County Sheriff's Office vehicles.	Existing
	Williamson County TOC	Traffic operations center for Williamson County. Responsible for the operation of the traffic signal system.	Planned
	Williamson County Traffic Signals	Traffic signal system operated and maintained by Williamson County.	Existing
Wilson County	WEMA EMS Vehicles	Wilson County Emergency Management Agency Emergency Medical Services	Existing
	WEMA Fire Vehicles	Wilson County Emergency Management Agency fire vehicles	Existing
	Wilson County EMA	Emergency management agency for Wilson County. Responsible for disaster planning for the County and operating the emergency operations center.	Existing
	Wilson County EMA Dispatch	Emergency management agency for Wilson County. Responsible for dispatch of county EMS and Fire.	Existing
	Wilson County PSAP	911 Public Safety Answering Point responsible for answering all 911 calls made within the county and dispatching emergency responders.	Existing
	Wilson County Sheriff Vehicles	Wilson County Sheriff's Office vehicles.	Existing
	Wilson County TOC	Traffic operations center for Wilson County. Responsible for the operation of the traffic signal system.	Planned
	Wilson County Traffic Signals	Traffic signal system operated and maintained by Wilson County.	Existing

4. REGIONAL ITS ARCHITECTURE

Upon completion of the system inventory, the next step in the development of the Regional ITS Architecture was to identify the ITS services that are important to the Nashville Area. The National ITS Architecture has the following eight groups of ITS service areas:

- ***Traffic Management*** – includes the TDOT Region 3 SmartWay TMC in Nashville as well as other existing and future municipal traffic operations centers (TOCs), detection systems, CCTV cameras, fixed and portable dynamic message signs (DMS), and other related technologies.
- ***Emergency Management*** – includes emergency operations/management centers, improved information sharing among traffic and emergency services, automated vehicle location (AVL) on emergency vehicles, traffic signal preemption for emergency vehicles, and wide-area alerts.
- ***Maintenance and Construction Management*** – includes work zone management, roadway maintenance and construction information, and road weather detection systems.
- ***Public Transportation Management*** – includes transit and paratransit AVL, transit travel information systems, electronic fare collection, and transit security.
- ***Commercial Vehicle Operations*** – includes coordination with CVISN efforts.
- ***Traveler Information*** – includes broadcast traveler information, traveler information kiosks, and highway advisory radio (HAR).
- ***Archived Data Management*** – includes electronic data management and archiving systems.
- ***Vehicle Safety*** – these systems were discussed, but at this time this service group is primarily a private sector initiative to incorporate technologies such as intersection collision avoidance and automated vehicle operation systems into vehicles.

Existing, planned, and future systems in the Region were considered in each of the service areas. Vehicle Safety was not included in the Nashville Area Regional ITS Architecture because implementation of those market packages would primarily be by private sector automobile manufacturers and information service providers.

4.1 Market Packages

In the National ITS Architecture, services are referred to as market packages. Market packages can include several stakeholders and elements that work together to provide a service in the Region. Examples of market packages from the National ITS Architecture include Network Surveillance, Traffic Information Dissemination, and Transit Vehicle Tracking. There are currently a total of 91 market packages identified in the National ITS Architecture Version 6.1.

4.1.1 Overview of Market Package Structure

A market package is made up of elements and data flows. Each identified system or component in the Nashville Area regional ITS inventory, which is documented in the previous section, was mapped to a subsystem or terminator in the National ITS Architecture. Subsystems and terminators represent the various functional categories that define the role of an element in ITS and the regional architecture. The elements are connected together by architecture flows that document the existing and planned flow of information. **Figure 3** depicts a sample market package with each of the components identified. Additional explanation of the terminology used can be found after the figure.

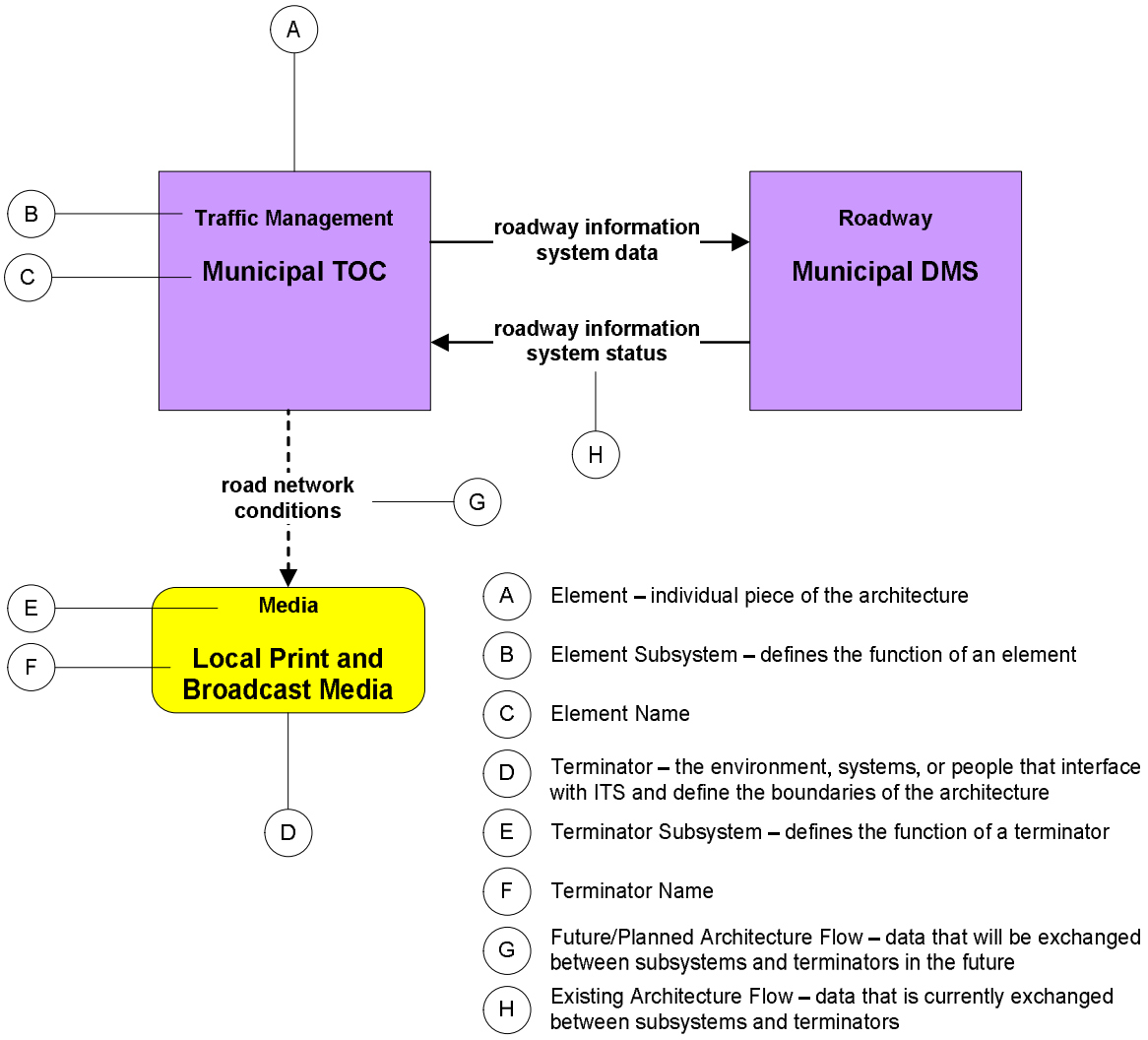

Figure 3 – Overview of Market Package Structure

Elements represent the ITS inventory for the Region. Both existing and planned elements have been included in the inventory and incorporated into the architecture through the development of the market package diagrams.

Subsystems are the highest level building blocks of the physical architecture, and the National ITS Architecture groups them into four major classes: Centers, Field, Vehicles, and Travelers. Each of these major classes includes various subsystems that represent a set of transportation functions (or processes). Each set of functions is grouped under one agency, jurisdiction, or location, and correspond to physical elements such as: traffic operations centers, traffic signals, or vehicles. Each element is assigned to one or more subsystems.

Terminators are the people, systems, other facilities, and environmental conditions outside of ITS that need to communicate or interface with ITS subsystems. Terminators help define the boundaries of the National ITS Architecture as well as a regional system. Examples of terminators include drivers, weather services, and information service providers.

Architecture Flows provide a standardized method for documenting the types of information that flow between elements. A flow can be shown as either existing or future/planned. Existing flows indicate a connection that has already been established to share at least a portion of the desired information but showing a flow as existing is not meant to imply that the function is complete. For example, the traffic information coordination flow between traffic management agencies includes the sharing of video images, incident information and other relevant data. The flow could be shown as existing to capture the sharing of video images while incident information is still a future desired expansion of functionality. Many of the architecture flows have associated technical specifications, known as standards, which define the format of the data being shared.

4.1.2 Selection and Prioritization of Regional Market Packages

In the Nashville Area, the National ITS Architecture market packages were reviewed by the stakeholders and selected based on the relevance of the service that the market package could provide to the Region. Stakeholders selected 40 market packages for implementation in the Region. The selected market packages are identified in **Table 5**. Stakeholders prioritized the selected market packages during the workshops, and the table organizes the market packages into service areas and priority groupings.

TDOT is leading a separate effort to develop and implement the CVISN program. CVISN addresses commercial vehicle operations, including ITS, on a statewide level and includes such applications as electronic clearance, safety enforcement, and registration. Unless a specific need was identified in the Nashville Area that could be addressed locally, the commercial vehicle operations market packages were not selected and instead will be covered in the CVISN effort to ensure consistency.

After selecting the market packages that were applicable for the Region, stakeholders reviewed each market package and the elements that could be included to customize it for the Region. This customization is discussed further in the following section.

Table 5 – Nashville Area ITS Market Package Prioritization by Functional Area

High Priority Market Packages	Medium Priority Market Packages	Low Priority Market Packages
Traffic Management		
ATMS01 Network Surveillance ATMS03 Surface Street Control ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management ATMS08 Traffic Incident Management System	ATMS04 Freeway Control ATMS13 Standard Railroad Grade Crossing ATMS15 Railroad Operations Coordination ATMS18 Reversible Lane Management ATMS19 Speed Monitoring	ATMS02 Traffic Probe Surveillance ATMS05 HOV Lane Management ATMS10 Electronic Toll Collection
Emergency Management		
EM01 Emergency Call-Taking and Dispatch EM02 Emergency Routing EM04 Roadway Service Patrols	EM06 Wide-Area Alert EM08 Disaster Response and Recovery EM09 Evacuation and Reentry Management EM10 Disaster Traveler Information	
Maintenance and Construction Management		
MC08 Work Zone Management MC10 Maintenance and Construction Activity Coordination	MC01 Maintenance and Construction Vehicle and Equipment Tracking MC03 Road Weather Data Collection MC04 Weather Information Processing and Distribution	
Public Transportation Management		
APTS01 Transit Vehicle Tracking APTS02 Transit Fixed Route Operations APTS03 Demand Response Transit Operations APTS05 Transit Security APTS06 Transit Fleet Management APTS08 Transit Traveler Information APTS09 Transit Signal Priority	APTS04 Transit Fare Collection Management APTS07 Multi-Modal Coordination APTS10 Transit Passenger Counting	
Traveler Information		
ATIS01 Broadcast Traveler Information ATIS02 Interactive Traveler Information		
Commercial Vehicle Operations		
	CVO06 Weigh-in-Motion	
Archived Data Management		
	AD1 ITS Data Mart AD3 ITS Virtual Data Warehouse	

4.1.3 Customization of Regional Market Packages

The market packages in the National ITS Architecture were customized to reflect the unique systems, subsystems, and terminators in the Nashville Area. Market packages represent a service that will be deployed as an integrated capability. Each market package is shown graphically with the market package name, local agencies involved, and desired data flows. The data flows are shown as either existing or planned/future. Data flows shown as existing indicate that in at least one location within the jurisdiction the connection exists. Data flows shown as existing should not be interpreted to mean that deployment of that service is complete as there are many cases where a data flow exists in a service but a need has been identified to expand the service to additional locations.

Figure 4 is an example of an Advanced Traffic Management System (ATMS) market package for traffic information dissemination that has been customized for the Region. This instance focuses on the activities of TDOT. The market package shows the distribution of traffic information from the TDOT Region 3 TMC to emergency dispatch agencies and the media as well as in the future to transit management agencies. Messages are also placed on DMS and HAR and entered into TSIS for inclusion on the SmartWay website and 511. Data flows between the subsystems indicate what information is being shared. The remainder of the market packages that were customized for the Nashville Area Regional ITS Architecture are shown in **Appendix B**.

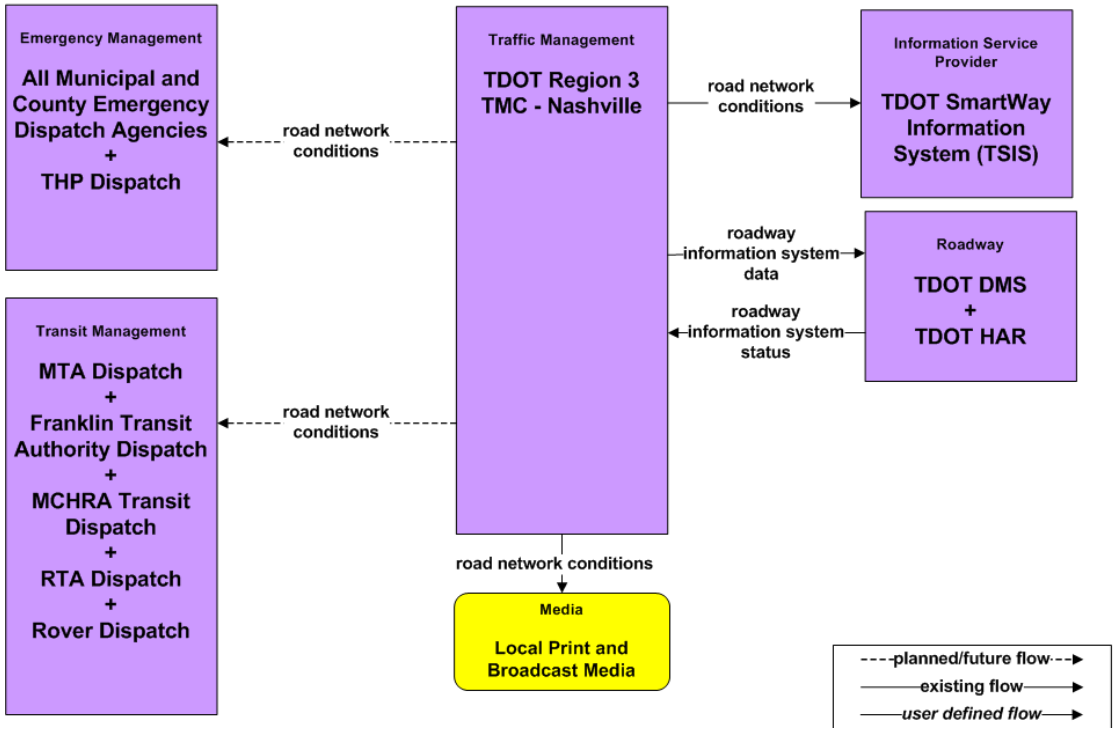

Figure 4 – Example Market Package Diagram: ATMS06 – Traffic Information Dissemination (TDOT Region 3 TMC)

4.1.4 Regional Needs and Corresponding Market Packages

Input received from stakeholders at the Nashville Area Regional ITS Architecture workshops provided valuable input for the market package customization process. The needs identified in the ITS Architecture workshops, as well as needs from the Nashville Area MPO 2030 Long Range Transportation Plan are identified in **Table 6**. The table also identifies which market package documents the particular ITS need.

Table 6 – Nashville Area Regional ITS Needs and Corresponding Market Packages

ITS Need	Market Package
Traffic Management and Traveler Information	
Apply traffic management techniques that increase transportation system capacity and minimize disruptions to normal operation, such as traffic surveillance and control system, motorist information systems, computerized and coordinated signal system, incident management, ITS, and reversible lanes	ATMS01 – Network Surveillance ATMS03 – Surface Street Control ATMS04 – Freeway Control ATMS06 – Traffic Information Dissemination ATMS07 – Regional Traffic Management ATMS08 – Traffic Incident Management System ATMS18 – Reversible Lane Management
Implement measures, where appropriate, to improve operating efficiency and reduce idling time such as incident management, motorist information systems, and coordinated traffic signal operation	ATMS03 – Surface Street Control ATMS06 – Traffic Information Dissemination ATMS08 – Traffic Incident Management System MC10 – Maintenance and Construction Activity Coordination ATMS01 – Broadcast Traveler Information ATMS02 – Interactive Traveler Information
Improve information sharing between the TDOT Region 3 SmartWay TMC and the municipal TOCs in the Region	ATMS07 – Regional Traffic Management ATMS08 – Traffic Incident Management System
Deploy arterial DMS or other roadside traveler information system	ATMS06 – Traffic Information Dissemination
Develop alternate signal timing plans that can be implemented during incidents, detours, or special events	ATMS03 – Surface Street Control ATMS07 – Regional Traffic Management ATMS08 – Traffic Incident Management System
Expand the TDOT SmartWay 511 traveler information system by adding incident and closure information for arterial roadways	ATIS01 – Interactive Traveler Information
Emergency Management	
Improve coordination with the THP to share more real-time information from the THP to the TDOT Region 3 SmartWay TMC	ATMS08 – Traffic Incident Management System EM08 – Disaster Response and Recovery EM09 – Evacuation and Reentry Management EM10 – Disaster Traveler Information
Improve emergency management coordination, especially along jurisdictional boundaries to speed incident response	ATMS08 – Traffic Incident Management System EM01 – Emergency Call-Taking and Dispatch EM02 – Emergency Routing EM04 – Roadway Service Patrols
Provide real-time maintenance and construction management information from traffic management to public safety and emergency management agencies to support quick dispatch of first responders	EM02 – Emergency Routing MC10 – Maintenance and Construction Activity Coordination
Archived Data Management	
Develop a centralized regional information resource for traffic information	AD3 – ITS Virtual Data Warehouse

4.2 Architecture Interfaces

While it is important to identify the various systems and stakeholders that are part of a regional ITS, a primary purpose of the ITS architecture is to identify the connectivity between transportation systems in the Nashville Area. The system interconnect diagram shows the high-level relationships of the subsystems and terminators in the Nashville Area and the associated local projects and systems. The customized market packages represent services that can be deployed as an integrated capability and the market package diagrams show the information flows between the subsystems and terminators that are most important to the operation of the market packages. How these systems interface with each other is an integral part of the overall ITS architecture.

4.2.1 Top Level Regional System Interconnect Diagram

A system interconnect diagram, or "sausage diagram", shows the systems and primary interconnects in the Region. The National ITS Architecture interconnect diagram has been customized for the Nashville Area based on the system inventory and information gathered from the stakeholders. **Figure 4** summarizes the existing and planned ITS elements for the Nashville Area in the context of a physical interconnect. Subsystems and elements specific to the Region are called out in the boxes surrounding the main interconnect diagram, and these are color-coded to the subsystem with which they are associated.

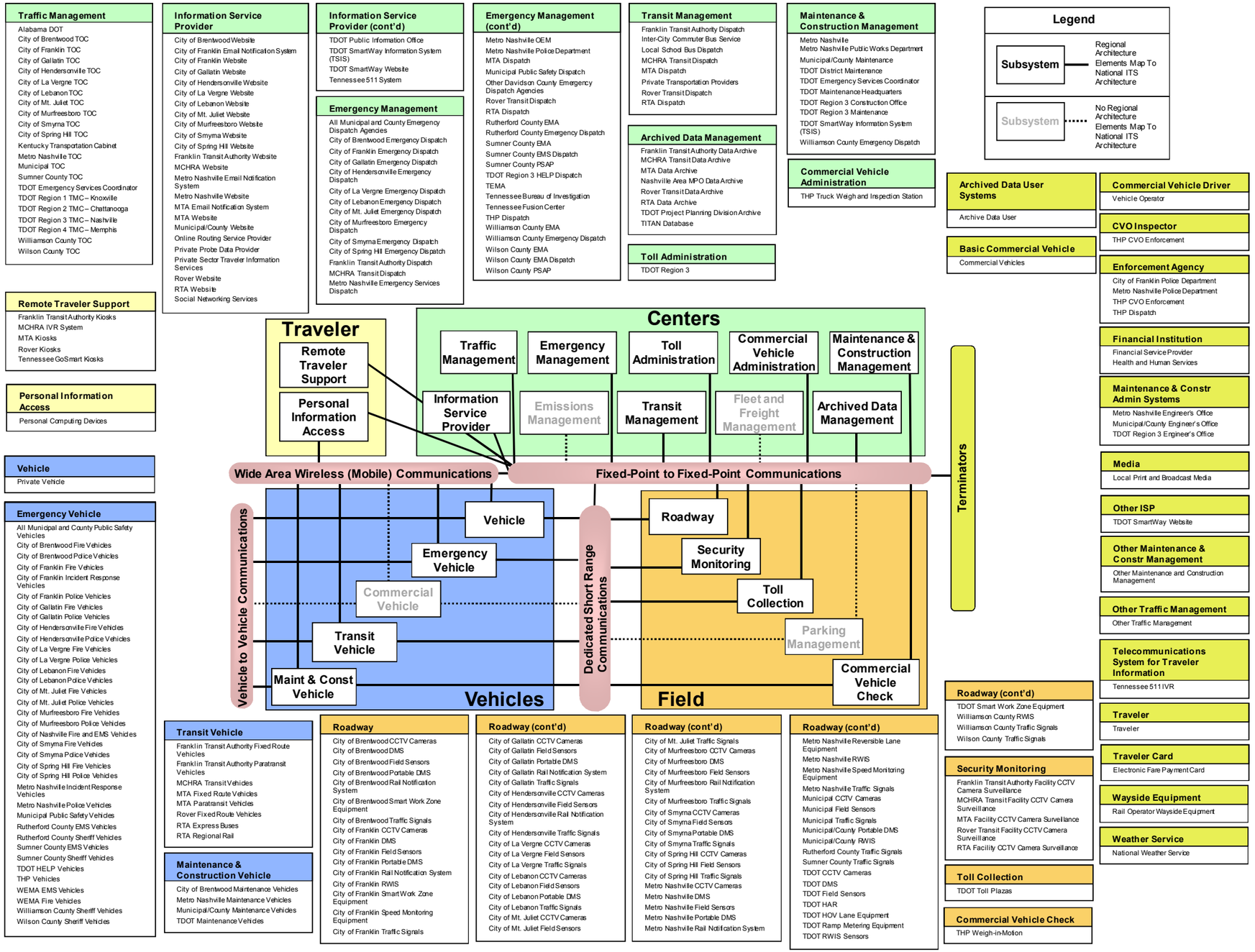

Figure 5 – Nashville Area Regional System Interconnect Diagram

4.2.2 Element Connections

A number of different elements are identified as part of the Nashville Area Regional ITS Architecture. These elements include transportation management centers, transit vehicles, dispatch systems, emergency management agencies, media outlets, and others—essentially, all of the existing and planned physical components that contribute to the regional ITS. Interfaces have been identified for each element in the Nashville Area Regional ITS Architecture and each element has been mapped to those other elements with which it must interface. The Turbo Architecture software can generate interconnect diagrams for each element in the Region that show which elements are connected to one another. **Figure 6** is an example of an interconnect diagram from the Turbo database output. This particular interconnect diagram is for the Metro Nashville Traffic Signals.

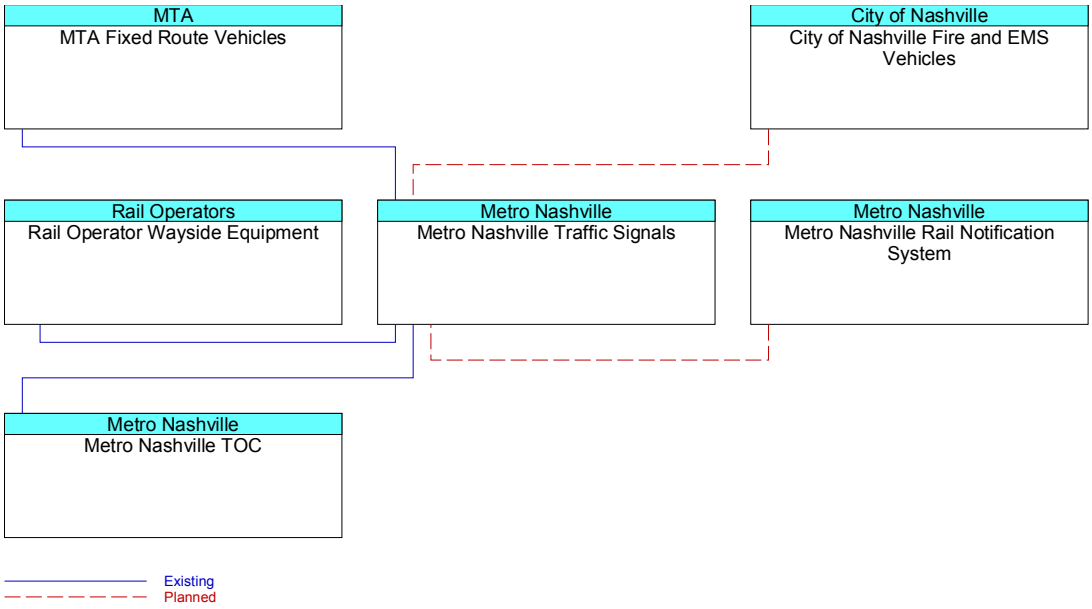

Figure 6 – Example Interconnect Diagram: Metro Nashville Traffic Signals

4.2.3 Data Flows Between Elements

In the market package diagrams, flows between the subsystems and terminators define the specific information (data) that is exchanged between the elements and the direction of the exchange. The data flows could be requests for information, alerts and messages, status requests, broadcast advisories, event messages, confirmations, electronic credentials, and other key information requirements. Turbo Architecture can be used to output flow diagrams and can be filtered by market package for ease of interpretation; however, it is important to remember that custom data flows will not show up in diagrams that are filtered by market package. An example of a flow diagram that has been filtered for the ATMS01 – Network Surveillance market package is shown in **Figure 7**.

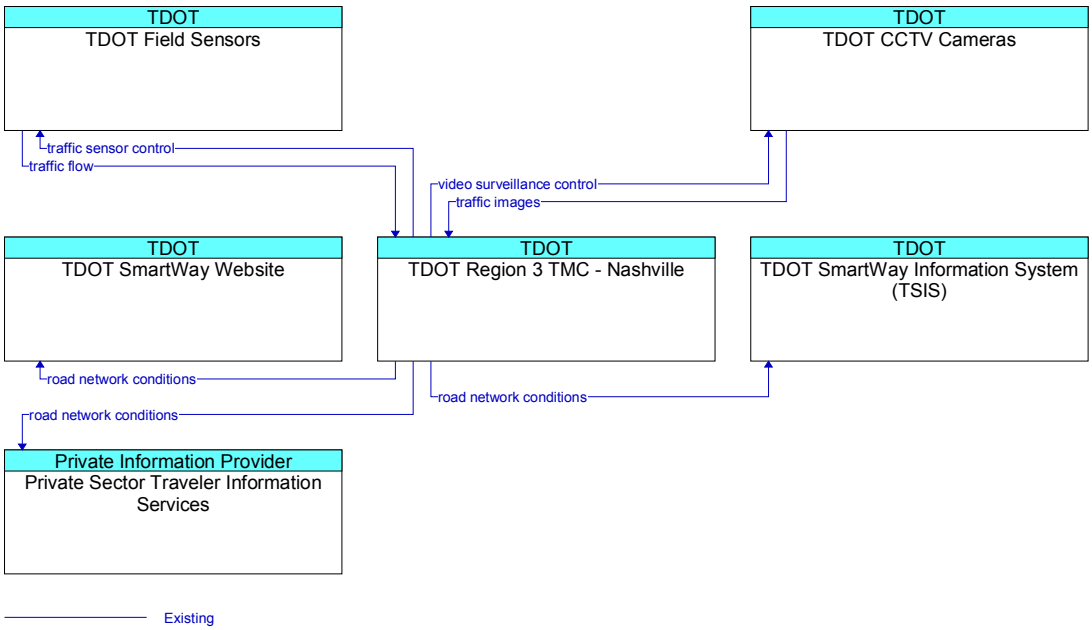

Figure 7 – Example Flow Diagram: ATMS01 – Network Surveillance

4.3 Functional Requirements

Functions are a description of what the system has to do. In the National ITS Architecture, functions are defined at several different levels, ranging from general subsystem descriptions through somewhat more specific equipment package descriptions to Process Specifications that include substantial detail. Guidance from the USDOT on developing a Regional ITS Architecture recommends that each Region determine the level of detail of the functional requirements for their Region. In the Nashville Area, it is recommended that the development of detailed functional requirements such as the "shall" statements included in process specifications for a system be developed at the project level. These detailed "shall" statements identify all functions that a project or system needs to perform.

For the Nashville Area Regional ITS Architecture, functional requirements have been identified at two levels. The customized market packages, discussed previously in Section 4.1.3, describe the services that ITS needs to provide in the Region and the architecture flows between the elements. These market packages and data flows describe what ITS in the Nashville Area has to do and the data that needs to be shared among elements.

At a more detailed level, functional requirements for the Nashville Area are described in terms of functions that each element in the architecture performs or will perform in the future. In the final documents **Appendix C** will contain a table that summarizes the functions by element.

4.4 Standards

Standards are an important tool that will allow efficient implementation of the elements in the Nashville Area Regional ITS Architecture over time. Standards facilitate deployment of interoperable systems at local, regional, and national levels without impeding innovation as technology advances, vendors change, and as new approaches evolve. The USDOT's ITS Joint Program Office is supporting Standards Development Organizations (SDOs) with an extensive,

multi-year program of accelerated, consensus-based standards development to facilitate successful ITS deployment in the United States. **Table 7** identifies each of the ITS standards that could apply to the Nashville Area Regional ITS Architecture. These standards are based on the physical subsystem architecture flows previously identified in Section 4.2.3 and shown in the market package diagrams in **Appendix B**.

While **Table 7** does not match the standards to specific architecture flows, that information is available through the National ITS Architecture website and Turbo Architecture. Since the website is updated more frequently than the software and links directly to additional information about the applicable standard, the website is the preferred method for determining which standards apply to a particular architecture flow. To locate this information do the following:

- Go to the main page of the National Architecture website at *http://www.iteris.com/itsarch/*;
- In the menu bar on the left hand side select the tab for Physical Architecture;
- Select the Architecture Flows link embedded in the descriptive paragraph about the Physical Architecture;
- From the alphabetical list of flows that appears locate and select the desired flow;
- Architecture flows are often used between multiple subsystems so scrolling may be required to find the appropriate information associated with the particular use of the flow, in the descriptive information any applicable standards will be identified; and
- For additional information on the applicable standards the standard name is a link that when selected leads to a more detailed description of the standard.

Table 7 – Nashville Area Applicable ITS Standards

SDO	Document ID	Title
AASHTO/ITE/NEMA	NTCIP 1102	Octet Encoding Rules Base Protocol
	NTCIP 1103	Transportation Management Protocols
	NTCIP 1104	Center-to-Center Naming Convention Specification
	NTCIP 1201	Global Object Definitions
	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller Units
	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)
	NTCIP 1204	Object Definitions for Environmental Sensor Stations
	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control
	NTCIP 1207	Object Definitions for Ramp Meter Control Units
	NTCIP 1208	Object Definition for CCTV Camera Switching
	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems
	NTCIP 1210	Field Management Stations – Part 1: Object Definitions for Signal System Masters
	NTCIP 1211	Object Definitions for Signal Control and Prioritization
	NTCIP 2101	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile
	NTCIP 2102	Point to Multi-Point Protocol Using Frequency Shift Keying Modem Subnetwork Profile
	NTCIP 2103	Point-to-Point Protocol Over RS-232 Subnetwork Profile
	NTCIP 2104	Ethernet Subnetwork Profile
	NTCIP 2201	Transportation Transport Profile
	NTCIP 2202	Internet Transmission Control Protocol/Internet Protocol and Universal Datagram Protocol/Internet Protocol Transport Profile
	NTCIP 2301	Simple Transportation Management Framework Application Profile
	NTCIP 2302	Trivial File Transfer Protocol Application Profile
	NTCIP 2303	File Transfer Protocol Application Profile
	NTCIP 2304	Application Profile for DATEX-ASN (AP-DATEX)
	NTCIP 2306	Application Profile for Extensible Markup Language (XML) Message Encoding and Transport in ITS Center-to-Center Communications
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary and Message Sets for External TMC Communications (TMDD and MS/ETMCC)
APTA	APTA TCIP-S-001 3.0.0	Standard for Transit Communications Interface Profiles
ASTM	ASTM E2158-01	Standard Specification for Dedicated Short Range Communication (DSRC) Physical Layer using Microwave in the 902-928 MHz Band
	ASTM E2213-03	Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems – 5 GHz Band DSRC Medium Access Control and Physical Layer Specifications
	ASTM E2468-05	Standard Practice for Metadata to Support Archived Data Management Systems
	ASTM WK7604	Standard Specifications for Archiving ITS-Generated Traffic Monitoring Data

Table 7 – Nashville Area Applicable ITS Standards (continued)

SDO	Document ID	Title
IEEE	IEEE 1455-1999	Standard Message Sets for Vehicle/Roadside Communications
	IEEE 1512-2006	Standard for Common Incident Management Message Sets for use by Emergency Management Centers
	IEEE 1512.1-2006	Standard for Traffic Incident Management Message Sets for Use by Emergency Management Centers
	IEEE 1512.2-2004	Standard for Public Safety Traffic Management Message Sets for use by Emergency Management Centers
	IEEE 1512.3-2006	Standard for Hazardous Material Incident Management Sets for Use by Emergency Management Centers
	IEEE 1570-2002	Standard for Interface Between the Rail Subsystem and the Highway Subsystem at a Highway Rail Intersection
	IEEE 1609.1 – 2006	Standard for Wireless Access in Vehicular Environments (WAVE) – Resource Manager
	IEEE 1609.2 – 2006	Standard for WAVE – Security Services for Applications and Management Messages
	IEEE 1609.3	Standard for WAVE – Networking Services
	IEEE 1609.4 – 2006	Standard for WAVE – Multi-Channel Operation
	IEEE 802.11p	Standard for Information Technology – Telecommunications and Information Exchange Between Systems – Local and Metropolitan Area Networks – Specific Requirements – Part II: Wireless LAN Medium Access Control and Physical Layer Specifications
	IEEE P1512.4	Standard for Common Traffic Incident Management Message Sets for Use in Entities External to Centers
	IEEE P1609.0	Standard for WAVE - Architecture
SAE	SAE J2266	Location Referencing Message Specification
	SAE J2354	Message Set for Advanced Traveler Information System (ATIS)
	SAE J2540	Messages for Handling Strings and Look-Up Tables in ATIS Standards
	SAE J2540/1	Radio Data System Phrase Lists
	SAE J2540/2	International Traveler Information Systems Phrase Lists
	SAE J2540/3	National Names Phrase List

4.5 Operational Concepts

An operational concept documents each stakeholder's current and future roles and responsibilities across a range of transportation services, as grouped in the Operational Concepts section of Turbo Architecture, in the operation of the regional ITS. The services covered are:

- ***Surface Street Management*** – The development of signal systems that react to changing traffic conditions and provide coordinated intersection timing over a corridor, an area, or multiple jurisdictions.
- ***Freeway Management*** – The development of systems to monitor freeway traffic flow and roadway conditions, and provide strategies such as ramp metering or lane access control to improve the flow of traffic on the freeway. Includes systems to provide information to travelers on the roadway.

- ***Incident Management*** – The development of systems to provide rapid and effective response to incidents. Includes systems to detect and verify incidents, along with coordinated agency response to the incidents.
- ***Emergency Management*** – The development of systems to provide emergency call taking, public safety dispatch, and emergency operations center operations.
- ***Maintenance and Construction Management*** – The development of systems to manage the maintenance of roadways in the Region, including winter snow and ice clearance. Includes the managing of construction operations and coordinating construction activities.
- ***Transit Management*** – The development of systems to more efficiently manage fleets of transit vehicles or transit rail. Includes systems to provide transit traveler information both pre-trip and during the trip.
- ***Traveler Information*** – The development of systems to provide static and real time transportation information to travelers.
- ***Commercial Vehicle Operations*** – The development of systems to facilitate the management of commercial vehicles (e.g., electronic clearance).
- ***Archived Data Management*** – The development of systems to collect transportation data for use in non-operational purposes (e.g., planning and research).

Table 8 identifies the roles and responsibilities of key stakeholders for a range of transportation services.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities

Transportation Service	Stakeholder	Roles/Responsibilities
Surface Street Management	Metro Nashville	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Provide traffic signal preemption for emergency vehicles.
		Provide traffic signal priority for transit vehicles.
		Operate DMS for the distribution of traffic information and roadway conditions to travelers on the roadway.
	City of Brentwood	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Provide traffic signal preemption for emergency vehicles.
		Operate DMS for the distribution of traffic information and roadway conditions to travelers on the roadway.
	City of Franklin	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Provide traffic signal preemption for emergency vehicles.
		Provide traffic signal priority for transit vehicles.
		Operate DMS for the distribution of traffic information and roadway conditions to travelers on the roadway.
	City of Gallatin	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Provide traffic signal preemption for emergency vehicles.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Surface Street Management (continued)	City of Hendersonville	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
	City of La Vergne	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
	City of Lebanon	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Provide traffic signal preemption for emergency vehicles.
	City of Mt. Juliet	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
	City of Murfreesboro	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Operate DMS for the distribution of traffic information and roadway conditions to travelers on the roadway.
	City of Smyrna	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Surface Street Management (continued)	City of Smyrna (continued)	Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Provide traffic signal preemption for emergency vehicles.
	City of Spring Hill	Operate and maintain traffic signal systems within the City.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
	Sumner County	Operate and maintain traffic signal systems within the County.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
	Williamson County	Operate and maintain traffic signal systems within the County.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
		Provide traffic signal preemption for emergency vehicles.
	Wilson County	Operate and maintain traffic signal systems within the County.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemptions.
	Municipal Government	Operate and maintain traffic signal systems within the municipality.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on roadways within the City to facilitate traffic signal operations.
		Remotely operate traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, and emergency vehicle preemption requests.
		Provide traffic signal preemption for emergency vehicles.
Freeway Management	TDOT	Operate DMS and HAR to distribute traffic information and roadway conditions to travelers on the roadway.
		Operate network surveillance equipment including CCTV cameras and vehicle detection on state roadways.
		Remotely operate ramp metering systems to manage the use of freeways.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Incident Management (Traffic)	Metro Nashville	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Brentwood	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Franklin	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Gallatin	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Hendersonville	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of La Vergne	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Incident Management (Traffic) (continued)	City of La Vergne (continued)	Coordinate maintenance resources for incident response.
	City of Lebanon	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Mt. Juliet	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Murfreesboro	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Smyrna	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	City of Spring Hill	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	Municipal Government	Remotely control traffic and video sensors to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Incident Management (Traffic) (continued)	Municipal Government (continued)	Responsible for coordination with other traffic operations centers and emergency management agencies for coordinated incident management.
		Coordinate maintenance resources for incident response.
	TDOT	Remotely control traffic and video sensors from the SmartWay TMC to support incident detection and verification.
		Responsible for the dissemination of traffic related data to other centers and the media.
		Operate DMS and HAR to distribute incident information to travelers on the roadway.
		Responsible for coordination with other TOCs and emergency management agencies for coordinated incident management.
		Responsible for the development, coordination, and execution of special traffic management strategies during an evacuation.
Incident Management (Emergency)	Metro Nashville Emergency Services Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Brentwood Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Franklin Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Gallatin Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Hendersonville Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of La Vergne Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Lebanon Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Incident Management (Emergency) (continued)	City of Mt. Juliet Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Murfreesboro Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Smyrna Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	City of Spring Hill Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	Rutherford County Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	Sumner County PSAP	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	Williamson County Emergency Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	Wilson County PSAP	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	Municipal Government	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other emergency dispatch agencies and the TDOT SmartWay Center for incidents on state facilities.
	THP Dispatch	Dispatch public safety vehicles to incidents.
		Coordinate incident response with other public safety and traffic management agencies as well as the TDOT SmartWay Center for incidents on state facilities.
Emergency Management	Metro Nashville Emergency Services Dispatch	Responsible for emergency call-taking as the 911 PSAP for the City of Nashville and Davidson County, except for several cities that operate their own dispatch centers.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Emergency Management (continued)	Metro Nashville Emergency Services Dispatch (continued)	Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Metro Nashville OEM	Operates the EOC for Davidson County in the event of a disaster or other large-scale emergency situation.
		Responsible for tactical decision support, resource coordination, and communications integration among emergency management agencies in the County.
		Lead regional efforts for emergency planning to support large-scale incidents and disasters.
		Lead evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of Brentwood Emergency Dispatch	Responsible for emergency call-taking for the City Brentwood as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of Franklin Emergency Dispatch	Responsible for emergency call-taking for the City of Franklin as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of Gallatin Emergency Dispatch	Responsible for emergency call-taking for the City of Franklin as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Emergency Management (continued)	City of Hendersonville Emergency Dispatch	Responsible for emergency call-taking for the City of Hendersonville as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of La Vergne Emergency Dispatch	Responsible for emergency call-taking for the City of La Vergne as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of Lebanon Emergency Dispatch	Responsible for emergency call-taking for the City of Lebanon as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of Mt. Juliet Emergency Dispatch	Responsible for emergency call-taking for the City of Mt. Juliet as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Emergency Management (continued)	City of Murfreesboro Emergency Dispatch	Responsible for emergency call-taking for the City of Murfreesboro as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
	City of Murfreesboro Emergency Dispatch (continued)	Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of Smyrna Emergency Dispatch	Responsible for emergency call-taking for the City of Smyrna as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	City of Spring Hill Emergency Dispatch	Responsible for emergency call-taking for the City of Spring Hill as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Rutherford County Emergency Dispatch	Responsible for emergency call-taking for Rutherford County as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Emergency Management (continued)	Rutherford County EMA	Operates the EOC for Rutherford County in the event of a disaster or other large-scale emergency situation.
		Responsible for tactical decision support, resource coordination, and communications integration among emergency management agencies in the County.
		Lead regional efforts for emergency planning to support large-scale incidents and disasters.
		Lead evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Sumner County PSAP	Responsible for emergency call-taking for Sumner County as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Sumner County EMA	Operates the EOC for Sumner County in the event of a disaster or other large-scale emergency situation.
		Responsible for tactical decision support, resource coordination, and communications integration among emergency management agencies in the County.
		Lead regional efforts for emergency planning to support large-scale incidents and disasters.
		Lead evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Williamson County Emergency Dispatch	Responsible for emergency call-taking for Williamson County as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Williamson County EMA	Operates the EOC for Williamson County in the event of a disaster or other large-scale emergency situation.
		Responsible for tactical decision support, resource coordination, and communications integration among emergency management agencies in the County.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Emergency Management (continued)	Williamson County EMA (continued)	Lead regional efforts for emergency planning to support large-scale incidents and disasters.
		Lead evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Wilson County Emergency Dispatch	Responsible for emergency call-taking for Wilson County as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
	Wilson County Emergency Dispatch (continued)	Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Wilson County EMA	Operates the EOC for Wilson County in the event of a disaster or other large-scale emergency situation.
		Responsible for tactical decision support, resource coordination, and communications integration among emergency management agencies in the County.
		Lead regional efforts for emergency planning to support large-scale incidents and disasters.
		Lead evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Municipal Government	Responsible for emergency call-taking as the 911 PSAP.
		Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	TEMA	Operates the EOC for the State of Tennessee in the event of a disaster or other large-scale emergency situation.
		Responsible for tactical decision support, resource coordination, and communications integration among emergency management agencies in the State.
		Responsible for coordination with adjacent states, including the State of Georgia, as needed to support emergency management.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Emergency Management (continued)	TEMA (continued)	Lead statewide efforts for emergency planning to support large-scale incidents and disasters.
		Lead evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	THP	Responsible for the dispatch of emergency vehicles to incidents and tracking of their location and status.
		Responsible for the routing of emergency vehicles to facilitate the safest/quickest arrival at an incident.
		Participate in regional emergency planning to support large-scale incidents and disasters.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Tennessee Bureau of Investigation	Responsible for the initiation of AMBER Alerts.
Maintenance and Construction Management	Metro Nashville	Responsible for the tracking and dispatch of maintenance vehicles.
		Supports coordinated response to incidents.
		Monitors environmental sensors and distributes information about road weather conditions.
		Supports work zone activities including the dissemination of work zone information through portable DMS and sharing of information with other groups.
		Disseminates work zone activity schedules and current asset restrictions to other agencies.
	Municipal/County Maintenance	Responsible for the tracking and dispatch of maintenance vehicles.
		Supports coordinated response to incidents.
		Monitors environmental sensors and distributes information about road weather conditions.
		Supports work zone activities including the dissemination of work zone information through portable DMS and sharing of information with other groups.
		Disseminates work zone activity schedules and current asset restrictions to other agencies.
	TDOT	Monitors environmental sensors and distributes information about road weather conditions.
		Responsible for the tracking and dispatch of maintenance vehicles.
		Supports coordinated response to incidents.
		Supports work zone activities including the dissemination of work zone information through portable DMS, HAR, and sharing of information with other groups.
		Responsible for entering and updating work zone information in TSIS.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Maintenance and Construction Management (continued)	TDOT (continued)	Disseminates work activity schedules and current asset restrictions to other agencies.
		Operates work zone traffic control equipment including portable surveillance equipment, DMS, and HAR transmitters.
Transit Management	Franklin Transit Authority	Operates fixed route and paratransit services from a central dispatch facility responsible for tracking their location and status.
		Provide transit security on transit vehicles and at transit terminals through silent alarms and surveillance systems.
		Coordinate with the Public Works Department on transit signal priority.
		Provide transit traveler information to the agency website, local private sector traveler information services, and the Tennessee 511 system.
		Provide real-time arrival information on kiosks at transfer stations.
		Operate on-board systems to provide next stop annunciation.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Mid-Cumberland Human Resource Agency	Operates demand response transit services from a central dispatch facility responsible for tracking vehicle location and status.
		Provide transit security on transit vehicles and at transit terminals through silent alarms and surveillance systems.
		Provide transit traveler information to the agency website, local private sector traveler information services, and the Tennessee 511 Traveler Information System.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	MTA	Operates fixed route and paratransit services from a central dispatch facility responsible for tracking their location and status.
		Provide transit passenger electronic fare payment on fixed route transit vehicles.
		Provide transit security on transit vehicles and at transit terminals through silent alarms and surveillance systems.
		Coordinate with Metro Nashville Public Works on transit signal priority.
		Provide transit traveler information to the agency website, local private sector traveler information services, and the Tennessee 511 system.
		Provide real-time arrival information on kiosks at transfer stations.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Transit Management (continued)	MTA (continued)	Operate on-board systems to provide next stop annunciation.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	Rover	Operates fixed route services from central dispatch facilities responsible for tracking their location and status.
		Provide transit security on transit vehicles and at transit terminals through silent alarms and surveillance systems.
		Provide transit traveler information to the agency website, local private sector traveler information services, and the Tennessee 511 Traveler Information System.
		Participate in evacuation planning and coordination to manage evacuation and reentry in the vicinity of a disaster or other emergency situation.
	RTA	Operates express bus and regional rail service from a central operations center.
		Provide transit security on transit vehicles and at transit terminals through silent alarms and surveillance systems.
		Provide transit traveler information to the agency website, local private sector traveler information services, and the Tennessee 511 Traveler Information System.
Traveler Information	Metro Nashville	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Brentwood	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Franklin	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Gallatin	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Traveler Information (continued)	City of Hendersonville	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of La Vergne	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Lebanon	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Mt. Juliet	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Murfreesboro	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Smyrna	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	City of Spring Hill	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.
	Municipal Government	Responsible for the collection and distribution of traveler information including incident information and maintenance and construction closure information.
		Responsible for the collection and distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.

Table 8 – Nashville Area Stakeholder Roles and Responsibilities (continued)

Transportation Service	Stakeholder	Roles/Responsibilities
Traveler Information (continued)	TDOT	Collection, processing, storage, and broadcast dissemination of traffic, transit, maintenance and construction, event and weather information to travelers via the SmartWay Website and the Tennessee 511 system.
		Provide transportation information to travelers via traveler information kiosks.
		Provide transportation network condition data to private sector information service providers.
Commercial Vehicle Operations	THP	Operate weigh-in-motion commercial vehicle inspection station.
		Enforce commercial vehicle regulations in the State of Tennessee.
Archived Data Management	Franklin Transit Authority	Collect and maintain transit archive data.
	Mid Cumberland Human Resource Agency	Collect and maintain transit archive data.
	MTA	Collect and maintain transit archive data.
	Rover	Collect and maintain transit archive data.
	RTA	Collect and maintain transit archive data.
	Nashville Area MPO	Collect and maintain data from regional traffic, transit, and emergency management agencies.
	TDOT	Collect and maintain traffic archive data.
	THP	Collect and maintain crash record information from regional emergency management agencies.

4.6 Potential Agreements

The Regional ITS Architecture for the Nashville Area has identified many agency interfaces, information exchanges, and integration strategies that would be needed to provide the ITS services and systems identified by the stakeholders in the Region. Interfaces and data flows among public and private entities in the Region will require agreements among agencies that establish parameters for sharing agency information to support traffic management, incident management, provide traveler information, and perform other functions identified in the Regional ITS Architecture.

With the implementation of ITS technologies, integrating systems from one or more agencies, and the anticipated level of information exchange identified in the Regional ITS Architecture, it is likely that formal agreements between agencies will be needed in the future. These agreements, while perhaps not requiring a financial commitment from agencies in the Region, should outline specific roles, responsibilities, data exchanges, levels of authority, and other facets of regional operations. Some agreements will also outline specific funding responsibilities, where appropriate and applicable.

Agreements should avoid being specific with regard to technology when possible. Technology is likely to change and changes to technology could require an update of the agreement if the agreement was not technology neutral. Focus of the agreement should be on the responsibilities of the agencies and types of information that need to be exchanged. Depending on the type of agreement being used, agencies should be prepared for the process to complete an agreement to take several months to years. Agencies must first reach consensus on what should be in an agreement and then proceed through the approval process. The approval process for formal agreements varies by agency and can often be quite lengthy, so it is recommended that agencies plan ahead to ensure that the agreement does not delay the project.

When implementing an agreement for ITS, it is recommended that as a first step any existing agreements are reviewed to determine whether they can be amended or modified to include the additional requirements that will come with deploying a system. If there are no existing agreements that can be modified or used for ITS implementation, then a new agreement will need to be developed. The formality and type of agreement used is a key consideration. If the arrangement will be in effect for an extended duration or involve any sort of long term maintenance, then written agreements should be used. Often during long term operations, staff may change and a verbal agreement between agency representatives may be forgotten by new staff.

Common agreement types and potential applications include:

- *Handshake Agreement:* Handshake agreements are often used in the early stage of a project. This type of informal agreement depends very much on relationships between agencies and may not be appropriate for long term operations where staff is likely to change.
- *Memorandum of Understanding (MOU):* A MOU demonstrates general consensus but is not typically very detailed. MOUs often identify high-level goals and partnerships.
- *Interagency and Intergovernmental Agreements:* These agreements between public agencies can be used for operation, maintenance, or funding projects and systems. They can include documentation on the responsibility of each agency, functions they will provide, and liability.
- *Funding Agreements:* Funding agreements document the funding arrangements for ITS projects. At a minimum, funding agreements include a detailed scope, services to be

performed, and a detailed project budget. Agency funding expectations or funding sources are also typically identified.

- *Master Agreements:* Master agreements include standard contract language for an agency and serve as the main agreement between two entities which guides all business transactions. Use of a master agreement can allow an agency to do business with another agency or private entity without having to go through the often lengthy development of a formal agreement each time.

Table 9 provides a list of existing and potential agreements for the Nashville Area based on the interfaces identified in the Regional ITS Architecture. It is important to note that as ITS services and systems are implemented in the Region, part of the planning and review process for those projects should include a review of potential agreements that would be needed for implementation or operations.

Table 9 – Nashville Area Existing and Potential ITS Agreements

Status	Agreement and Agencies	Agreement Description
Existing	**Data Sharing and Usage (Public-Private)**	Agreement would allow private sector media and information service providers to access and broadcast public sector transportation agency CCTV camera video feeds, real time traffic speed and volume data, and incident data. Agreements should specify the control priority to allow traffic agencies first priority to control cameras during incidents or other events. The ability of the traffic agency to deny access to video and data feeds if a situation warrants such action should also be part of the agreement.
Existing	**Data Sharing and Usage (Public-Public)**	Agreement would define the parameters, guidelines, and policies for inter-agency ITS data sharing between public sector agencies including CCTV camera feeds. Similar to data sharing and usage agreements for public-private agencies, the agency that owns the equipment should have first priority of the equipment and the ability to discontinue data sharing if a situation warrants such action.
Future	**Traffic Signal Timing Data Sharing and Usage**	Agreement would define the parameters, guidelines, and policies for inter-agency traffic signal timing, including sharing of timing plans and joint operations of signals, between cities and counties.
Future	**Incident Data Sharing and Usage**	Agreement would define the parameters, guidelines, and policies for inter-agency sharing of incident data between transportation and emergency management agencies in the Region. Incident information could be sent directly to computer-aided dispatch systems and include information on lane closures, travel delays, and weather.

4.7 Phases of Implementation

The Nashville Area Regional ITS Architecture will be implemented over time through a series of projects. Though TDOT and many of the larger municipalities have already made significant ITS deployments in the Region, for other agencies key foundation systems will need to be implemented in order to support other systems that have been identified in the Regional ITS Architecture. The deployment of all of the systems required to achieve the final Regional ITS Architecture build out will occur over many years.

A sequence of projects and their respective time frames have been identified in the Nashville Regional ITS Deployment Plan. These projects have been sequenced over a 20-year period, with projects identified for deployment in 5-, 10- and 20-year timeframes.

Some of the key market packages that will provide the functions for the foundation systems in the Nashville Area are listed below. Projects associated with these and other market packages identified for the Region have been included in the Nashville Area Regional ITS Deployment Plan.

- ATMS01 – Network Surveillance;
- ATMS03 – Surface Street Control;
- ATMS06 – Traffic Information Dissemination;
- ATMS08 – Traffic Incident Management System;
- ATMS 13 – Standard Railroad Grade Crossing;
- EM02 – Emergency Routing;
- EM04 – Roadway Service Patrols;
- APTS01 – Transit Vehicle Tracking;
- APTS02 – Transit Fixed Route Operations; and
- APTS03 – Demand Response Transit Operations.

5. USE AND MAINTENANCE OF THE REGIONAL ITS ARCHITECTURE

The Regional ITS Architecture developed for the Nashville Area addresses the Region's vision for ITS implementation at the time the plan was developed. With the growth of the Region, needs will change and as technology progresses new ITS opportunities will arise. Shifts in regional needs and focus as well as changes in the National ITS Architecture will necessitate that the Nashville Area Regional ITS Architecture be updated periodically to remain a useful resource for the Region. As projects are developed and deployed it will be important that those projects either conform to the Regional ITS Architecture so that they are consistent with both the Region's vision for ITS as well as the National standards described in the Regional ITS Architecture. In some cases if projects do not conform it may be necessary to modify the Regional ITS Architecture to reflect changes in the Region's vision for ITS rather than modify the project. In this Section, a process for determining architecture conformity of projects is presented and a plan for how to maintain and update the Regional ITS Architecture is described.

5.1 Incorporation into the Regional Planning Process

Stakeholders invested a considerable amount of effort in the development of the Regional ITS Architecture and Regional ITS Deployment Plan for the Nashville Area. The plans need to be incorporated into the regional planning process so that the ITS vision for the Region is considered when implementing ITS projects in the future, and to ensure that the Region remains eligible for federal funding. The FHWA and FTA require that any project that is implemented with federal funds conform to the Regional ITS Architecture. Many metropolitan or transportation planning organizations around the country now require that an agency certify that a project with ITS elements conforms to the Regional ITS Architecture before allowing the project to be included in the Transportation Improvement Program (TIP).

Stakeholders in the Nashville Area agreed that as projects are submitted for inclusion in the TIP each project should be evaluated by the submitting agency to determine if the project includes any ITS elements. If the project contains any ITS elements, then the project needs to be reviewed to determine if the ITS elements in the project are in conformance with the Regional ITS Architecture. The submitting agency will perform this examination as part of the planning process using the procedure outlined in Section 5.2 and the Nashville Area MPO will review each project to confirm it does conform to the Regional ITS Architecture.

5.2 Process for Determining Architecture Conformity

The Nashville Area Regional ITS Architecture documents the customized market packages that were developed as part of the ITS architecture process. To satisfy FHWA and FTA requirements and remain eligible to use Federal funds, a project must be accurately documented. The steps of the process are as follows:

- Identify the ITS components in the project;
- Identify the corresponding market packages(s) from the Regional ITS Architecture;
- Locate the component within the market package;
- Compare the connections to other agencies or elements documented in the ITS architecture as well as the information flows between them to the connections that will be part of the project; and
- Document any changes necessary to the Regional ITS Architecture or the project to ensure there is conformance.

The steps for determining ITS architecture conformity of a project are described in more detail below.

Step 1 – Identify the ITS Components

ITS components can be fairly apparent in an ITS focused project such as CCTV or DMS deployments, but could also be included in other types of projects where they are not as apparent. For example, an arterial widening project could include the installation of signal system interconnect, signal upgrades, and the incorporation of the signals in the project limits into a city's closed loop signal system. These are all ITS functions and should be included in the ITS Architecture.

Step 2 – Identify the Corresponding Market Packages

If a project was included in the projects identified in the Nashville Area Regional ITS Deployment Plan, then the applicable ITS market package(s) for that project are identified in a column of the tables. However, ITS projects are not required to be included in the ITS Deployment Plan in order to be eligible for federal funding; therefore, market packages might need to be identified for projects that have not been covered in the ITS Deployment Plan. In that case, the market packages selected and customized for the Nashville Area should be reviewed to determine if they adequately cover the project. Market packages selected for the Nashville Area Regional ITS Architecture are identified in **Table 5** of this document and detailed market package definitions are located in **Appendix A**.

Step 3 – Identify the Component within the Market Package

The customized market packages for the Nashville Area are located in **Appendix B**. Once the element is located within the appropriate ITS market package the evaluator should determine if the element name used in the market package is accurate or if a change to the name is needed. For example, a future element called the Metro Nashville Rail Notification System was included in the Nashville Area Regional ITS Architecture. Detailed planning for this system has not begun and it would not be unusual for Metro Nashville to select a different name for the system once planning and implementation is underway. Such a name change should be documented using the process outlined in Section 5.4.

Step 4 – Evaluate the Connections and Flows

The connections and architecture flows documented in the ITS market package diagrams were selected based on the information available at the time the Regional ITS Architecture was developed. As the projects are designed, decisions will be made on the system layout that might differ from what is shown in the market package. These changes in the project should be documented in the ITS market packages using the process outlined in Section 5.4.

Step 5 – Document Required Changes

If any changes are needed to accommodate the project under review, Section 5.4 describes how those changes should be documented. Any changes will be incorporated during the next Regional ITS Architecture update. Conformance will be accomplished by documenting how the ITS market package(s) should be modified so that the connections and data flows are consistent with the project.

5.3 Maintenance Process

The Nashville Area MPO will be responsible for leading the process to update the Nashville Area Regional ITS Architecture and Deployment Plan in coordination with the TDOT Long Range Planning Division. **Table 10** summarizes the maintenance process agreed upon by stakeholders in the Region.

Table 10 – Nashville Area Regional ITS Architecture and Deployment Plan Maintenance Summary

Maintenance Details	Regional ITS Architecture		Regional ITS Deployment Plan	
	Minor Update	**Major Update**	**Minor Update**	**Major Update**
Timeframe for Updates	As needed	Approximately every 4 years	As needed	Approximately every 4 years
Scope of Update	Review and update market packages to satisfy architecture compliance requirements of projects or to document other changes that impact the Regional ITS Architecture	Entire Regional ITS Architecture	Review and update project status and add or remove projects as needed	Entire Regional ITS Deployment Plan
Lead Agency	Nashville Area MPO		Nashville Area MPO	
Participants	Stakeholders impacted by market package modifications	Entire stakeholder group	Entire stakeholder group	
Results	Market package or other change(s) documented for next complete update	Updated Regional ITS Architecture document, Appendices, and Turbo Architecture database	Updated project tables	Updated Regional ITS Deployment Plan document

Stakeholders agreed that a full update of the Regional ITS Architecture and Deployment Plan should occur approximately every four years in the year preceding the Long Range Transportation Plan (LRTP) update. By completing a full update in the year prior to the LRTP update, stakeholders will be able to determine the ITS needs and projects that are most important to the Region and document those needs and projects for consideration when developing the LRTP. The Nashville Area MPO, in coordination with the TDOT Long Range Planning Division, will be responsible for completing the full updates. During the update process all of the stakeholder agencies that participated in the original development of the Regional ITS Architecture and Deployment Plan should be included as well as any other agencies in the Region that are deploying or may be impacted by ITS projects.

Minor changes to the Regional ITS Architecture should occur as needed between full updates of the plan. In Section 5.4 of this document the procedure for submitting a change to the Regional ITS Architecture is documented. Documentation of changes to the Regional ITS Architecture is particularly important if a project is being deployed and requires a change to the Regional ITS Architecture in order to establish conformity.

Stakeholders recommended that the Nashville Area MPO lead a meeting to review projects in the Regional ITS Deployment Plan to update project status, remove projects that were completed, add project detail when available, and add new projects on an as needed basis. Minor changes to the Regional ITS Deployment Plan should be noted by the Nashville Area MPO. Any corresponding changes to the Regional ITS Architecture will be documented and retained by the MPO for inclusion during the next complete update.

5.4 Procedure for Submitting ITS Architecture Changes Between Major Updates

Updates to the Nashville Area Regional ITS Architecture will occur on a regular basis as described in Section 5.3 to maintain the architecture as a useful planning tool. Between major plan updates smaller modifications will likely be required to accommodate ITS projects in the Region. Section 5.2 contains step by step guidance for determining whether or not a project requires architecture modifications to the Regional ITS Architecture.

For situations where a change is required, an Architecture Maintenance Documentation Form was developed and is included in **Appendix E**. This form should be completed and submitted to the architecture maintenance contact person identified on the form whenever a change to the Regional ITS Architecture is proposed. There are several key questions that need to be answered when completing the Architecture Maintenance Documentation Form including those described below.

Change Information: The type of change that is being requested can include an Administrative Change, Functional Change – Single Agency, Functional Change – Multiple Agency, or a Project Change. A description of each type of change is summarized below.

- Administrative Change: Basic changes that do not affect the structure of the ITS market packages in the Regional ITS Architecture. Examples include changes to stakeholder or element names, element status, or data flow status.
- Functional Change – Single Agency: Structural changes to the ITS market packages that impact only one agency in the Regional ITS Architecture. Examples include the addition of a new ITS market package or changes to data flow connections of an existing market package. The addition or change would only impact a single agency.
- Functional Change – Multiple Agencies: Structural changes to the ITS market packages that have the potential to impact multiple agencies in the Regional ITS Architecture. Examples include the addition of a new ITS market package or changes to data flow connections of an existing ITS market package. The addition or changes would impact multiple agencies and require coordination between the agencies.
- Project Change: Addition, modification, or removal of a project in the Regional ITS Deployment Plan.

Description of the requested change: A brief description of the type of change being requested should be included.

Market packages being impacted by the change: Each of the ITS market packages that are impacted by the proposed change should be listed on the ITS Architecture Maintenance Documentation Form. If the proposed change involves creating or modifying an ITS market package then the agency completing the ITS Architecture Maintenance Documentation Form is asked to include a sketch of the new or modified market package.

Impact of proposed change on other stakeholders: If the proposed change is expected to have any impact on other stakeholders in the Region, then those stakeholders should be listed on the

ITS Architecture Maintenance Documentation Form. A description of any coordination that has occurred with other stakeholders that may be impacted by the change should be also included. Ideally all stakeholders that may be impacted by the change should be contacted and consensus should be reached on any new or modified ITS market packages that will be included as part of the Regional ITS Architecture.

The Nashville Area MPO will review and accept the proposed changes and forward the form to the TDOT Long Range Planning Division for their records. When a major update is performed all of the documented changes should be incorporated into the Regional ITS Architecture.

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 are 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.
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 and driver advisories.
ATMS07	Regional Traffic Management	Sharing of traffic information and control among traffic management centers to support a regional management strategy. 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 and coordination with 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	Recommends courses of action based on an assessment of the current and forecast road network performance as well as information on special events, parking, or transit operations if applicable. Example responses include predefined incident response plans, variable toll rates, transit strategies, and congestion management strategies.
ATMS10	Electronic Toll Collection	Provides toll operators with the ability to collect tolls electronically and detect and process violations.
ATMS11	Emissions Monitoring and Management	Monitors individual vehicle emissions and provides general air quality monitoring using distributed sensors to collect the data.
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.
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.
ATMS15	Railroad Operations Coordination	Provides an additional level of strategic coordination between freight rail operations and traffic management centers. Could include train schedules, maintenance schedules or any other anticipated HRI closures.

Market Package	Market Package Name	Description
Traffic Management Service Area (continued)		
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 communication and coordination between parking facilities as well as coordination between parking facilities and traffic and transit management systems.
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. This service can also support notifications to an enforcement agency to enforce the speed limit and roadside safe speed advisories based on current roadway conditions.
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, crashes, out of gas) to minimize disruption to the traffic stream. This market package monitors service patrol vehicle locations and supports vehicle dispatch.
EM05	Transportation Infrastructure Protection	Includes the monitoring of transportation infrastructure (e.g. bridges, tunnels and management centers) for potential threats using sensors, surveillance equipment, barriers and safeguard systems to preclude an incident, control access during and after an incident or mitigate the impact of an incident. Threats can be acts of nature, terrorist attacks or other incidents causing damage to the infrastructure.
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, 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.
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. so system operators can 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 driver information systems.
MC06	Winter Maintenance	Supports winter road 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, 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 on 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, as well as operator assignment and system monitoring for fixed-route and flexible-route transit services.
APTS03	Demand Response Transit Operations	Performs vehicle routing and scheduling, as well as 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 routs 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.
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.
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 the 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, freight equipment and the commercial vehicle driver.
Traveler Information Service Area		
ATIS01	Broadcast Traveler Information	Collects traffic conditions, advisories, general public transportation, toll and parking information, incident information, roadway maintenance and construction information, air quality and weather information, and broadly disseminates this information through existing infrastructures (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).
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. Focused archive typically covers a single transportation mode and one jurisdiction.
AD2	ITS Data Warehouse	Includes all the data collection and management capabilities of the ITS Data Mart. 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 MARKET PACKAGES

APPENDIX B

LIST OF FIGURES

APPENDIX B

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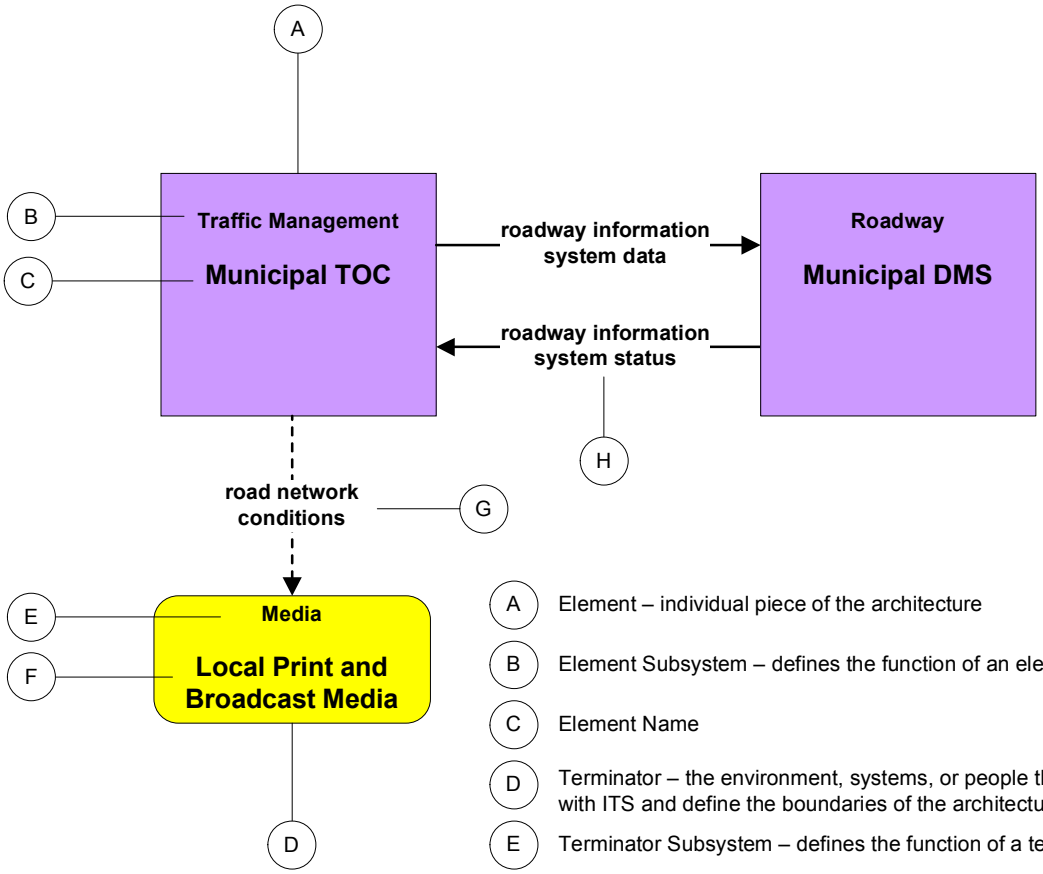
APPENDIX B

LIST OF FIGURES

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

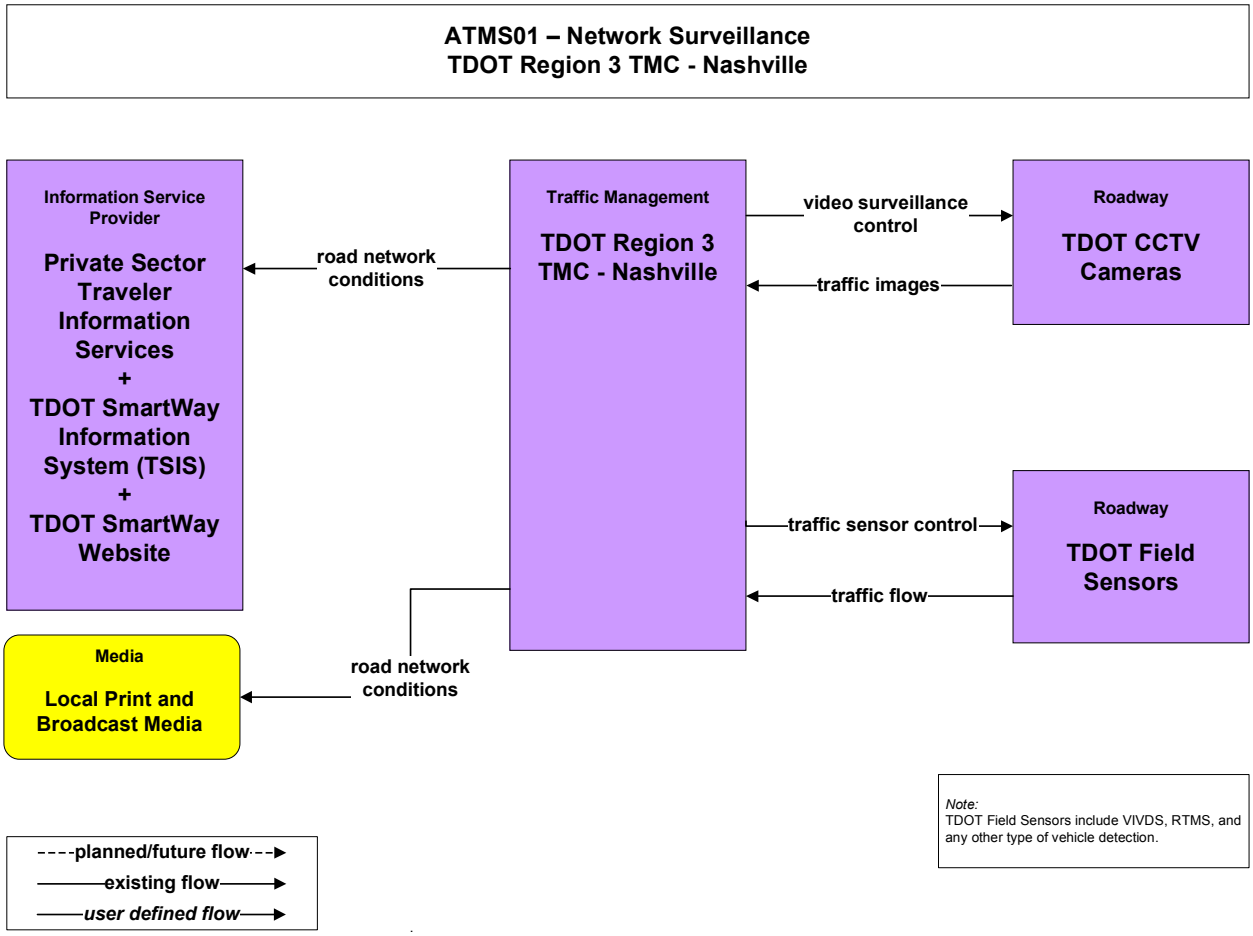
E – Terminator Subsystem – defines the function of a terminator

F – Terminator Name

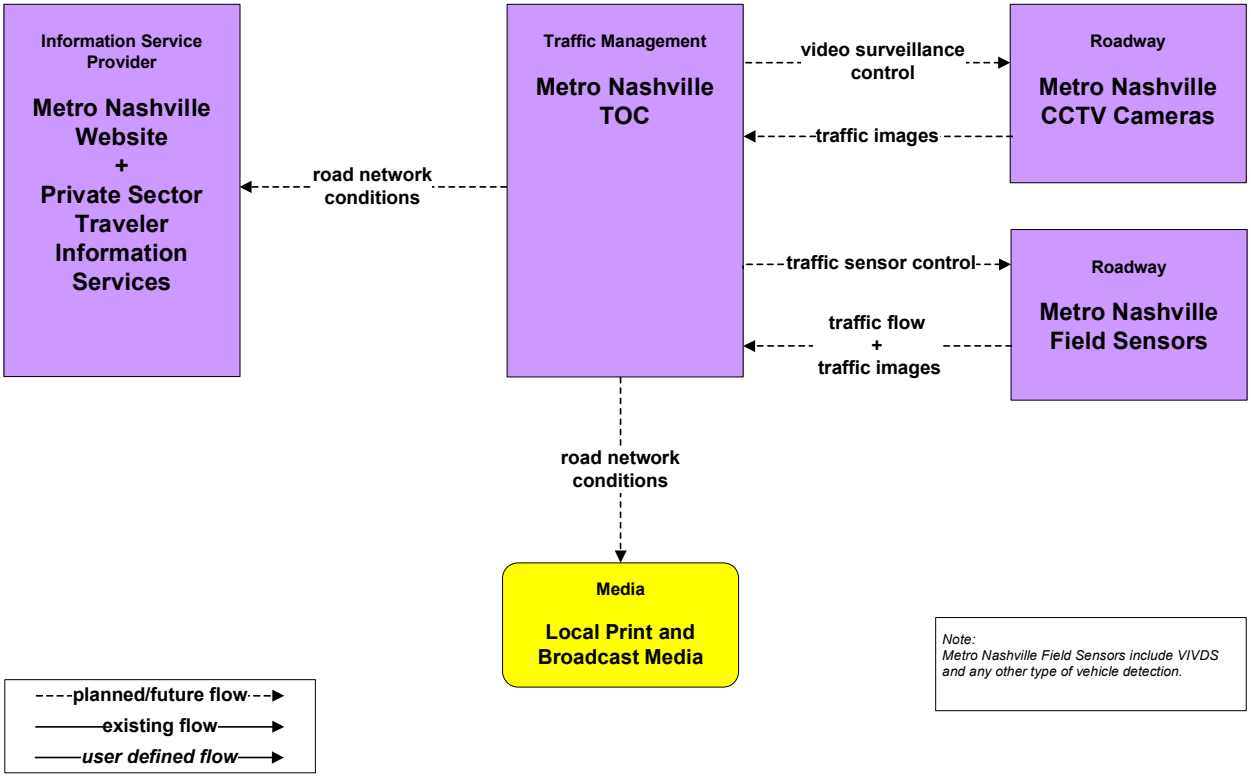
G – Future/Planned Architecture Flow – data that will be exchanged between subsystems and terminators in the future

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

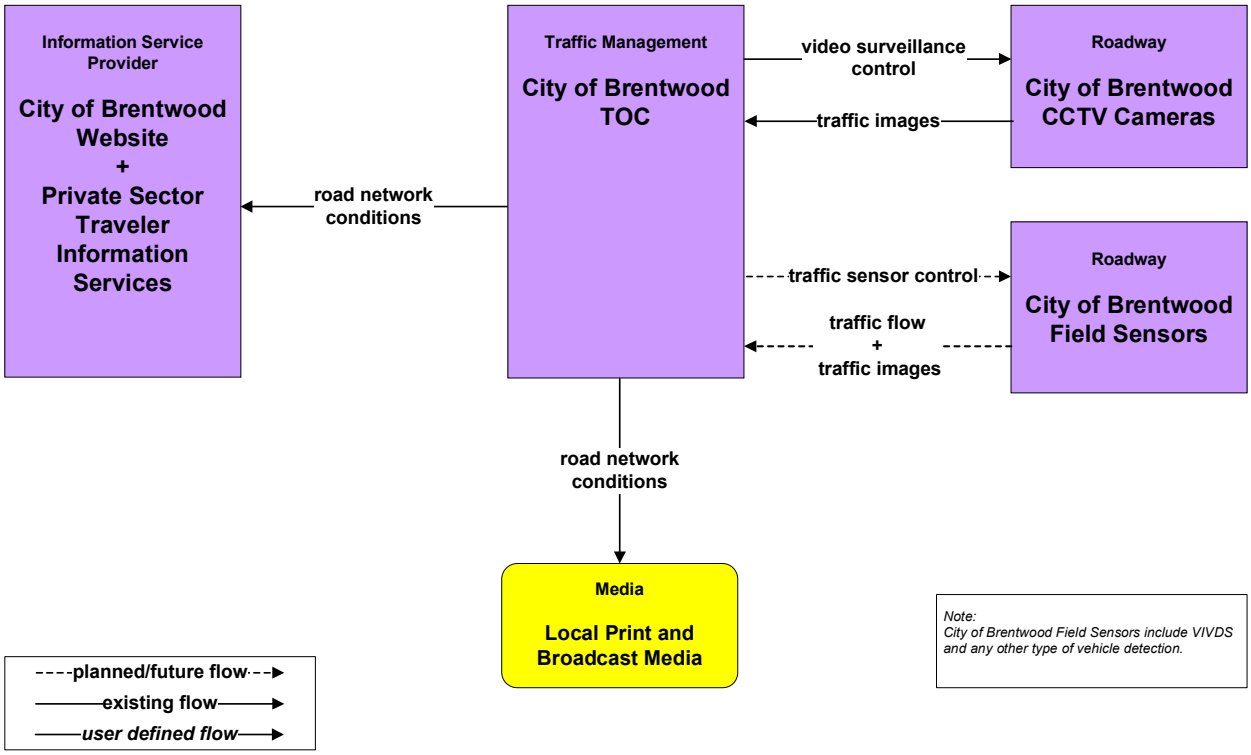
Advanced Traffic Management System



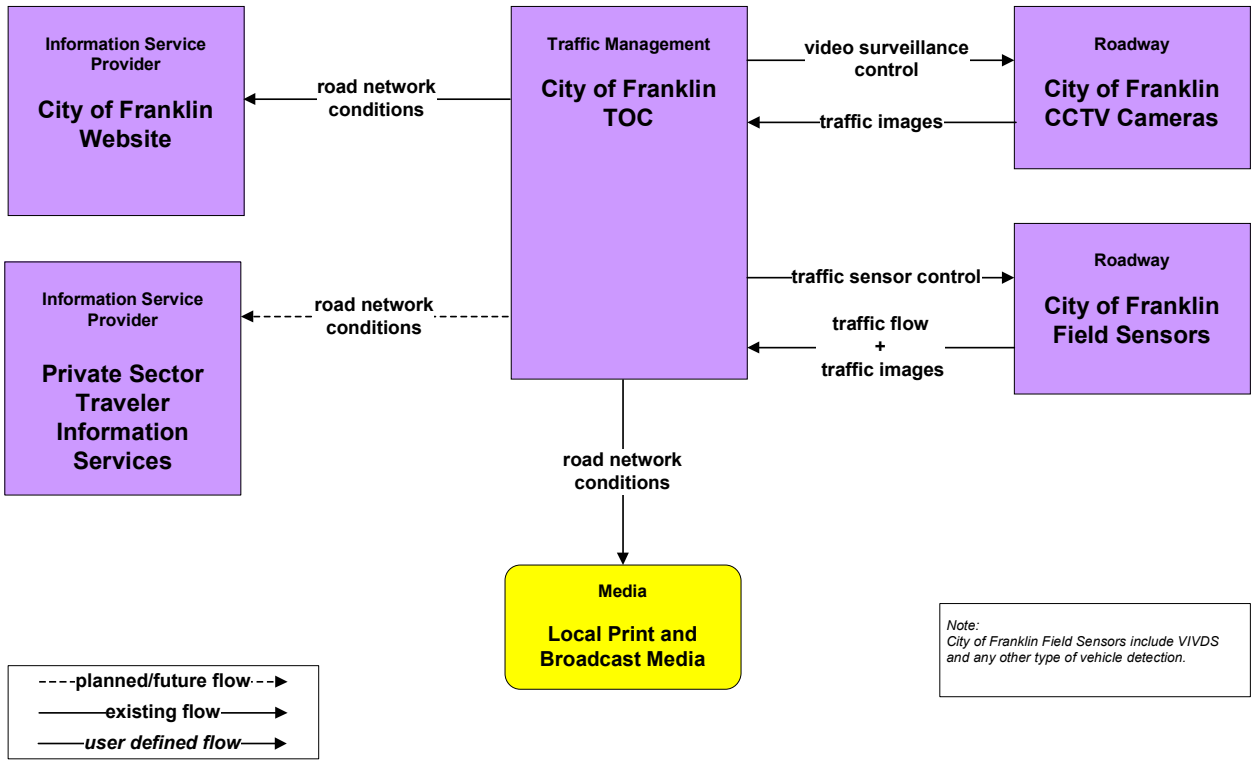
ATMS01 – Network Surveillance
Metro Nashville



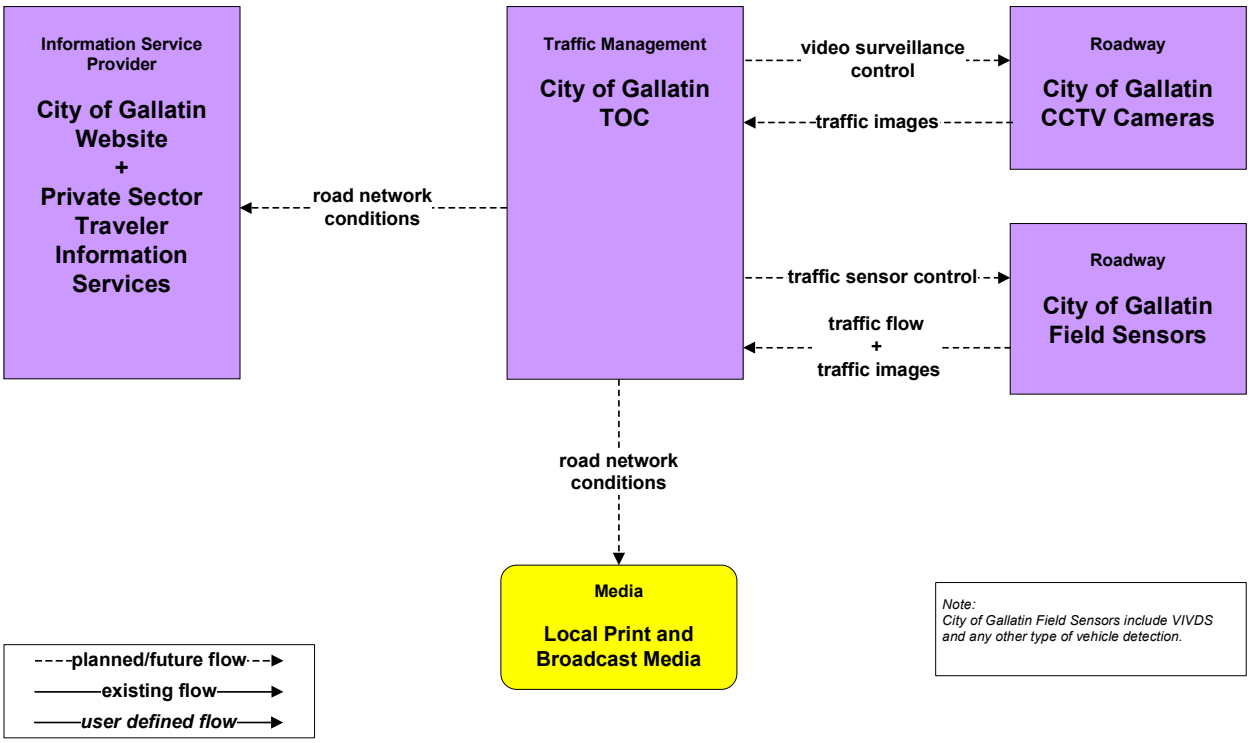
ATMS01 – Network Surveillance
City of Brentwood



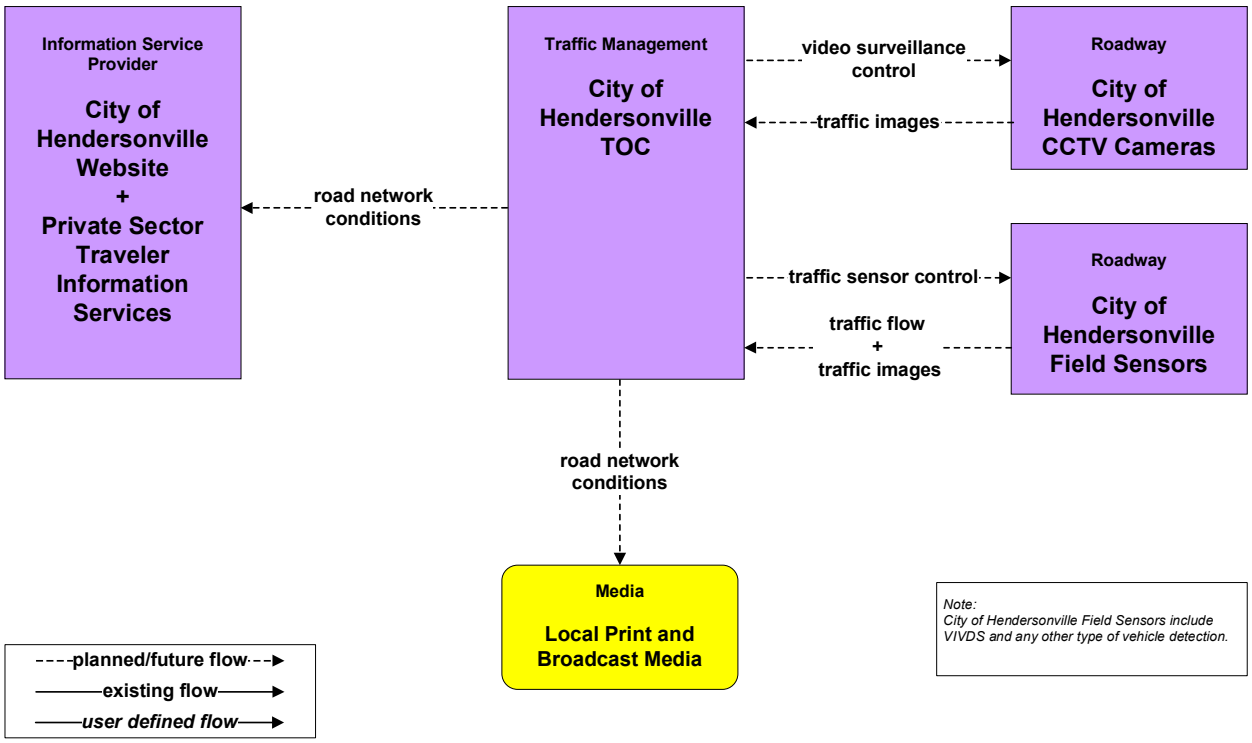
ATMS01 – Network Surveillance
City of Franklin



ATMS01 – Network Surveillance
City of Gallatin

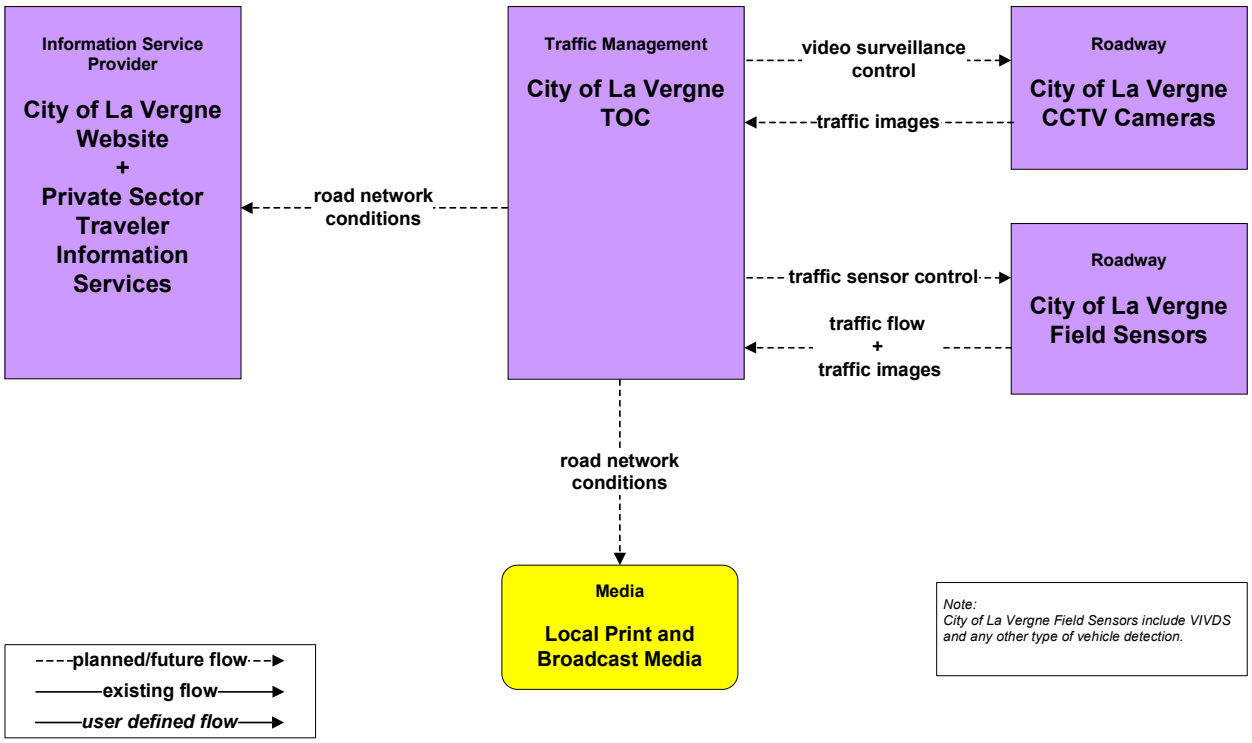


ATMS01 – Network Surveillance
City of Hendersonville



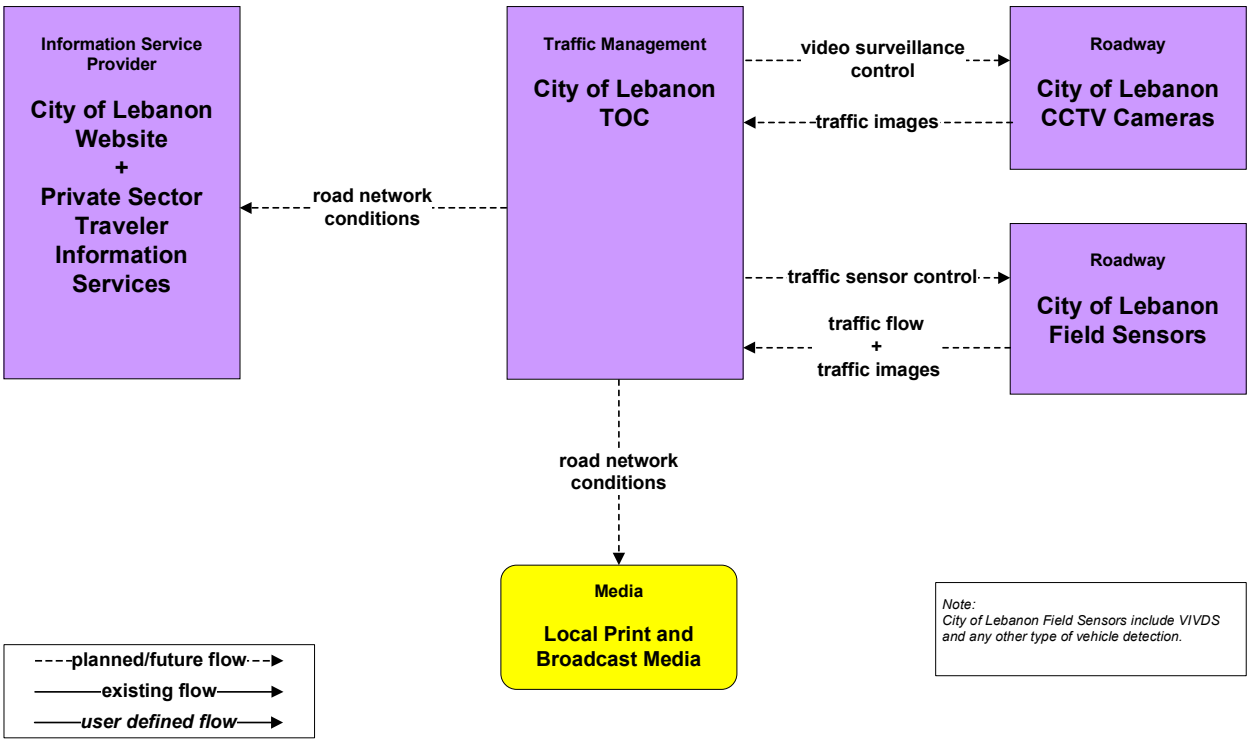
Note:
City of Hendersonville Field Sensors include VIVDS and any other type of vehicle detection.

ATMS01 – Network Surveillance
City of La Vergne

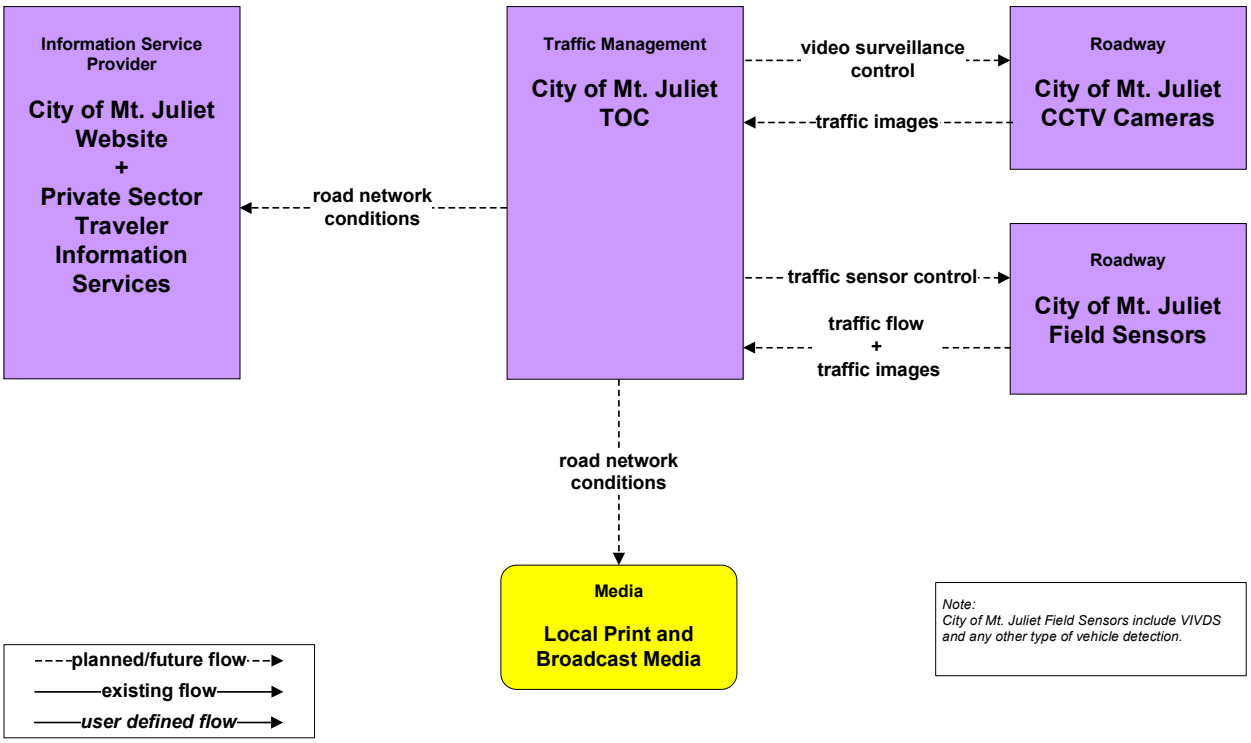


Note:
City of La Vergne Field Sensors include VIVDS and any other type of vehicle detection.

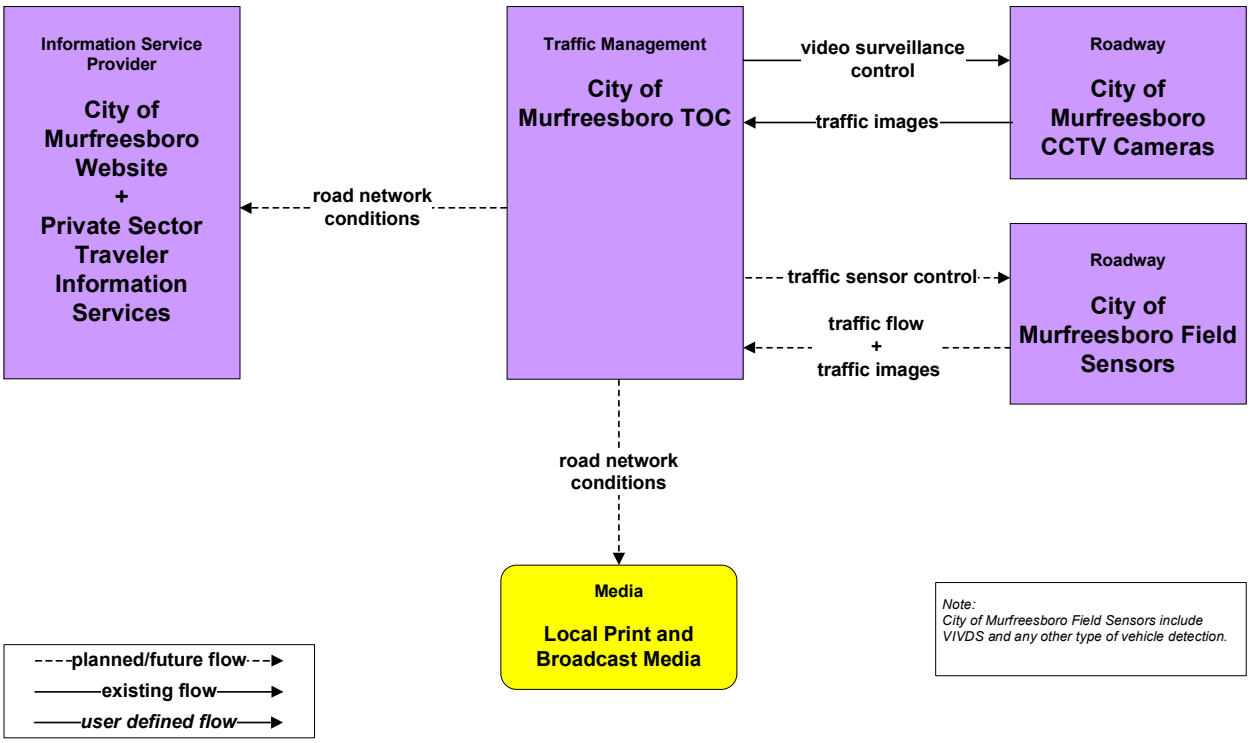
ATMS01 – Network Surveillance
City of Lebanon



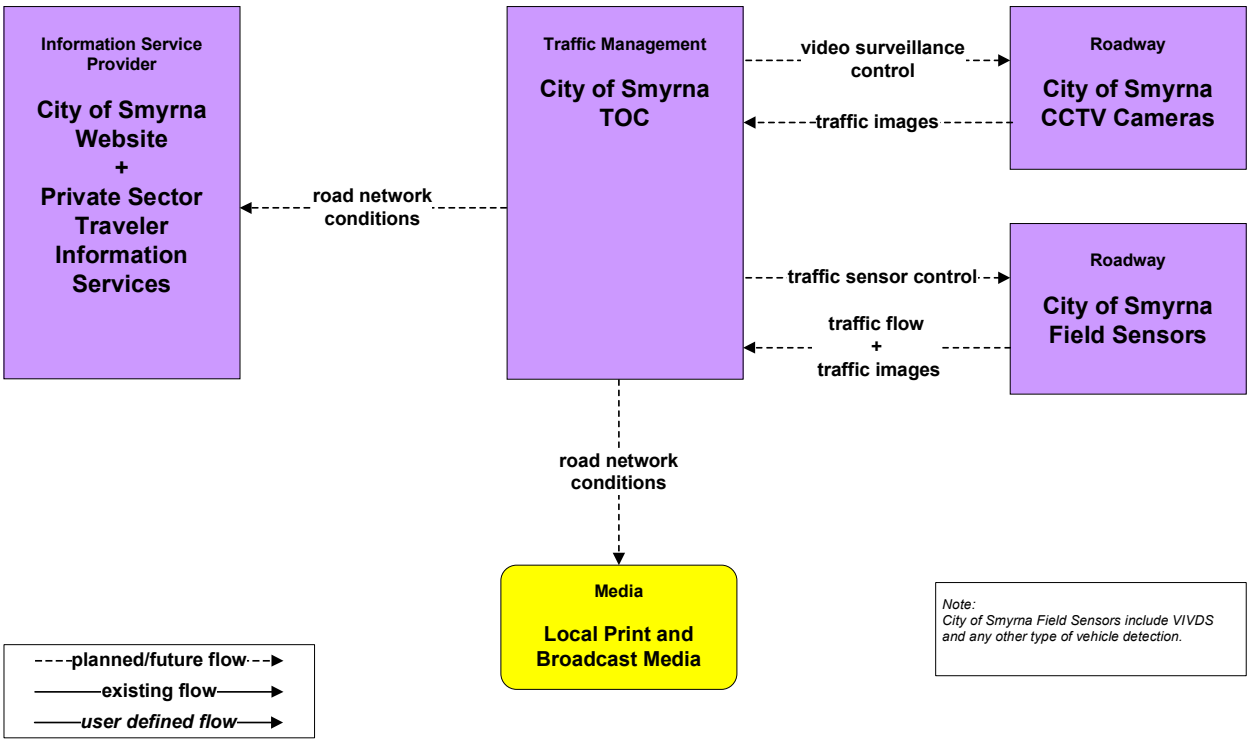
ATMS01 – Network Surveillance
City of Mt. Juliet



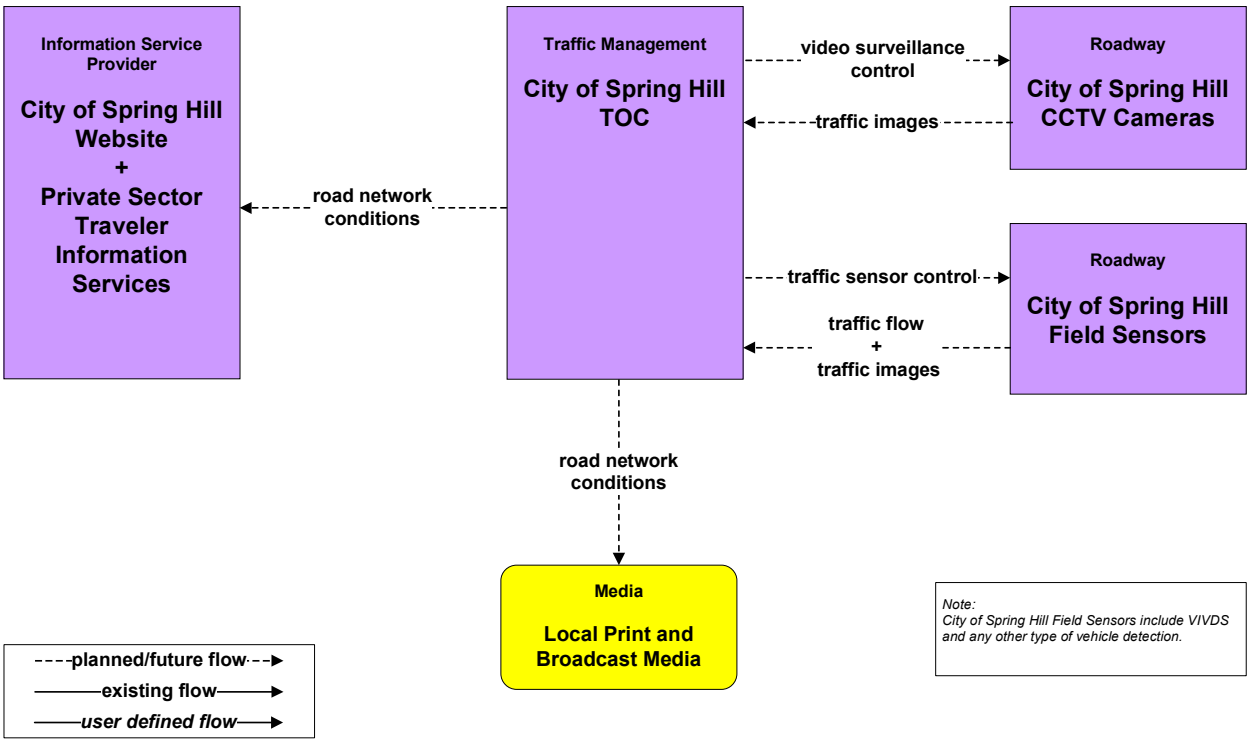
ATMS01 – Network Surveillance
City of Murfreesboro



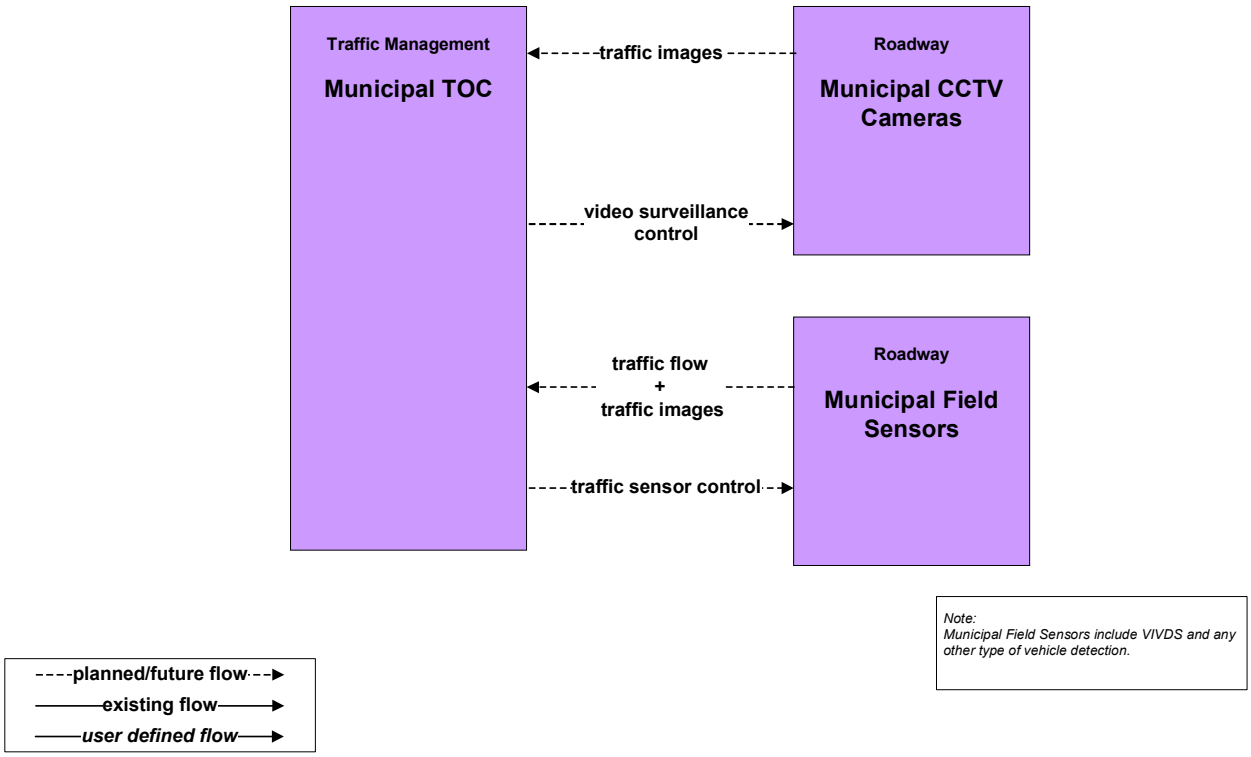
ATMS01 – Network Surveillance
City of Smyrna



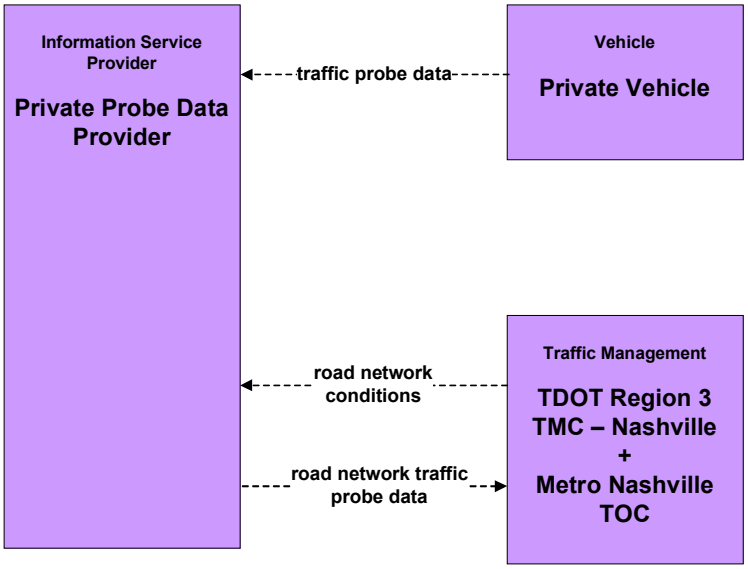
ATMS01 – Network Surveillance
City of Spring Hill

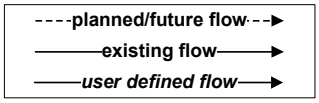


ATMS01 – Network Surveillance
Municipal

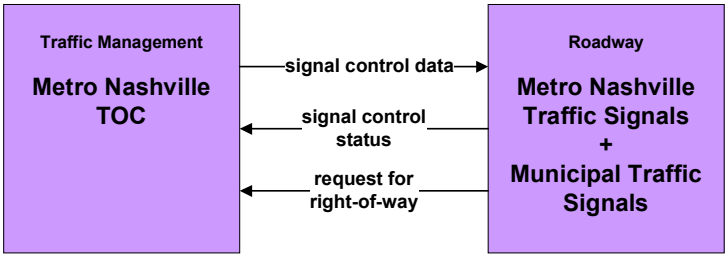


ATMS02 – Traffic Probe Surveillance
TDOT and Metro Nashville



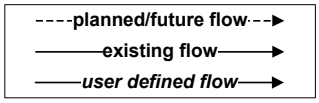


ATMS03 – Surface Street Control
Metro Nashville

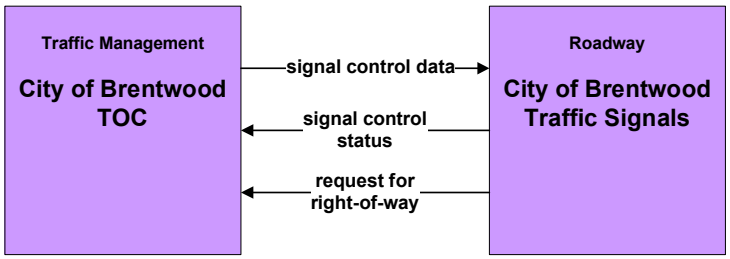


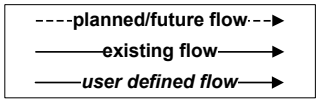
Note:
Metro Nashville currently operates signals for several municipalities including Goodlesttsville, Berry Hill and Belle Meade.

Metro Nashville, in conjunction with the Nashville Emergency Communication Center have a pilot emergency vehicle signal preemption project underway.

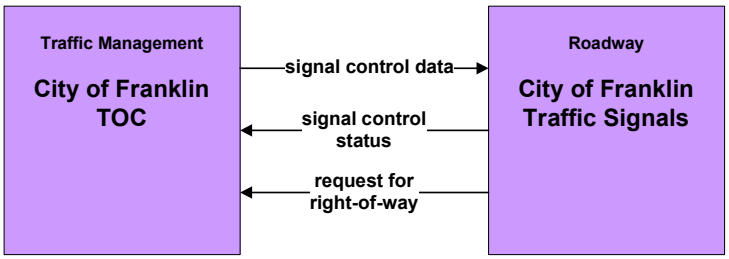


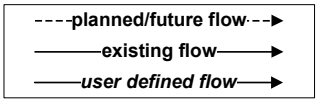
ATMS03 – Surface Street Control
City of Brentwood



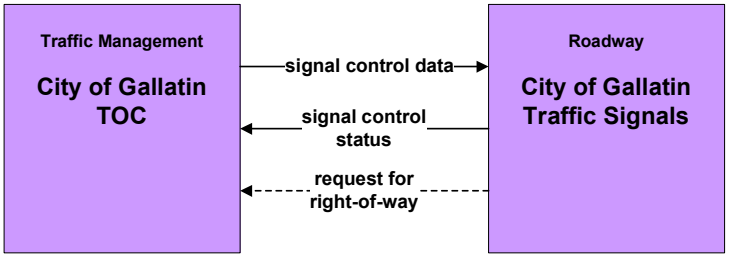


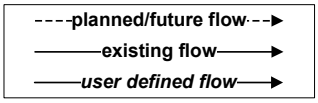
ATMS03 – Surface Street Control
City of Franklin



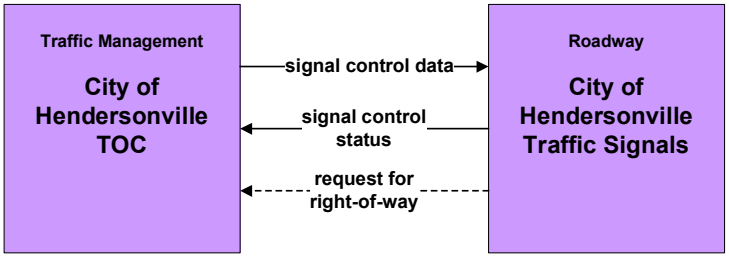


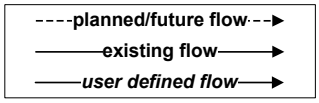
ATMS03 – Surface Street Control
City of Gallatin



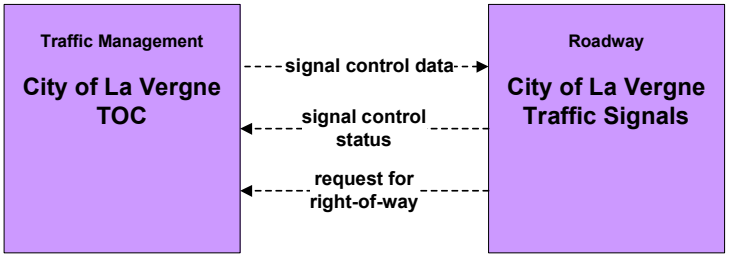


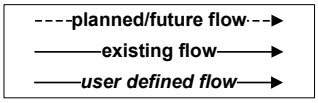
ATMS03 – Surface Street Control
City of Hendersonville



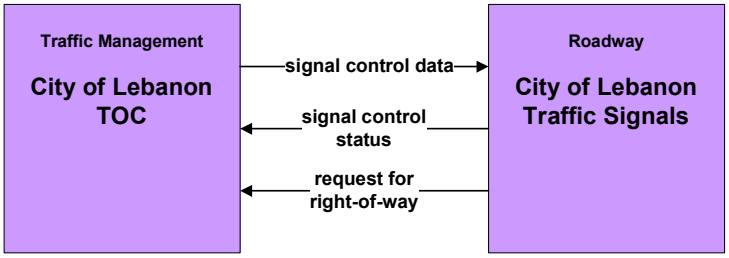


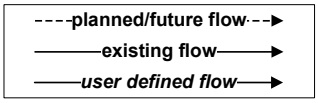
ATMS03 – Surface Street Control
City of La Vergne



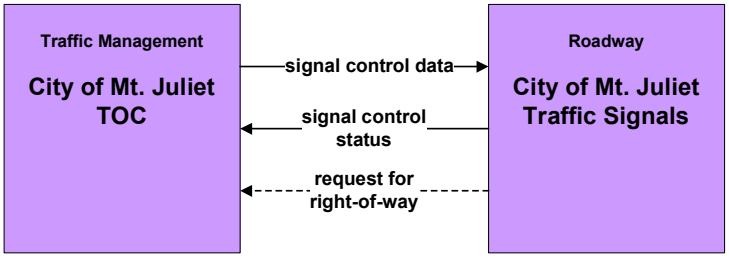


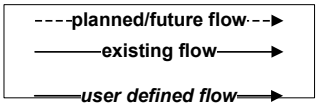
ATMS03 – Surface Street Control
City of Lebanon



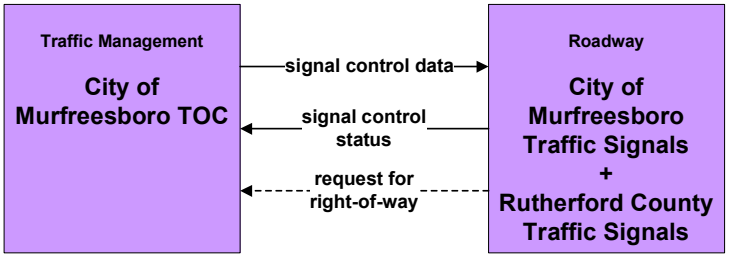


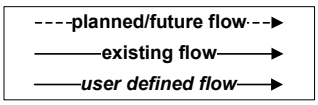
ATMS03 – Surface Street Control
City of Mt. Juliet



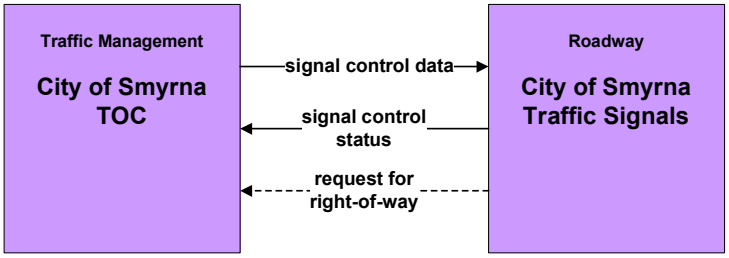


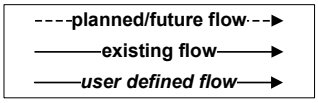
ATMS03 – Surface Street Control
City of Murfreesboro



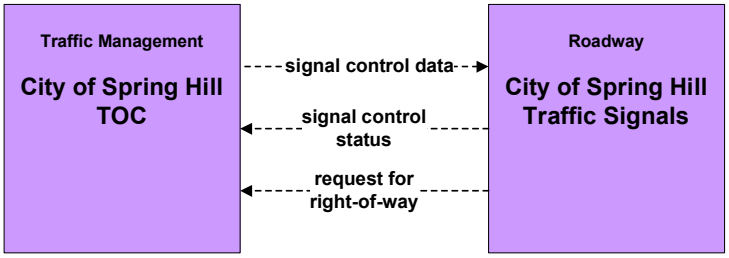


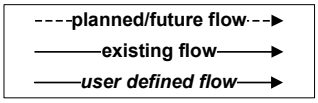
ATMS03 – Surface Street Control
City of Smyrna



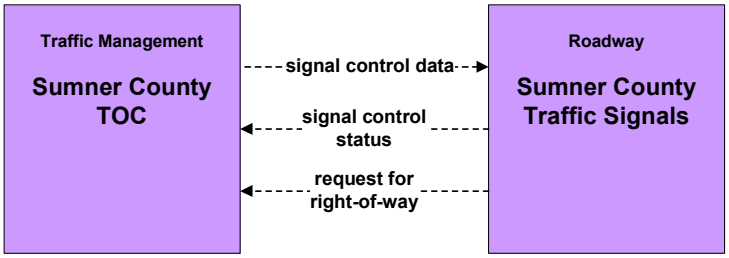


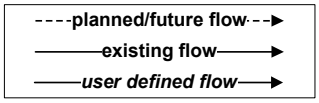
ATMS03 – Surface Street Control
City of Spring Hill



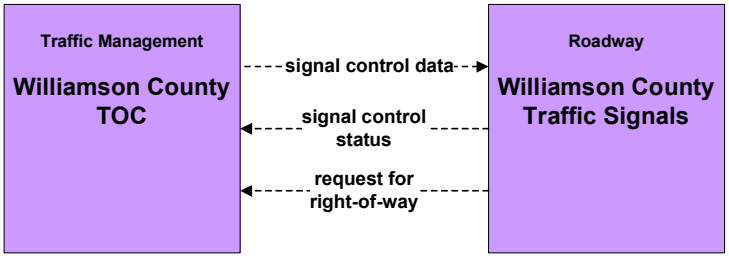


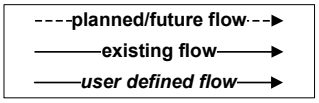
ATMS03 – Surface Street Control
Sumner County



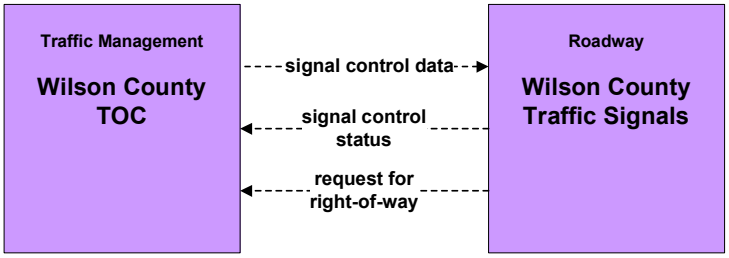


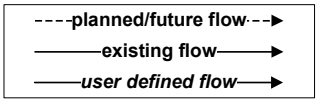
ATMS03 – Surface Street Control
Williamson County



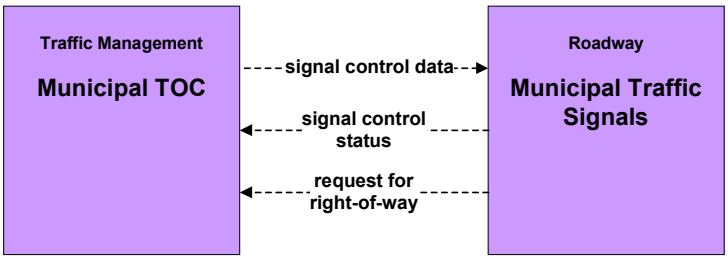


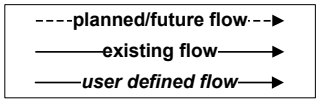
ATMS03 – Surface Street Control
Wilson County



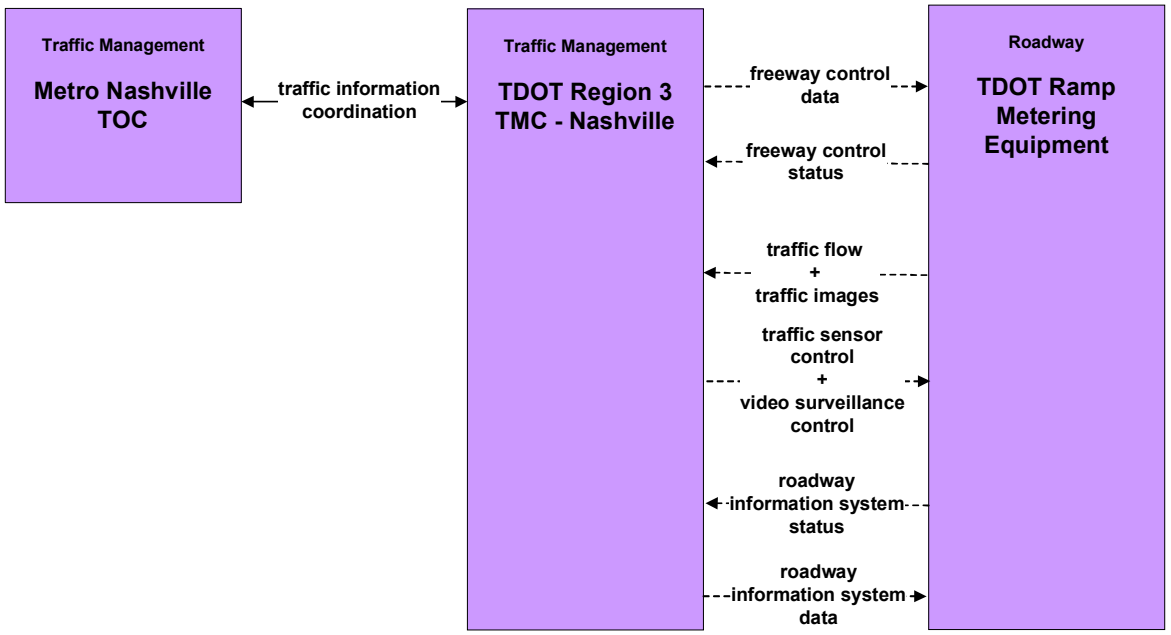


ATMS03 – Surface Street Control
Municipal/County

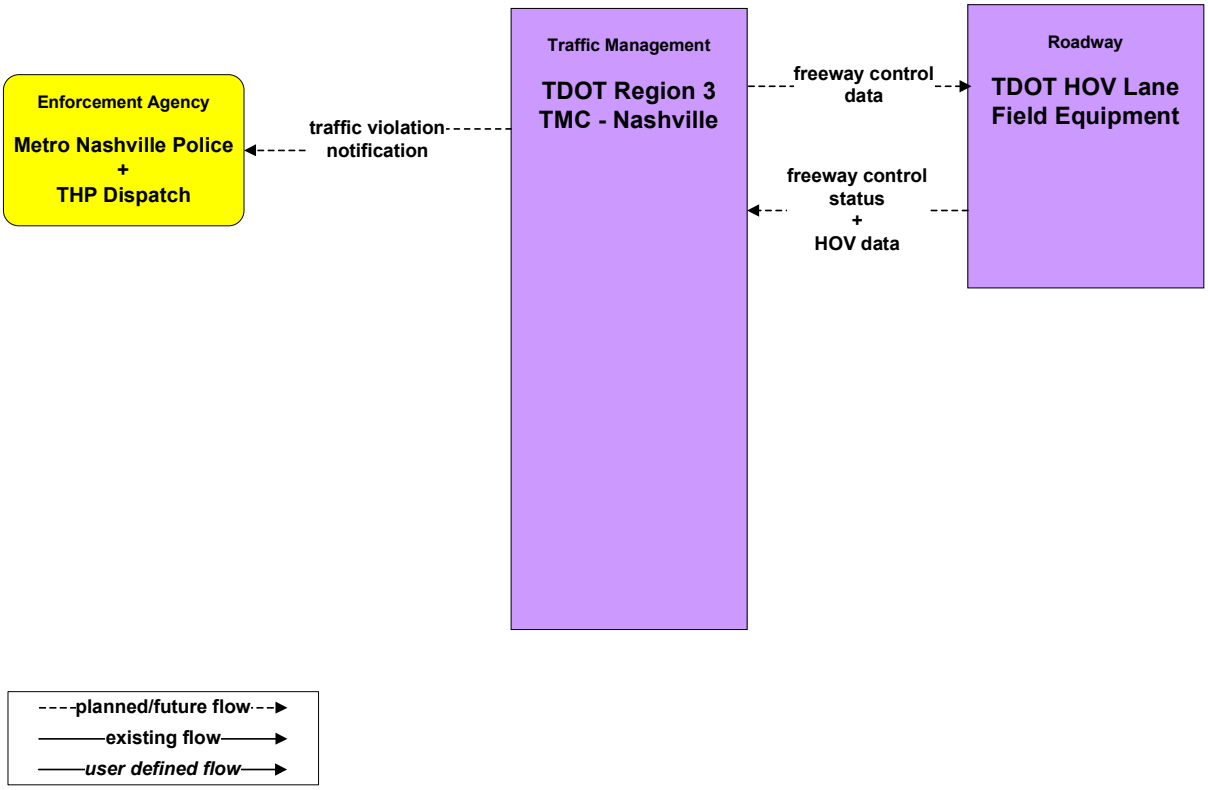


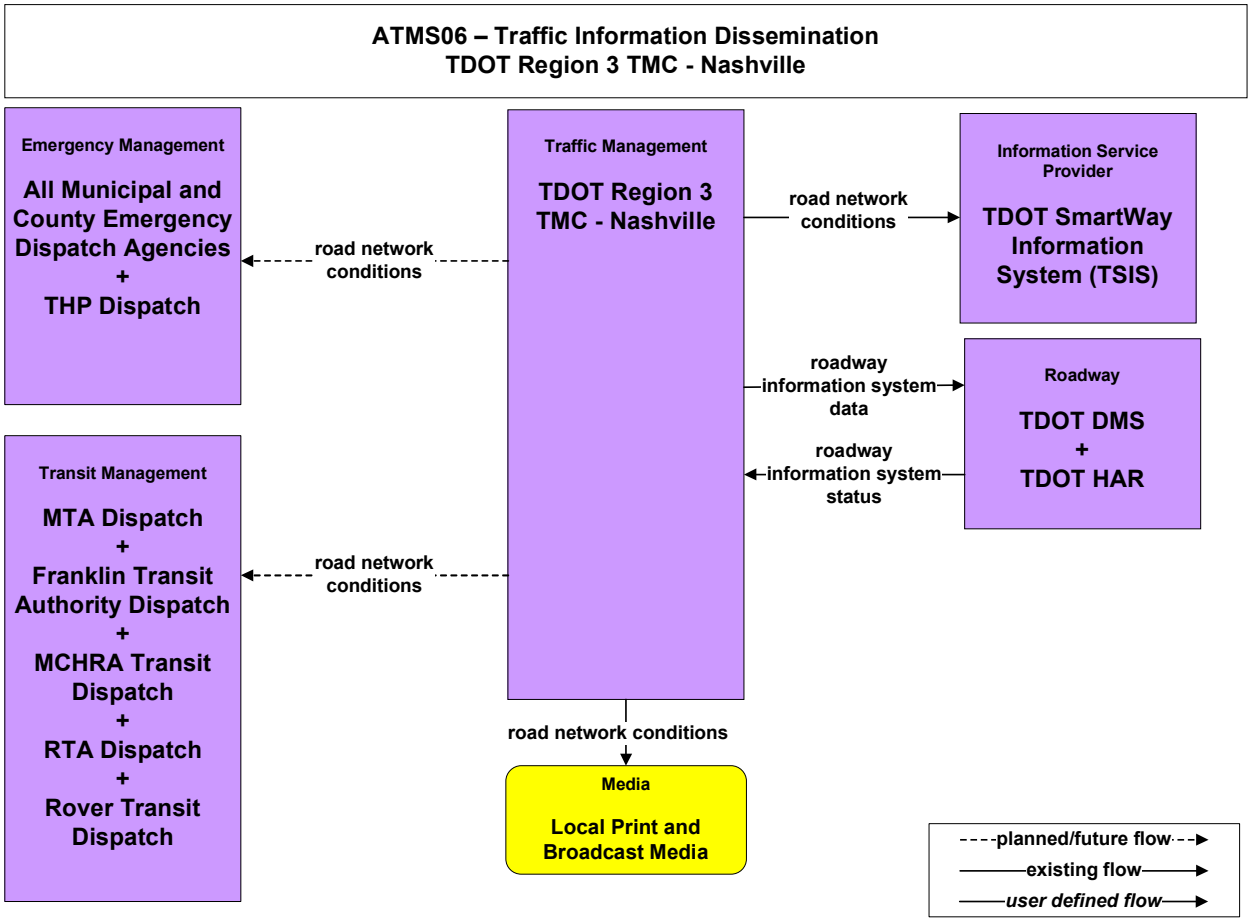


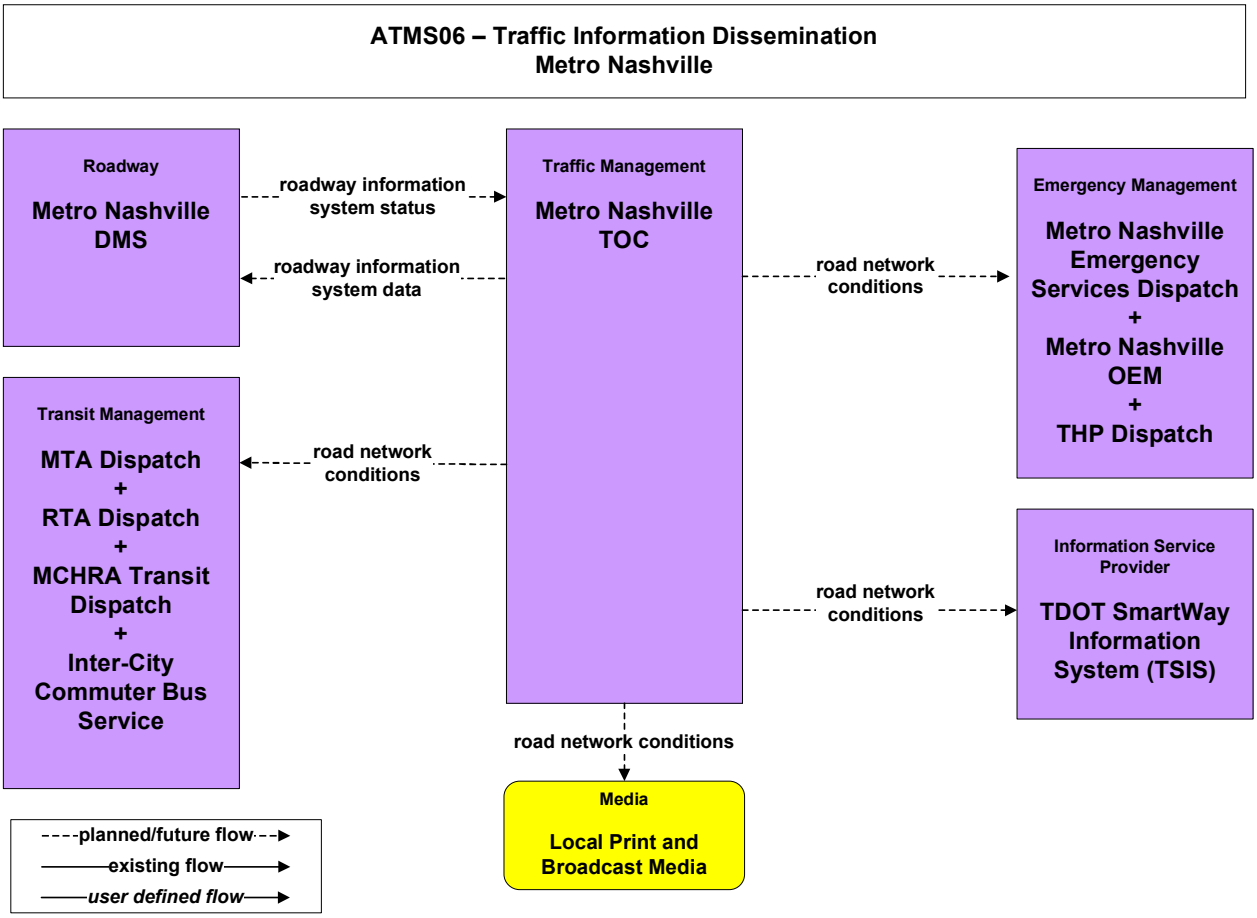
ATMS04 – Freeway Control
TDOT

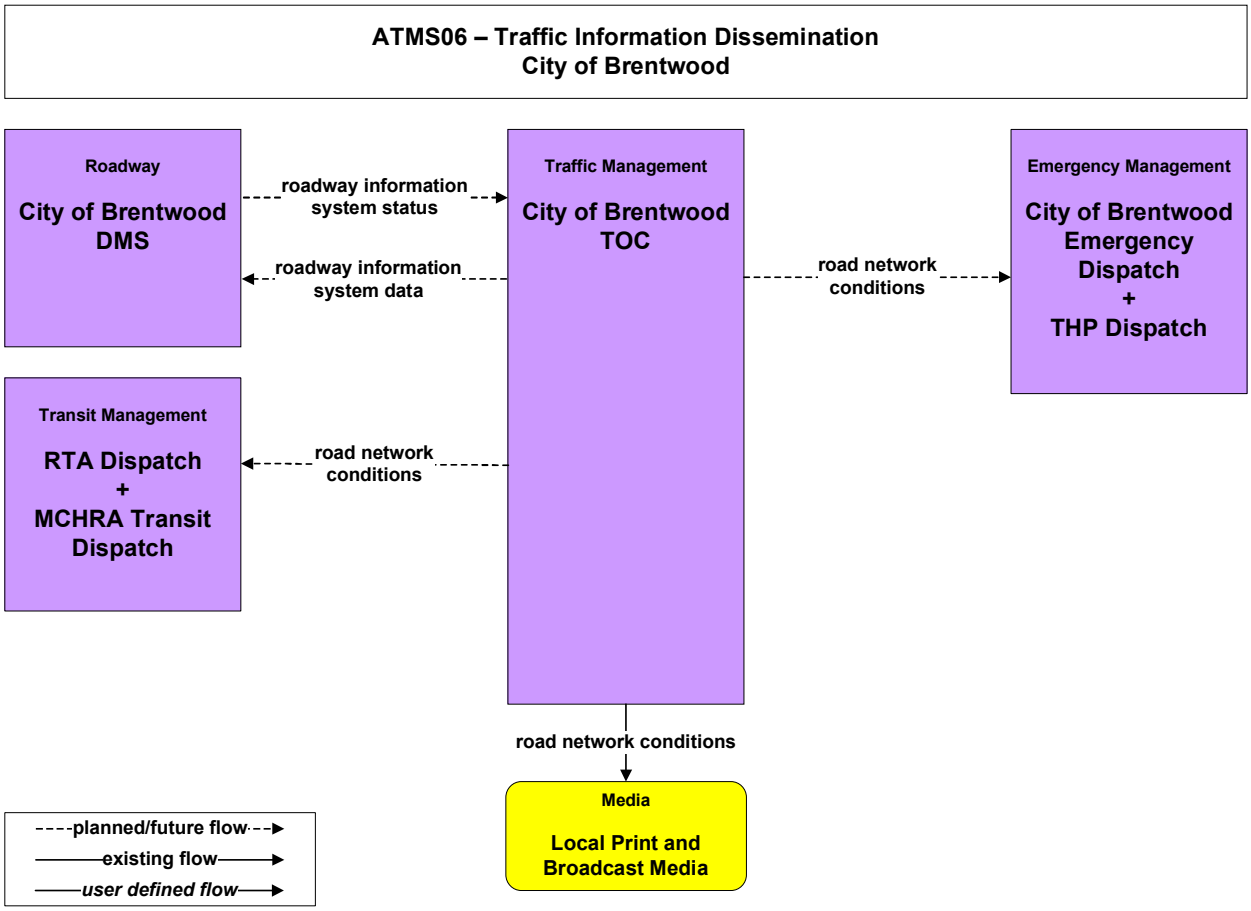


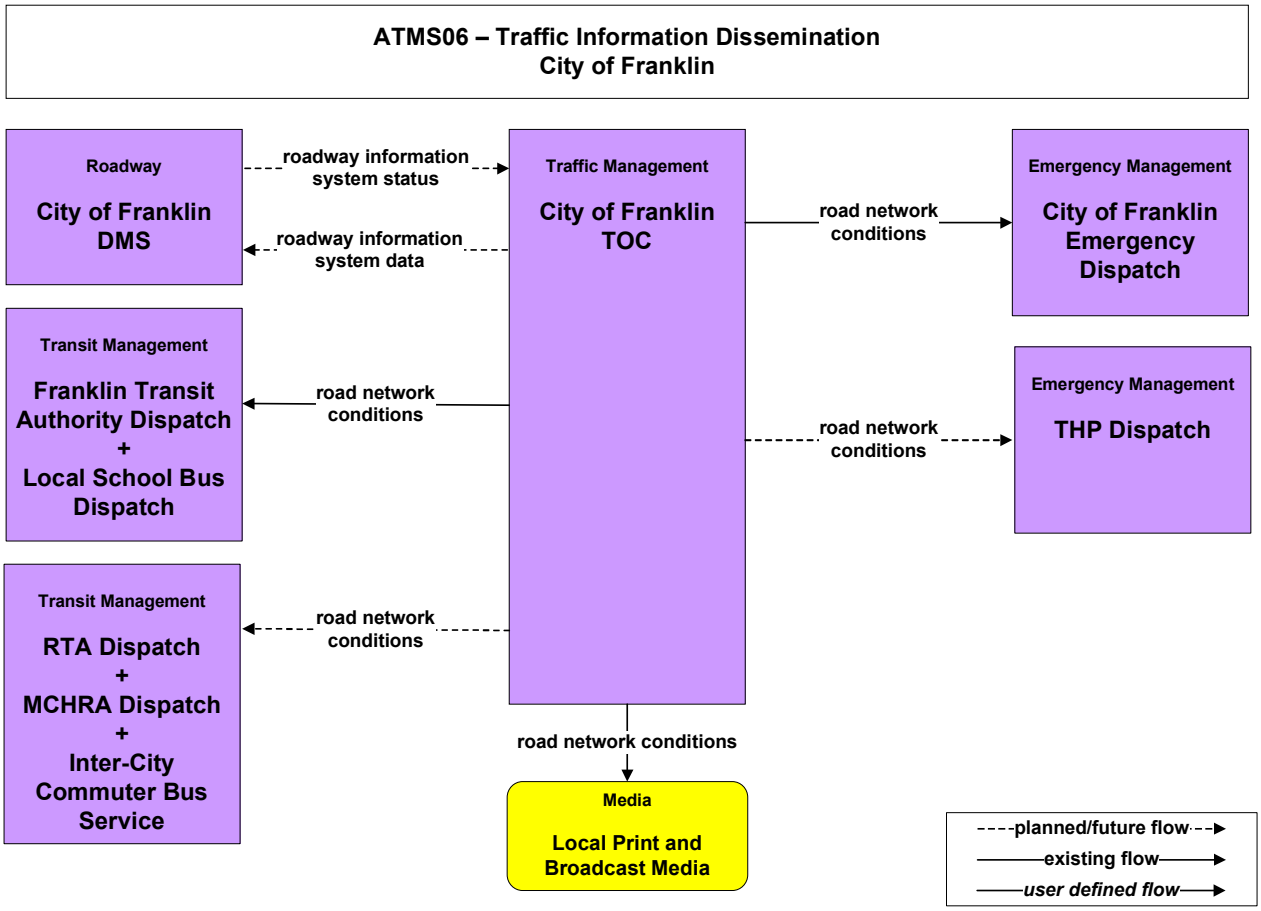
ATMS05 – HOV Lane Management
TDOT Region 3 TMC - Nashville

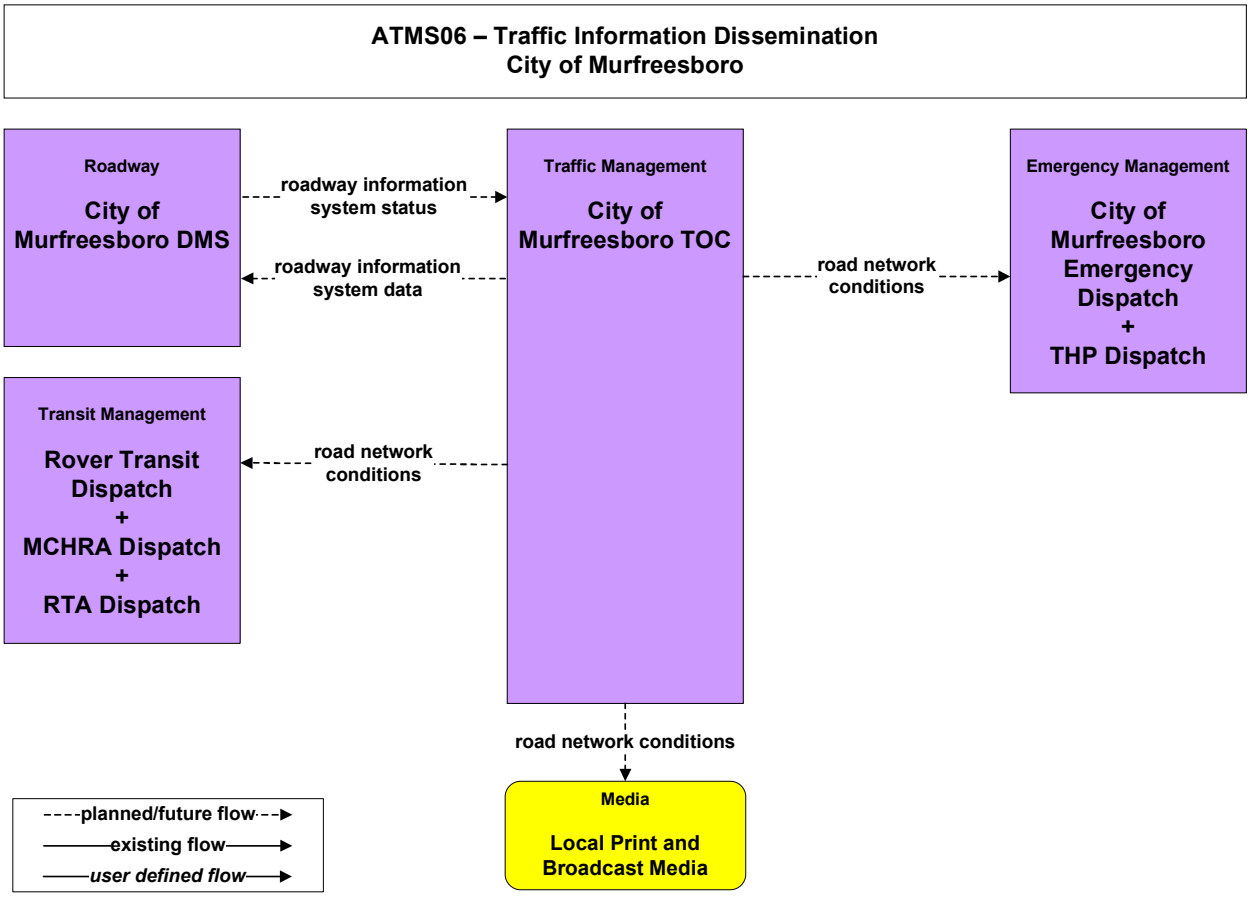


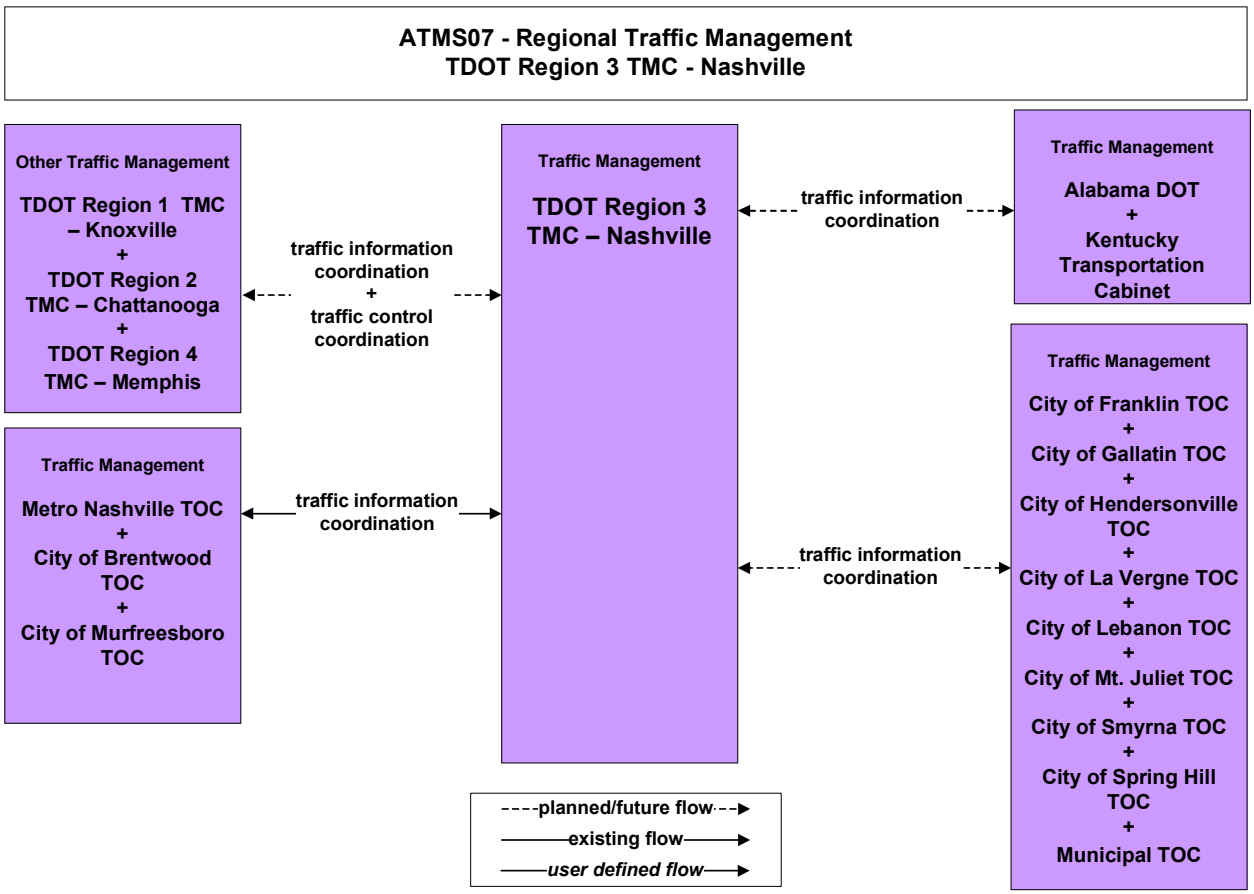

ATMS06 – Traffic Information Dissemination
TDOT Region 3 TMC - Nashville
Emergency Management
All Municipal and County Emergency Dispatch Agencies
+
THP Dispatch
Traffic Management
TDOT Region 3 TMC - Nashville
Information Service Provider
TDOT SmartWay Information System (TSIS)
road network conditions
road network conditions
roadway information system data
roadway information system status
Roadway
TDOT DMS
+
TDOT HAR
Transit Management
MTA Dispatch
+
Franklin Transit Authority Dispatch
+
MCHRA Transit Dispatch
+
RTA Dispatch
+
Rover Transit Dispatch
road network conditions
road network conditions
Media
Local Print and Broadcast Media
planned/future flow
existing flow
user defined flow


ATMS06 – Traffic Information Dissemination
Metro Nashville
Roadway
Metro Nashville DMS
roadway information system status
roadway information system data
Traffic Management
Metro Nashville TOC
road network conditions
Emergency Management
Metro Nashville Emergency Services Dispatch
+
Metro Nashville OEM
+
THP Dispatch
Transit Management
MTA Dispatch
+
RTA Dispatch
+
MCHRA Transit Dispatch
+
Inter-City Commuter Bus Service
road network conditions
road network conditions
Information Service Provider
TDOT SmartWay Information System (TSIS)
road network conditions
Media
Local Print and Broadcast Media
planned/future flow
existing flow
user defined flow

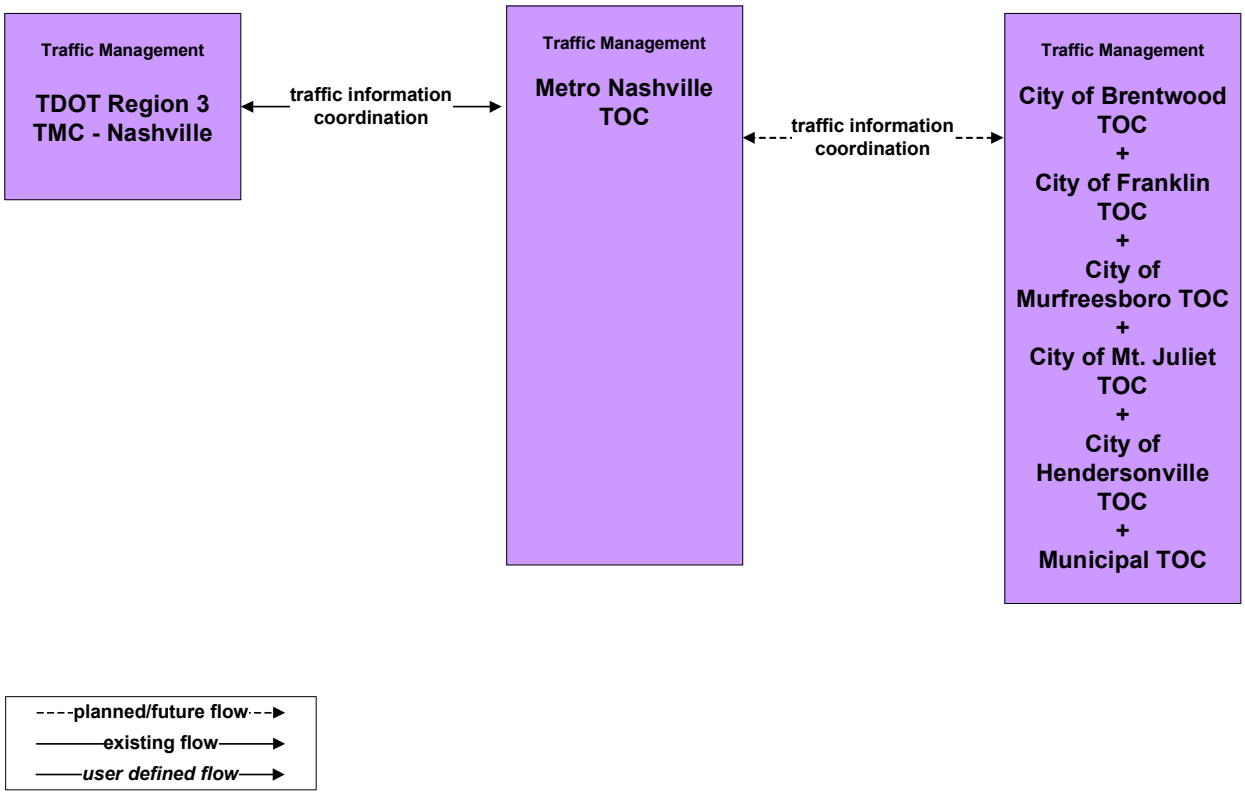

ATMS06 – Traffic Information Dissemination
City of Brentwood
Roadway
City of Brentwood DMS
roadway information system status
roadway information system data
Traffic Management
City of Brentwood TOC
road network conditions
Emergency Management
City of Brentwood Emergency Dispatch
+
THP Dispatch
Transit Management
RTA Dispatch
+
MCHRA Transit Dispatch
road network conditions
road network conditions
Media
Local Print and Broadcast Media
planned/future flow
existing flow
user defined flow


ATMS06 – Traffic Information Dissemination
City of Franklin
Roadway
City of Franklin DMS
roadway information system status
roadway information system data
Traffic Management
City of Franklin TOC
road network conditions
Emergency Management
City of Franklin Emergency Dispatch
Transit Management
Franklin Transit Authority Dispatch
+
Local School Bus Dispatch
road network conditions
road network conditions
Emergency Management
THP Dispatch
Transit Management
RTA Dispatch
+
MCHRA Dispatch
+
Inter-City Commuter Bus Service
road network conditions
road network conditions
Media
Local Print and Broadcast Media
planned/future flow
existing flow
user defined flow

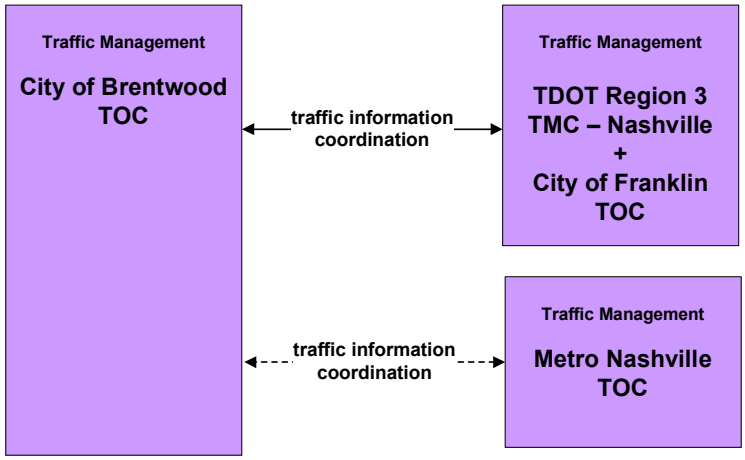

ATMS06 – Traffic Information Dissemination
City of Murfreesboro
Roadway
City of Murfreesboro DMS
roadway information system status
roadway information system data
Traffic Management
City of Murfreesboro TOC
road network conditions
Emergency Management
City of Murfreesboro Emergency Dispatch
+
THP Dispatch
Transit Management
Rover Transit Dispatch
+
MCHRA Dispatch
+
RTA Dispatch
road network conditions
road network conditions
Media
Local Print and Broadcast Media
planned/future flow
existing flow
user defined flow

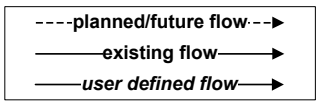

ATMS07 - Regional Traffic Management
TDOT Region 3 TMC - Nashville
Other Traffic Management
TDOT Region 1 TMC – Knoxville
+
TDOT Region 2 TMC – Chattanooga
+
TDOT Region 4 TMC – Memphis
traffic information coordination
+
traffic control coordination
Traffic Management
TDOT Region 3 TMC – Nashville
traffic information coordination
Traffic Management
Alabama DOT
+
Kentucky Transportation Cabinet
Traffic Management
Metro Nashville TOC
+
City of Brentwood TOC
+
City of Murfreesboro TOC
traffic information coordination
traffic information coordination
Traffic Management
City of Franklin TOC
+
City of Gallatin TOC
+
City of Hendersonville TOC
+
City of La Vergne TOC
+
City of Lebanon TOC
+
City of Mt. Juliet TOC
+
City of Smyrna TOC
+
City of Spring Hill TOC
+
Municipal TOC
planned/future flow
existing flow
user defined flow

ATMS07 – Regional Traffic Management
Metro Nashville

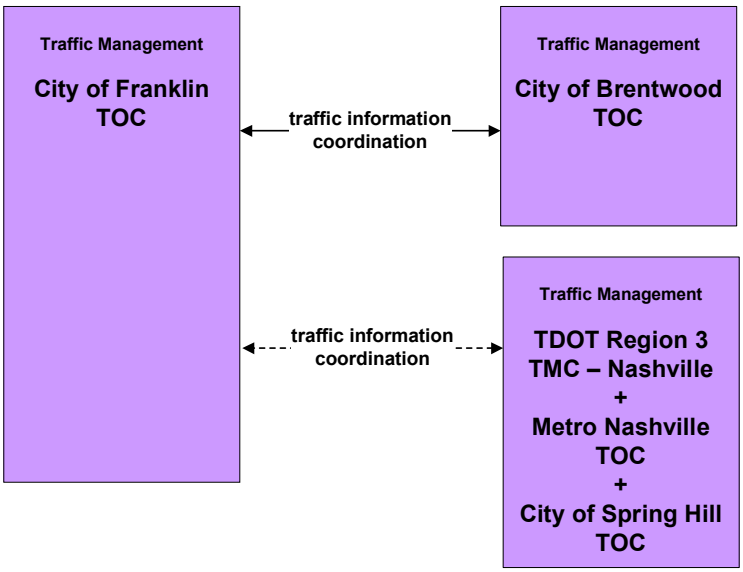


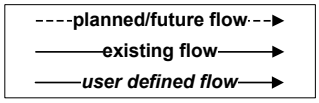
ATMS07 – Regional Traffic Management
City of Brentwood



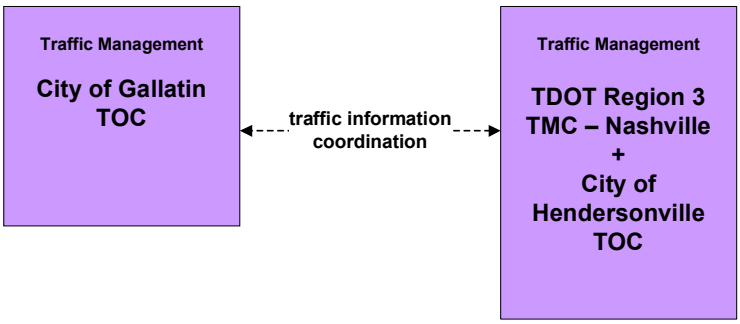


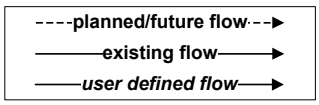
ATMS07 – Regional Traffic Management
City of Franklin



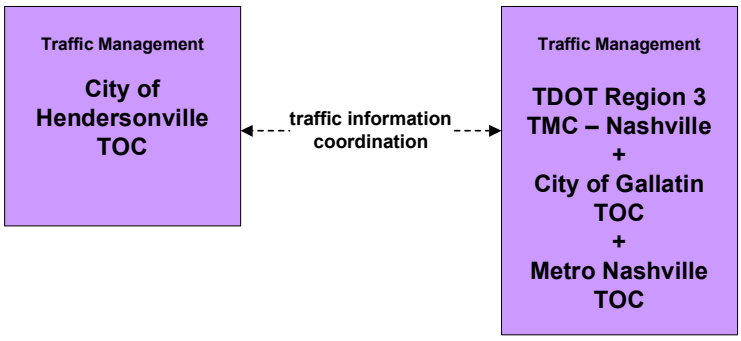


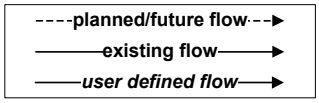
ATMS07 – Regional Traffic Management
City of Gallatin



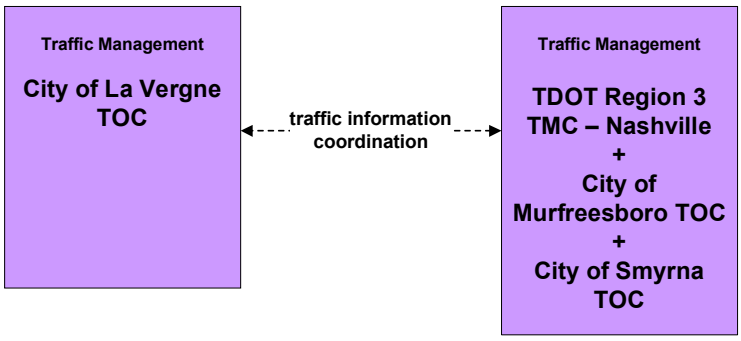


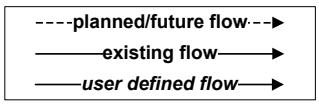
ATMS07 – Regional Traffic Management
City of Hendersonville



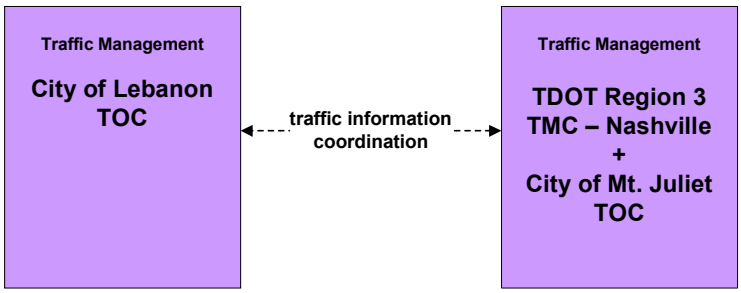


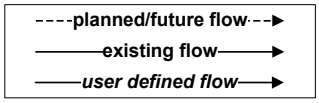
ATMS07 – Regional Traffic Management
City of La Vergne



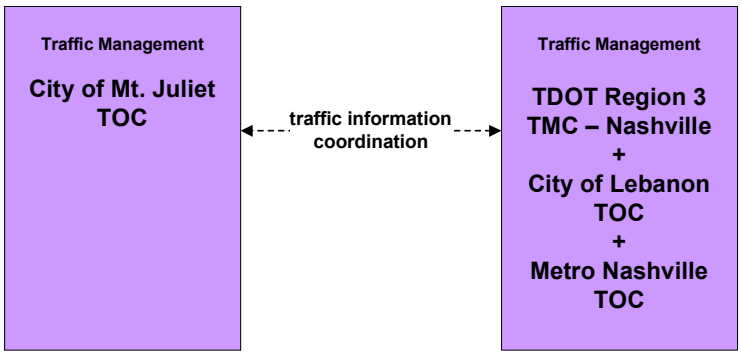


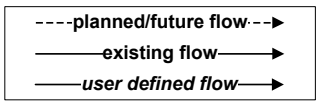
ATMS07 – Regional Traffic Management
City of Lebanon



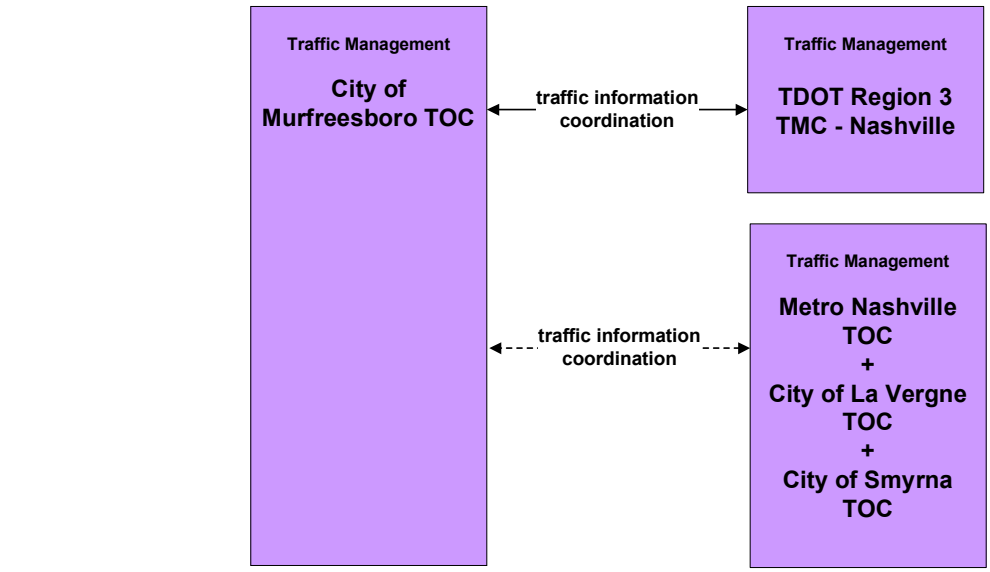


ATMS07 – Regional Traffic Management
City of Mt. Juliet

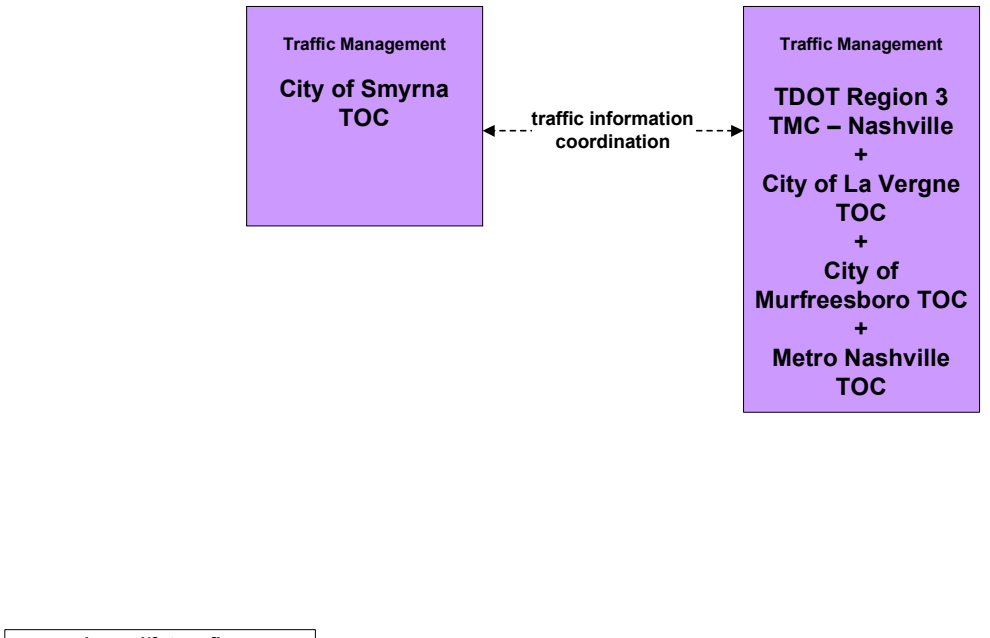




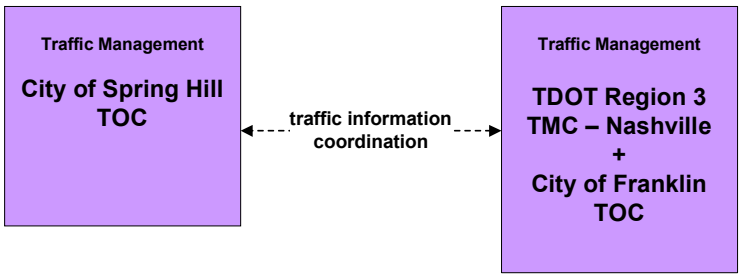
ATMS07 – Regional Traffic Management
City of Murfreesboro

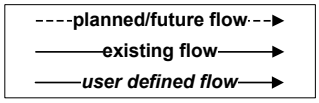


ATMS07 – Regional Traffic Management
City of Smyrna

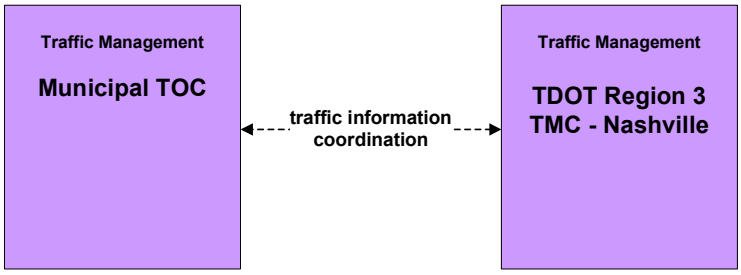


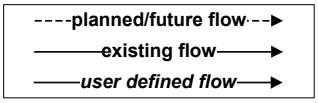
ATMS07 – Regional Traffic Management
City of Spring Hill



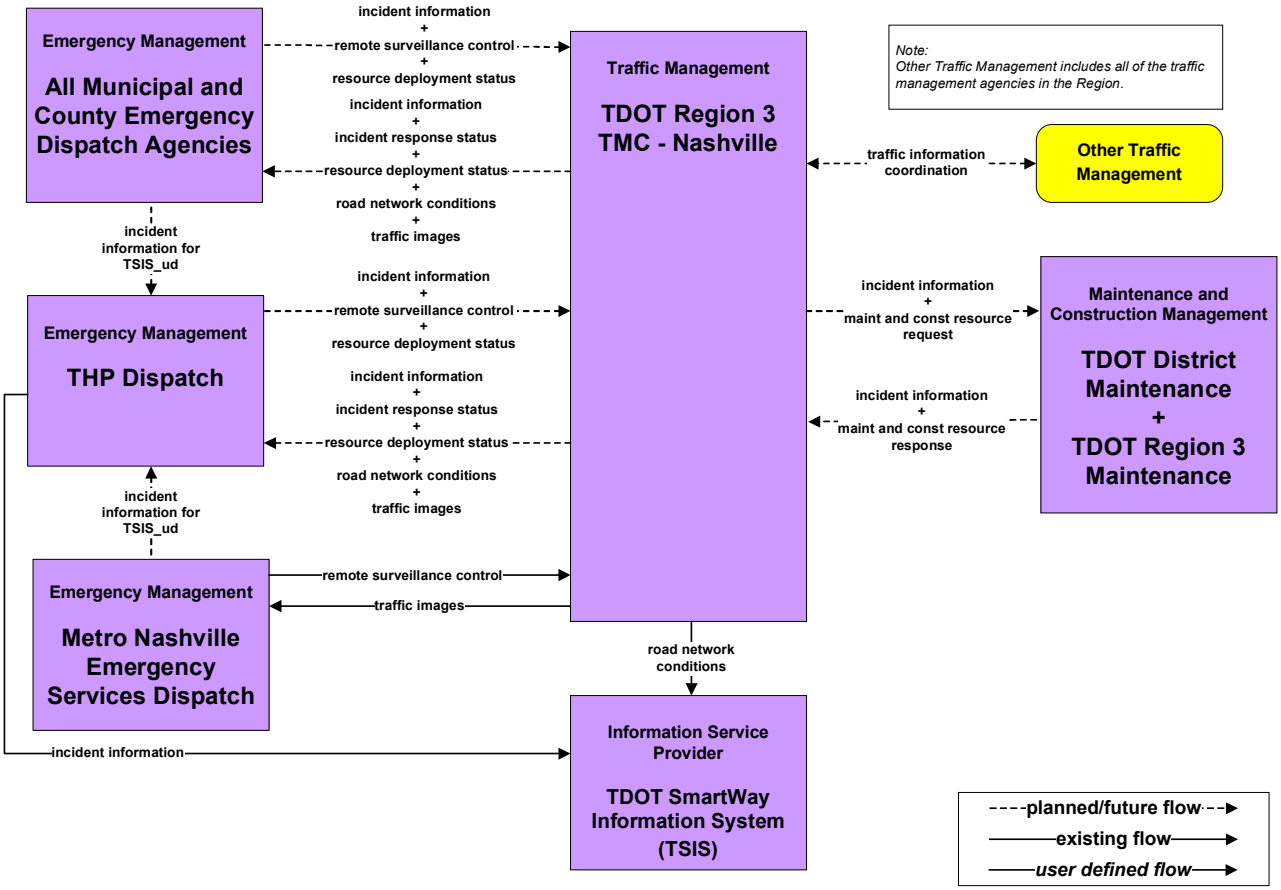


ATMS07 – Regional Traffic Management
Municipal/County

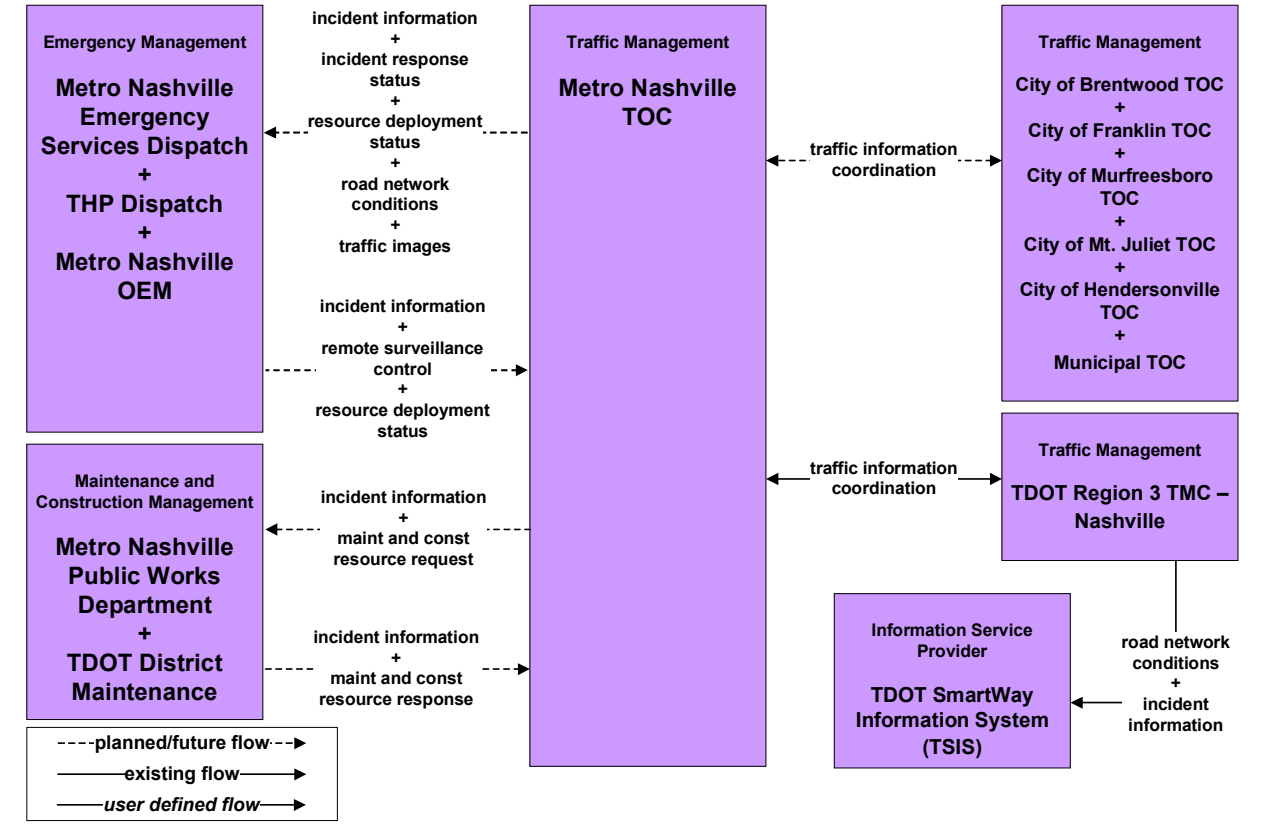




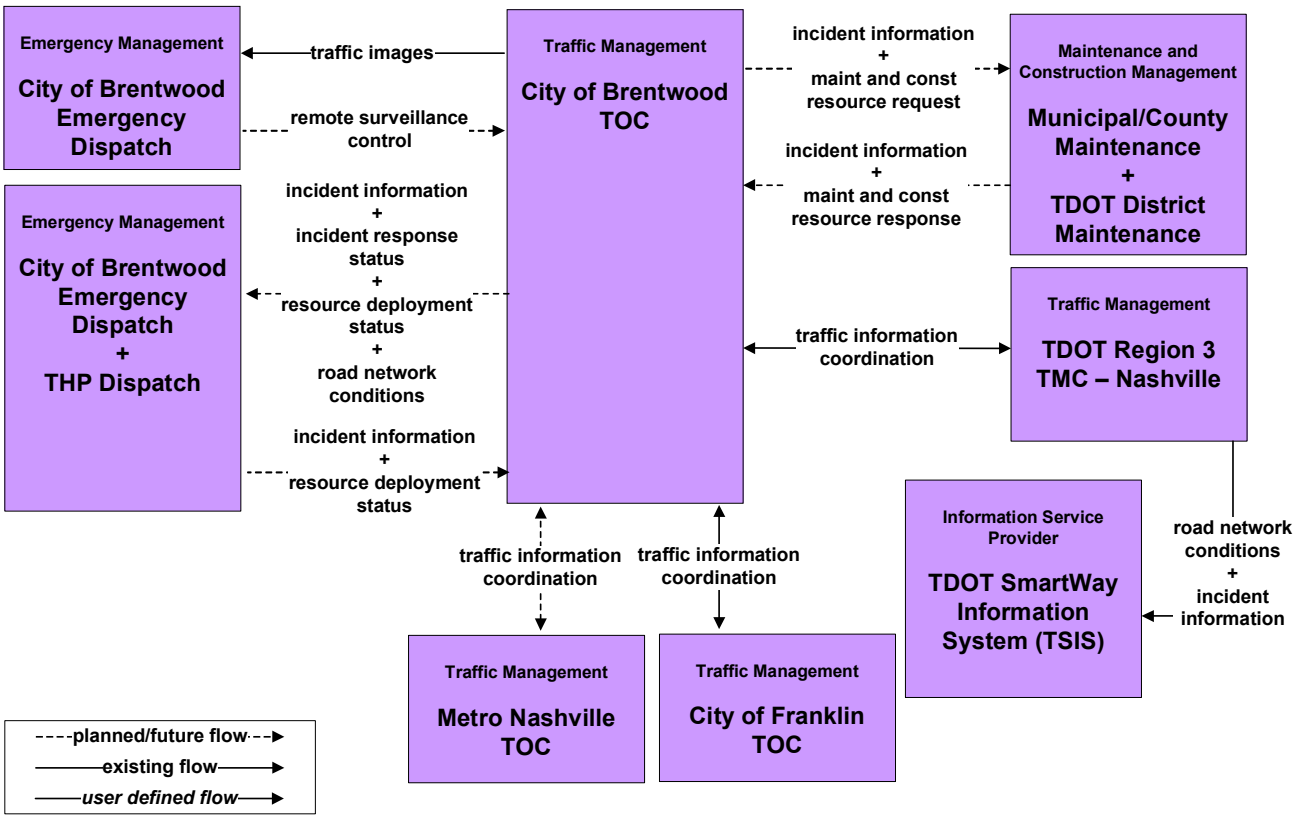
ATMS08 - Traffic Incident Management System
TDOT Region 3 TMC - Nashville



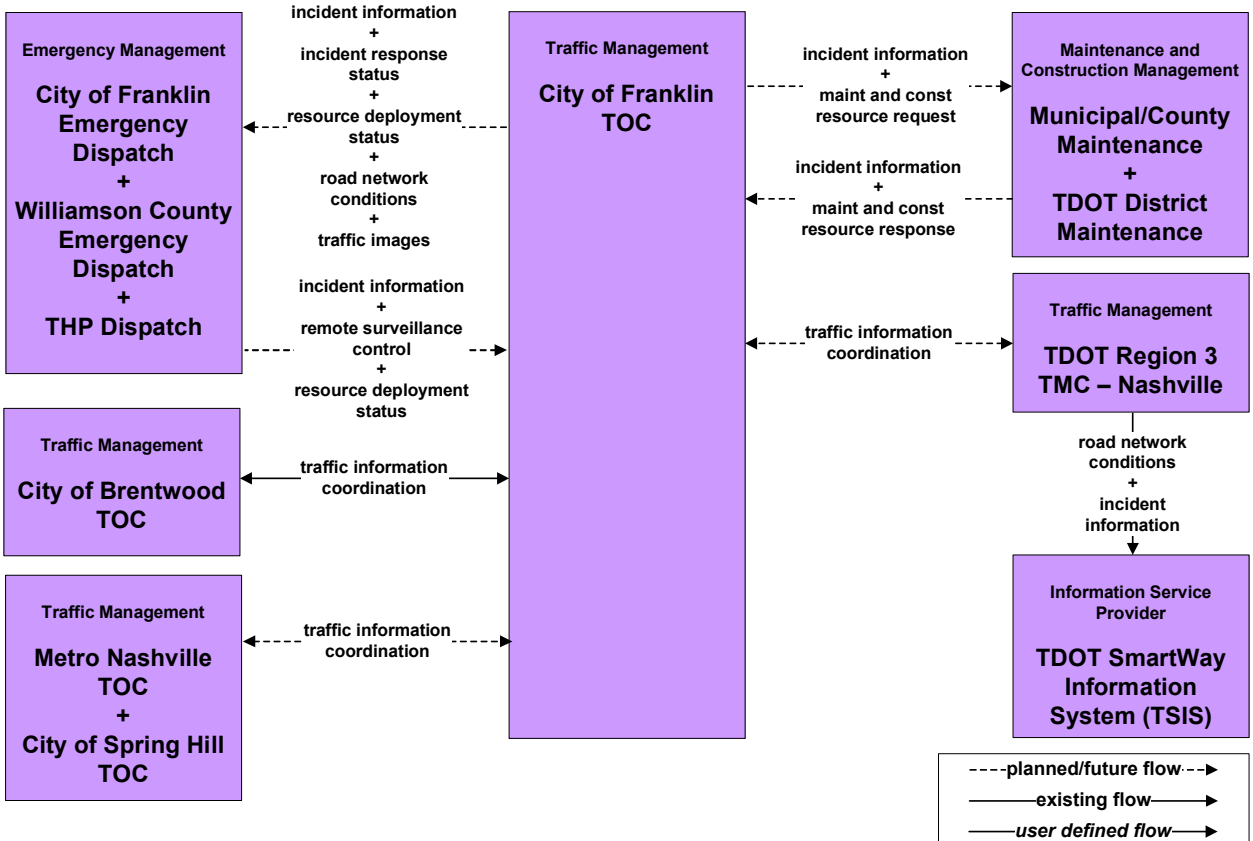
ATMS08 - Traffic Incident Management System
Metro Nashville



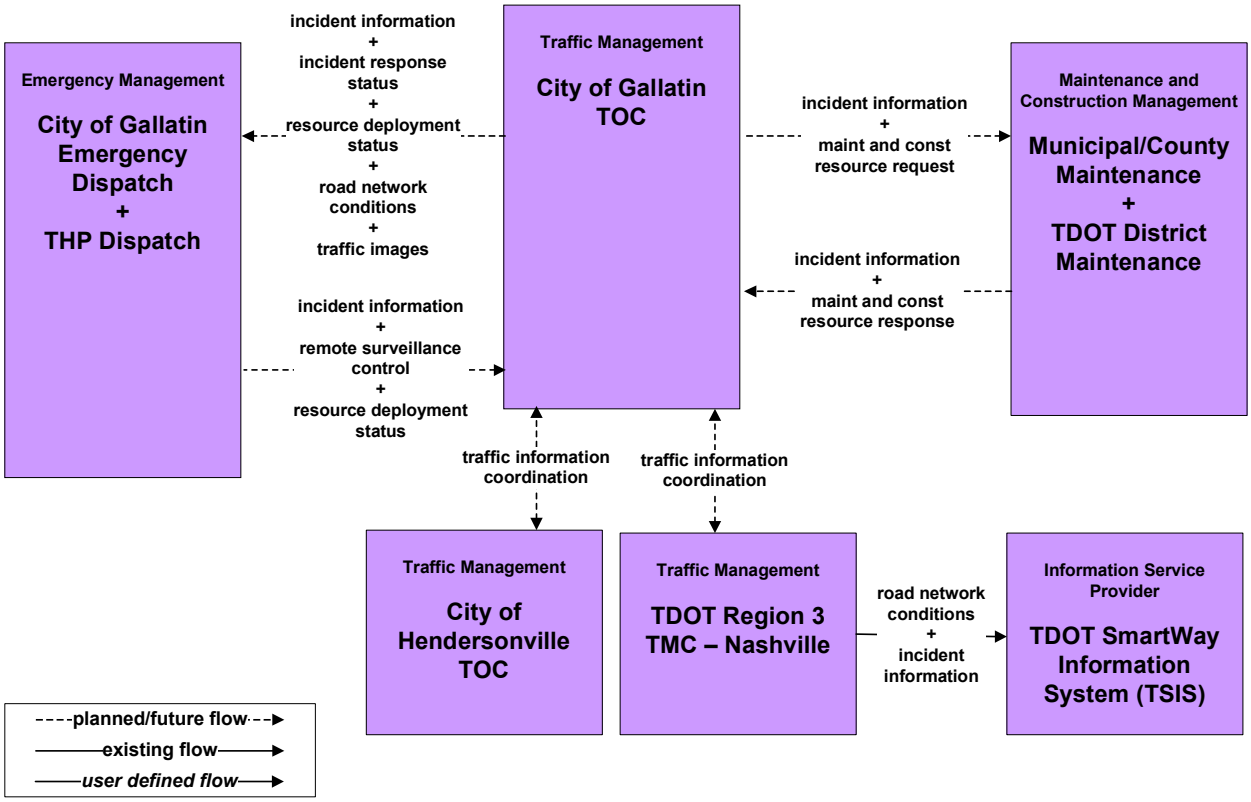
ATMS08 - Traffic Incident Management System
City of Brentwood



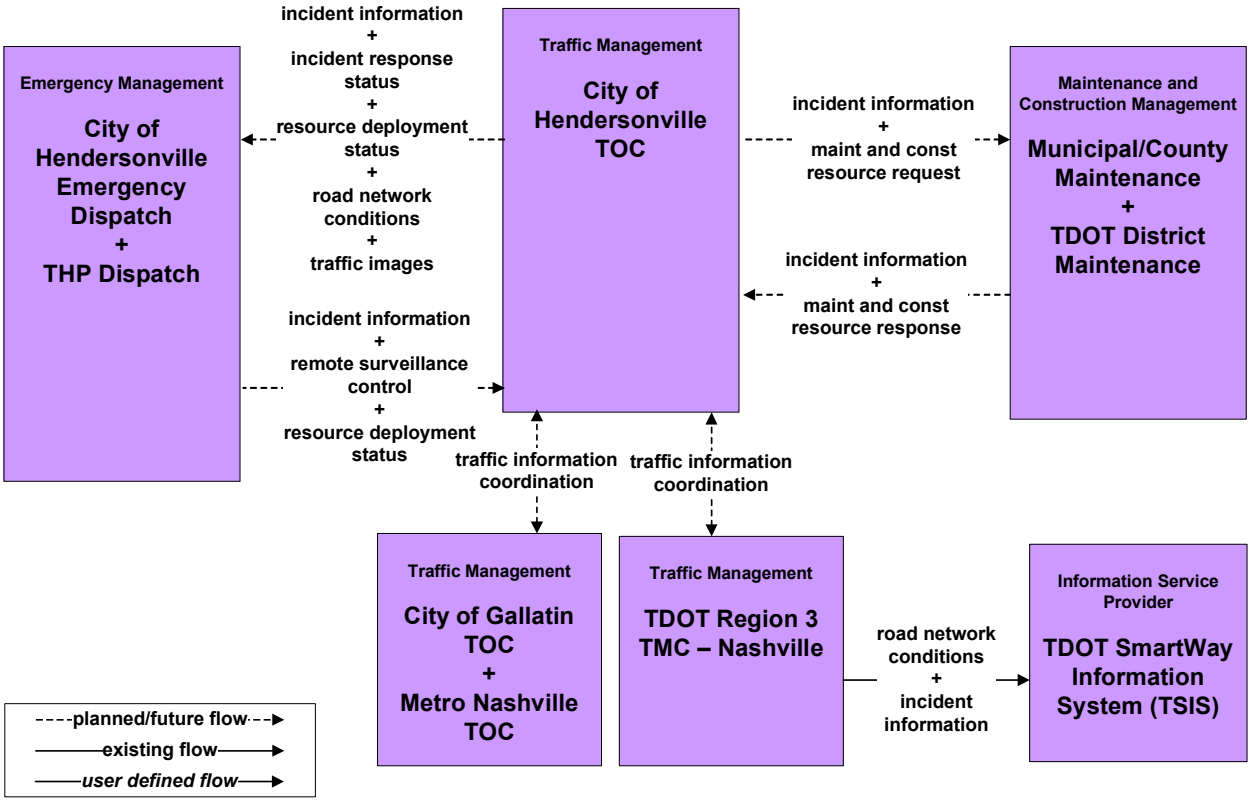
ATMS08 - Traffic Incident Management System
City of Franklin



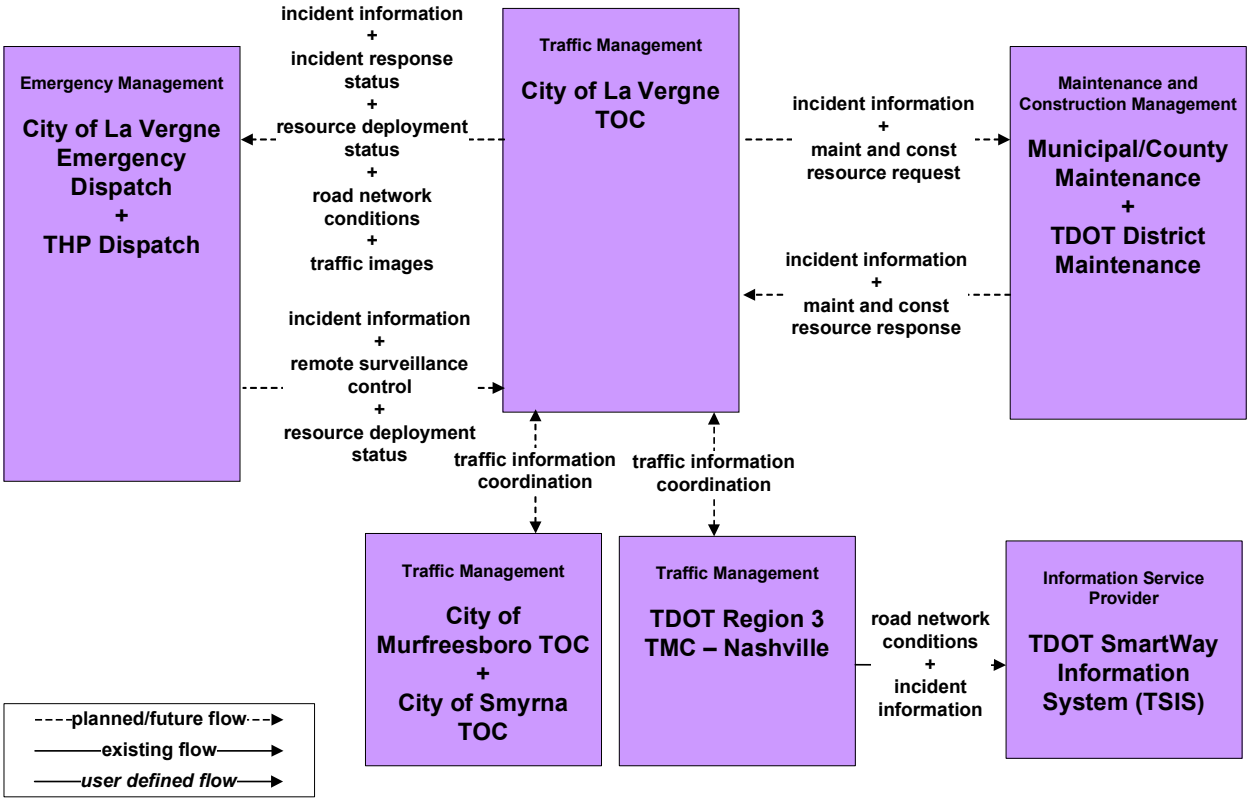
ATMS08 - Traffic Incident Management System
City of Gallatin



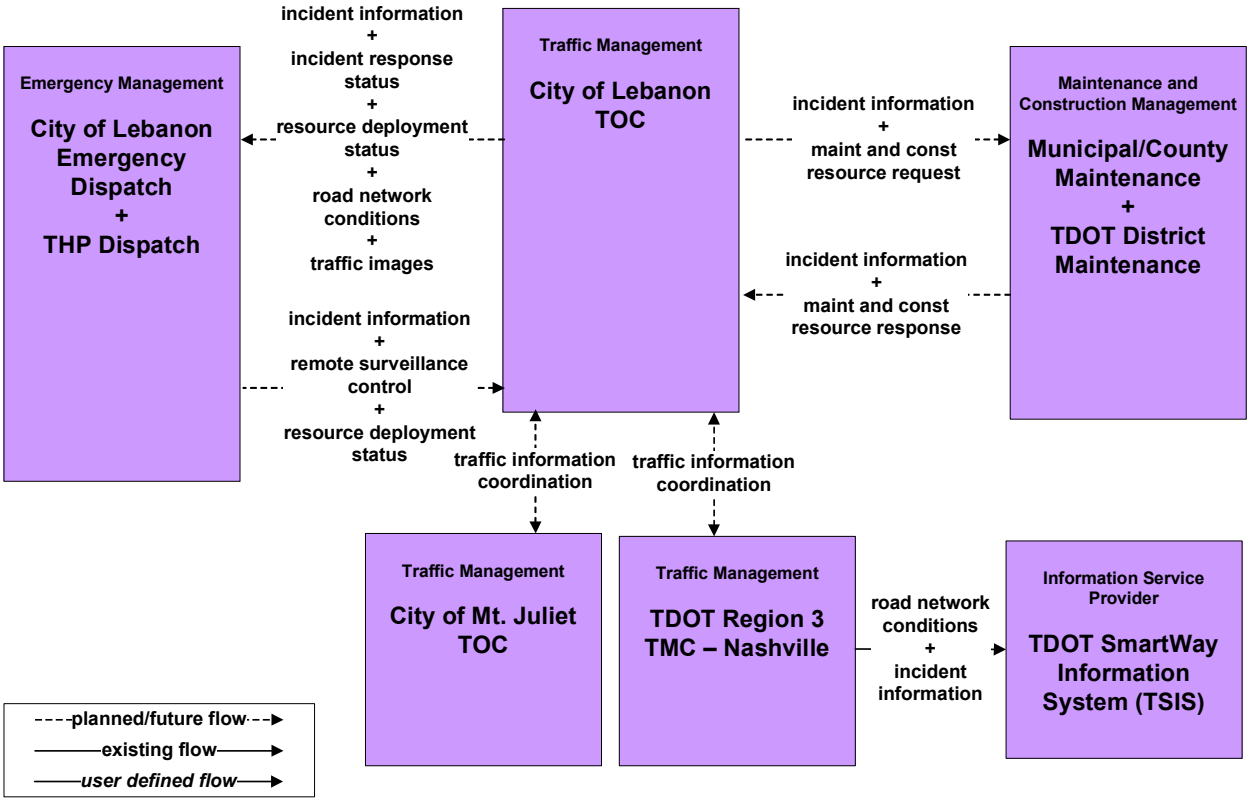
ATMS08 - Traffic Incident Management System
City of Hendersonville



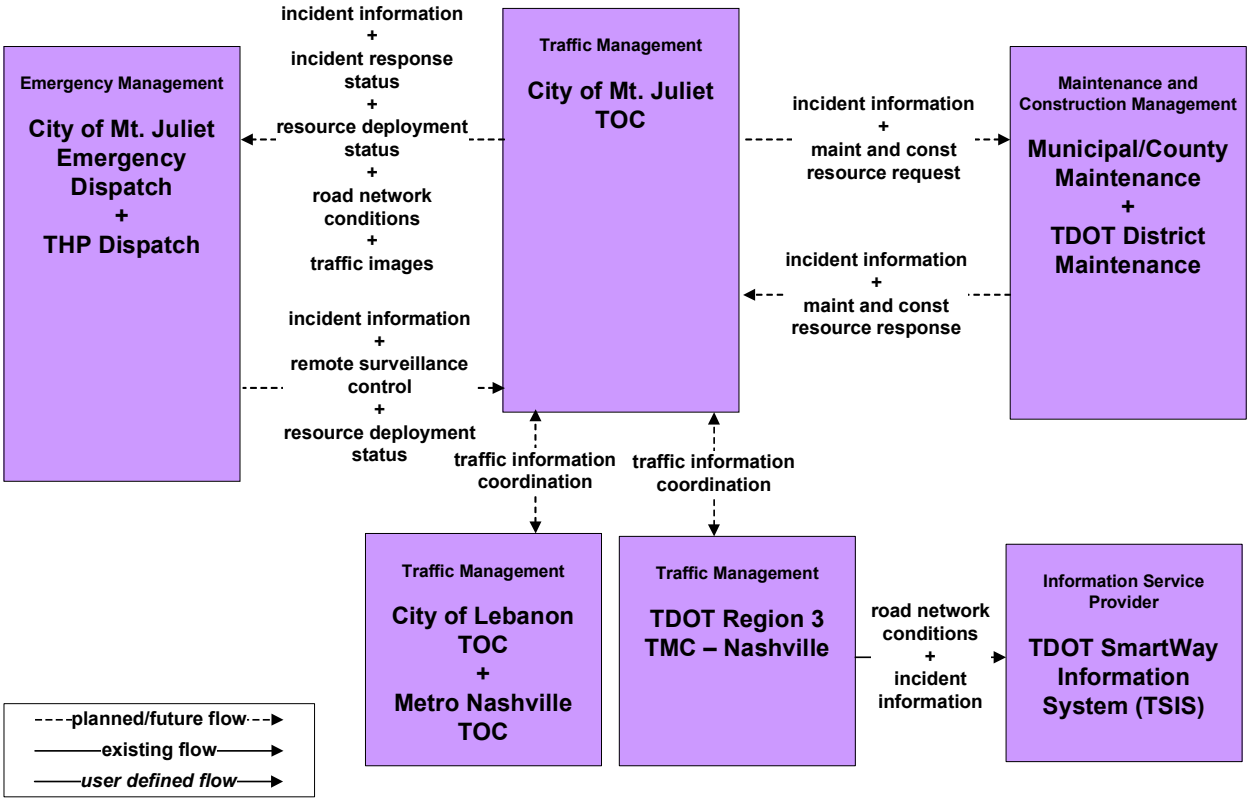
ATMS08 - Traffic Incident Management System
City of La Vergne



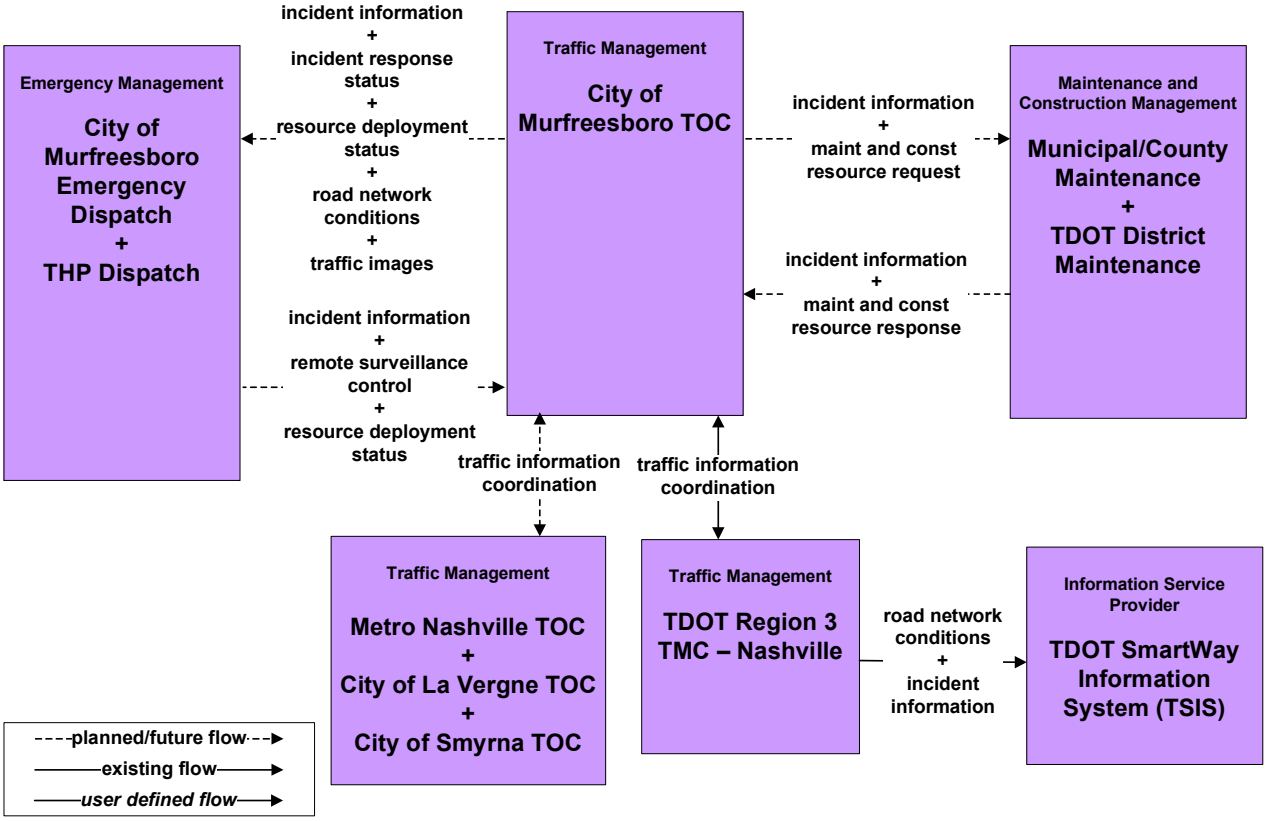
ATMS08 - Traffic Incident Management System
City of Lebanon



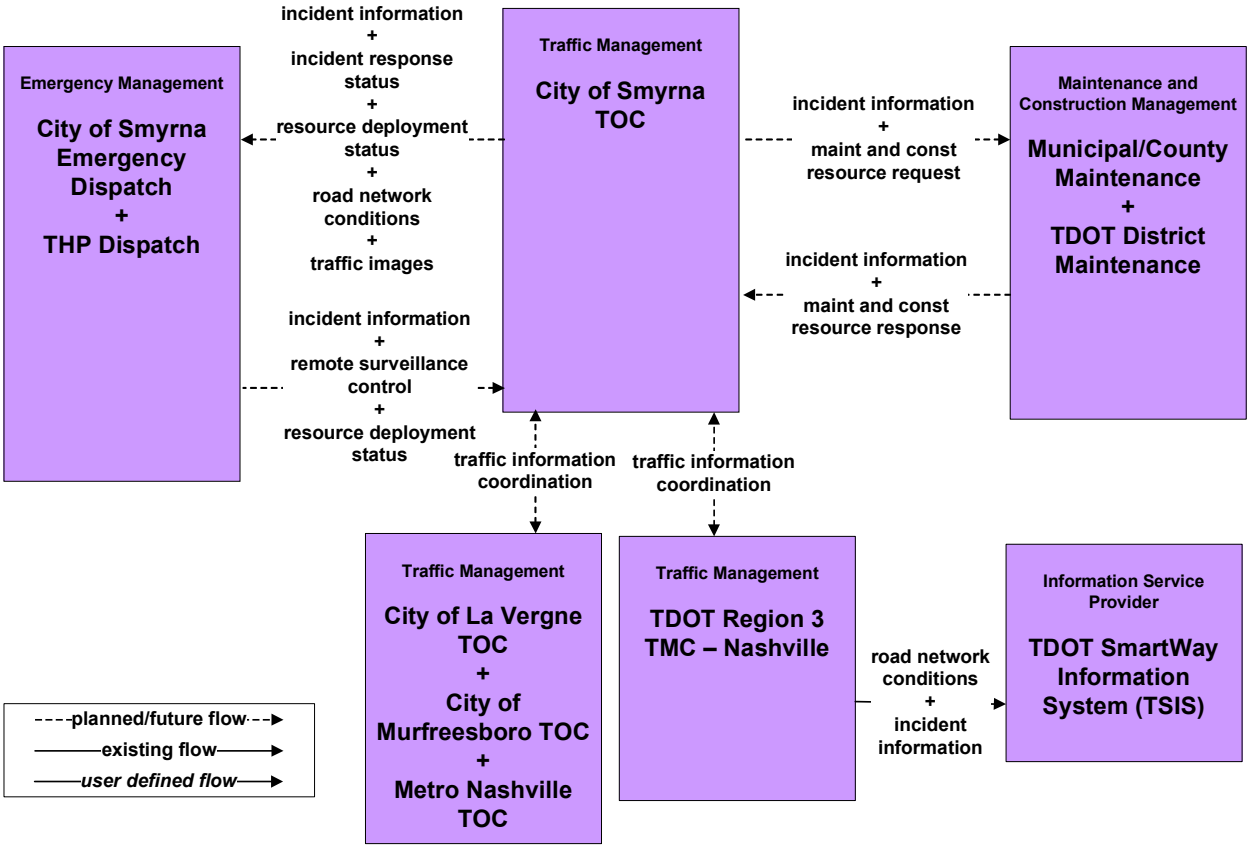
ATMS08 - Traffic Incident Management System
City of Mt. Juliet



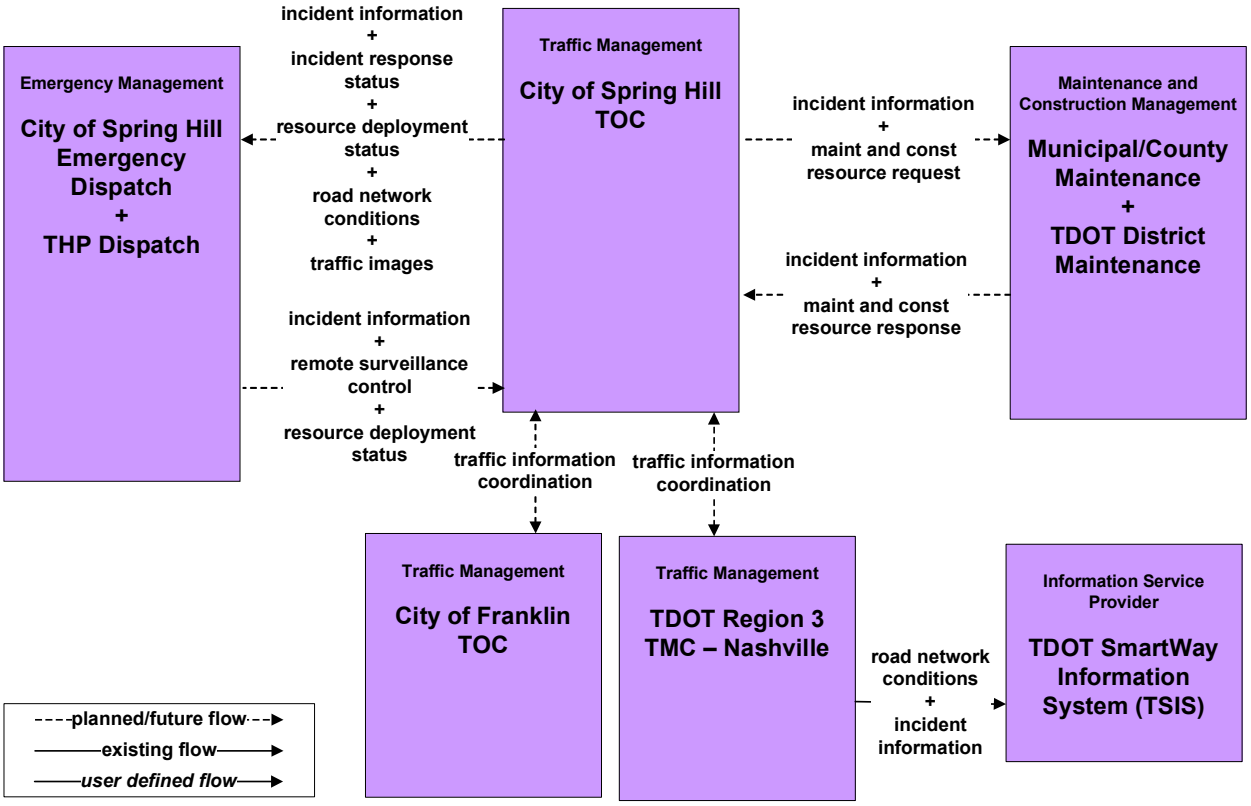
ATMS08 - Traffic Incident Management System
City of Murfreesboro



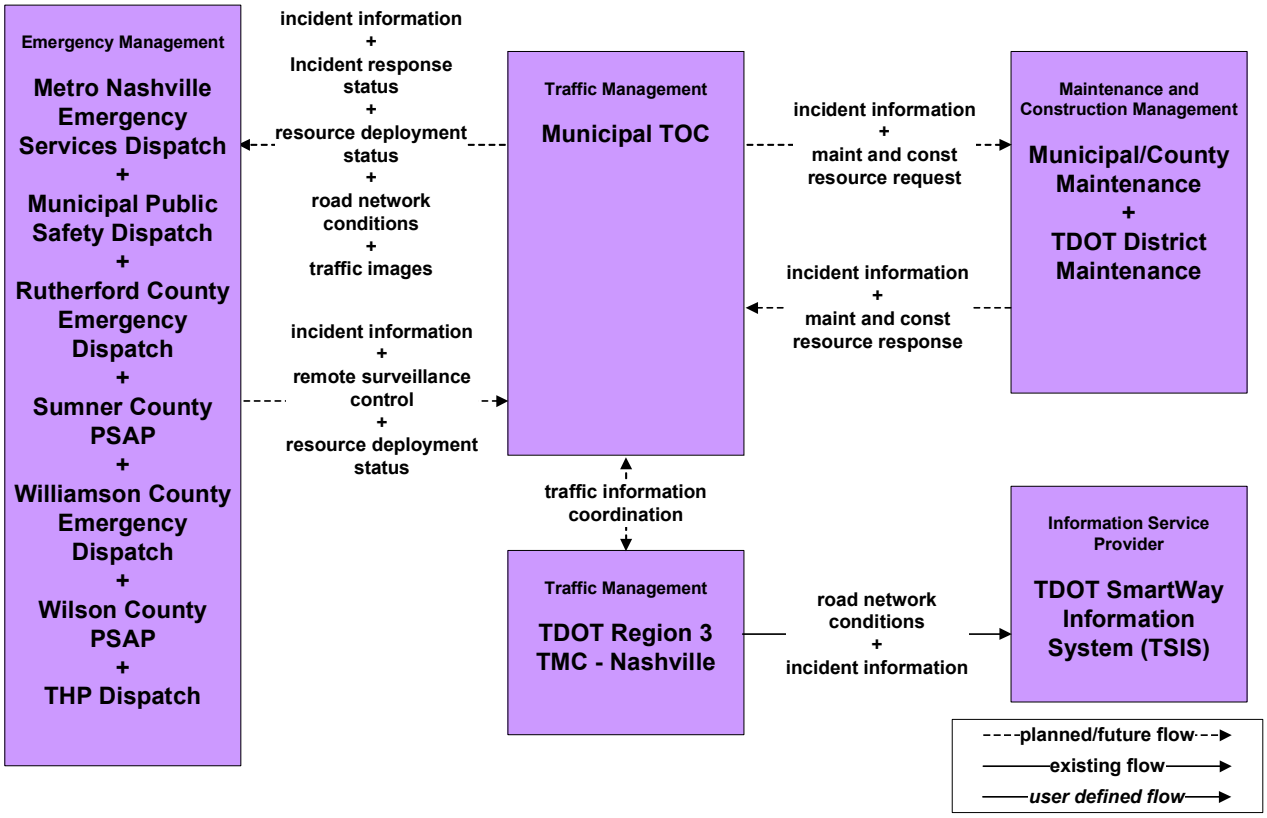
ATMS08 - Traffic Incident Management System
City of Smyrna



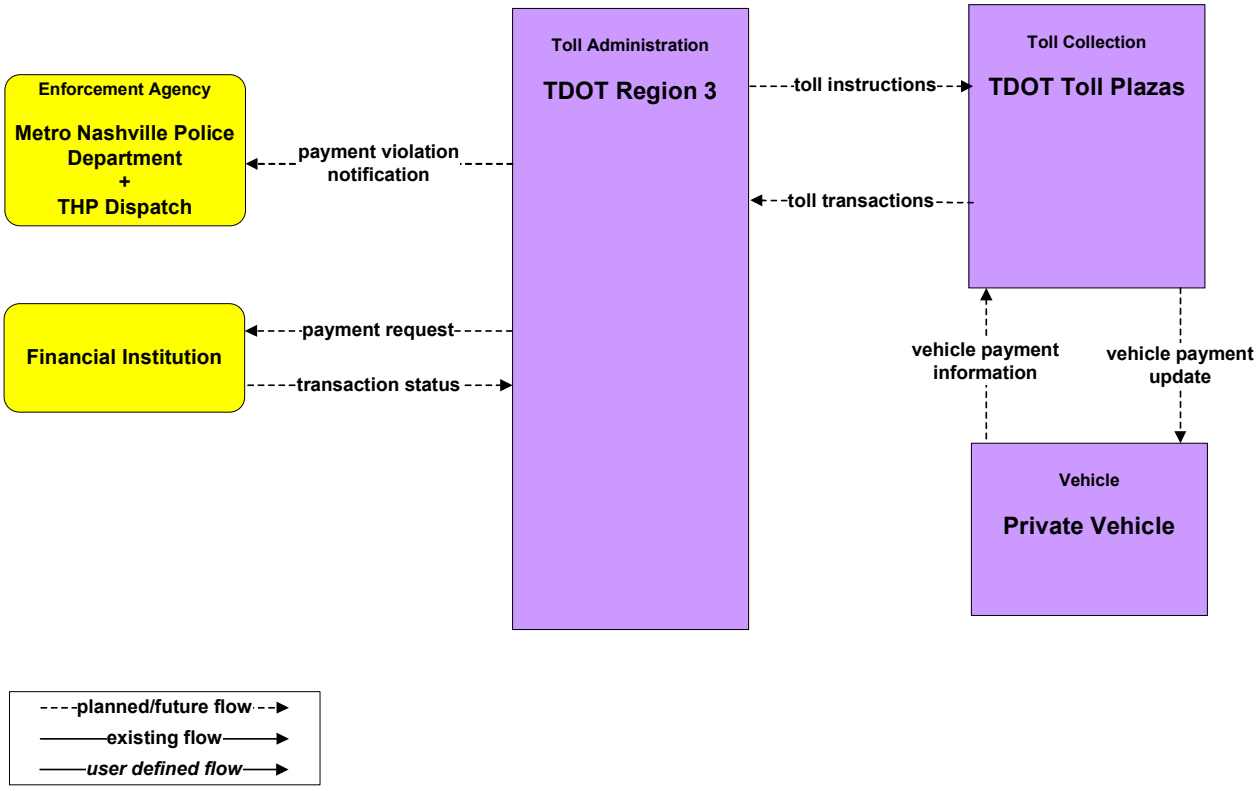
ATMS08 - Traffic Incident Management System
City of Spring Hill



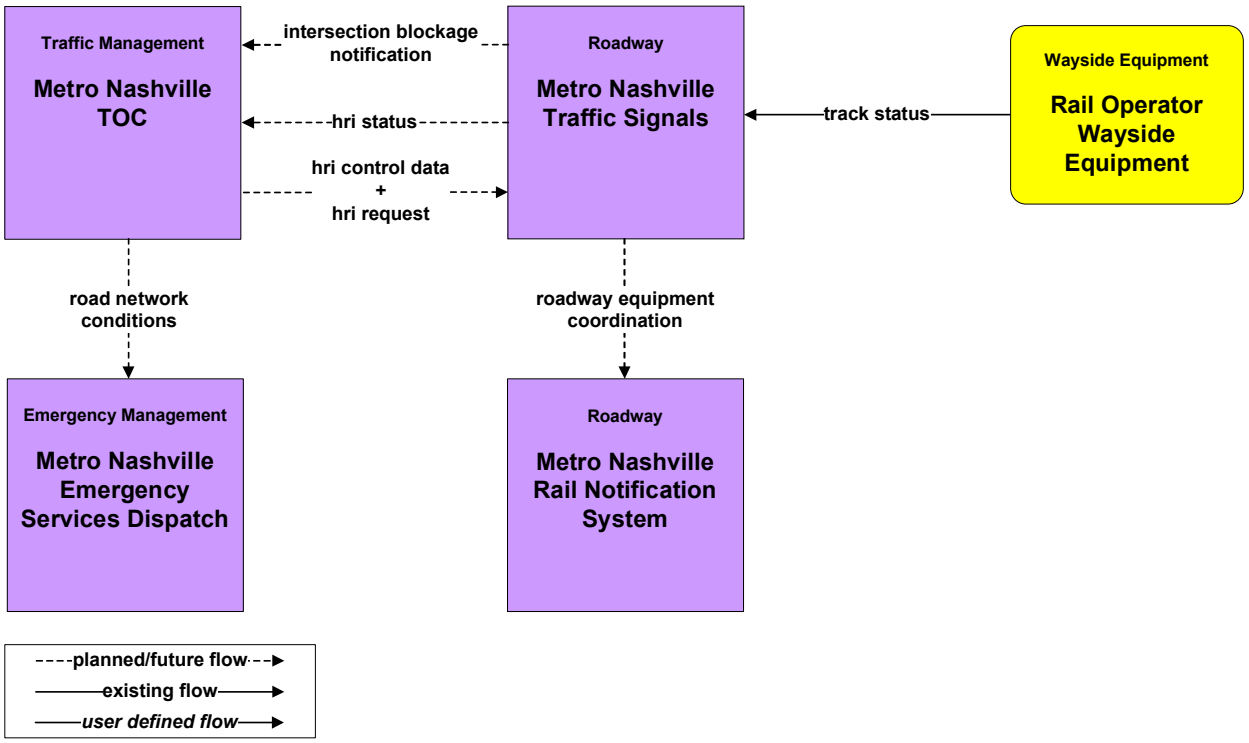
ATMS08 - Traffic Incident Management System
Municipal/County



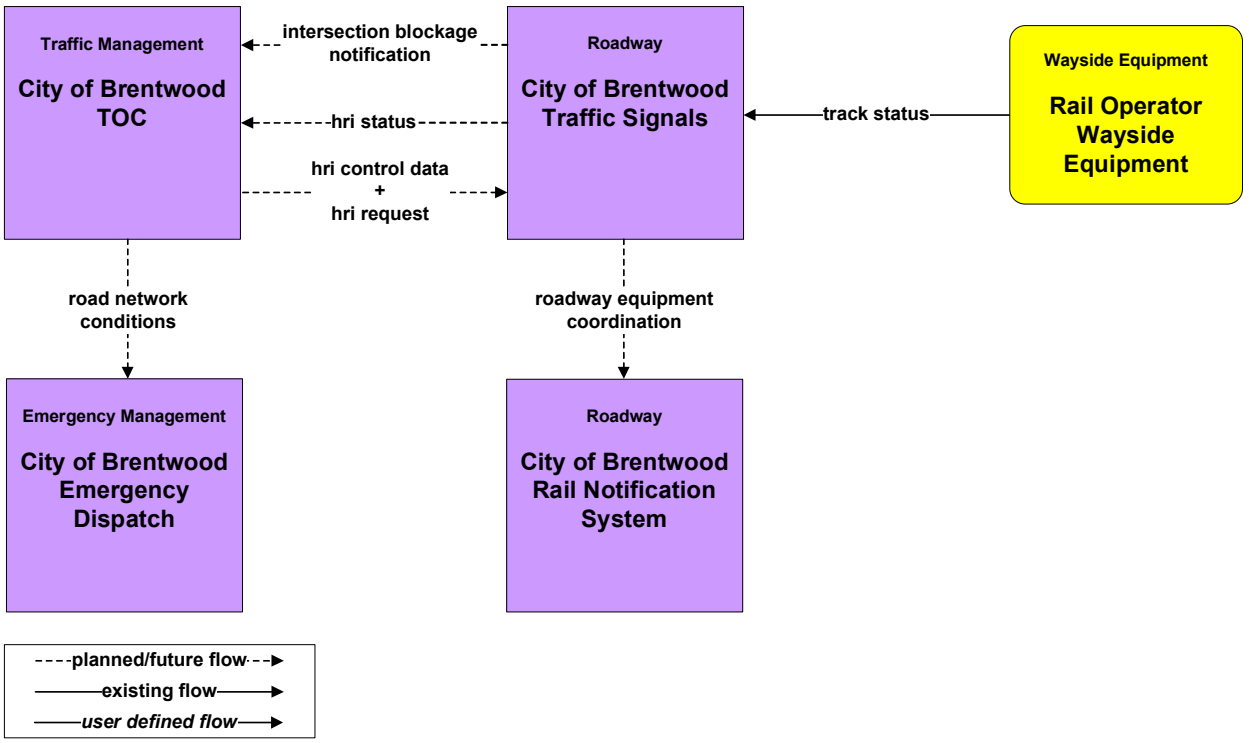
ATMS10 – Electronic Toll Collection
TDOT Region 3



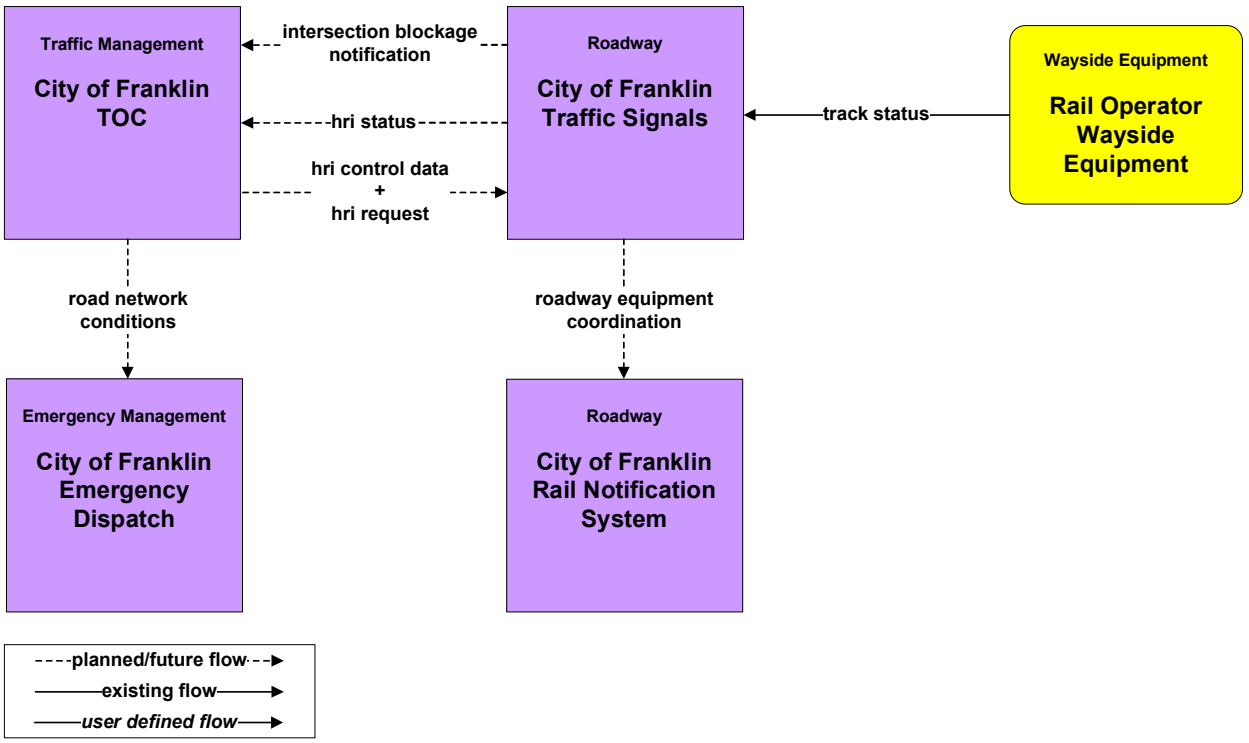
ATMS13 – Standard Railroad Grade Crossing
Metro Nashville



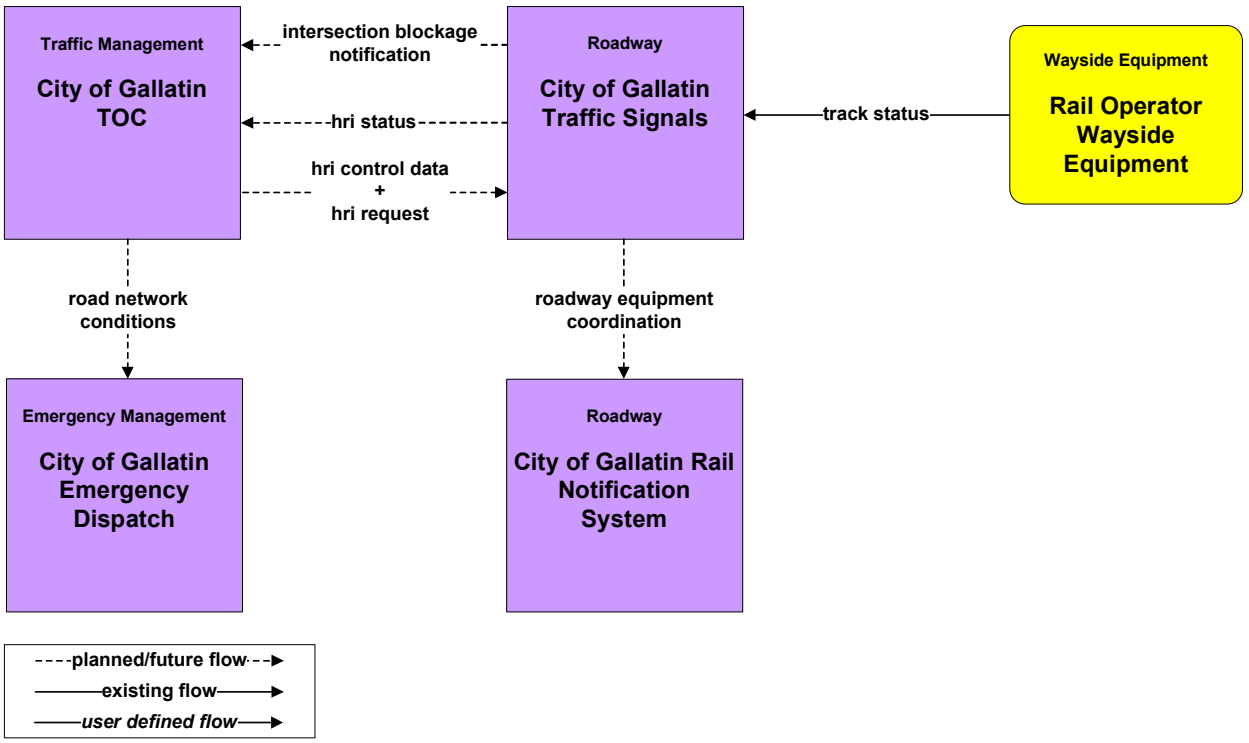
ATMS13 – Standard Railroad Grade Crossing
City of Brentwood



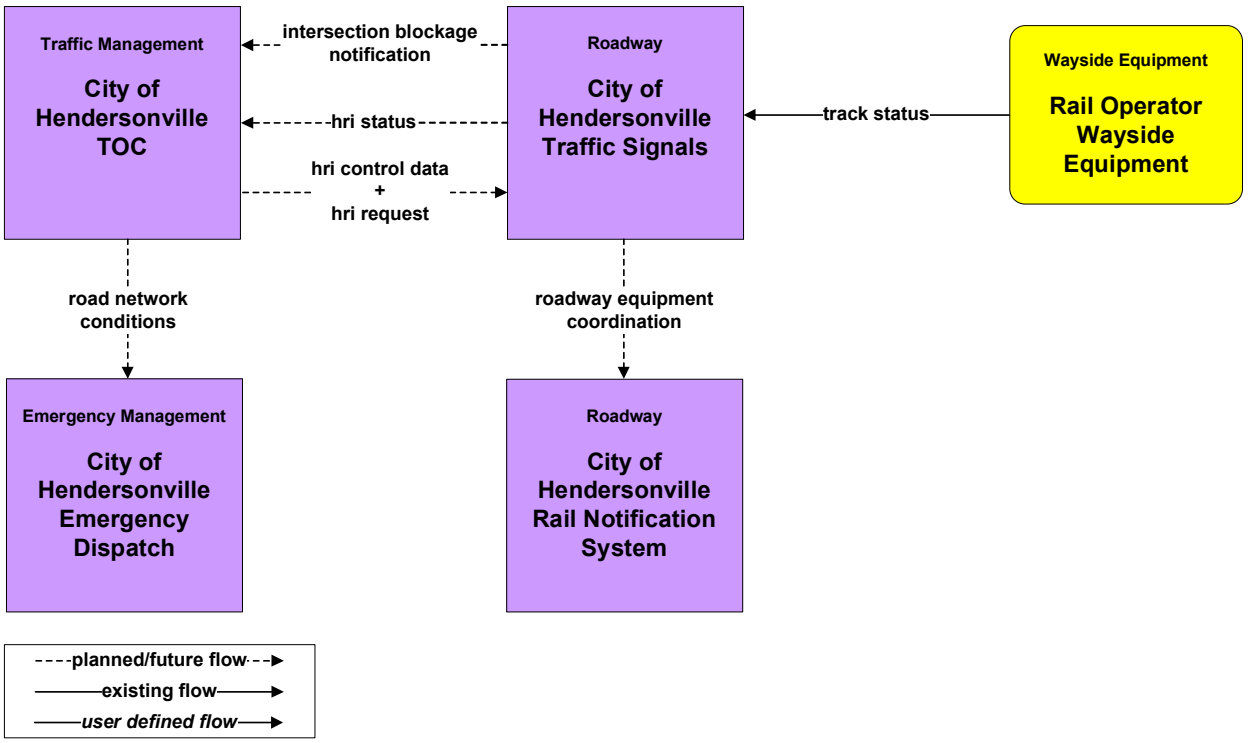
ATMS13 – Standard Railroad Grade Crossing
City of Franklin



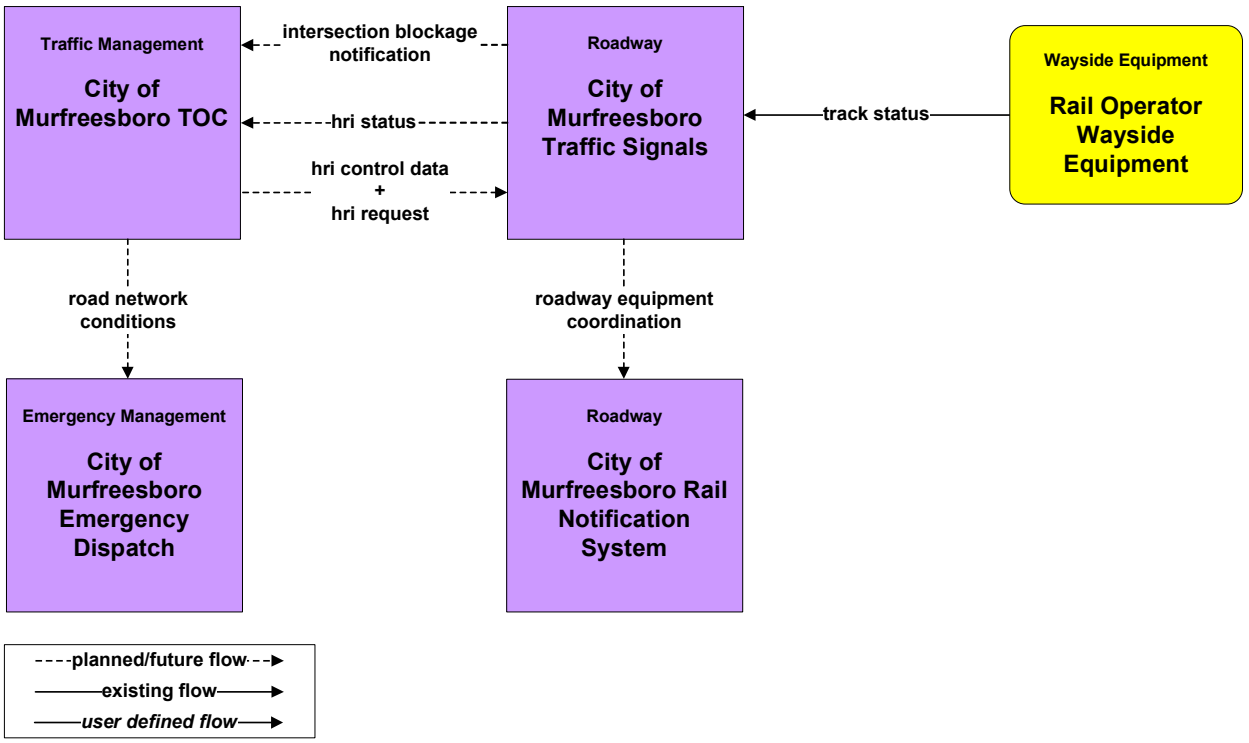
ATMS13 – Standard Railroad Grade Crossing
City of Gallatin



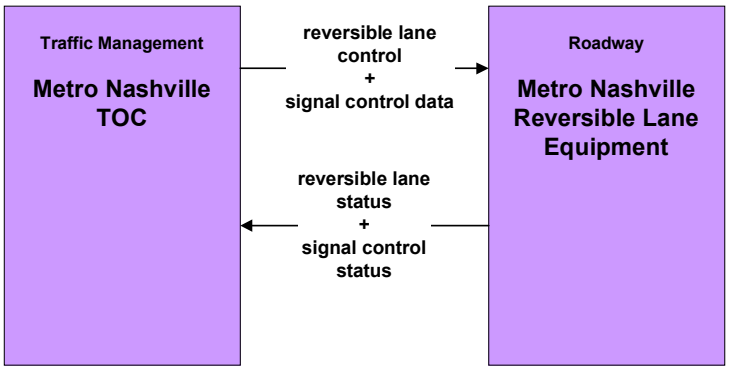
ATMS13 – Standard Railroad Grade Crossing
City of Hendersonville

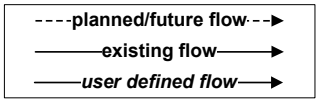


ATMS13 – Standard Railroad Grade Crossing
City of Murfreesboro

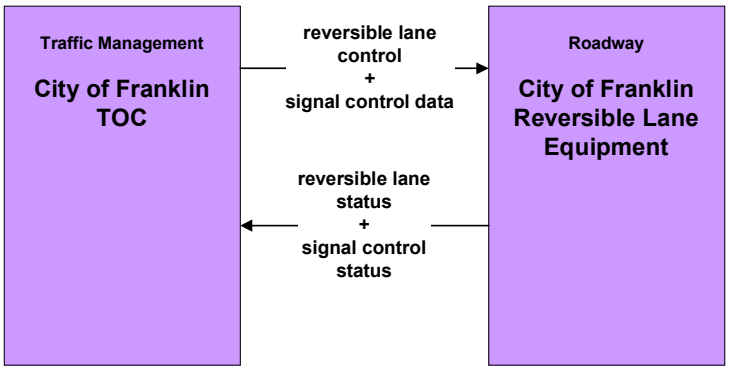


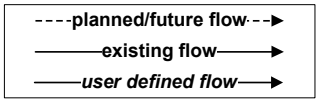
ATMS18 – Reversible Lane Management
Metro Nashville



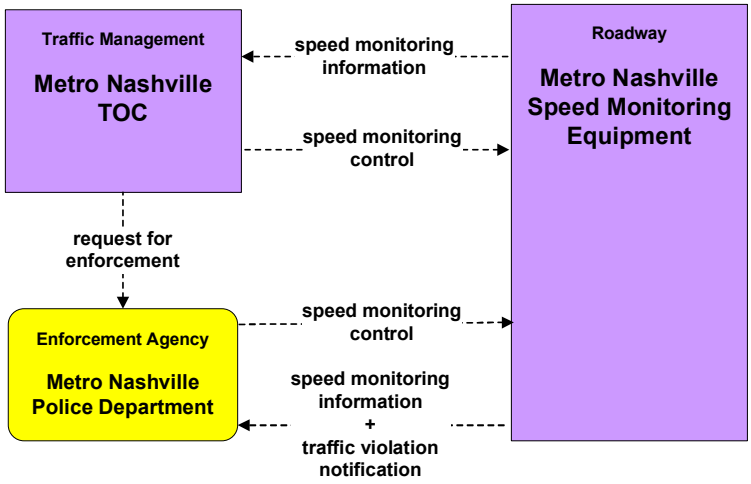


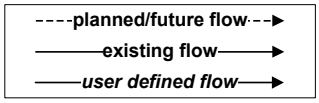
ATMS18 – Reversible Lane Management
City of Franklin



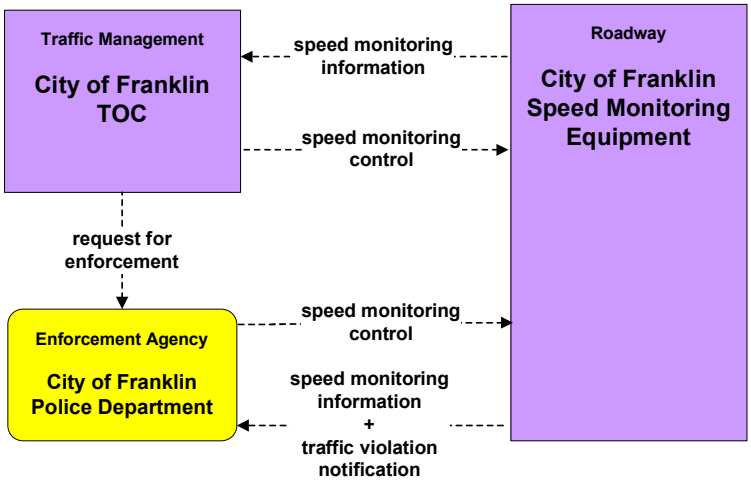


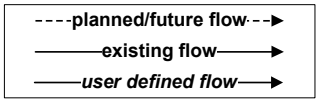
ATMS19 – Speed Monitoring
Metro Nashville





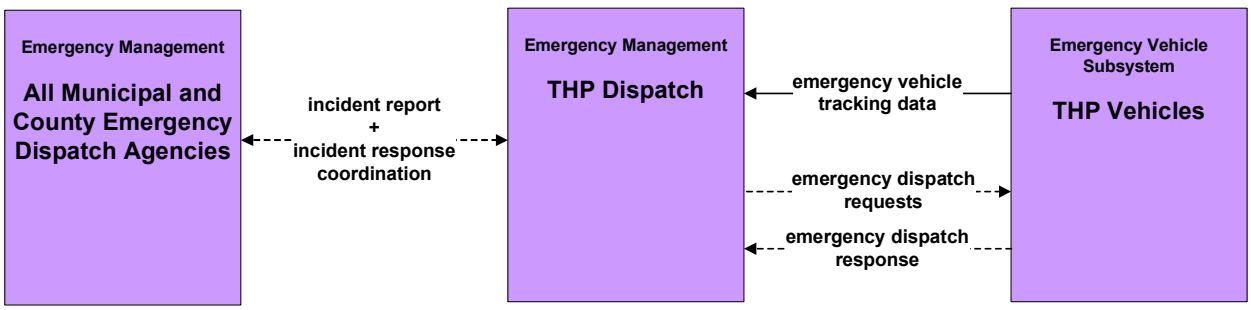
ATMS19 – Speed Monitoring
City of Franklin





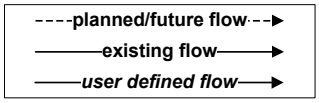
Emergency Management

EM01 - Emergency Call-Taking and Dispatch
Tennessee Highway Patrol

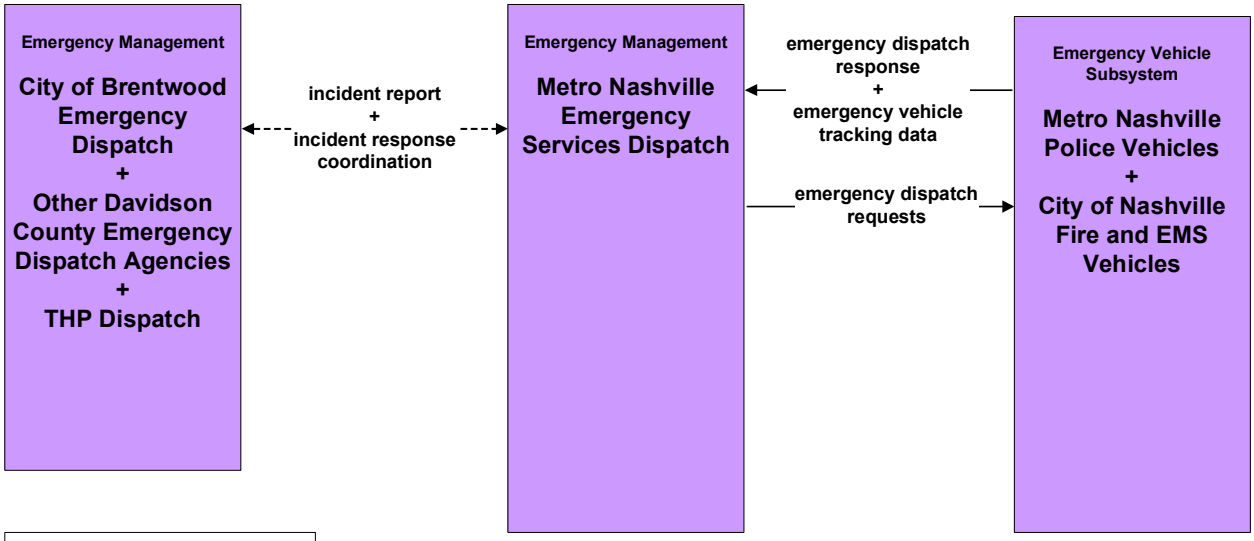


All Municipal and County Emergency Dispatch Agencies includes:

- Metro Nashville Emergency Services Dispatch
- City of Franklin Emergency Dispatch
- City of Gallatin Emergency Dispatch
- City of Hendersonville Emergency Dispatch
- City of La Vergne Emergency Dispatch
- City of Lebanon Emergency Dispatch
- City of Mt. Juliet Emergency Dispatch
- City of Murfreesboro Emergency Dispatch
- City of Smyrna Emergency Dispatch
- Rutherford County Emergency Dispatch
- Sumner County EMS Dispatch
- Sumner County PSAP (Sheriff)
- Wilson County PSAP
- Wilson County EMA Dispatch
- Williamson County Emergency Dispatch
- Municipal Public Safety Dispatch



EM01 - Emergency Call-Taking and Dispatch
Metro Nashville Emergency Services Dispatch

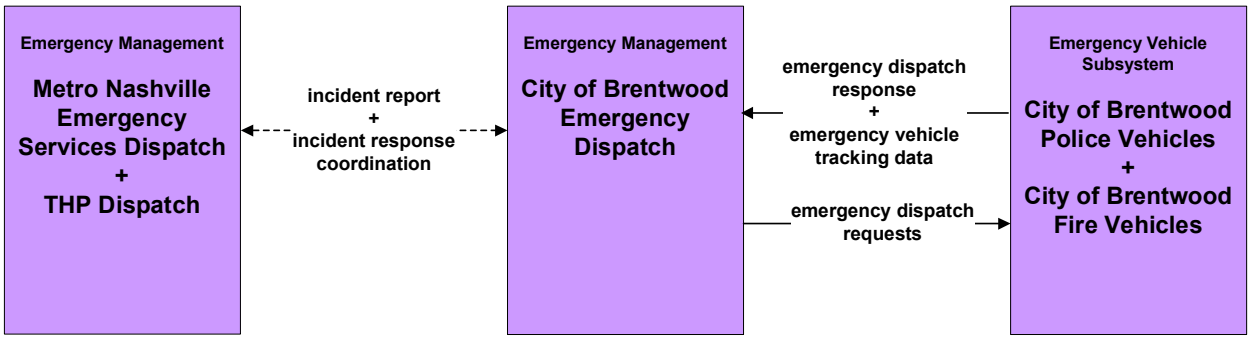


Other Davidson County Emergency Dispatch Agencies include:

- *City of Oak Hill*
- *City of Berry Hill*
- *City of Forest Hills*
- *City of Lakewood*
- *City of Belle Meade*
- *City of Goodlettsville*
- *Vanderbilt University Police Department*
- *Tennessee State Police Department*
- *BNA Airport Police*

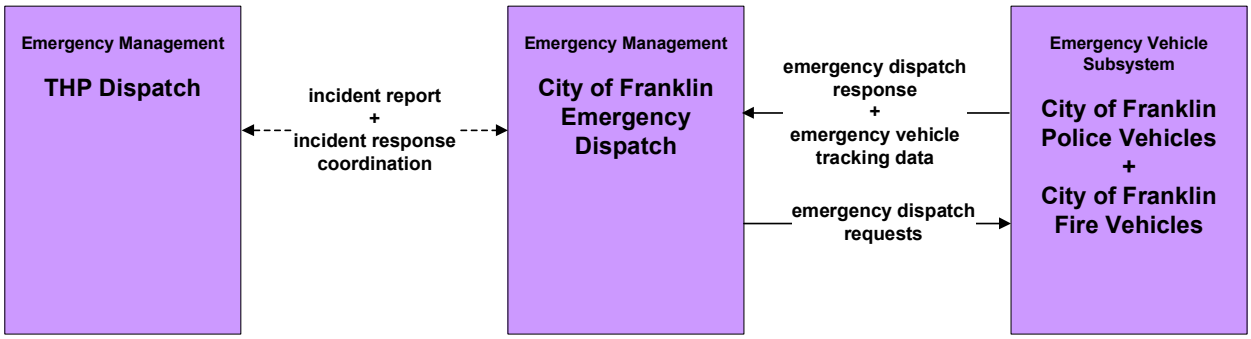
----planned/future flow-->
——existing flow——>
——*user defined flow*——>

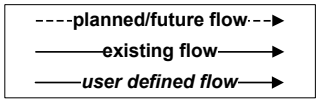
EM01 - Emergency Call-Taking and Dispatch
City of Brentwood Emergency Dispatch



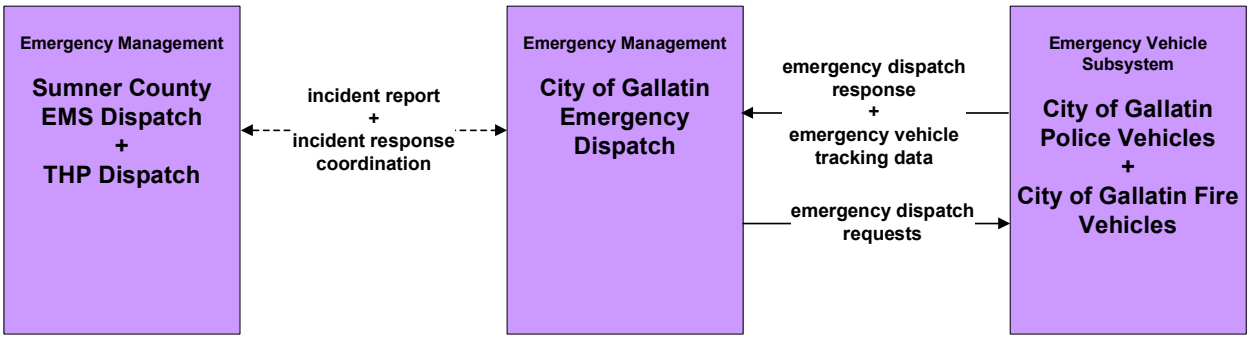
----planned/future flow-->
——existing flow——>
——*user defined flow*——>

EM01 - Emergency Call-Taking and Dispatch
City of Franklin Emergency Dispatch

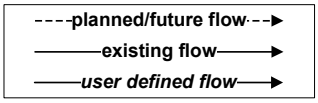




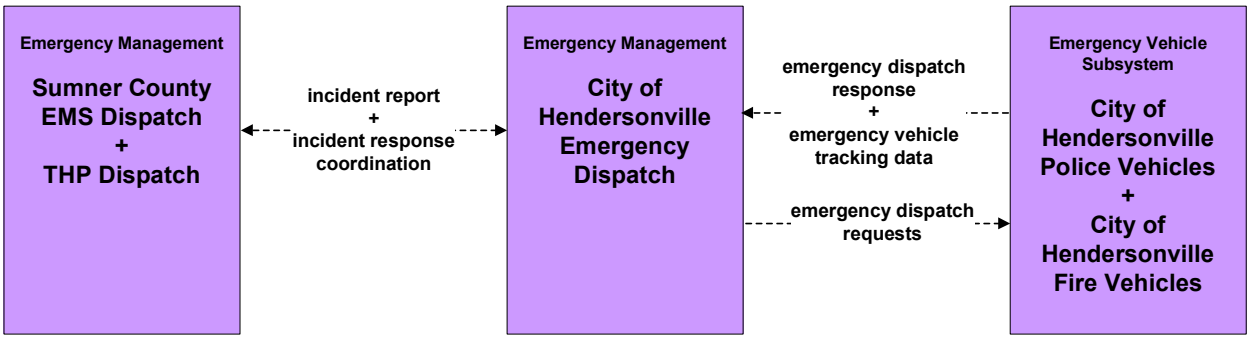
EM01 - Emergency Call-Taking and Dispatch
City of Gallatin Emergency Dispatch



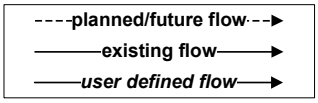
Note:
Sumner County is currently considering consolidating dispatch for all of Sumner County, including the City of Gallatin.



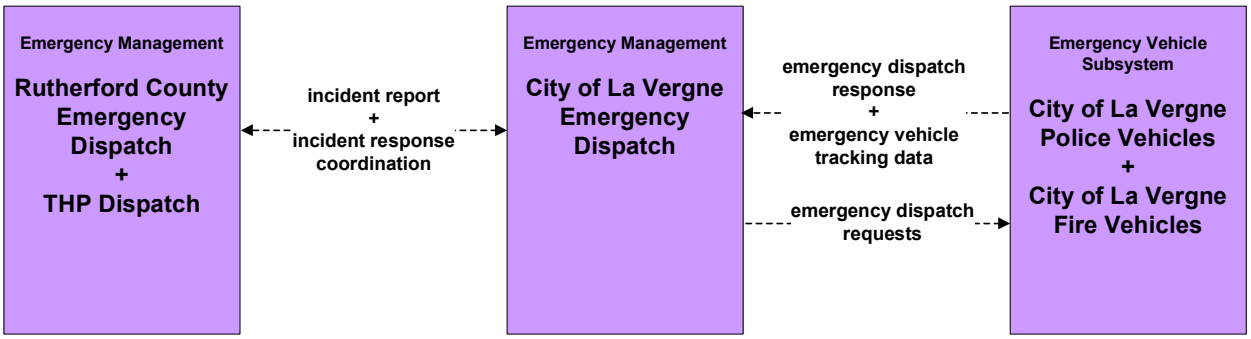
EM01 - Emergency Call-Taking and Dispatch
City of Hendersonville

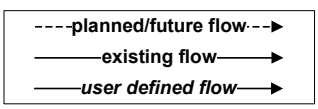


Note:
Sumner County is currently considering consolidating dispatch for all of Sumner County, including the City of Hendersonville.

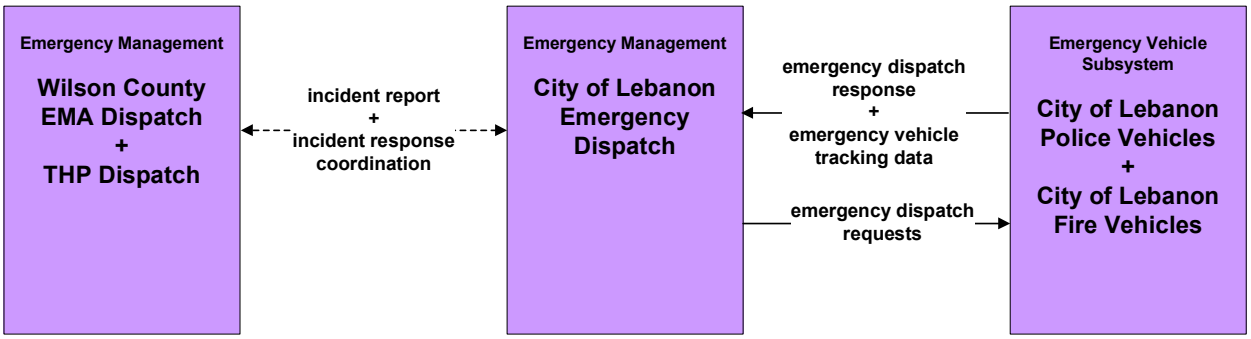


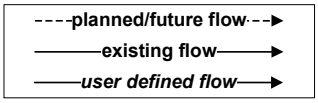
EM01 - Emergency Call-Taking and Dispatch
City of La Vergne



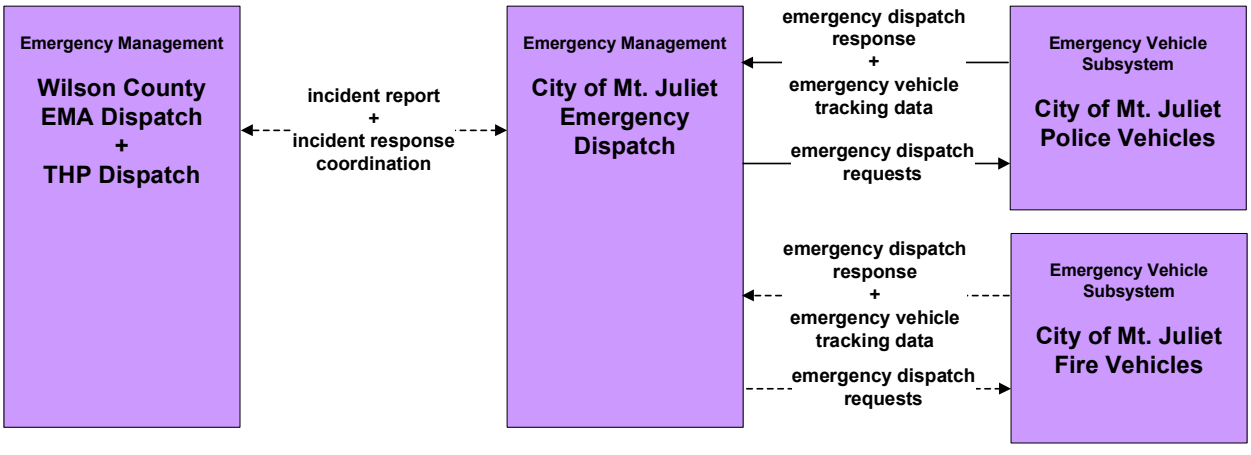


EM01 - Emergency Call-Taking and Dispatch
City of Lebanon Emergency Dispatch

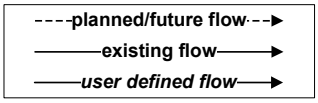




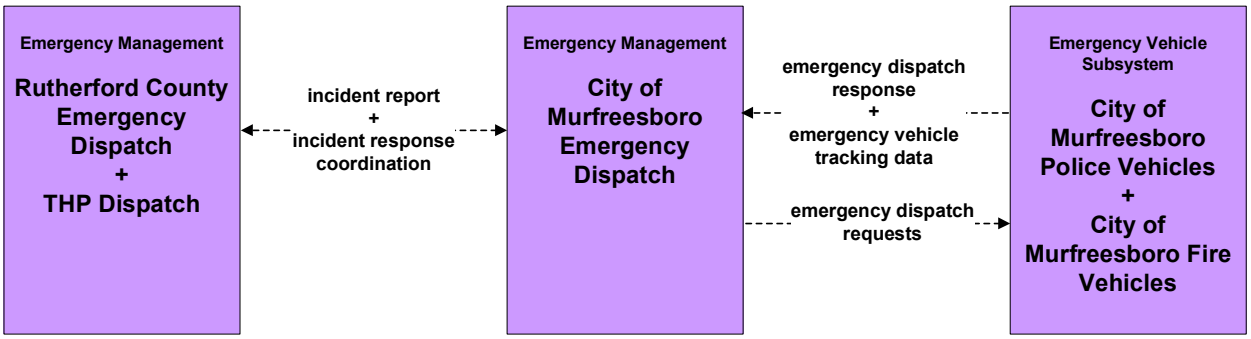
EM01 - Emergency Call-Taking and Dispatch
City of Mt. Juliet Emergency Dispatch

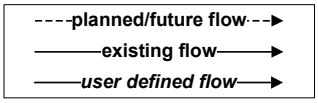


Note:
The City of Mt. Juliet does not currently have a fire department but are in the planning stages for establishing one.

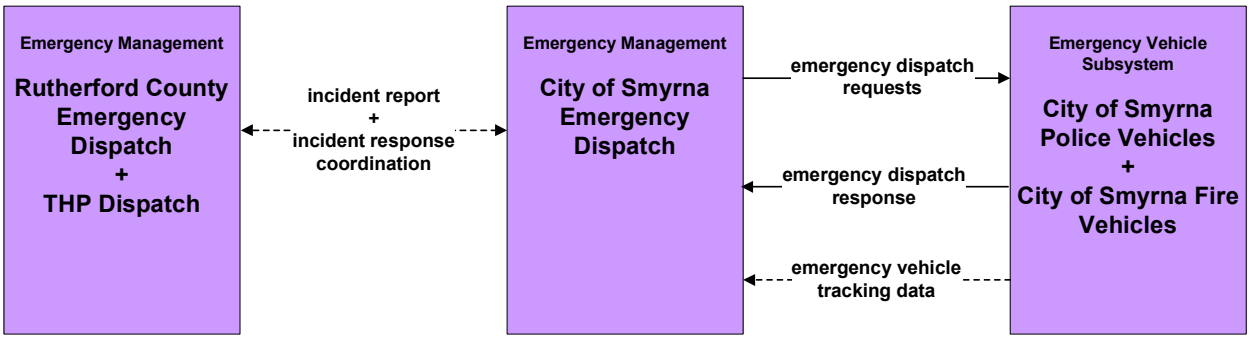


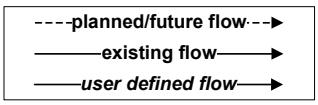
EM01 - Emergency Call-Taking and Dispatch
City of Murfreesboro



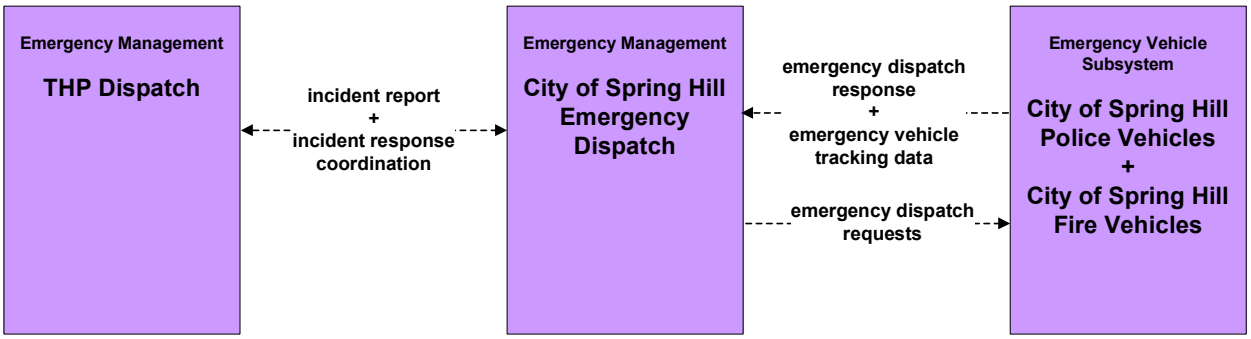


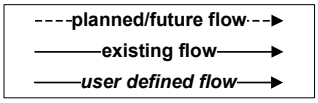
EM01 - Emergency Call-Taking and Dispatch
City of Smyrna Emergency Dispatch



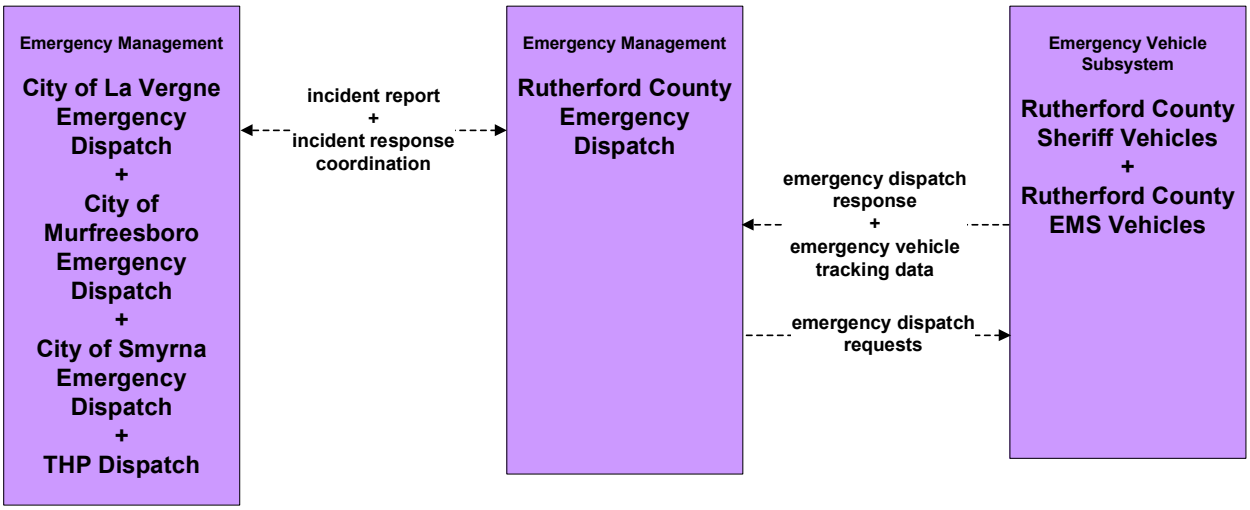


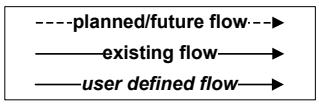
EM01 - Emergency Call-Taking and Dispatch
City of Spring Hill

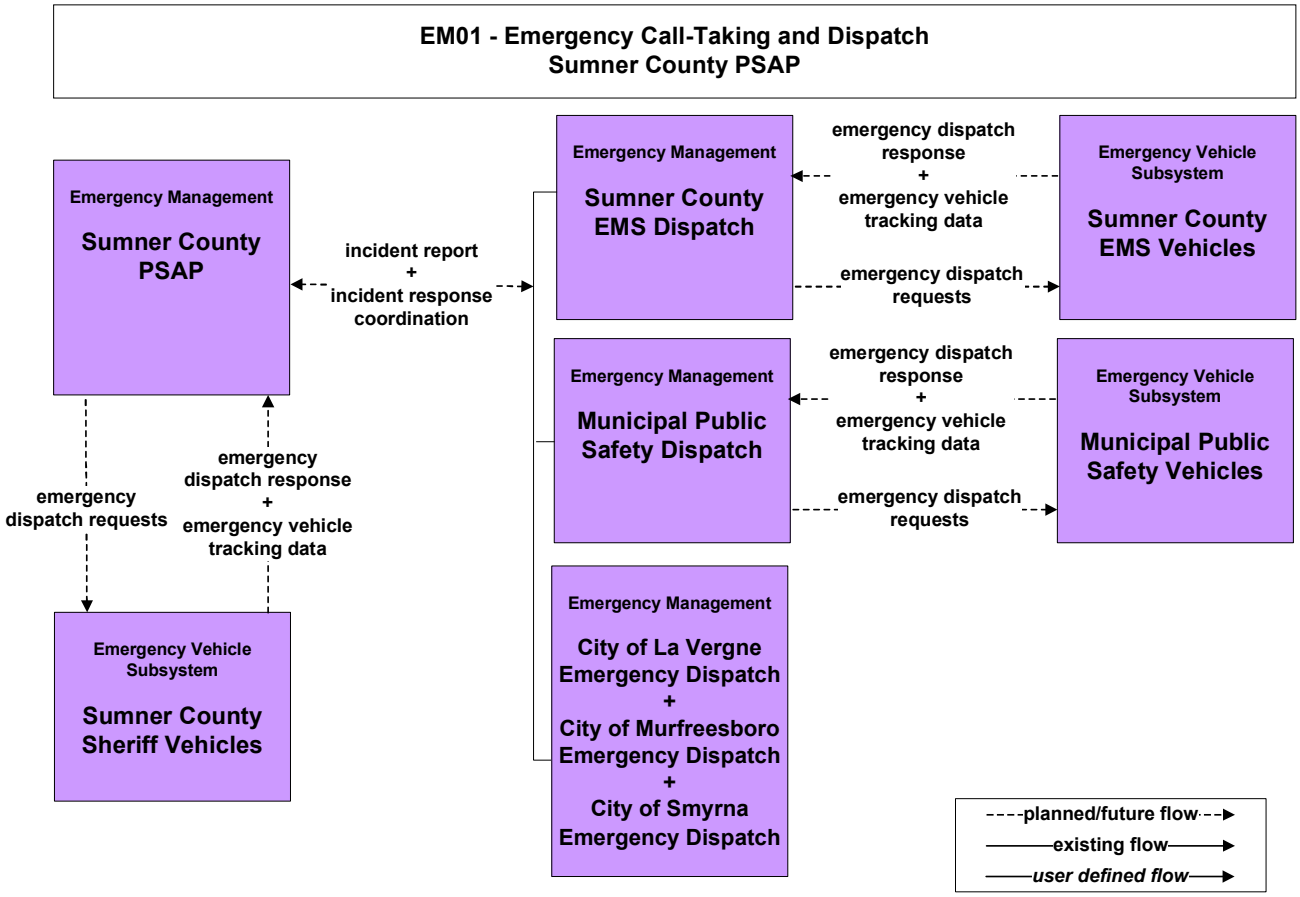


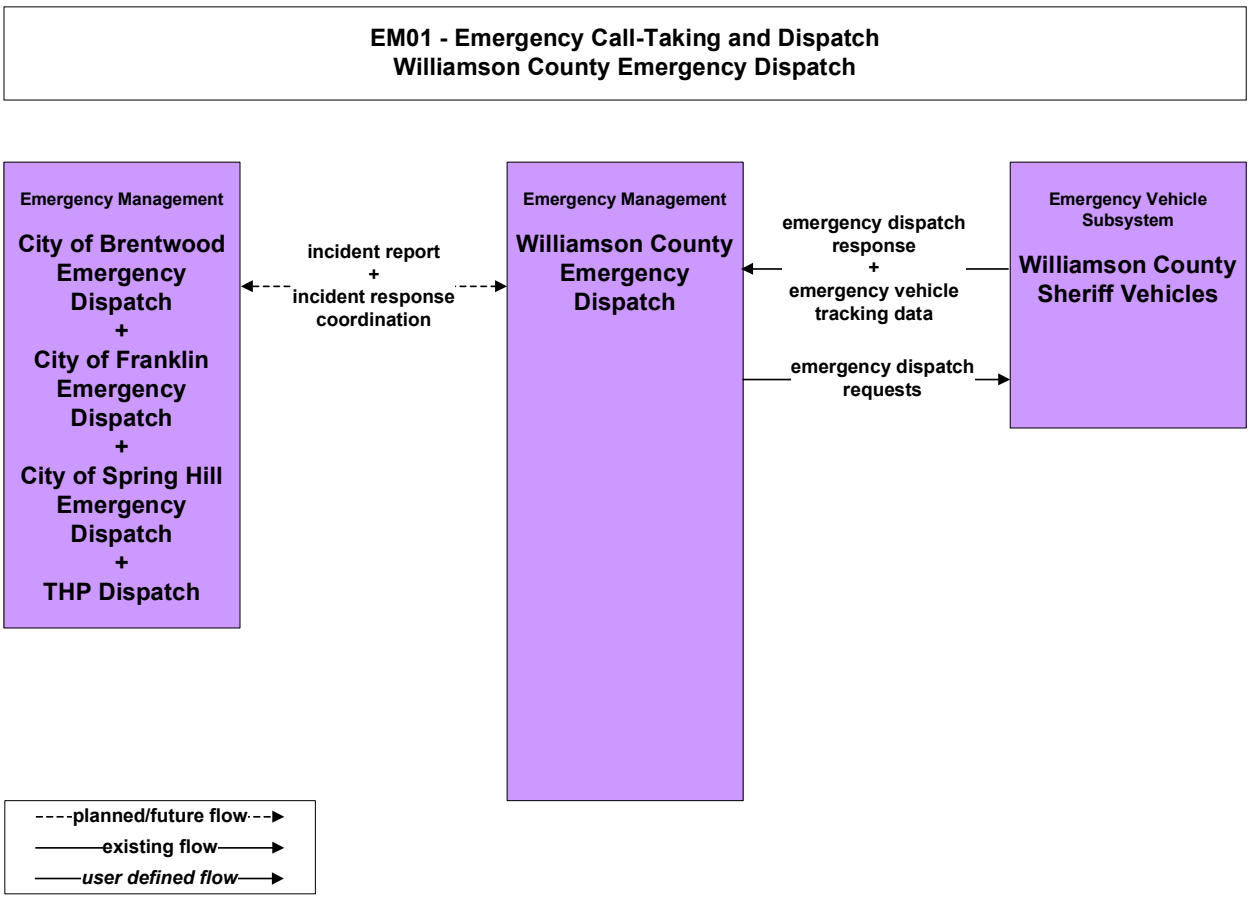


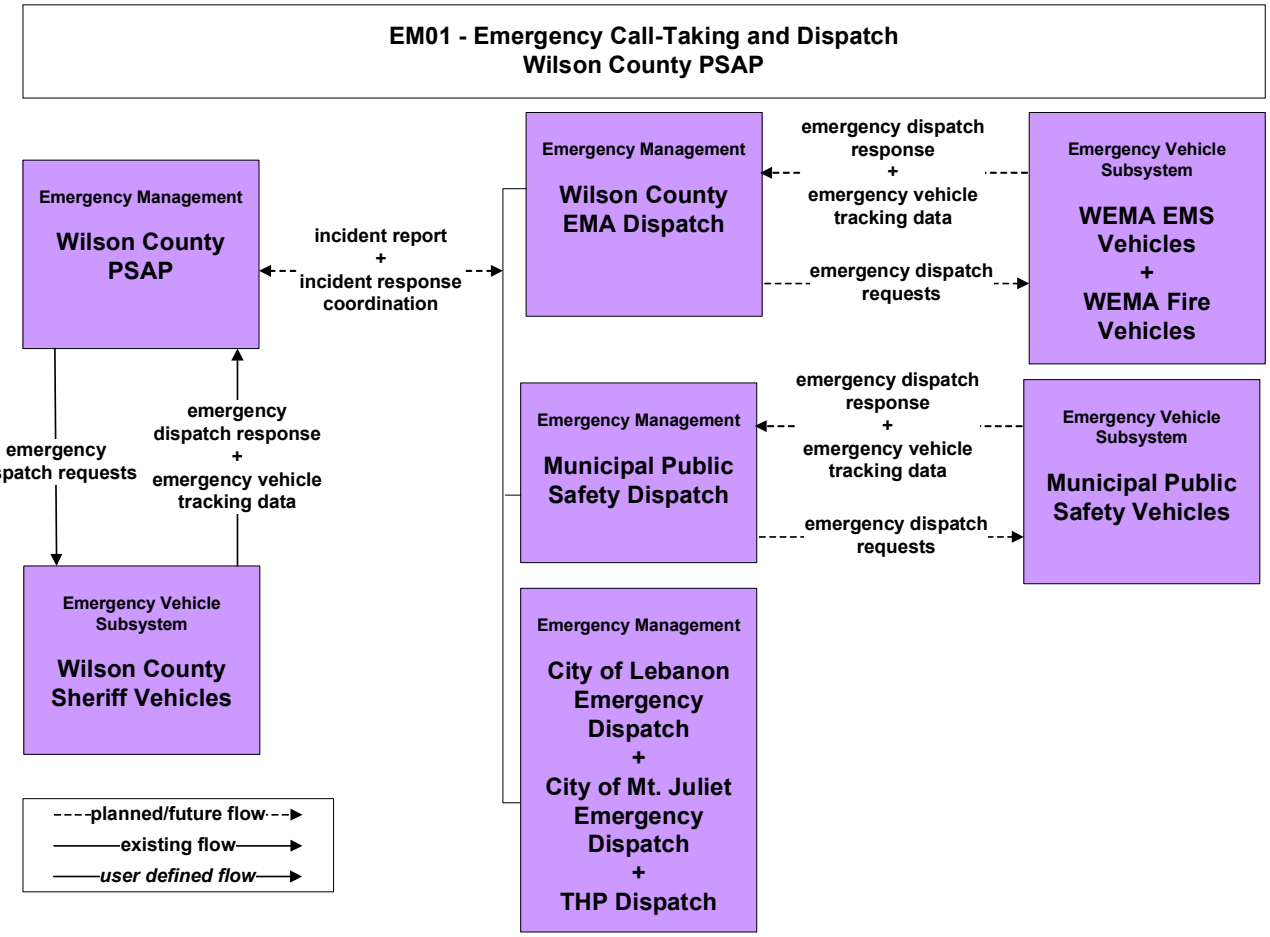
EM01 - Emergency Call-Taking and Dispatch
Rutherford County Emergency Dispatch

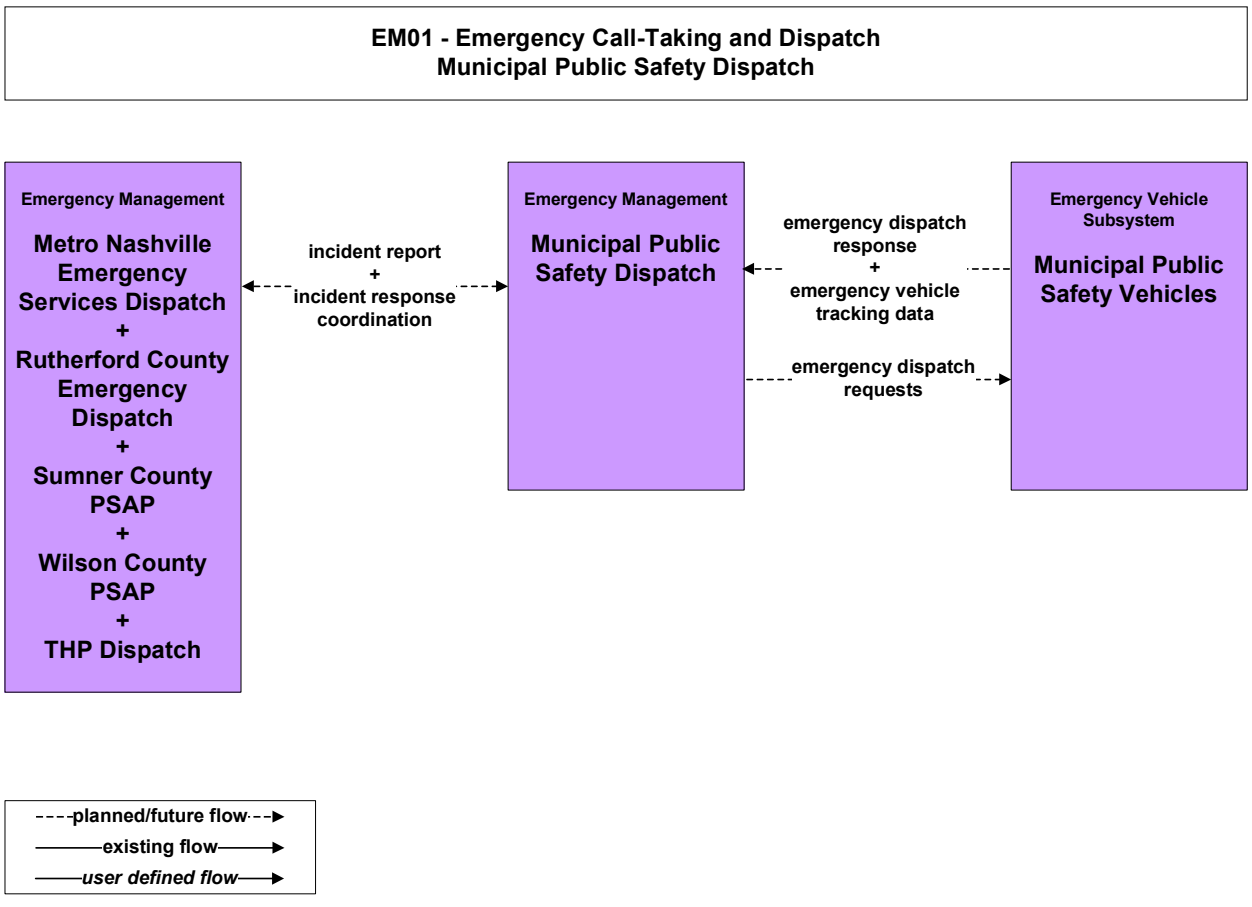


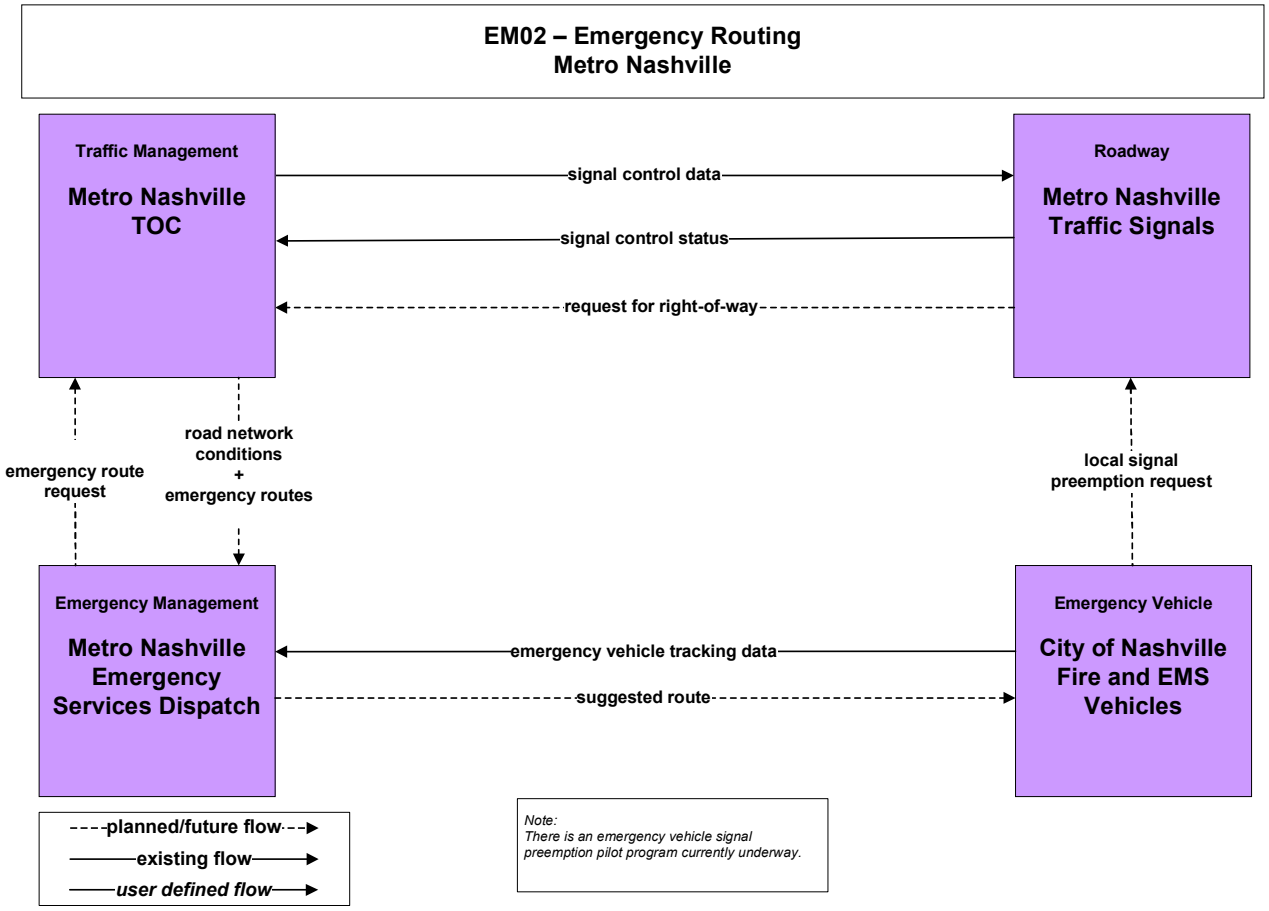


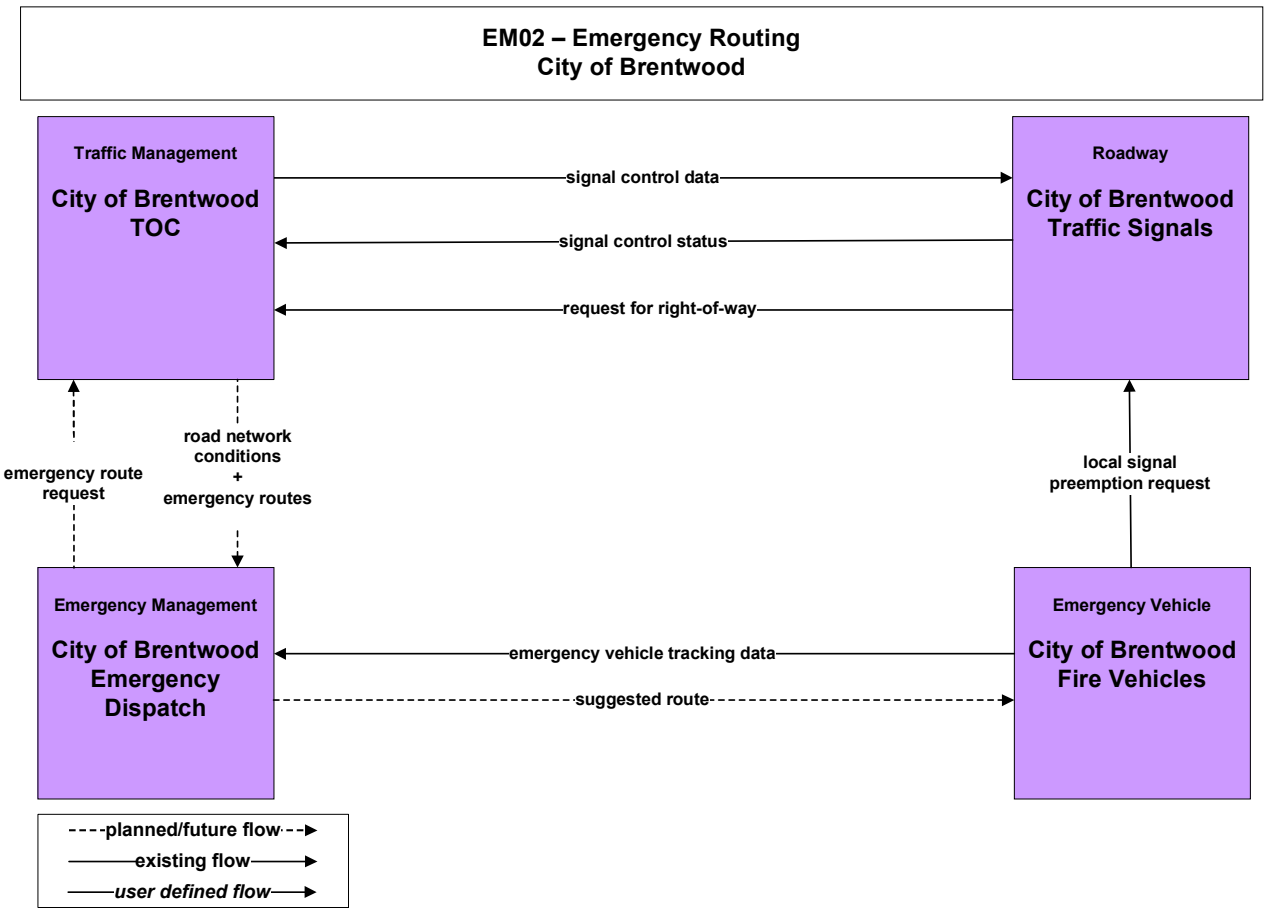

EM01 - Emergency Call-Taking and Dispatch
Sumner County PSAP
Emergency Management
Sumner County PSAP
incident report
+
incident response coordination
Emergency Management
Sumner County EMS Dispatch
emergency dispatch response
+
emergency vehicle tracking data
Emergency Vehicle Subsystem
Sumner County EMS Vehicles
emergency dispatch requests
Emergency Management
Municipal Public Safety Dispatch
emergency dispatch response
+
emergency vehicle tracking data
Emergency Vehicle Subsystem
Municipal Public Safety Vehicles
emergency dispatch requests
emergency dispatch response
+
emergency vehicle tracking data
Emergency Vehicle Subsystem
Sumner County Sheriff Vehicles
Emergency Management
City of La Vergne Emergency Dispatch
+
City of Murfreesboro Emergency Dispatch
+
City of Smyrna Emergency Dispatch
planned/future flow
existing flow
user defined flow

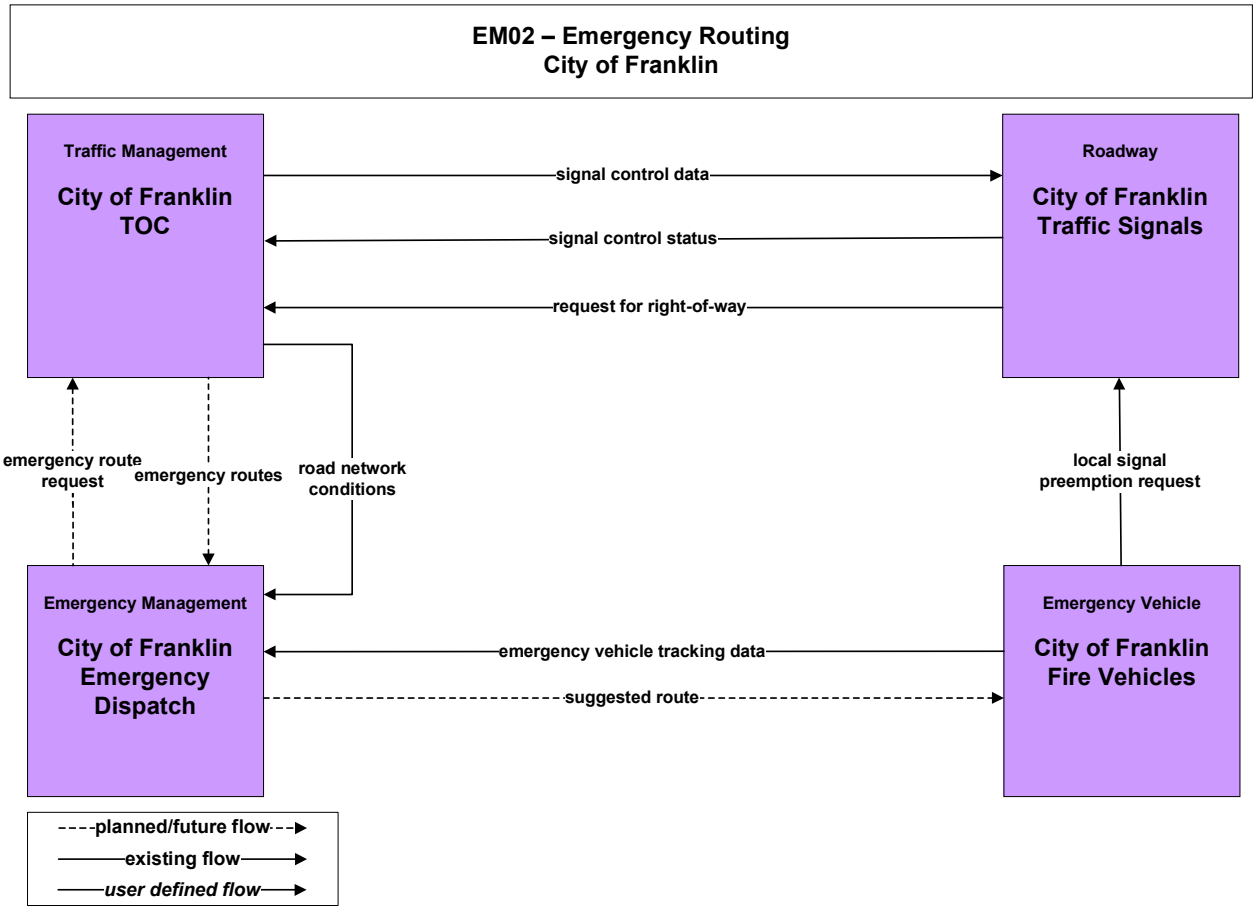

EM01 - Emergency Call-Taking and Dispatch
Williamson County Emergency Dispatch
Emergency Management
City of Brentwood Emergency Dispatch
+
City of Franklin Emergency Dispatch
+
City of Spring Hill Emergency Dispatch
+
THP Dispatch
incident report
+
incident response coordination
Emergency Management
Williamson County Emergency Dispatch
emergency dispatch response
+
emergency vehicle tracking data
Emergency Vehicle Subsystem
Williamson County Sheriff Vehicles
emergency dispatch requests
planned/future flow
existing flow
user defined flow

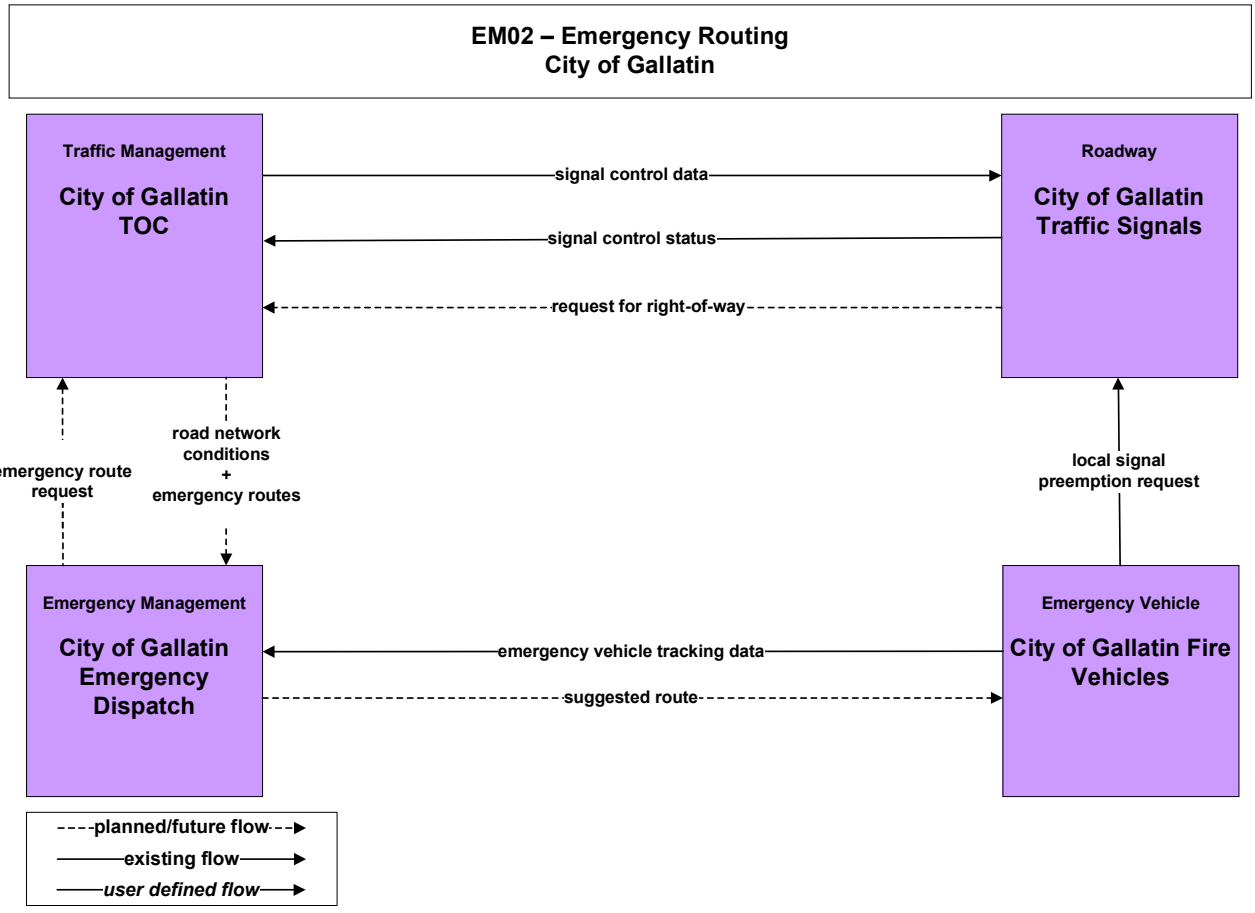

EM01 - Emergency Call-Taking and Dispatch
Wilson County PSAP
Emergency Management
Wilson County PSAP
incident report
+
incident response coordination
Emergency Management
Wilson County EMA Dispatch
emergency dispatch response
+
emergency vehicle tracking data
emergency dispatch requests
Emergency Vehicle Subsystem
WEMA EMS Vehicles
+
WEMA Fire Vehicles
emergency dispatch requests
emergency dispatch response
+
emergency vehicle tracking data
Emergency Management
Municipal Public Safety Dispatch
emergency dispatch response
+
emergency vehicle tracking data
emergency dispatch requests
Emergency Vehicle Subsystem
Municipal Public Safety Vehicles
Emergency Vehicle Subsystem
Wilson County Sheriff Vehicles
Emergency Management
City of Lebanon Emergency Dispatch
+
City of Mt. Juliet Emergency Dispatch
+
THP Dispatch
----planned/future flow
————existing flow
——user defined flow

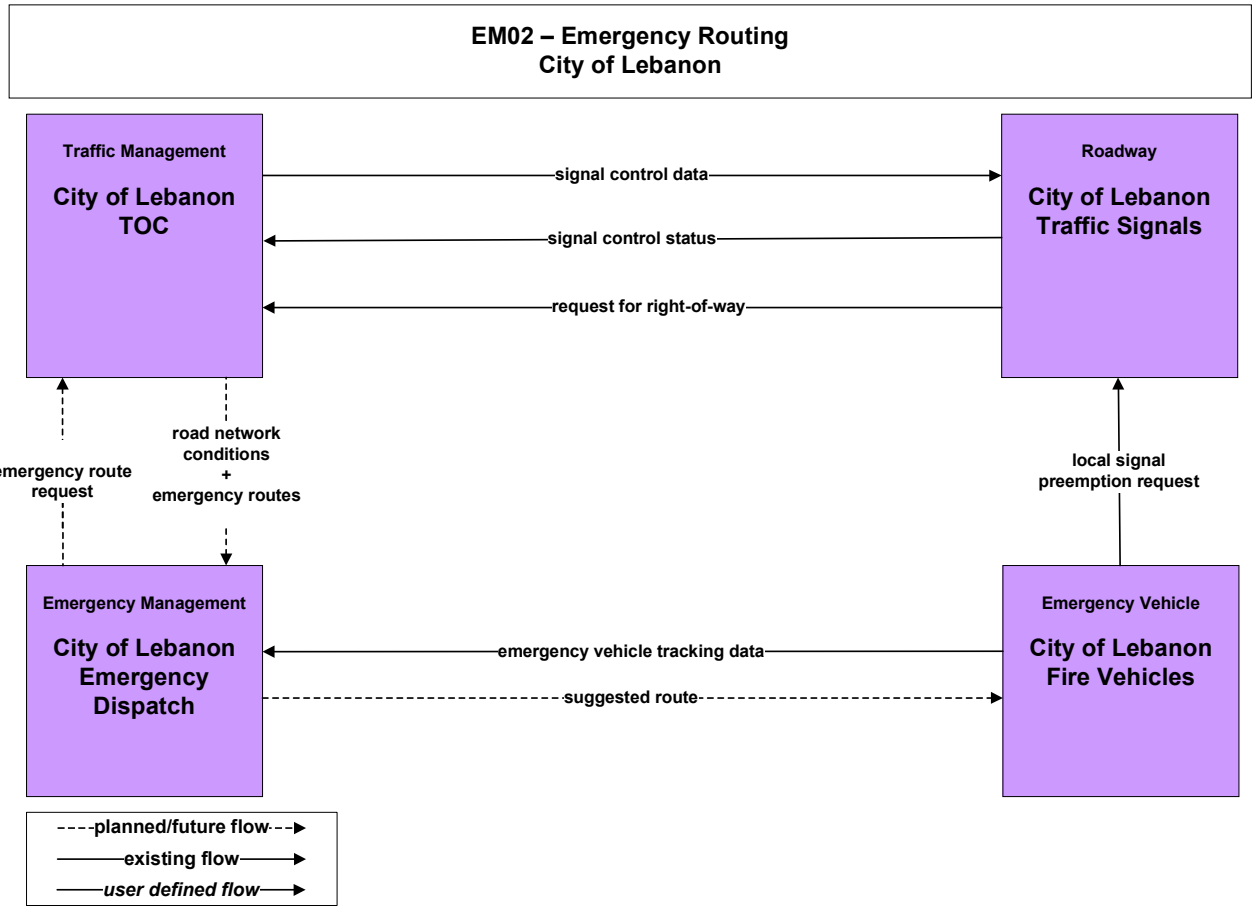

EM01 - Emergency Call-Taking and Dispatch
Municipal Public Safety Dispatch
Emergency Management
Metro Nashville Emergency Services Dispatch
+
Rutherford County Emergency Dispatch
+
Sumner County PSAP
+
Wilson County PSAP
+
THP Dispatch
incident report
+
incident response coordination
Emergency Management
Municipal Public Safety Dispatch
emergency dispatch response
+
emergency vehicle tracking data
emergency dispatch requests
Emergency Vehicle Subsystem
Municipal Public Safety Vehicles
----planned/future flow
————existing flow
——user defined flow

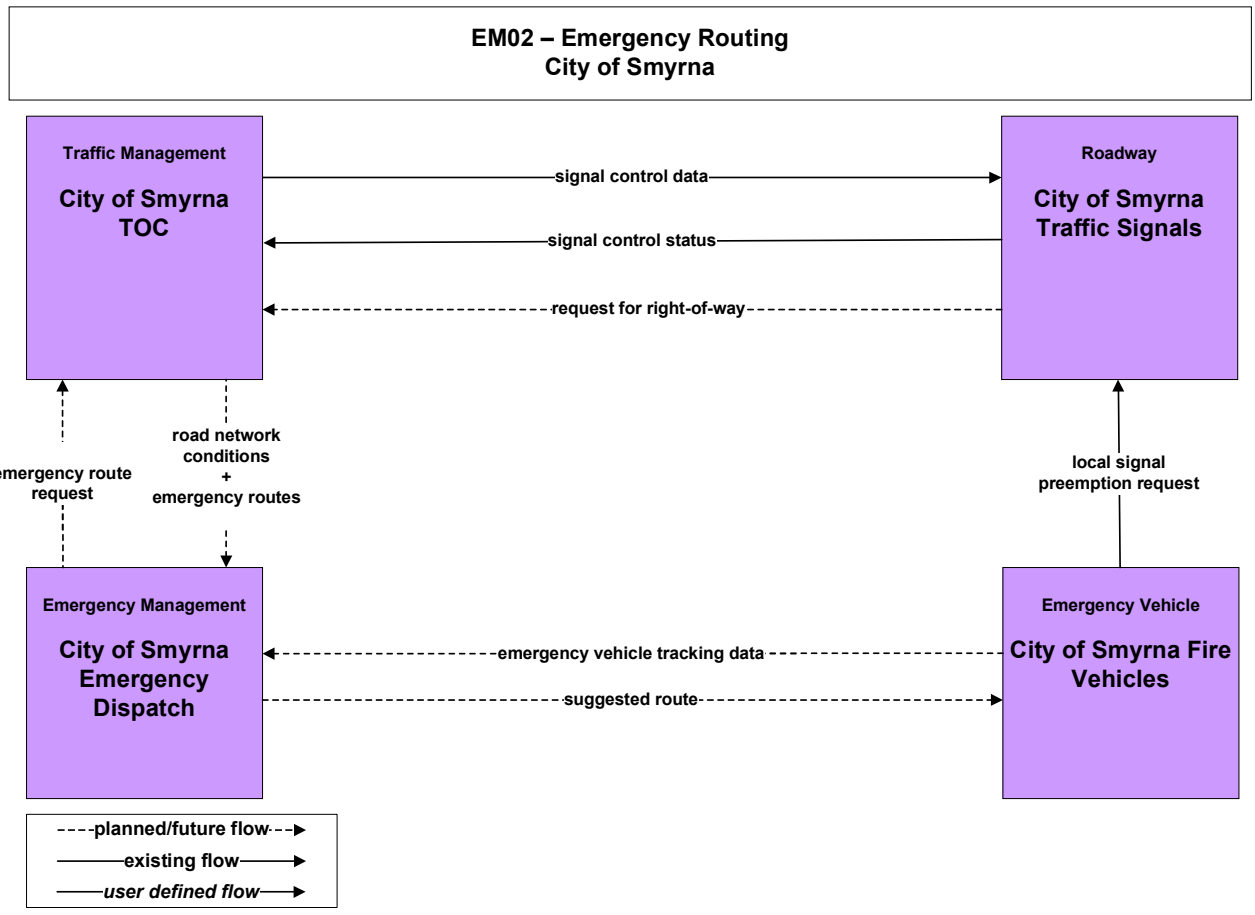

EM02 – Emergency Routing
Metro Nashville
Traffic Management
Metro Nashville TOC
Roadway
Metro Nashville Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
road network conditions + emergency routes
local signal preemption request
Emergency Management
Metro Nashville Emergency Services Dispatch
Emergency Vehicle
City of Nashville Fire and EMS Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow
Note:
There is an emergency vehicle signal preemption pilot program currently underway.

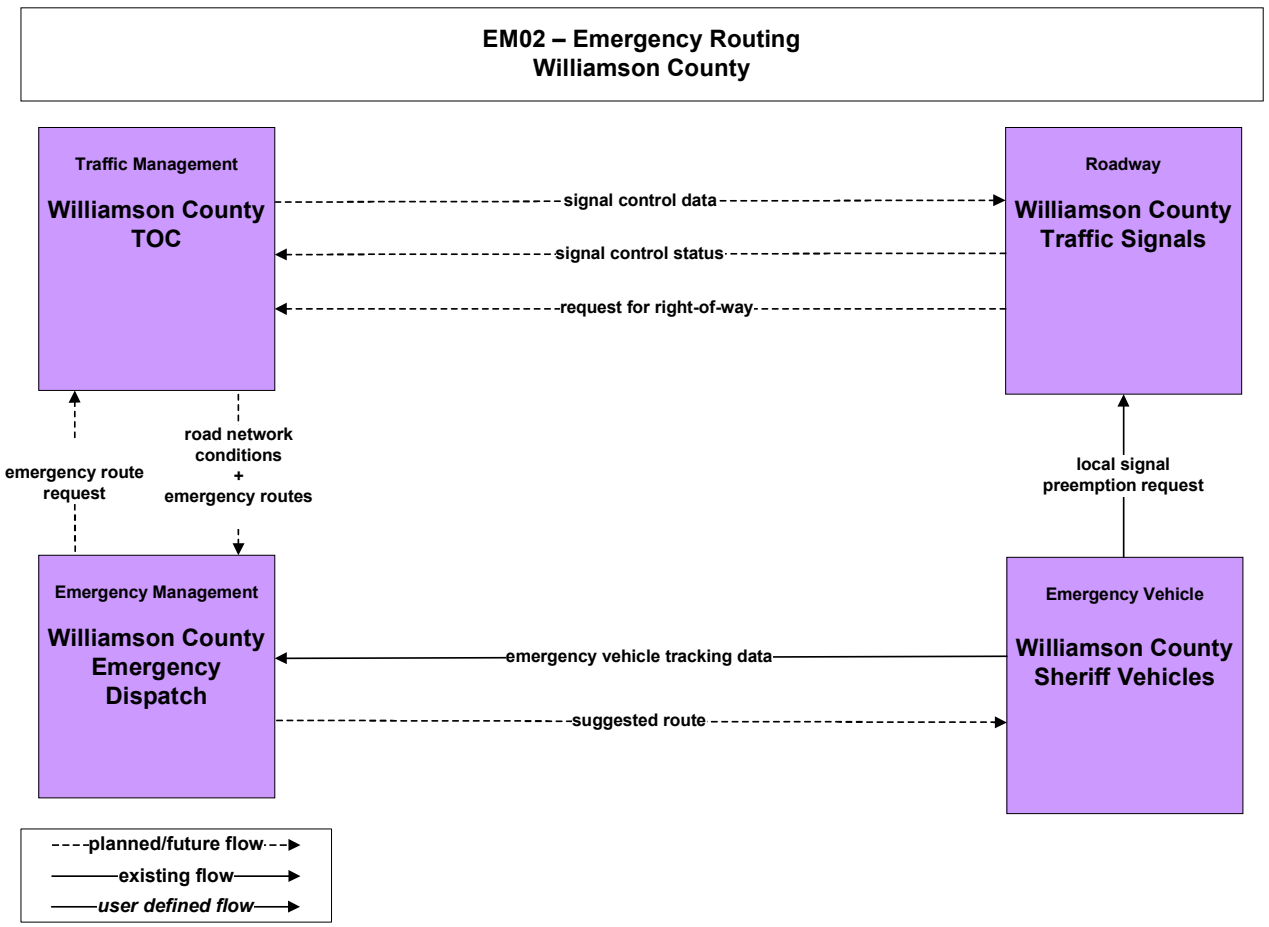

EM02 – Emergency Routing
City of Brentwood
Traffic Management
City of Brentwood TOC
Roadway
City of Brentwood Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
road network conditions + emergency routes
local signal preemption request
Emergency Management
City of Brentwood Emergency Dispatch
Emergency Vehicle
City of Brentwood Fire Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow

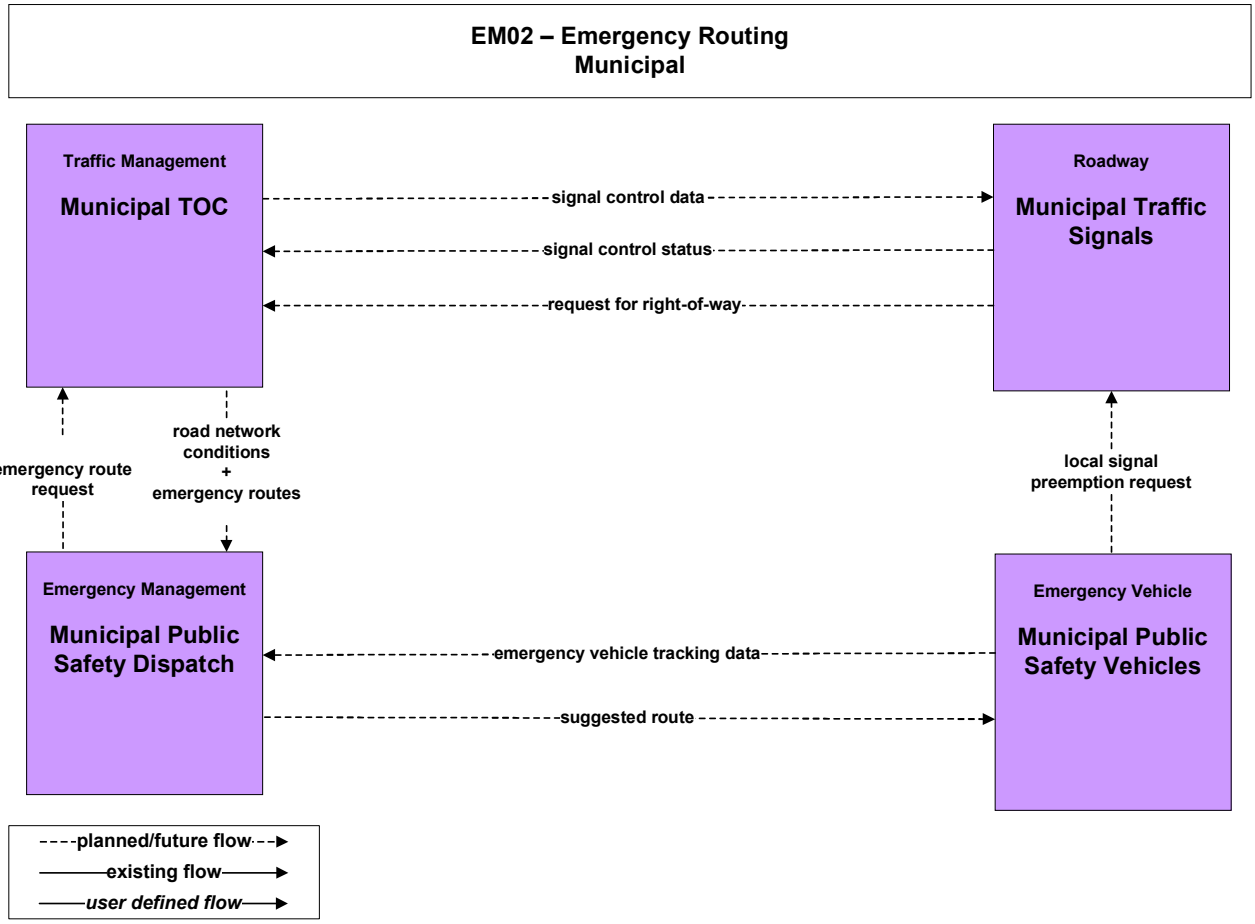

EM02 – Emergency Routing
City of Franklin
Traffic Management
City of Franklin TOC
Roadway
City of Franklin Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
emergency routes
road network conditions
local signal preemption request
Emergency Management
City of Franklin Emergency Dispatch
Emergency Vehicle
City of Franklin Fire Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow


EM02 – Emergency Routing
City of Gallatin
Traffic Management
City of Gallatin TOC
Roadway
City of Gallatin 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
City of Gallatin Emergency Dispatch
Emergency Vehicle
City of Gallatin Fire Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow

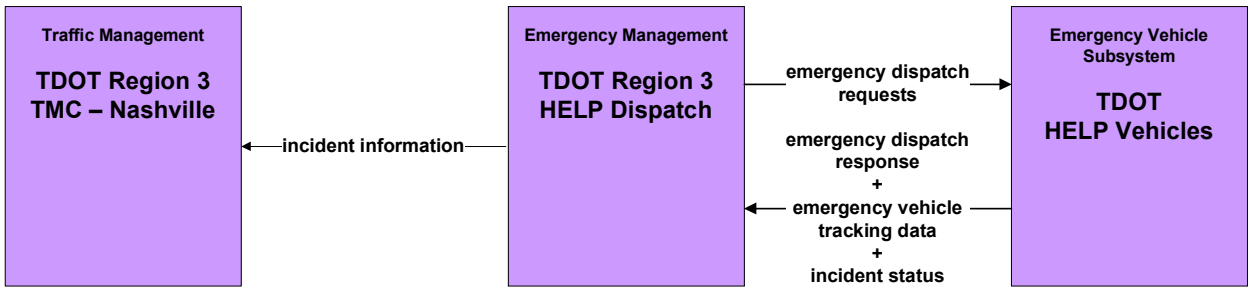

EM02 – Emergency Routing
City of Lebanon
Traffic Management
City of Lebanon TOC
Roadway
City of Lebanon Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
road network conditions + emergency routes
local signal preemption request
Emergency Management
City of Lebanon Emergency Dispatch
Emergency Vehicle
City of Lebanon Fire Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow

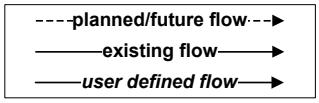

EM02 – Emergency Routing
City of Smyrna
Traffic Management
City of Smyrna TOC
Roadway
City of Smyrna Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
road network conditions + emergency routes
local signal preemption request
Emergency Management
City of Smyrna Emergency Dispatch
Emergency Vehicle
City of Smyrna Fire Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow


EM02 – Emergency Routing
Williamson County
Traffic Management
Williamson County TOC
Roadway
Williamson County 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
Williamson County Emergency Dispatch
Emergency Vehicle
Williamson County Sheriff Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow

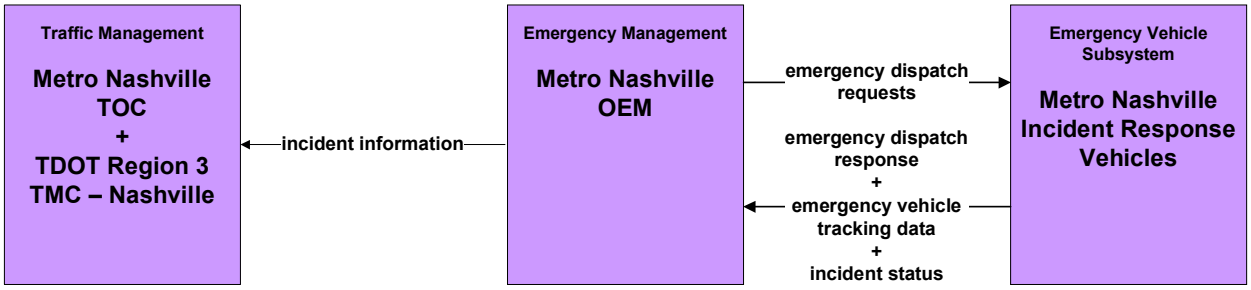

EM02 – Emergency Routing
Municipal
Traffic Management
Municipal TOC
Roadway
Municipal Traffic Signals
signal control data
signal control status
request for right-of-way
emergency route request
road network conditions + emergency routes
local signal preemption request
Emergency Management
Municipal Public Safety Dispatch
Emergency Vehicle
Municipal Public Safety Vehicles
emergency vehicle tracking data
suggested route
planned/future flow
existing flow
user defined flow

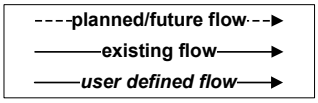
EM04 – Roadway Service Patrols
HELP



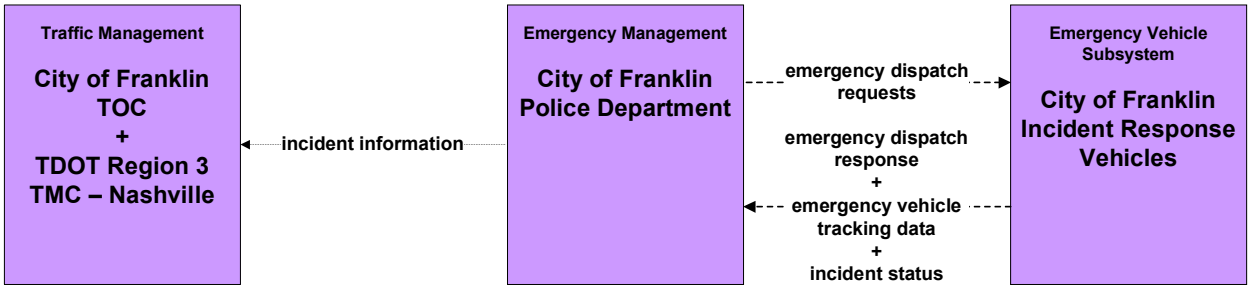


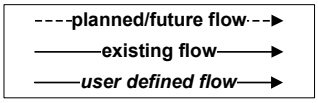
EM04 – Roadway Service Patrols
Metro Nashville Service Patrol



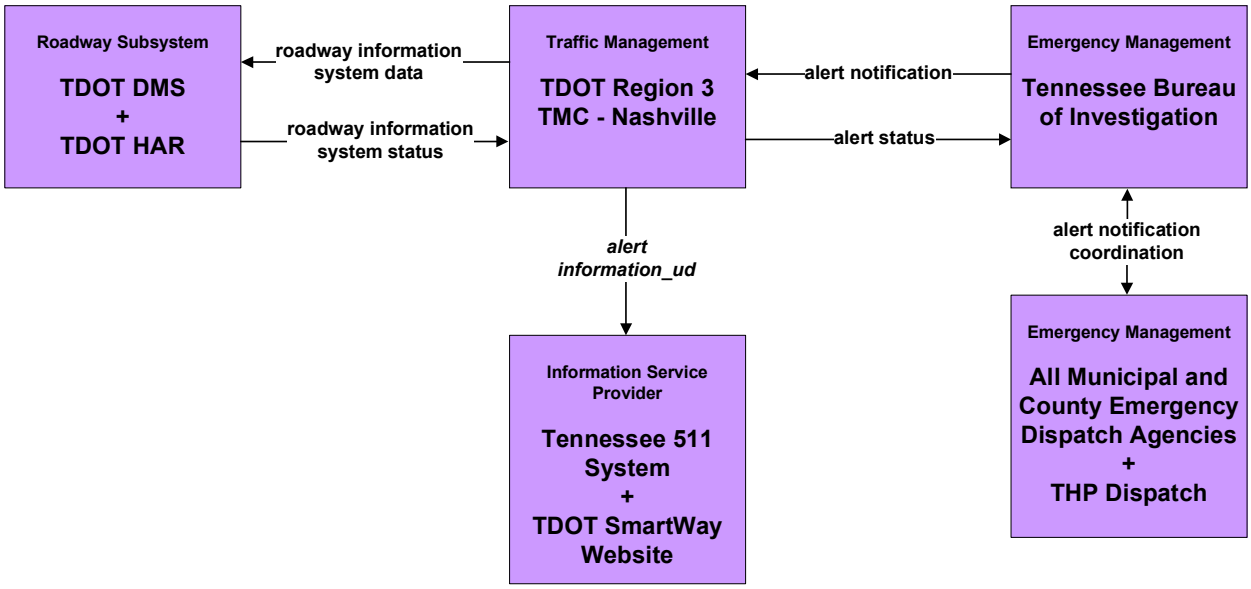


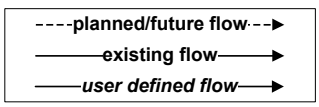
EM04 – Roadway Service Patrols
City of Franklin Service Patrol

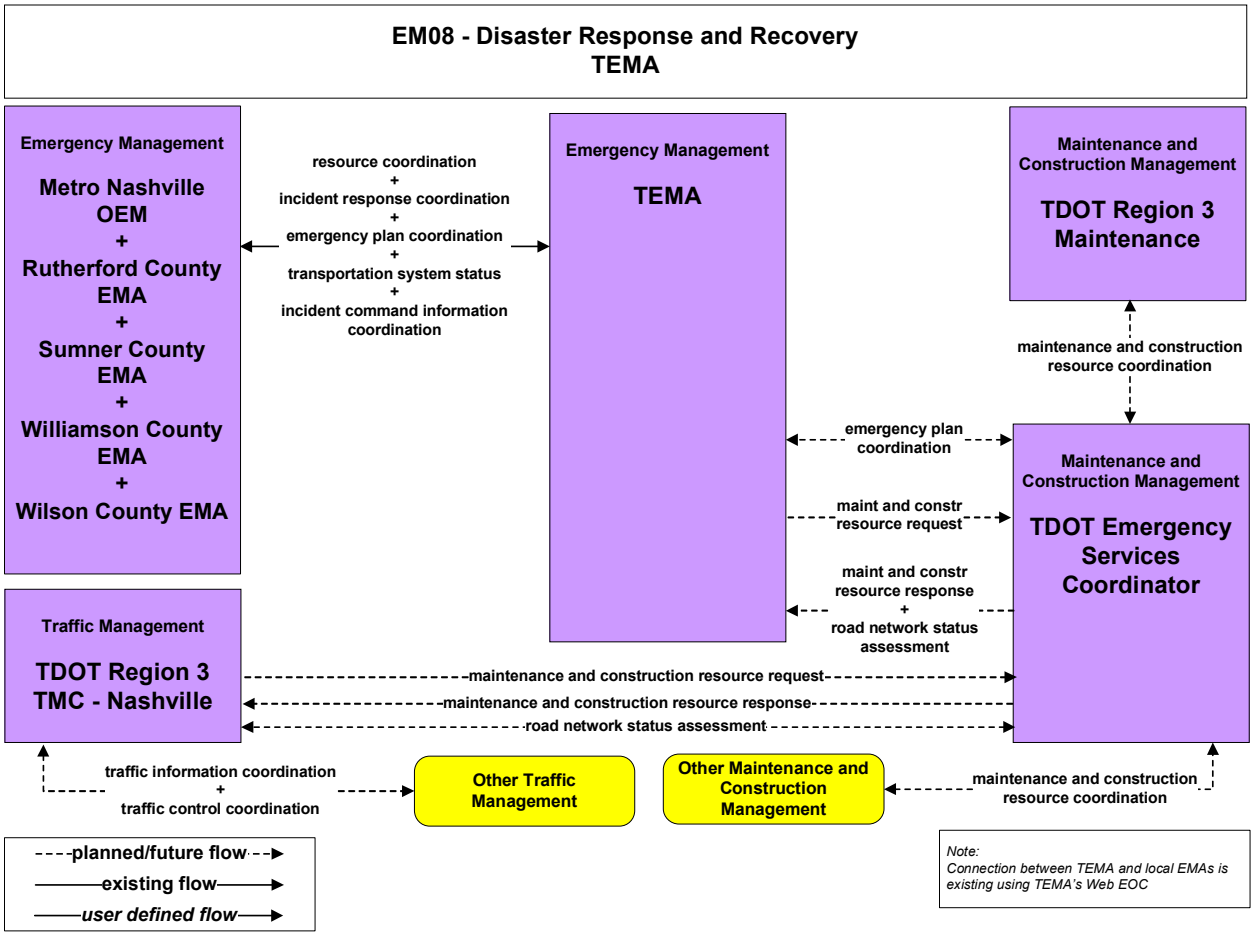


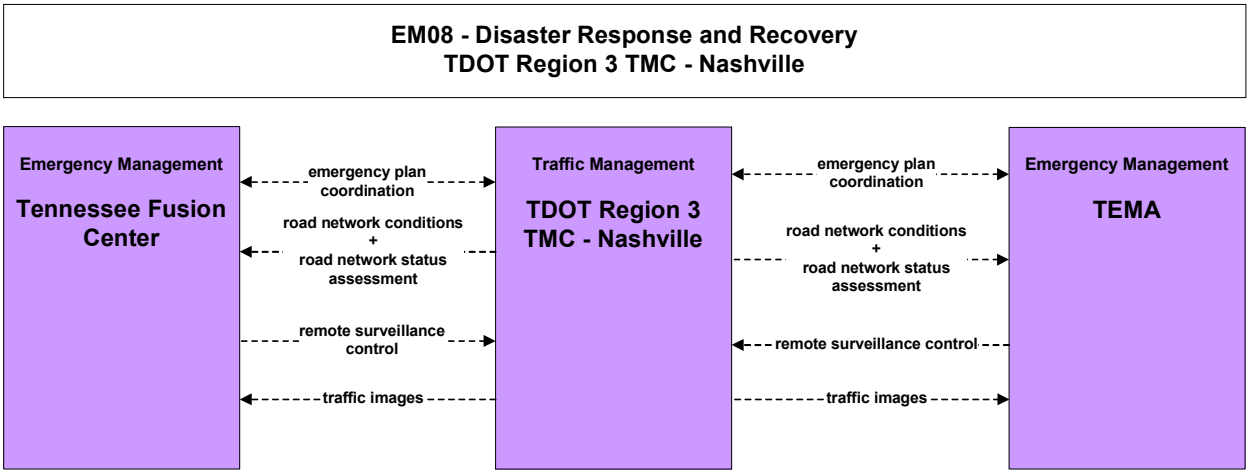


EM06 - Wide-Area Alert
Tennessee AMBER Alert

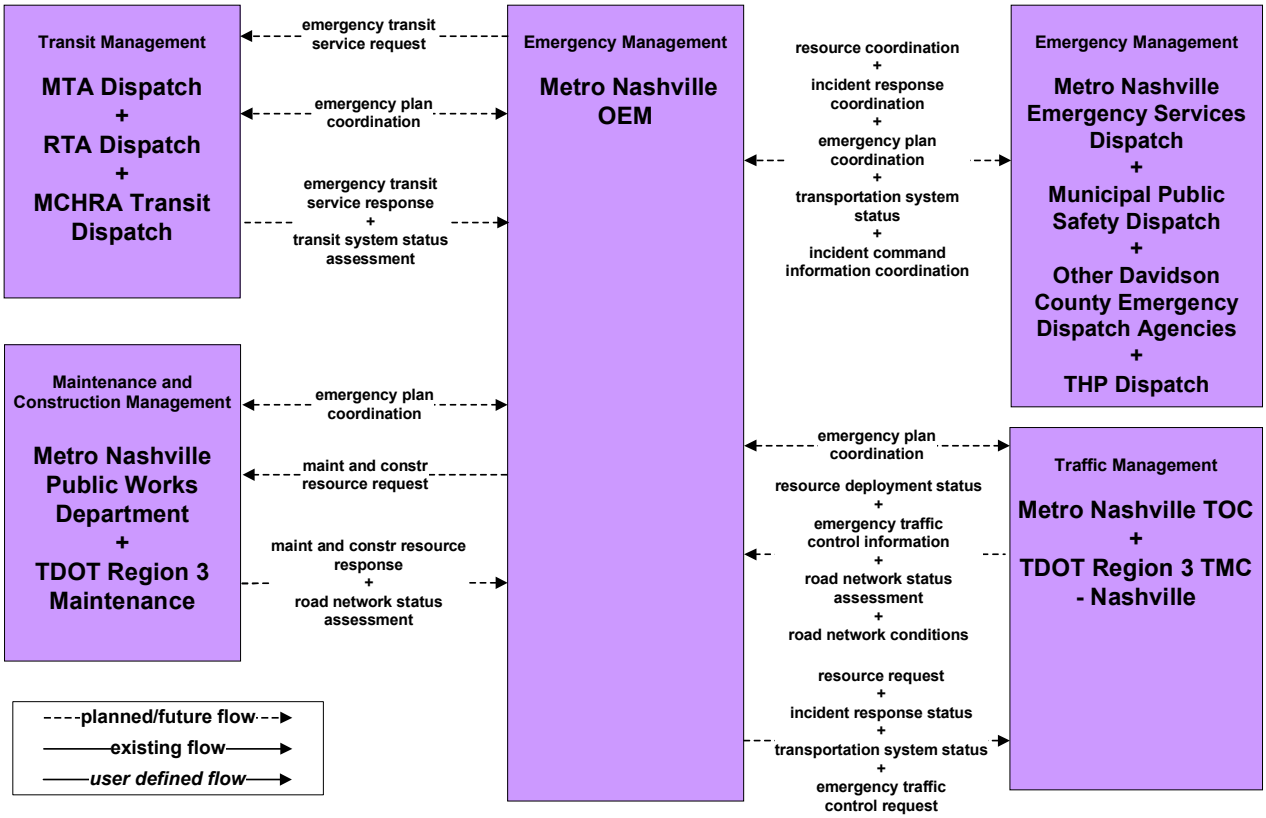




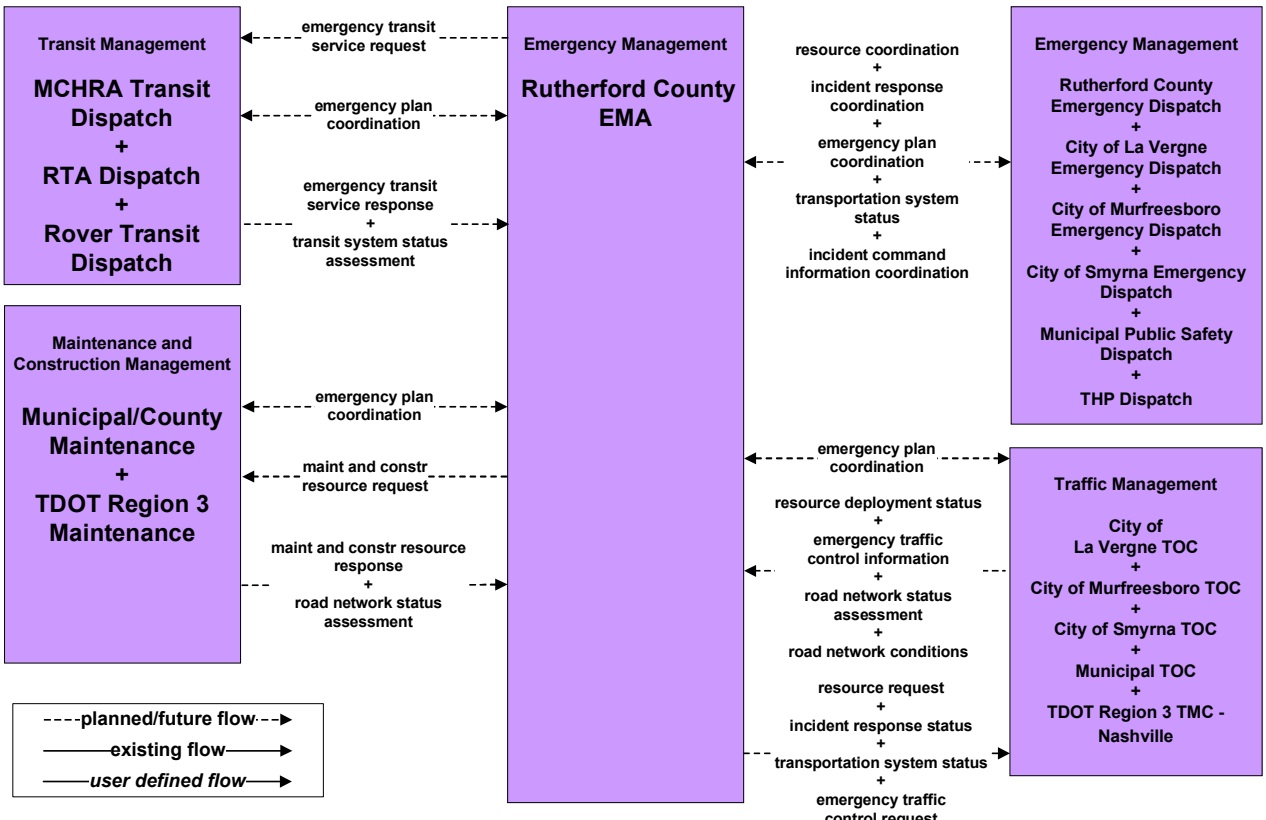

EM08 - Disaster Response and Recovery
TEMA
Emergency Management
Metro Nashville OEM
+
Rutherford County EMA
+
Sumner County EMA
+
Williamson County EMA
+
Wilson County EMA
resource coordination
+
incident response coordination
+
emergency plan coordination
+
transportation system status
+
incident command information coordination
Emergency Management
TEMA
Maintenance and Construction Management
TDOT Region 3 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 3 TMC - Nashville
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

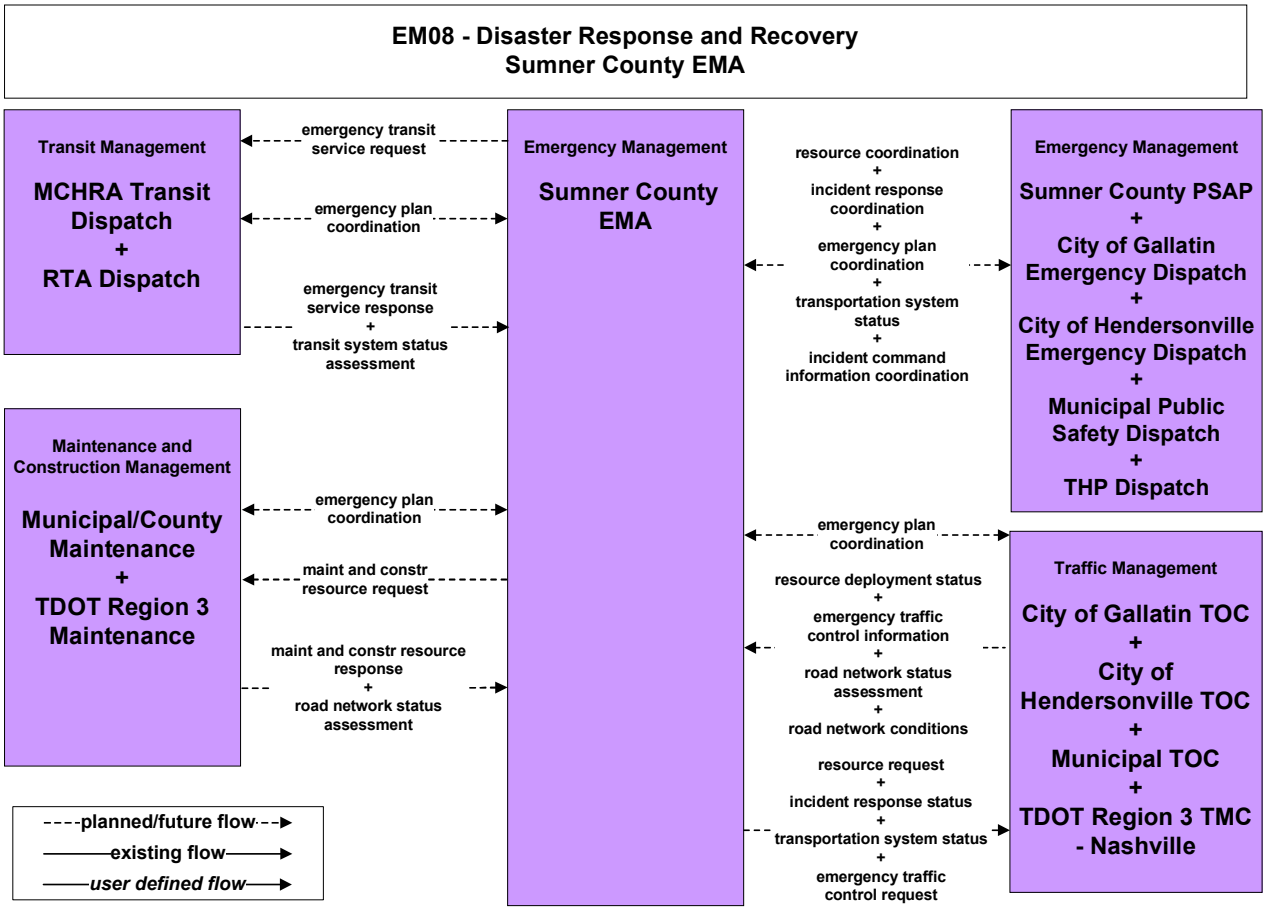

EM08 - Disaster Response and Recovery
TDOT Region 3 TMC - Nashville
Emergency Management
Tennessee Fusion Center
emergency plan coordination
road network conditions
+
road network status assessment
remote surveillance control
traffic images
Traffic Management
TDOT Region 3 TMC - Nashville
emergency plan coordination
road network conditions
+
road network status assessment
remote surveillance control
traffic images
Emergency Management
TEMA
planned/future flow
existing flow
user defined flow

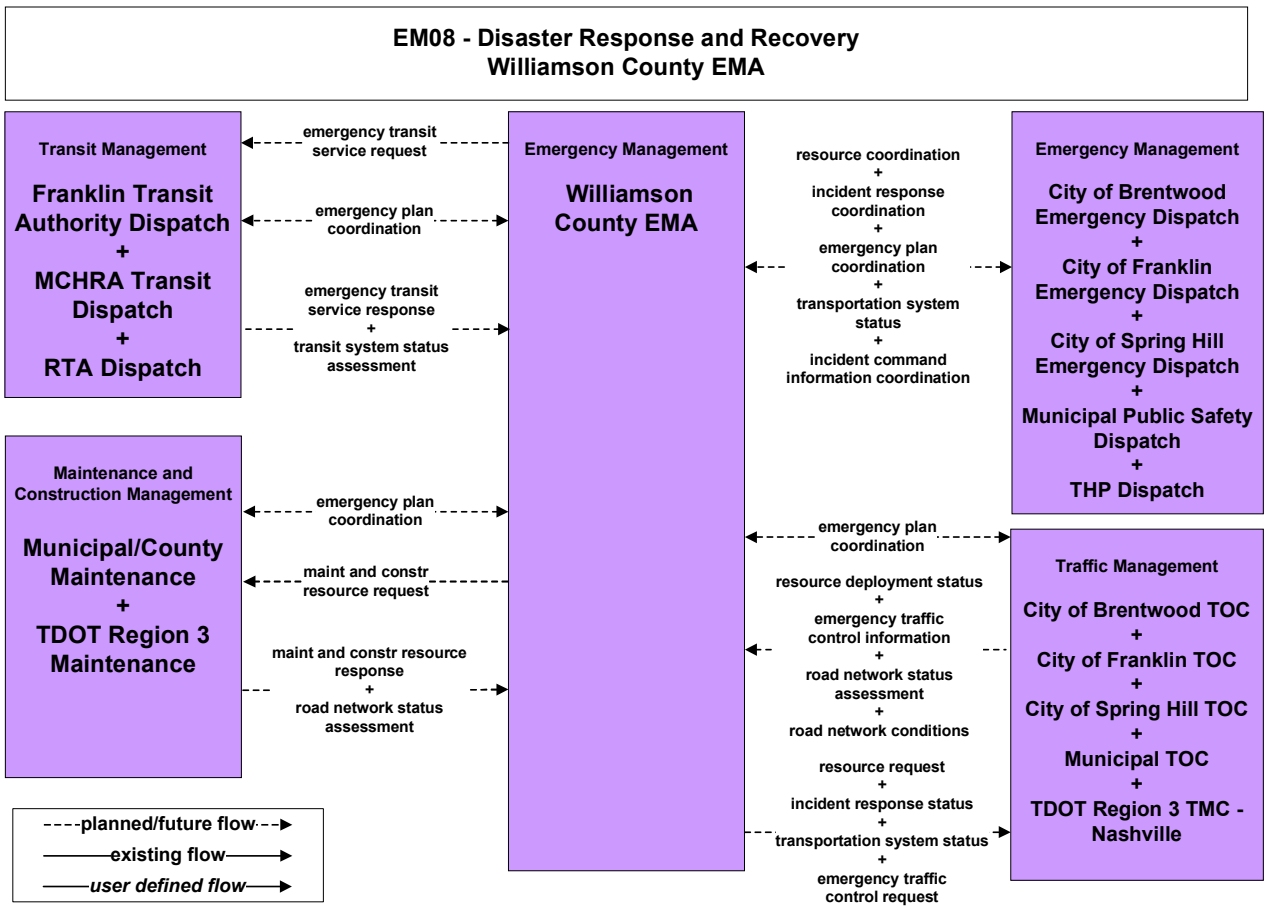
EM08 - Disaster Response and Recovery
Metro Nashville OEM



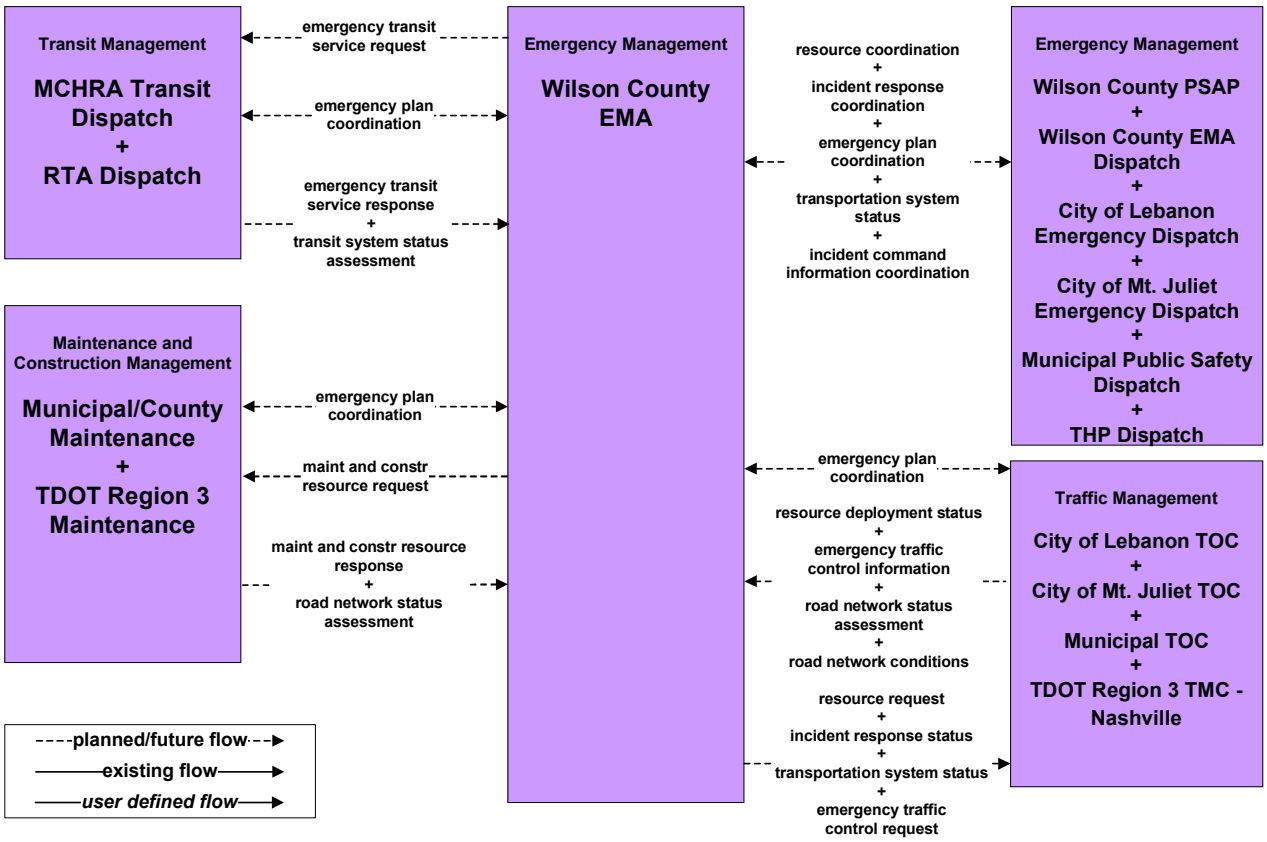
EM08 - Disaster Response and Recovery
Rutherford County EMA



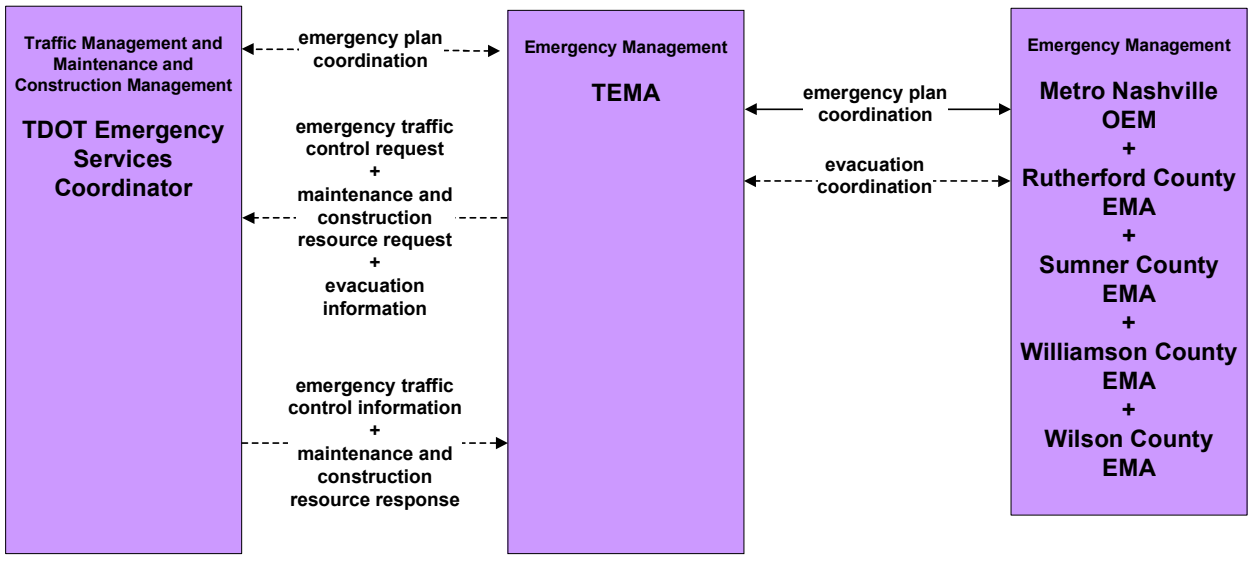

EM08 - Disaster Response and Recovery
Sumner County EMA
Transit Management
MCHRA Transit Dispatch + RTA Dispatch
Maintenance and Construction Management
Municipal/County Maintenance + TDOT Region 3 Maintenance
Emergency Management
Sumner County EMA
Emergency Management
Sumner County PSAP + City of Gallatin Emergency Dispatch + City of Hendersonville Emergency Dispatch + Municipal Public Safety Dispatch + THP Dispatch
Traffic Management
City of Gallatin TOC + City of Hendersonville TOC + Municipal TOC + TDOT Region 3 TMC - Nashville
emergency transit service request
emergency plan coordination
emergency transit service response + transit system status assessment
emergency plan coordination
maint and constr resource request
maint and constr resource response + road network status assessment
resource coordination + incident response coordination + emergency plan coordination + transportation system status + incident command information coordination
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
planned/future flow
existing flow
user defined flow


EM08 - Disaster Response and Recovery
Williamson County EMA
Transit Management
Franklin Transit Authority Dispatch + MCHRA Transit Dispatch + RTA Dispatch
Maintenance and Construction Management
Municipal/County Maintenance + TDOT Region 3 Maintenance
Emergency Management
Williamson County EMA
Emergency Management
City of Brentwood Emergency Dispatch + City of Franklin Emergency Dispatch + City of Spring Hill Emergency Dispatch + Municipal Public Safety Dispatch + THP Dispatch
Traffic Management
City of Brentwood TOC + City of Franklin TOC + City of Spring Hill TOC + Municipal TOC + TDOT Region 3 TMC - Nashville
emergency transit service request
emergency plan coordination
emergency transit service response + transit system status assessment
emergency plan coordination
maint and constr resource request
maint and constr resource response + road network status assessment
resource coordination + incident response coordination + emergency plan coordination + transportation system status + incident command information coordination
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
planned/future flow
existing flow
user defined flow

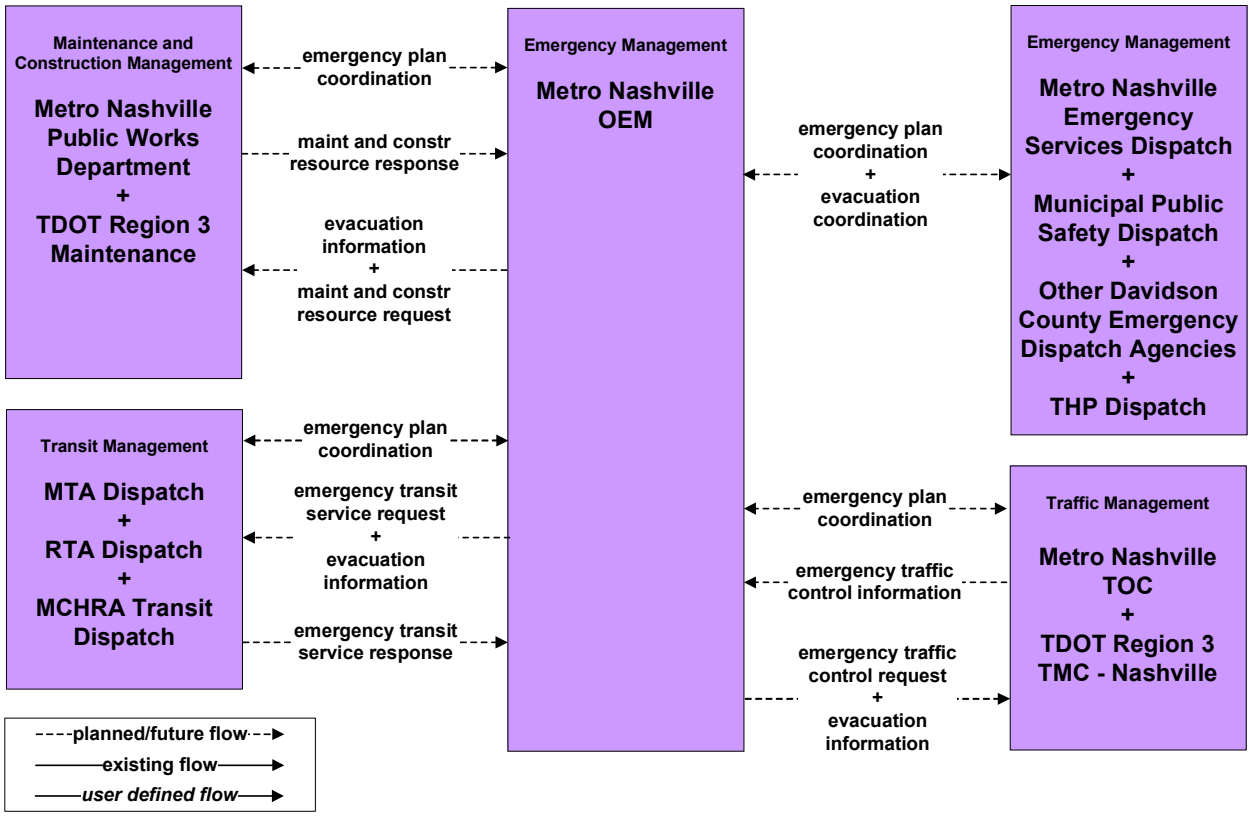
EM08 - Disaster Response and Recovery
Wilson County EMA



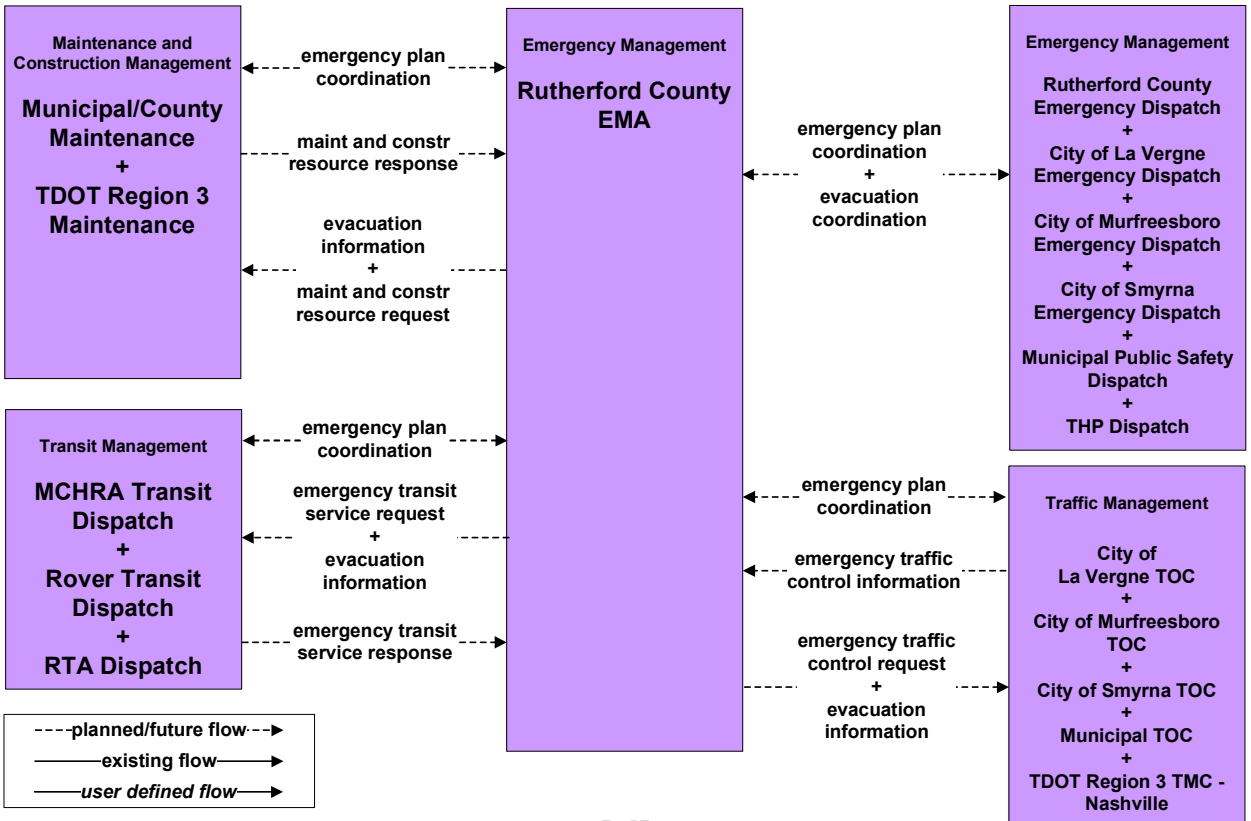
EM09 - Evacuation and Reentry Management
TEMA



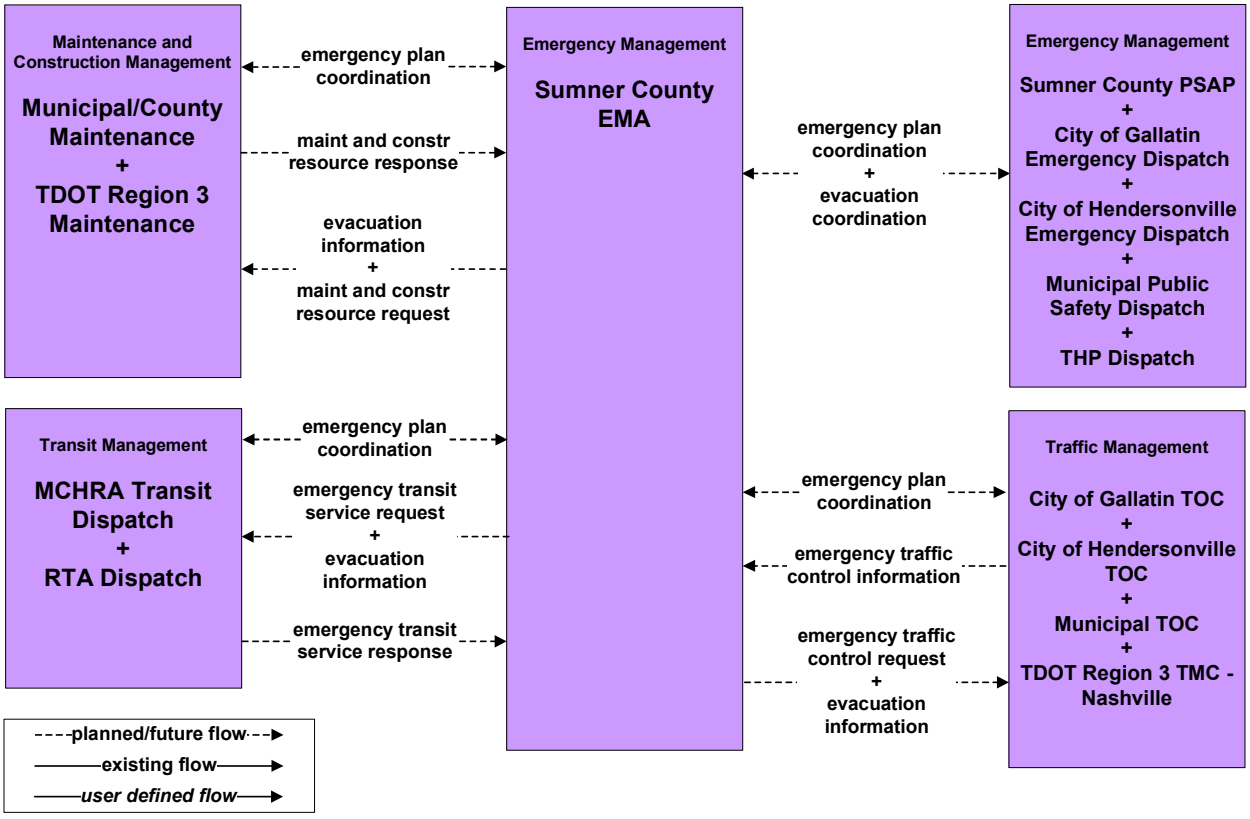
EM09 - Evacuation and Reentry Management
Metro Nashville OEM



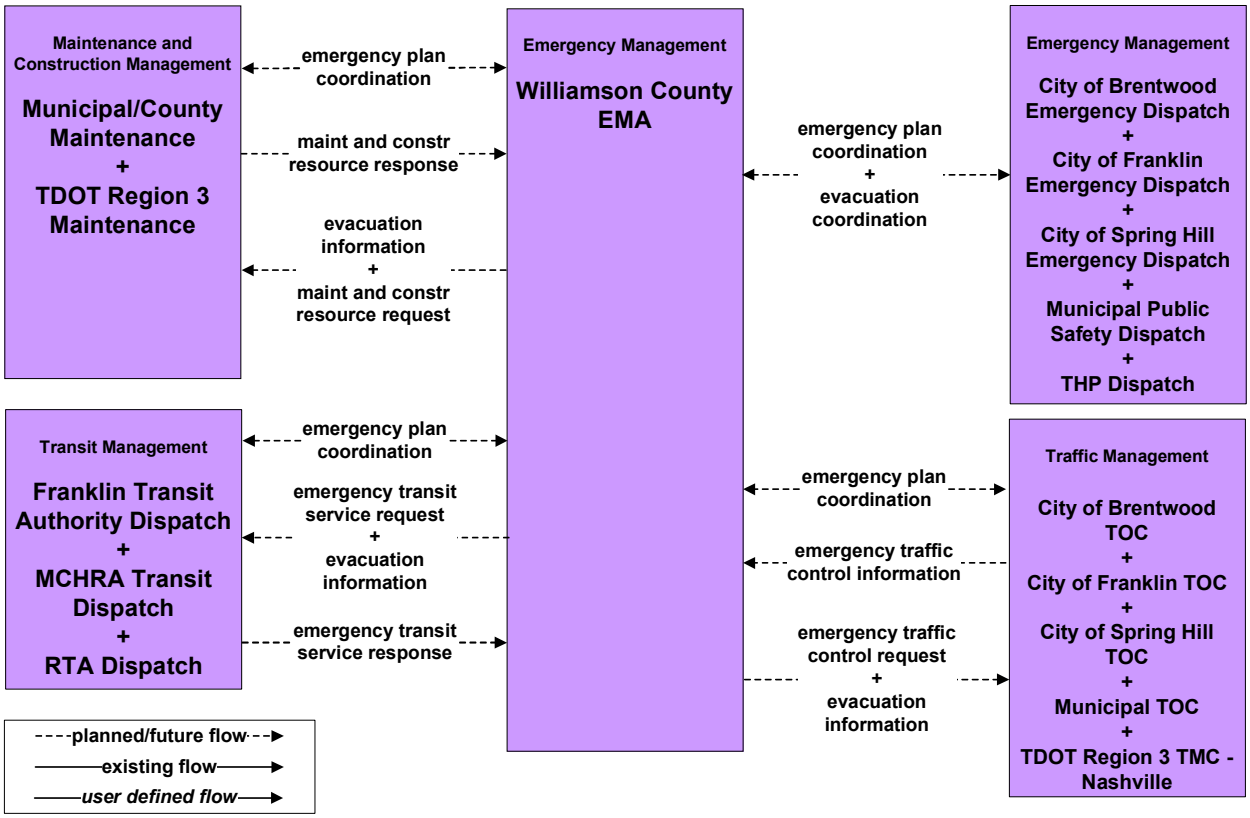
EM09 - Evacuation and Reentry Management
Rutherford County EMA



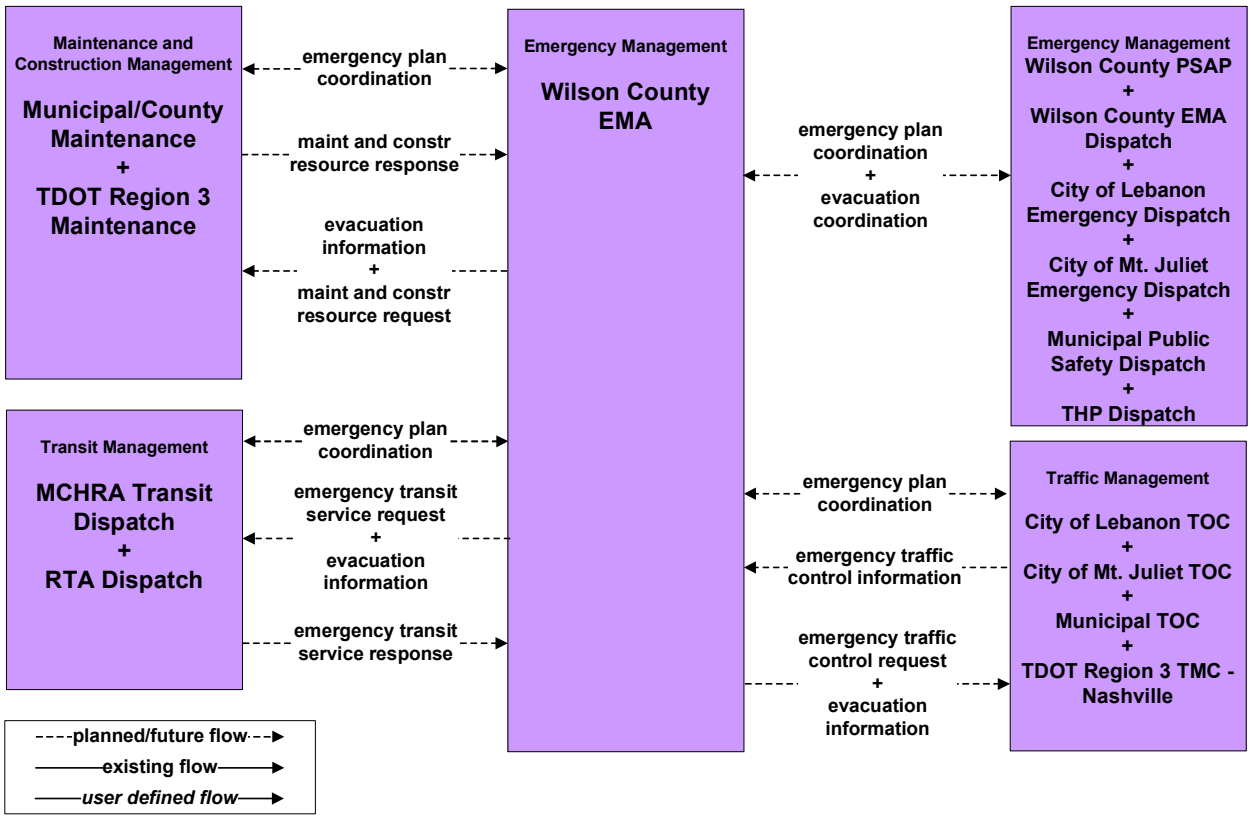
EM09 - Evacuation and Reentry Management
Sumner County EMA



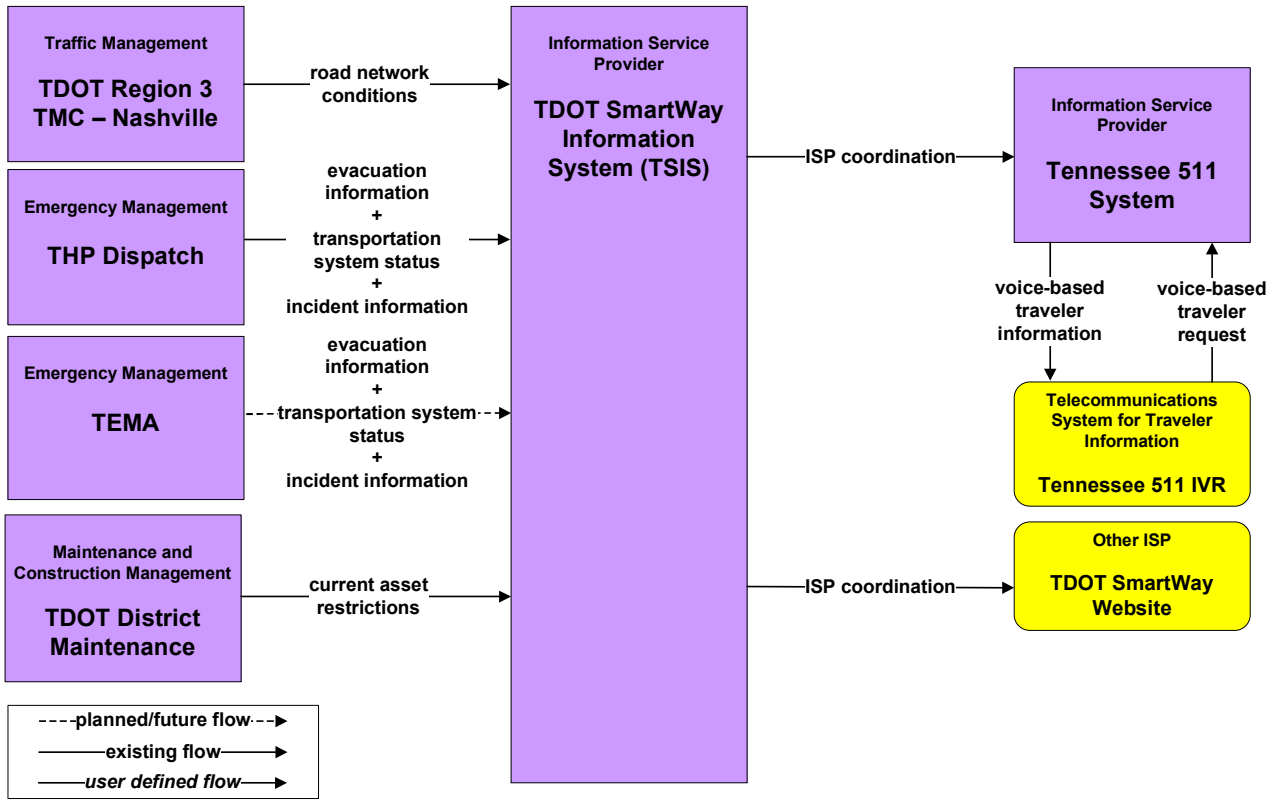
EM09 - Evacuation and Reentry Management
Williamson County EMA



EM09 - Evacuation and Reentry Management
Wilson County EMA

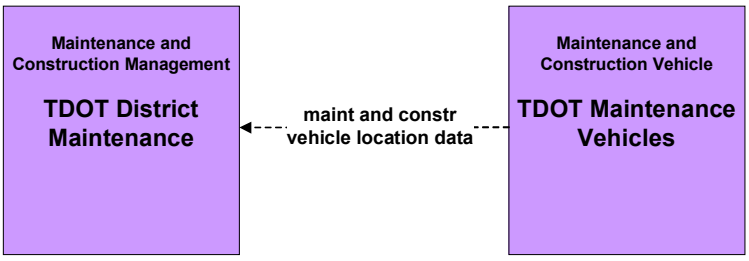


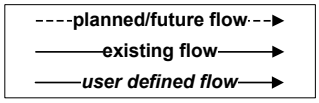
EM10 – Disaster Traveler Information
Tennessee 511 and TSIS



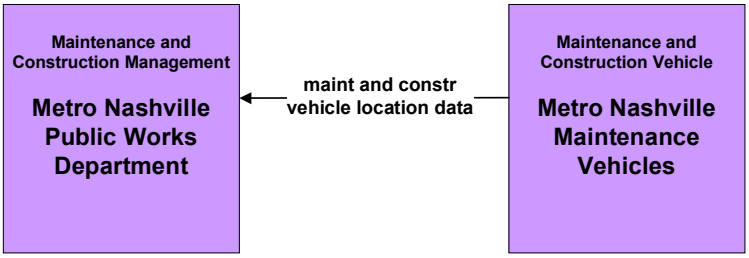
Maintenance and Construction Management

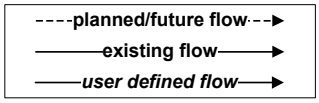
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
TDOT District Maintenance



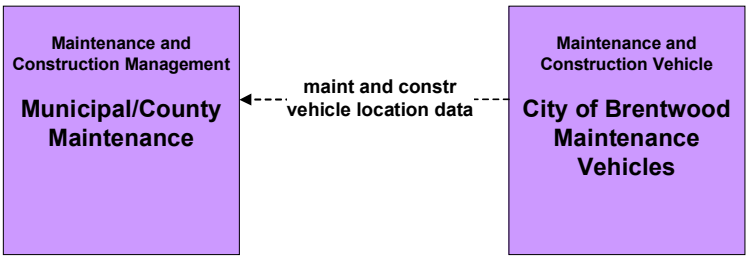


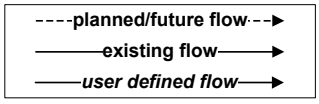
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
Metro Nashville



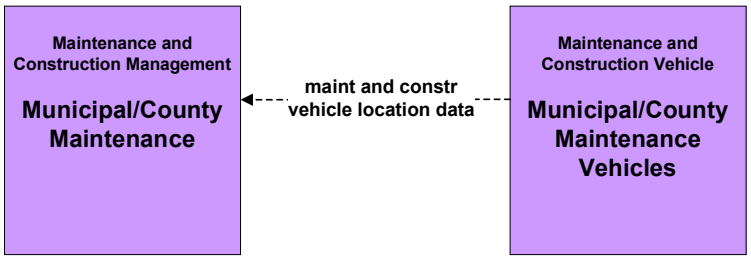


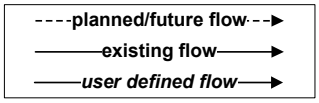
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
City of Brentwood



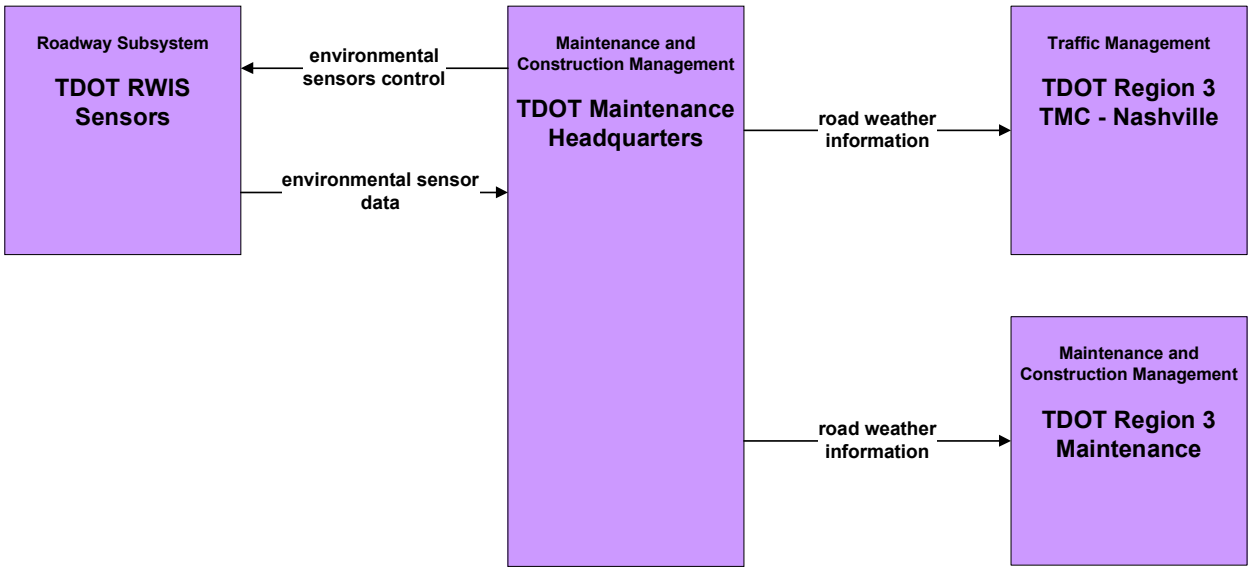


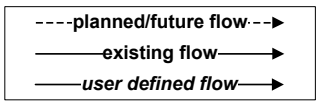
MC01 – Maintenance and Construction Vehicle and Equipment Tracking
Municipal/County



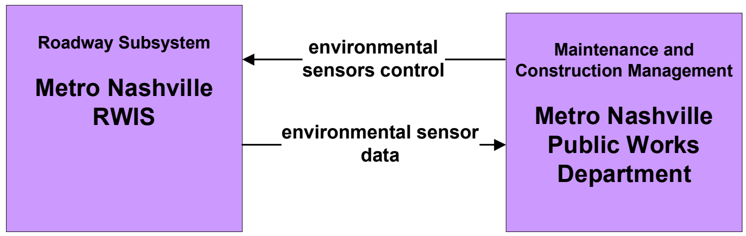


MC03 – Road Weather Data Collection
TDOT RWIS



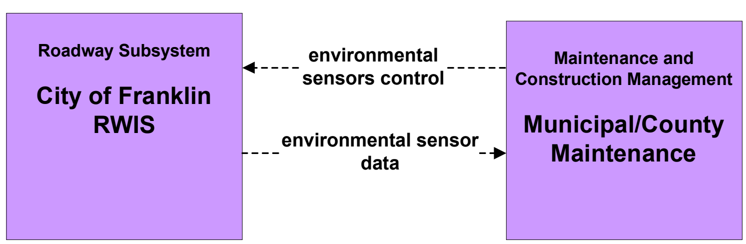


MC03 – Road Weather Data Collection
Metro Nashville



planned/future flow
existing flow
user defined flow

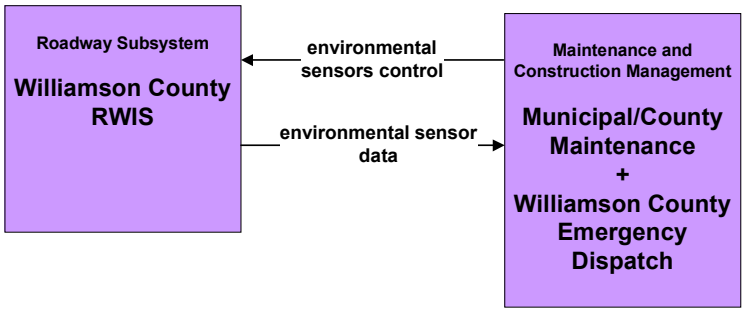
MC03 – Road Weather Data Collection
City of Franklin

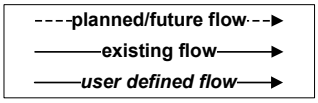


Note:
City of Franklin RWIS sensors are existing, but the data is not currently brought back.

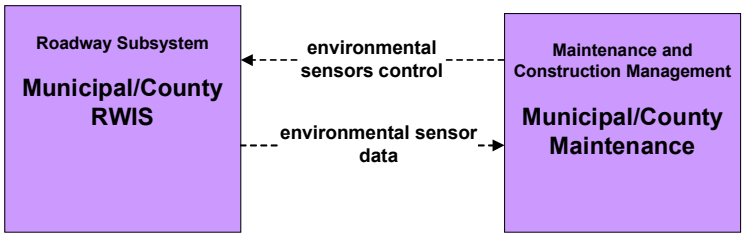
planned/future flow
existing flow
user defined flow

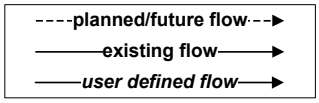
MC03 – Road Weather Data Collection
Williamson County

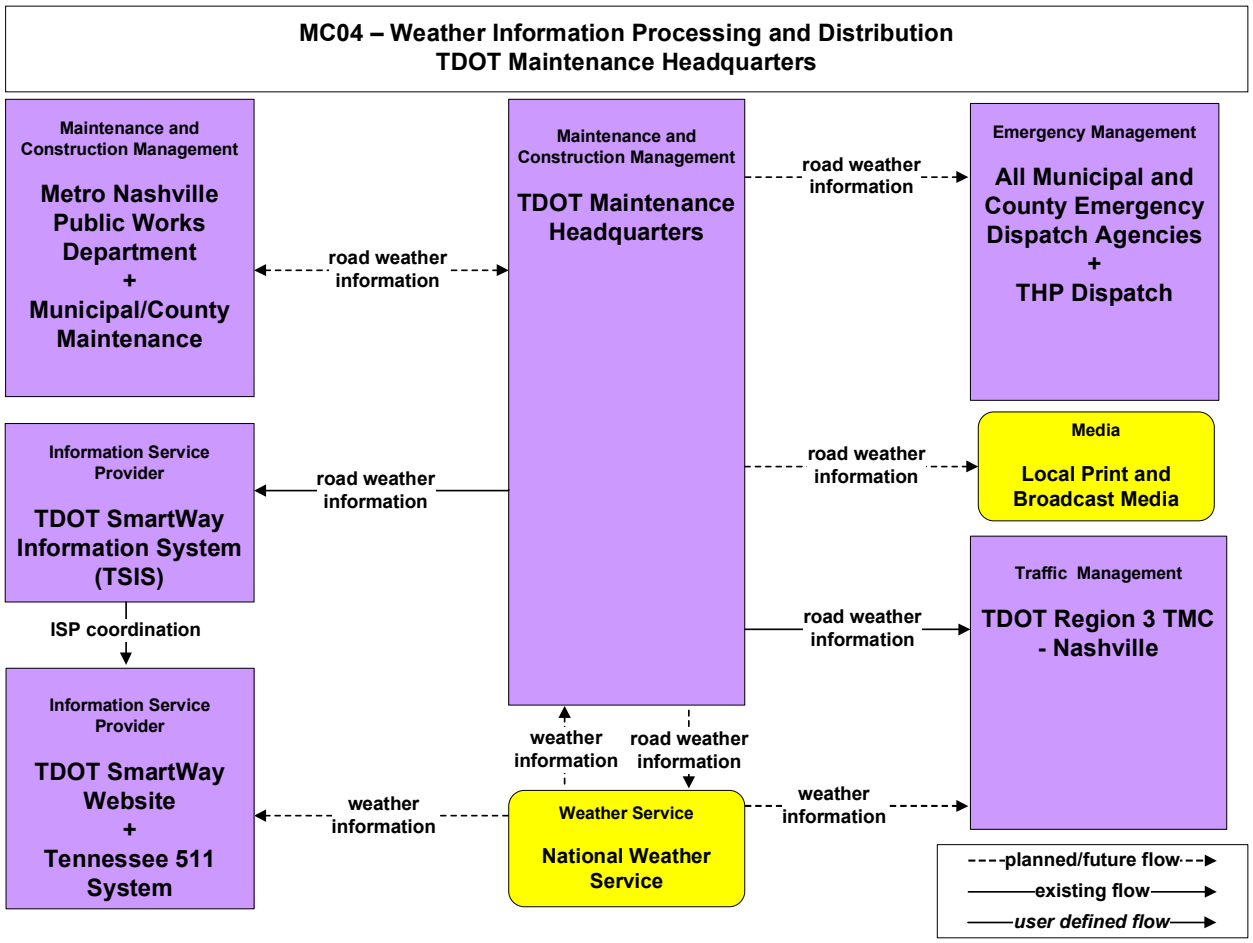


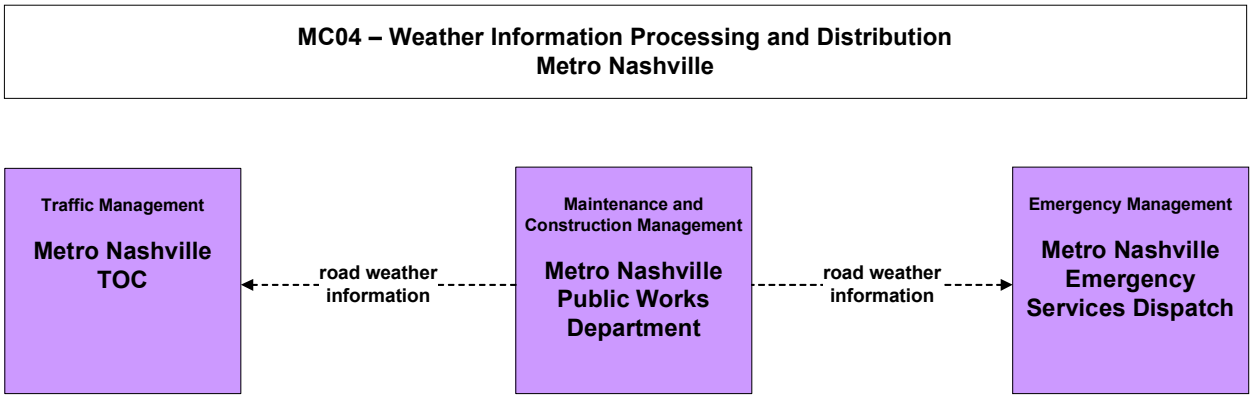


MC03 – Road Weather Data Collection
Municipal/County

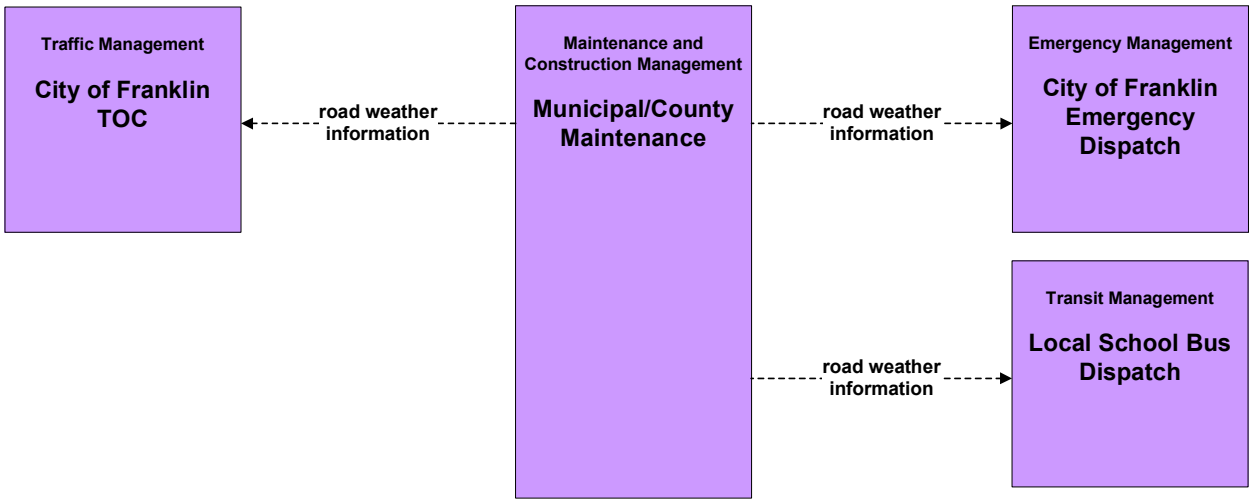


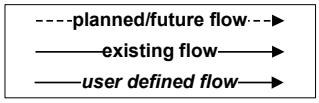



MC04 – Weather Information Processing and Distribution
TDOT Maintenance Headquarters
Maintenance and Construction Management
Metro Nashville Public Works Department + Municipal/County Maintenance
road weather information
Maintenance and Construction Management
TDOT Maintenance Headquarters
road weather information
Emergency Management
All Municipal and County Emergency Dispatch Agencies + THP Dispatch
Information Service Provider
TDOT SmartWay Information System (TSIS)
road weather information
road weather information
Media
Local Print and Broadcast Media
ISP coordination
road weather information
Traffic Management
TDOT Region 3 TMC - Nashville
Information Service Provider
TDOT SmartWay Website + Tennessee 511 System
weather information
road weather information
weather information
Weather Service
National Weather Service
weather information
planned/future flow
existing flow
user defined flow

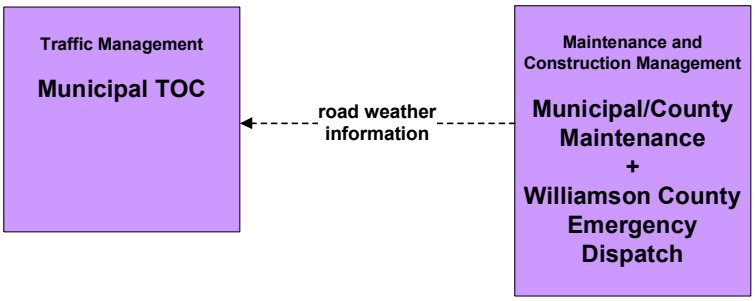

MC04 – Weather Information Processing and Distribution
Metro Nashville
Traffic Management
Metro Nashville TOC
road weather information
Maintenance and Construction Management
Metro Nashville Public Works Department
road weather information
Emergency Management
Metro Nashville Emergency Services Dispatch
planned/future flow
existing flow
user defined flow

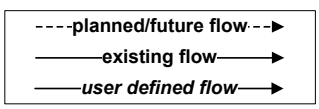
MC04 – Weather Information Processing and Distribution
City of Franklin

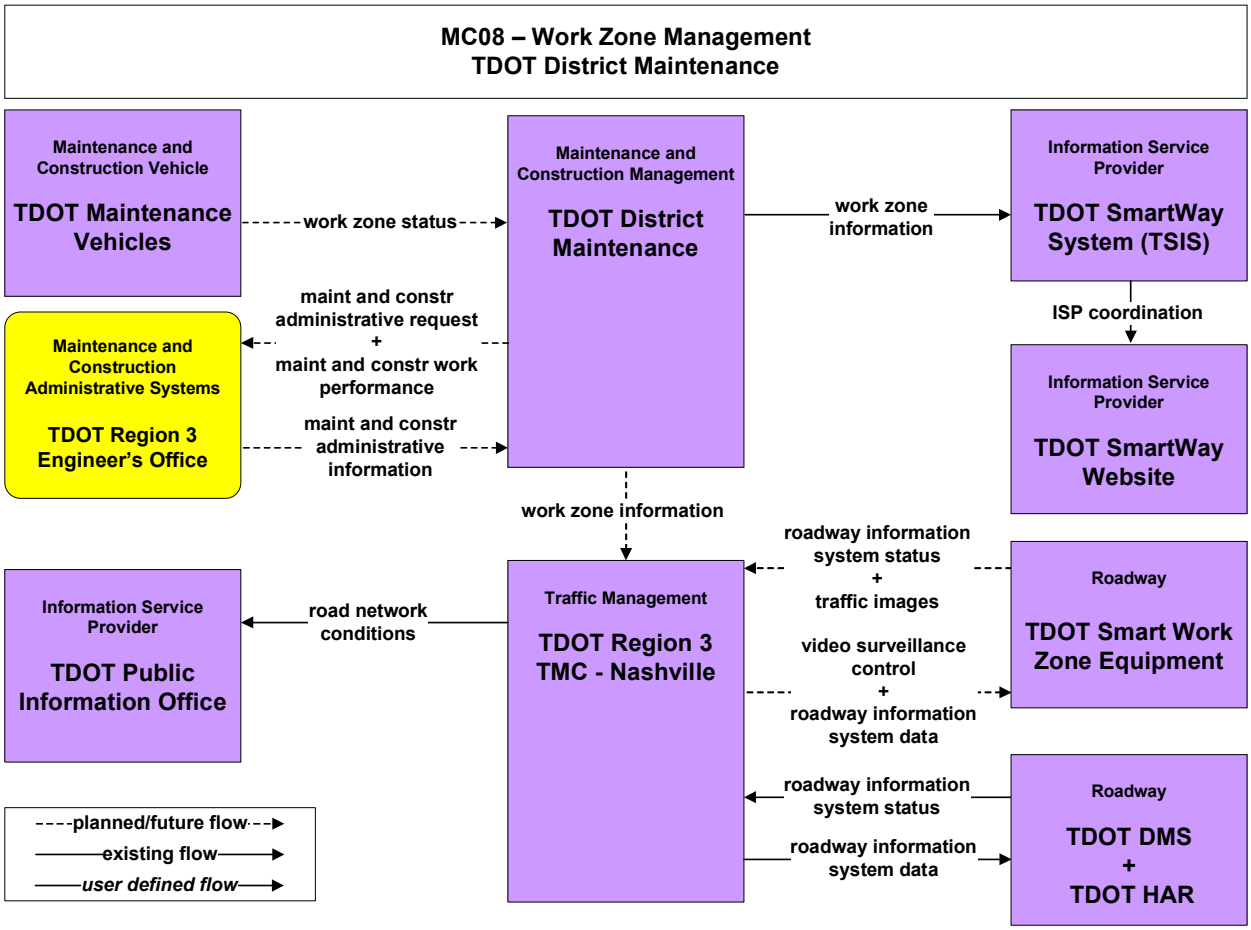


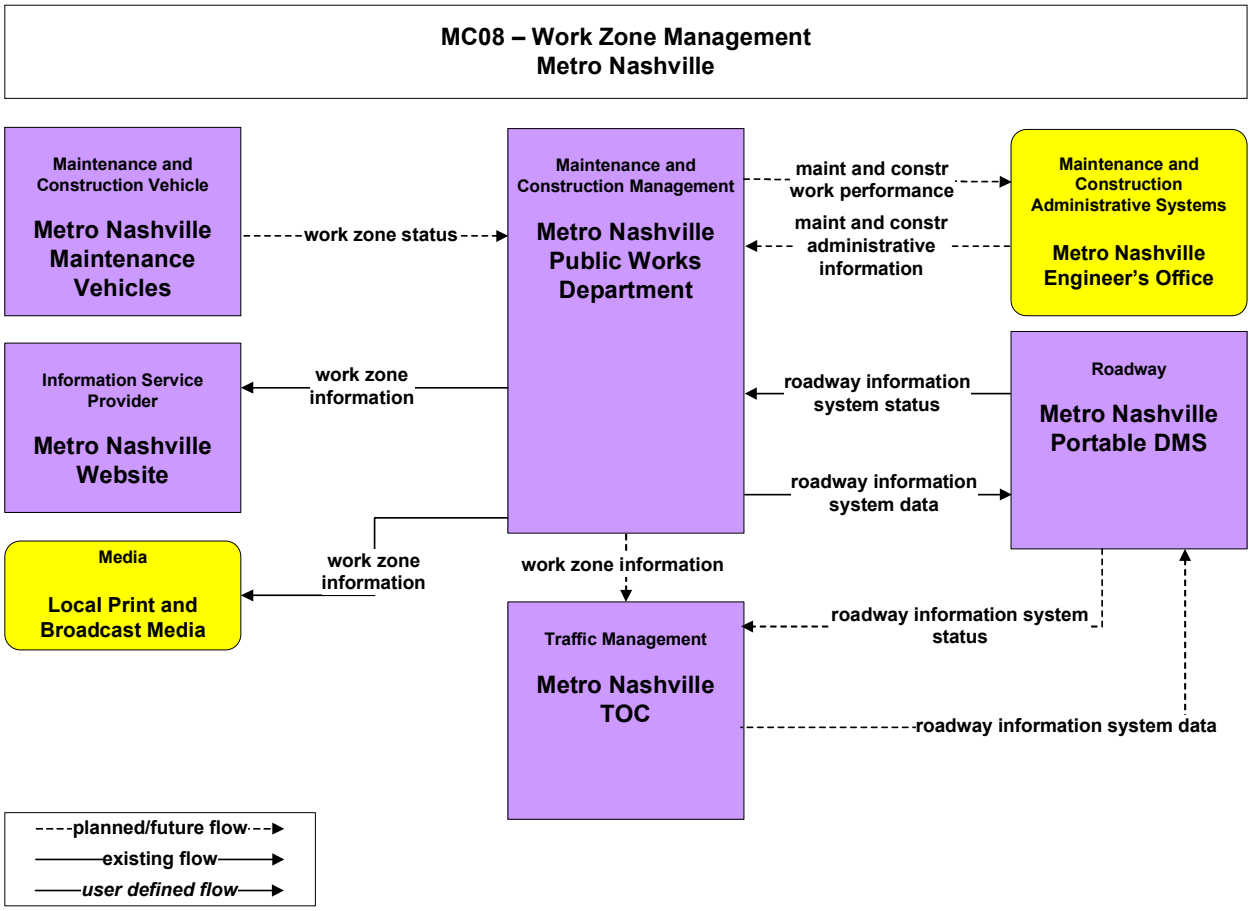


MC04 – Weather Information Processing and Distribution
Williamson County

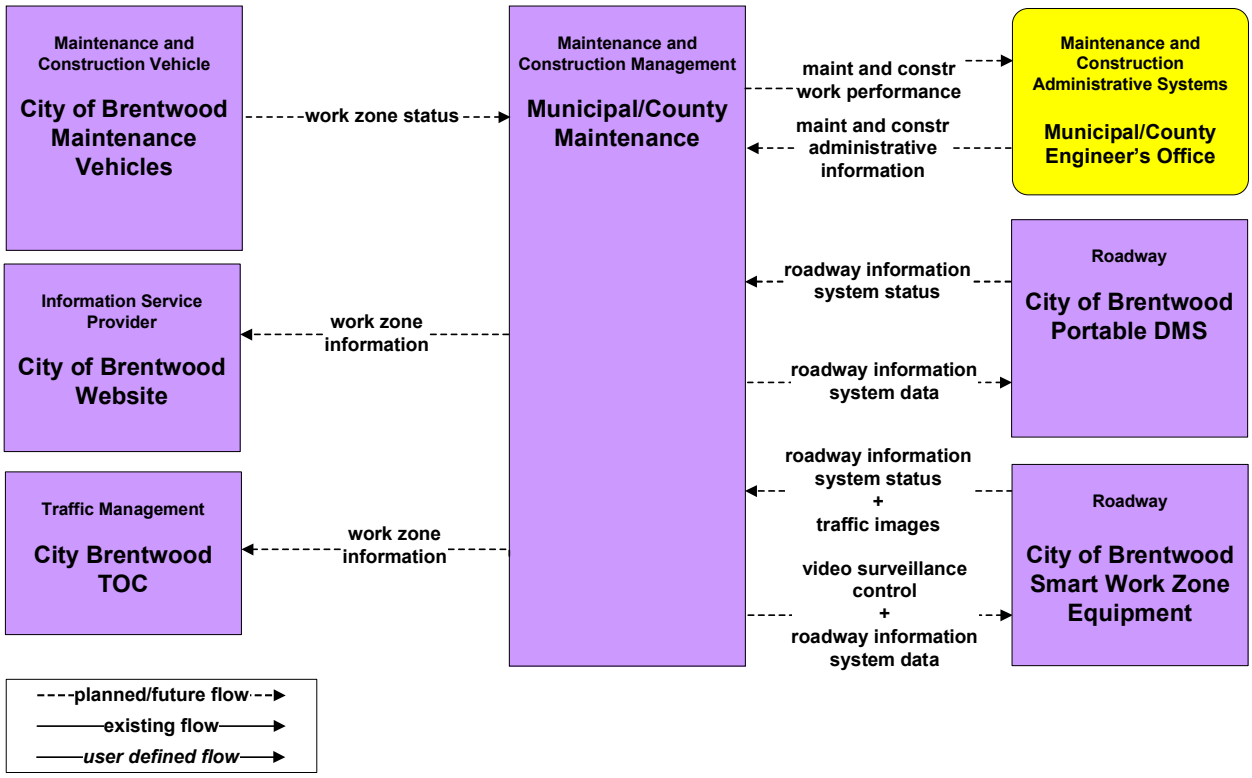




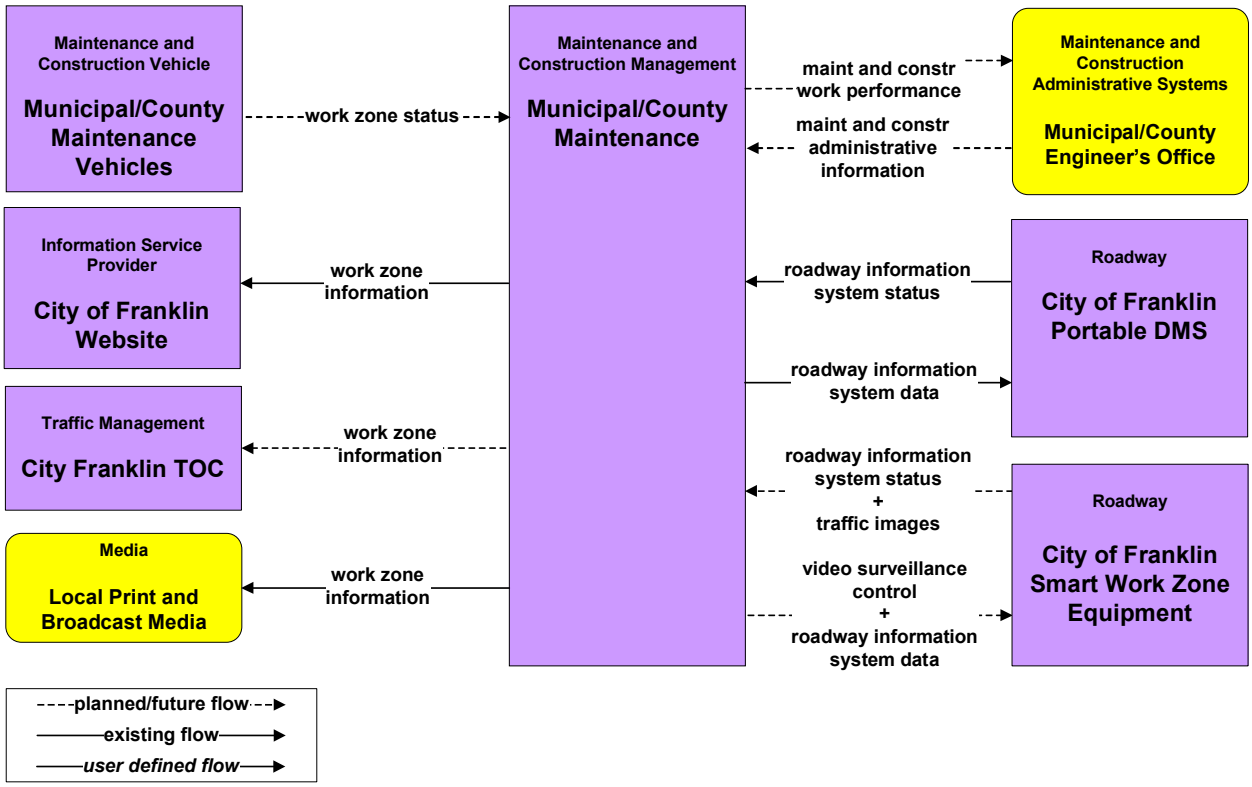

MC08 – Work Zone Management
TDOT District Maintenance
Maintenance and Construction Vehicle
TDOT Maintenance Vehicles
work zone status
Maintenance and Construction Management
TDOT District Maintenance
work zone information
Information Service Provider
TDOT SmartWay System (TSIS)
ISP coordination
Information Service Provider
TDOT SmartWay Website
maint and constr administrative request
+
maint and constr work performance
Maintenance and Construction Administrative Systems
TDOT Region 3 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 3 TMC - Nashville
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
Metro Nashville
Maintenance and Construction Vehicle
Metro Nashville Maintenance Vehicles
work zone status
Maintenance and Construction Management
Metro Nashville Public Works Department
maint and constr work performance
maint and constr administrative information
Maintenance and Construction Administrative Systems
Metro Nashville Engineer's Office
Information Service Provider
Metro Nashville Website
work zone information
roadway information system status
roadway information system data
Roadway
Metro Nashville Portable DMS
Media
Local Print and Broadcast Media
work zone information
work zone information
Traffic Management
Metro Nashville TOC
roadway information system status
roadway information system data
planned/future flow
existing flow
user defined flow

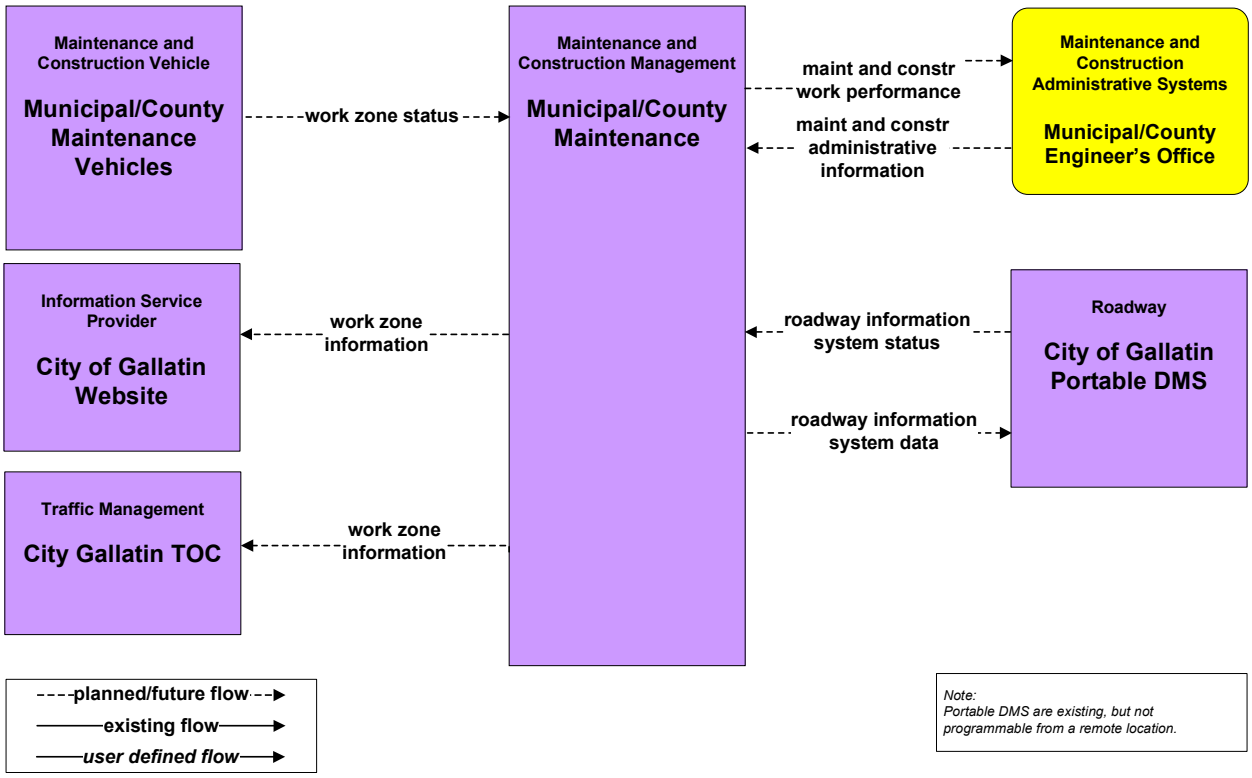
MC08 – Work Zone Management
City of Brentwood



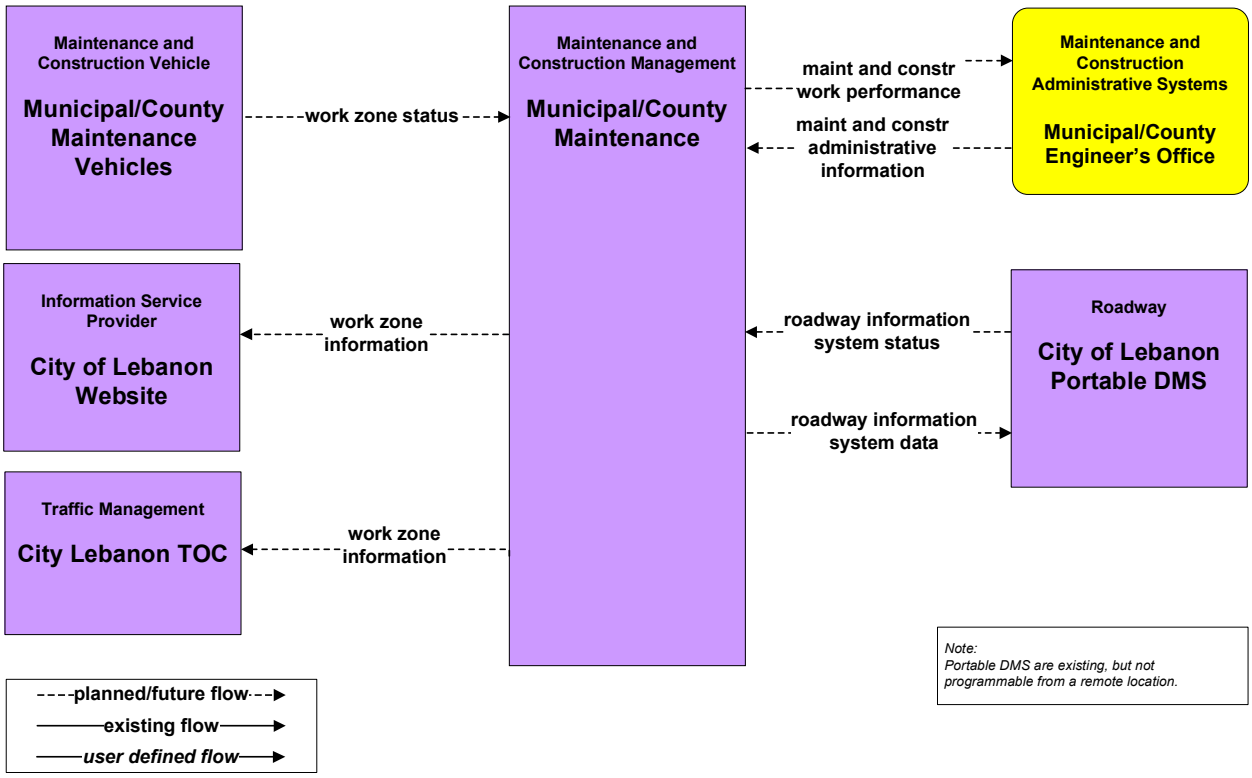
MC08 – Work Zone Management
City of Franklin



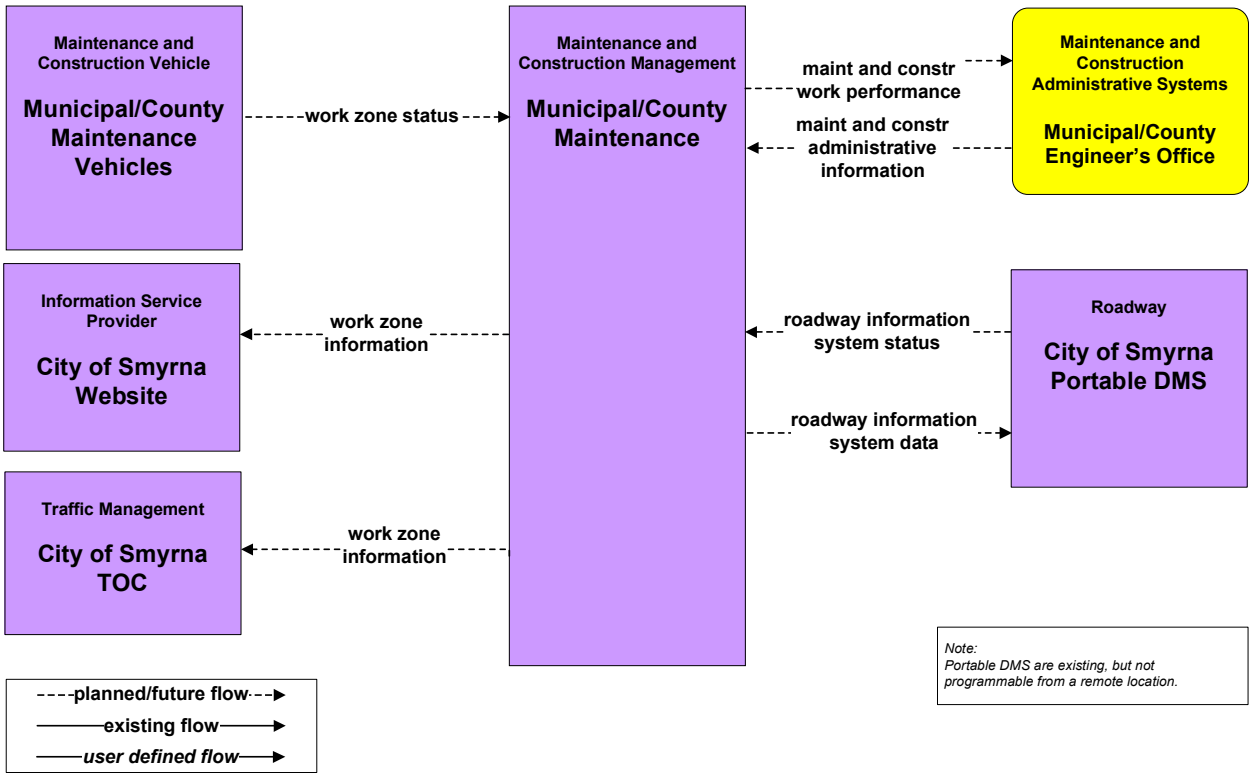
MC08 – Work Zone Management
City of Gallatin



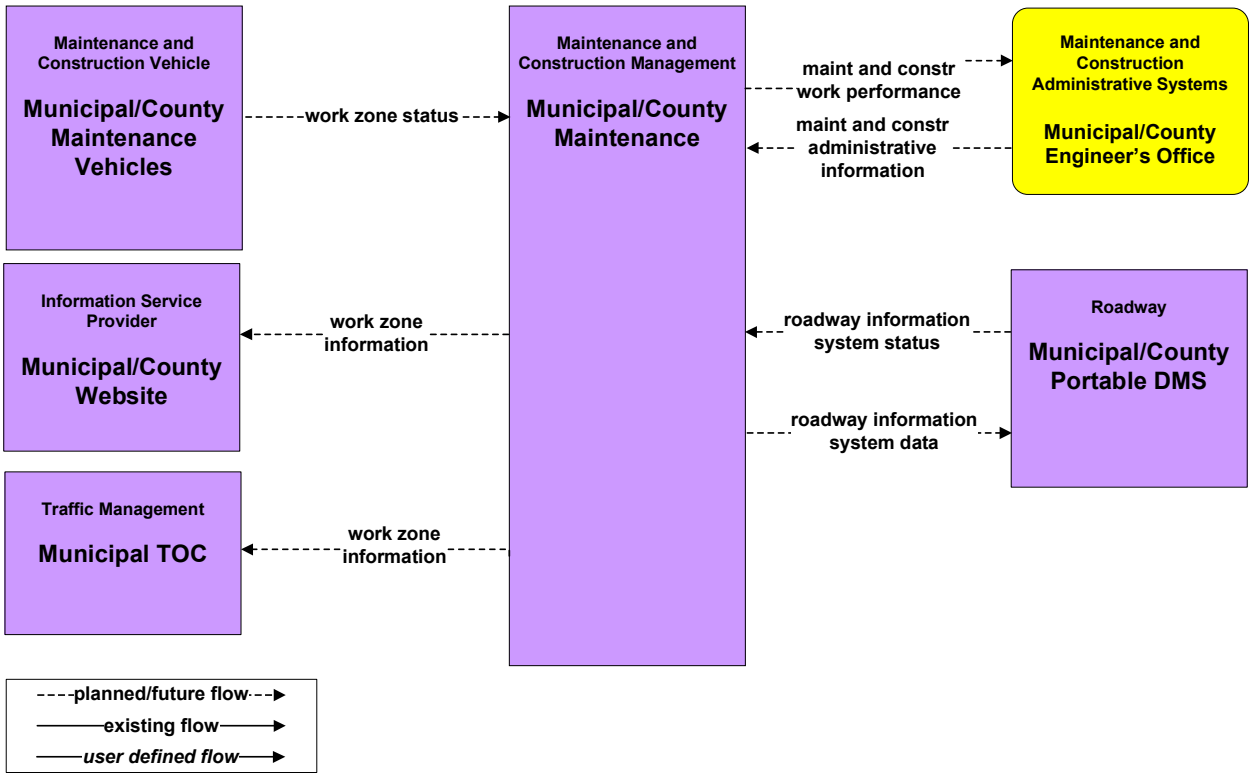
MC08 – Work Zone Management
City of Lebanon



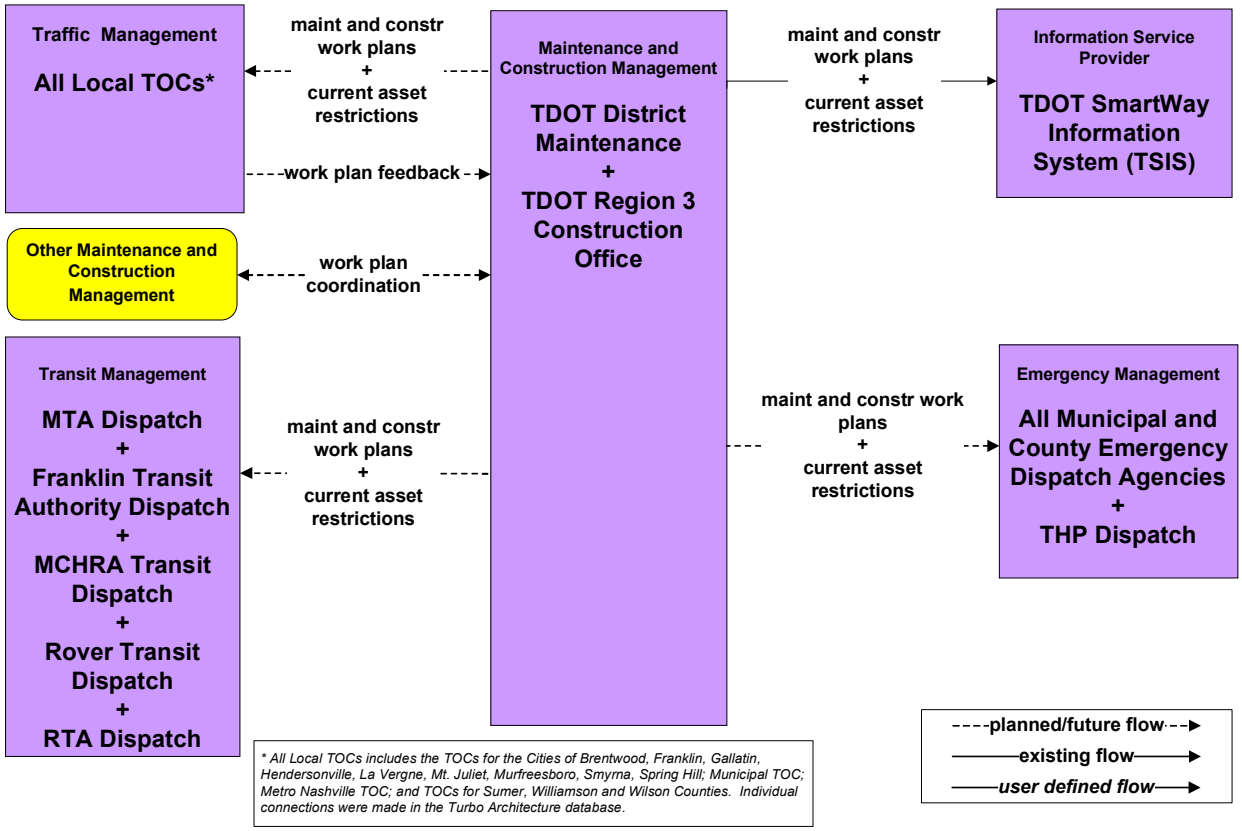
MC08 – Work Zone Management
City of Smyrna



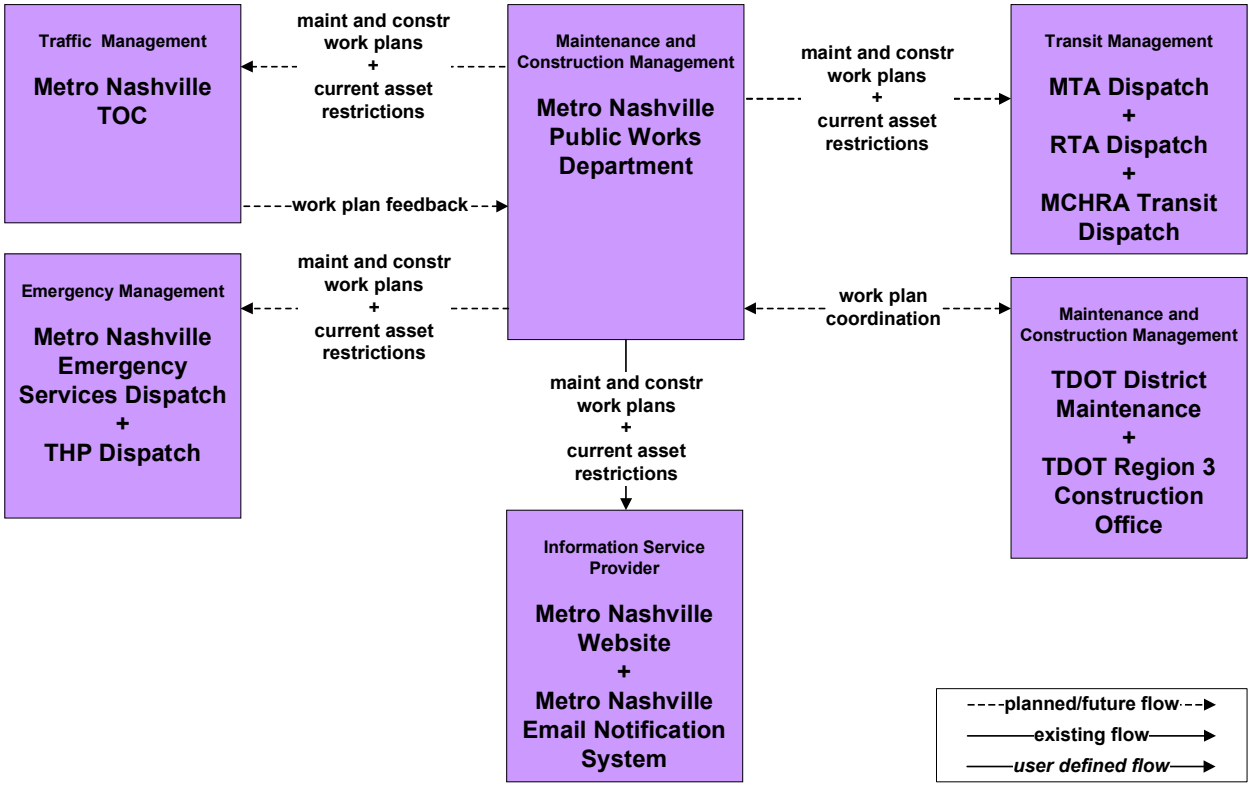
MC08 – Work Zone Management
Municipal/County



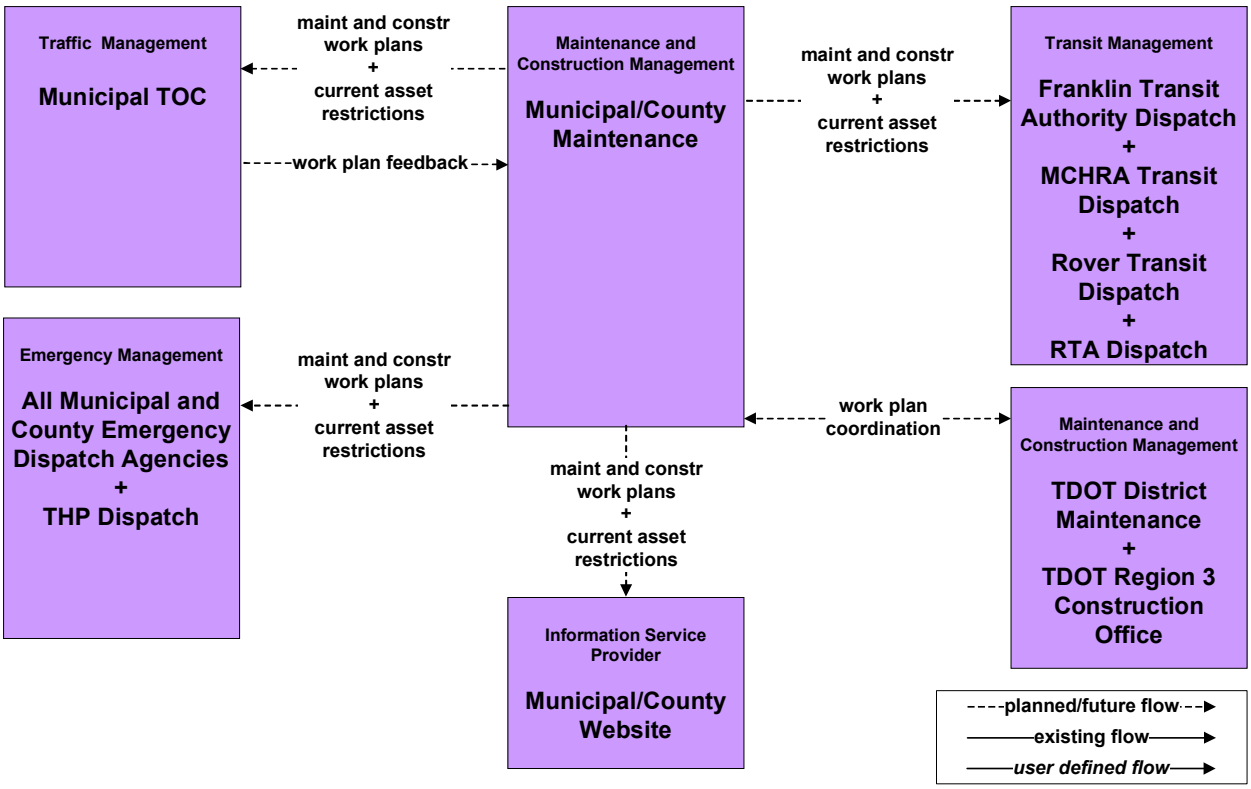
MC10 – Maintenance and Construction Activity Coordination
TDOT



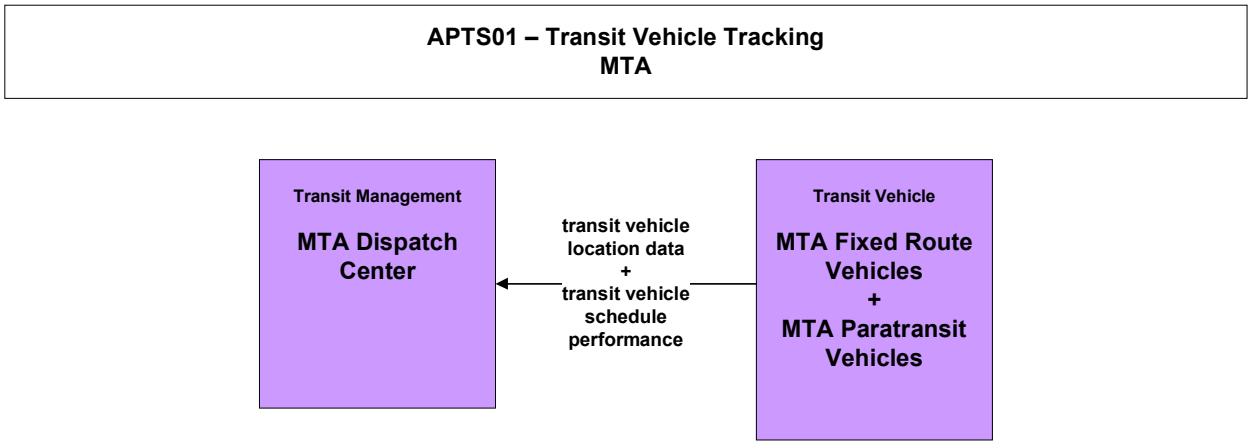
MC10 – Maintenance and Construction Activity Coordination
Metro Nashville

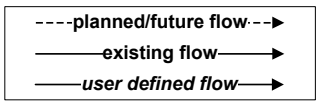


MC10 – Maintenance and Construction Activity Coordination
Municipal/County

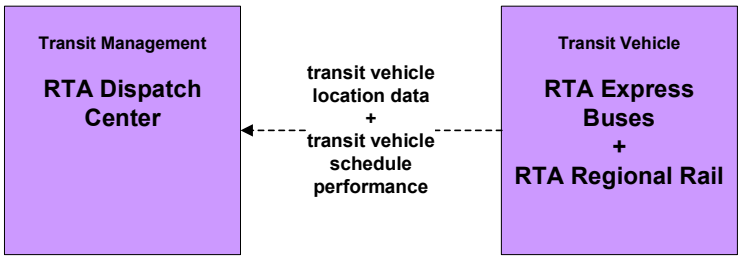


Advanced Public Transportation Systems





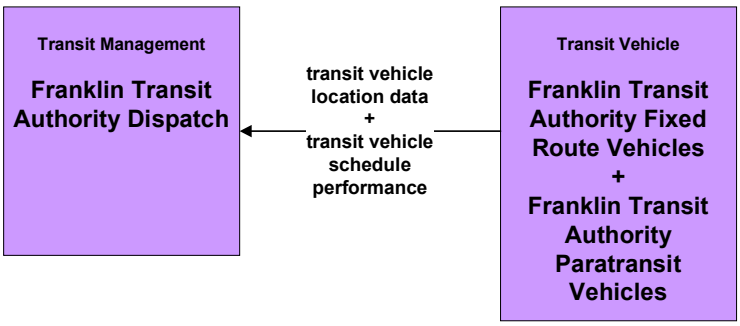
APTS01 – Transit Vehicle Tracking
RTA



Note:
One RTA route is currently operated by MTA. That vehicle has AVL, but RTA does not have or operate any AVL.

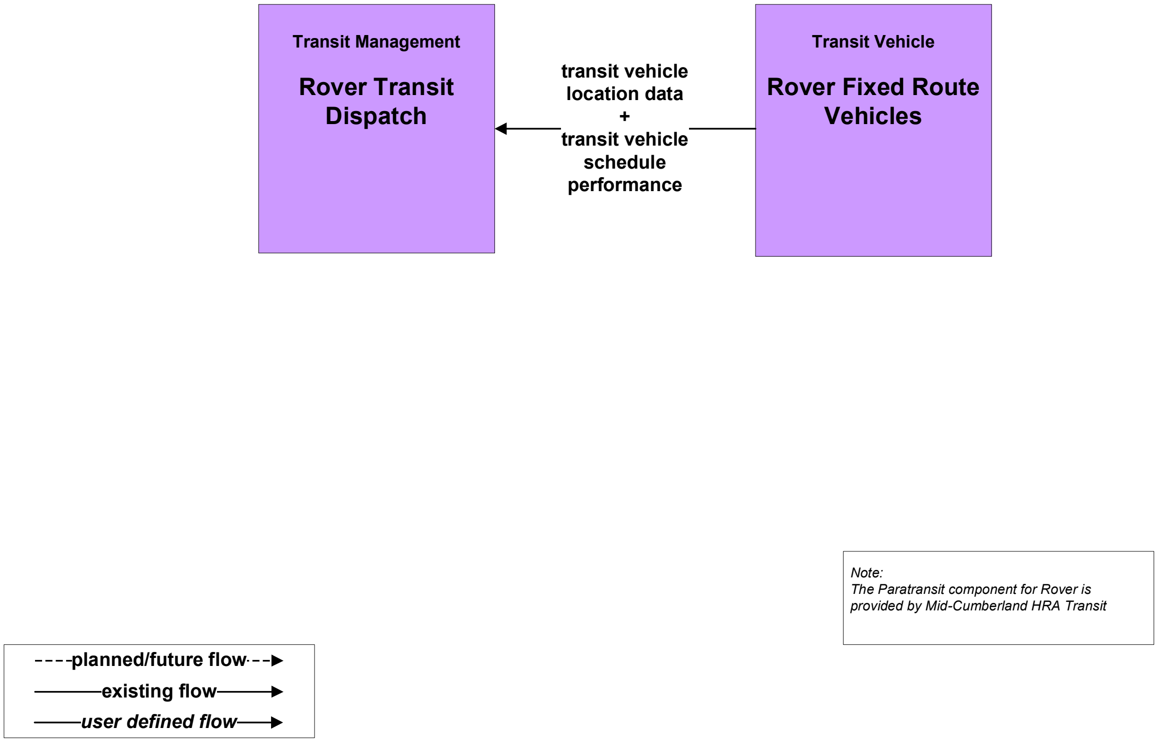
----planned/future flow-->
————existing flow————>
——*user defined flow*——>

APTS01 – Transit Vehicle Tracking
Franklin Transit Authority

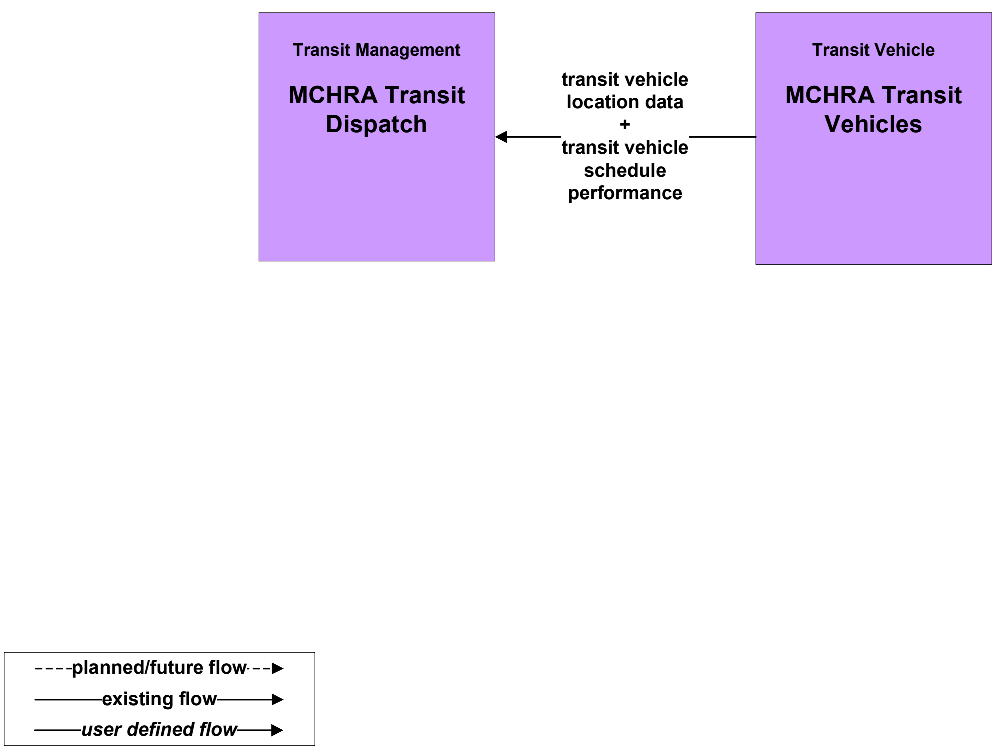


----planned/future flow-->
————existing flow————>
——*user defined flow*——>

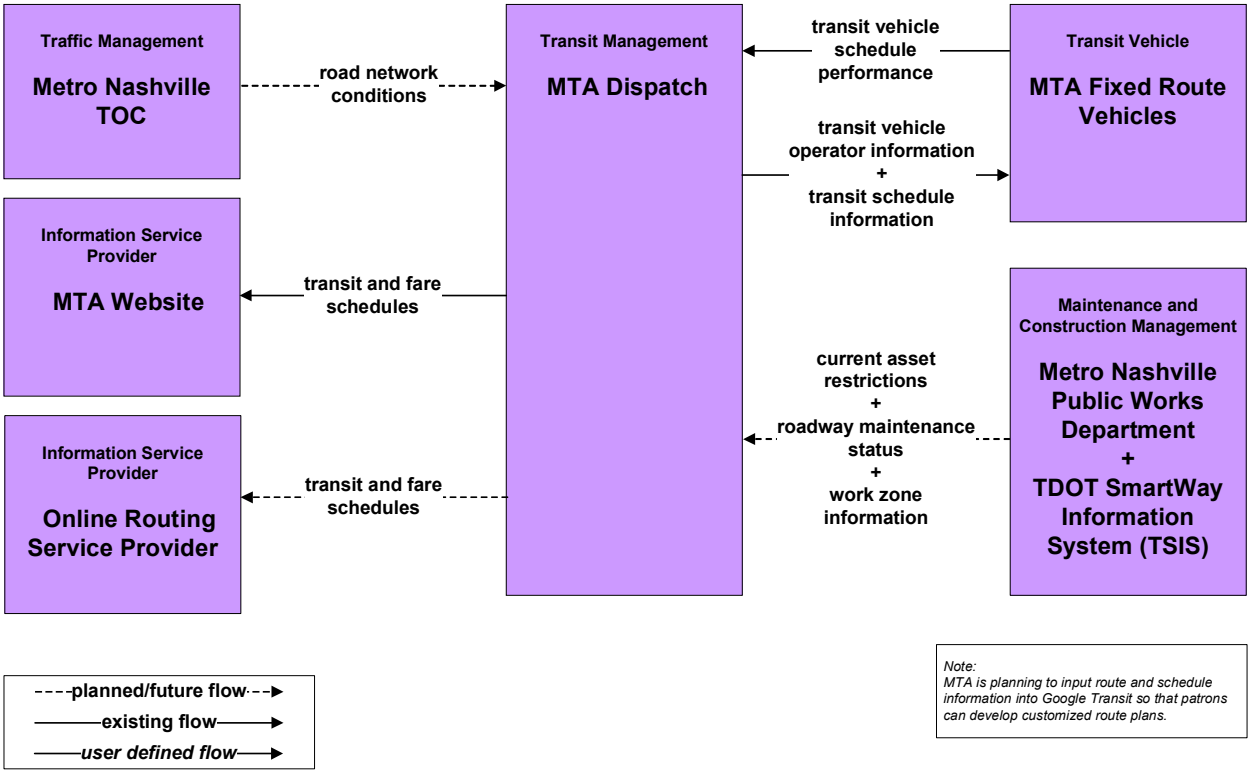
APTS01 – Transit Vehicle Tracking
Rover



APTS01 – Transit Vehicle Tracking
Mid-Cumberland HRA Transit

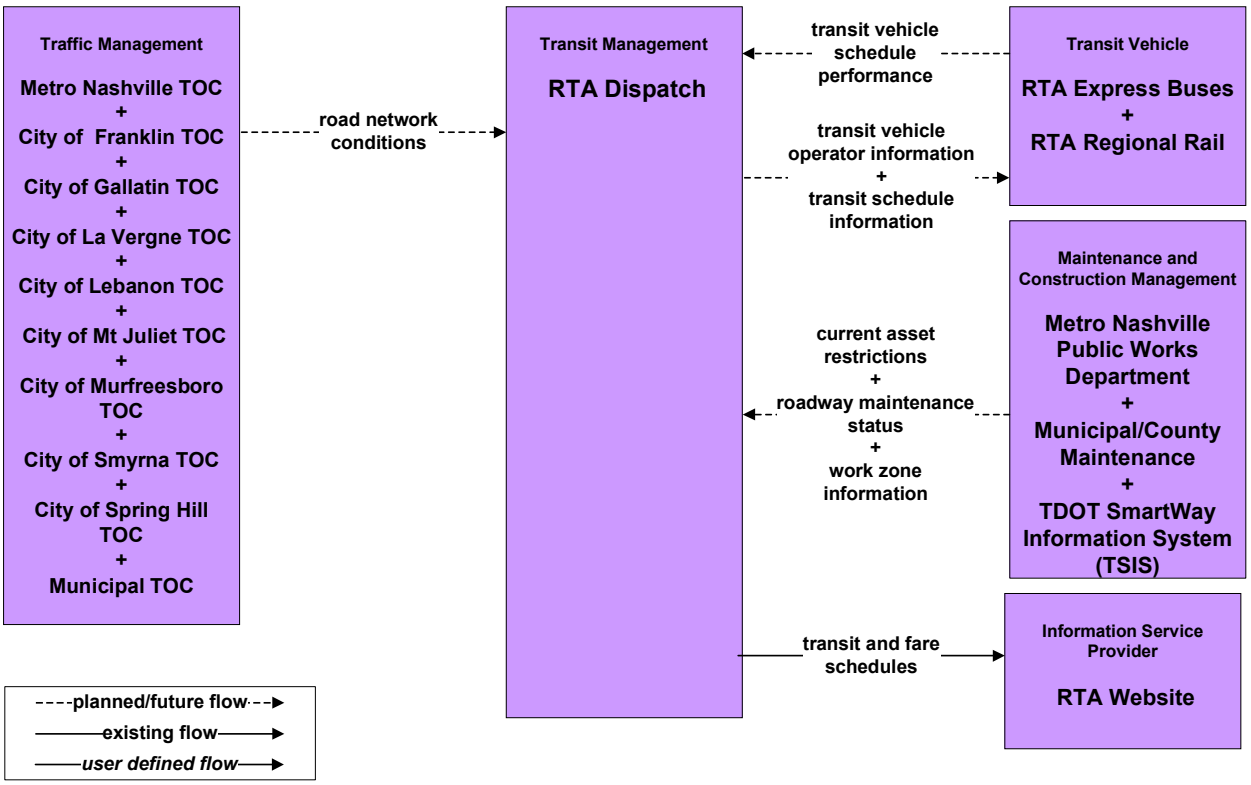


APTS02 – Transit Fixed Route Operations
MTA

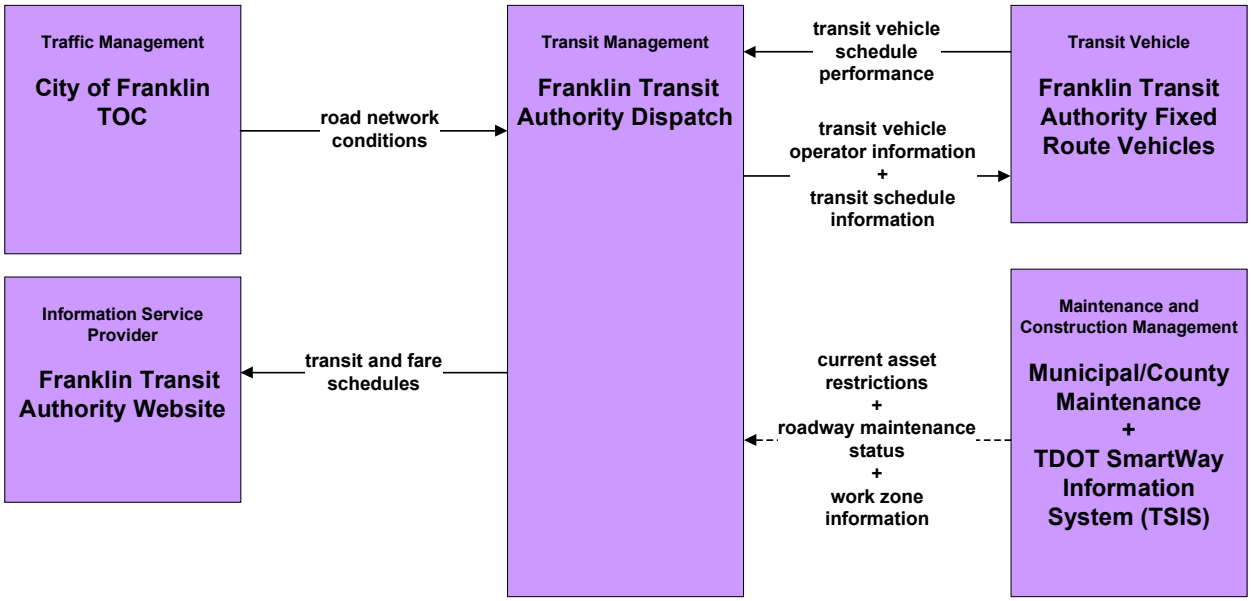


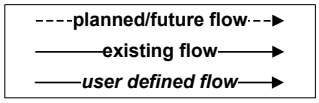
Note:
MTA is planning to input route and schedule information into Google Transit so that patrons can develop customized route plans.

APTS02 – Transit Fixed Route Operations
RTA

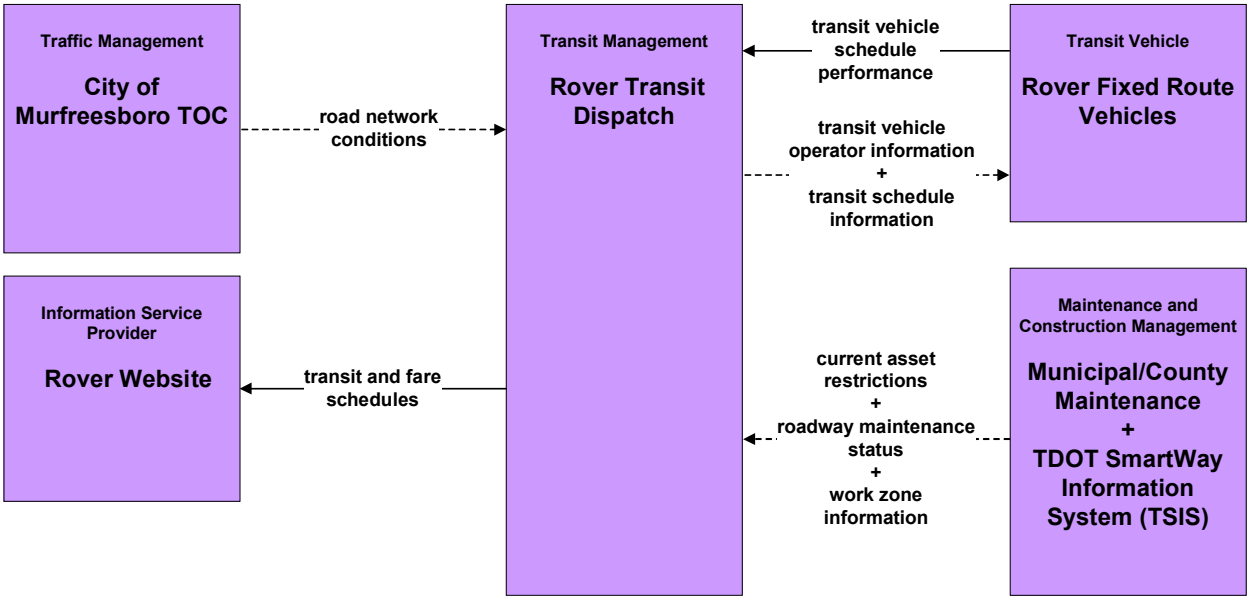


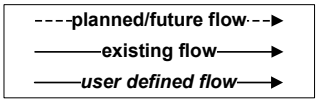
APTS02 – Transit Fixed Route Operations
Franklin Transit Authority



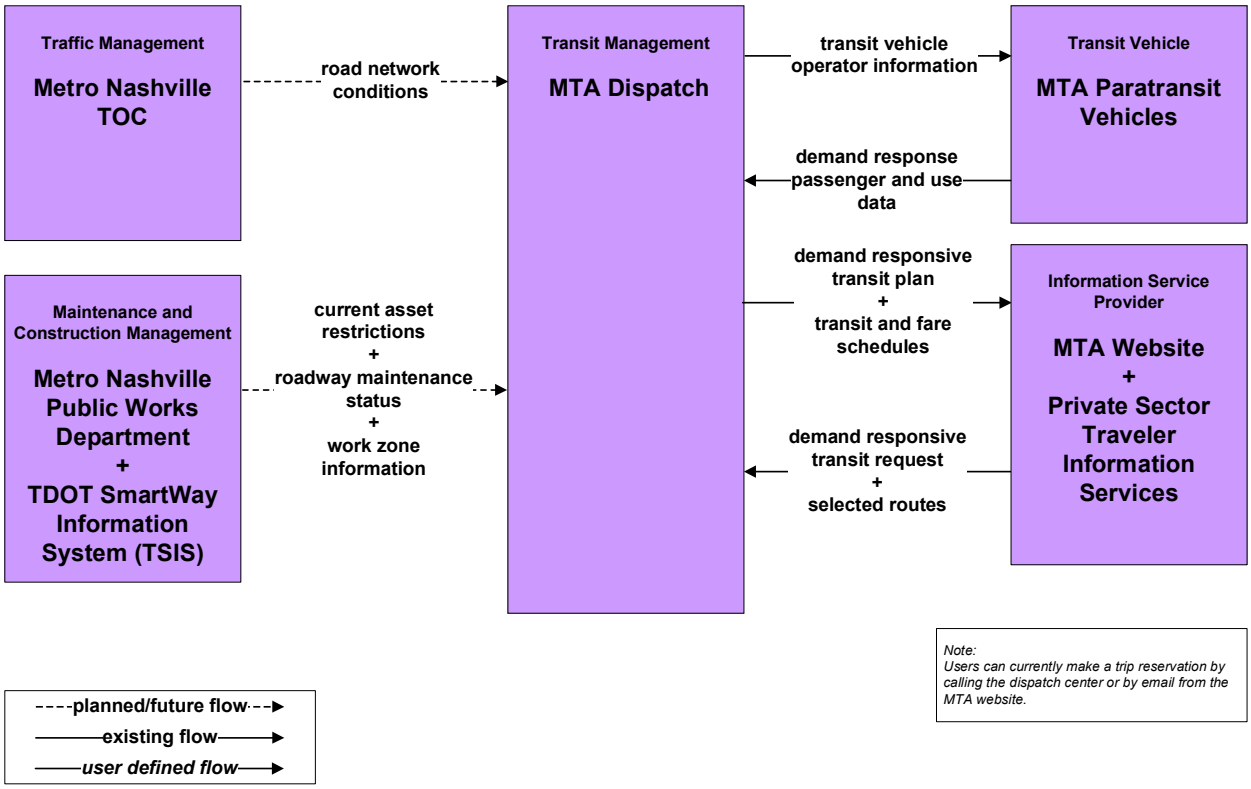


APTS02 – Transit Fixed Route Operations
Rover

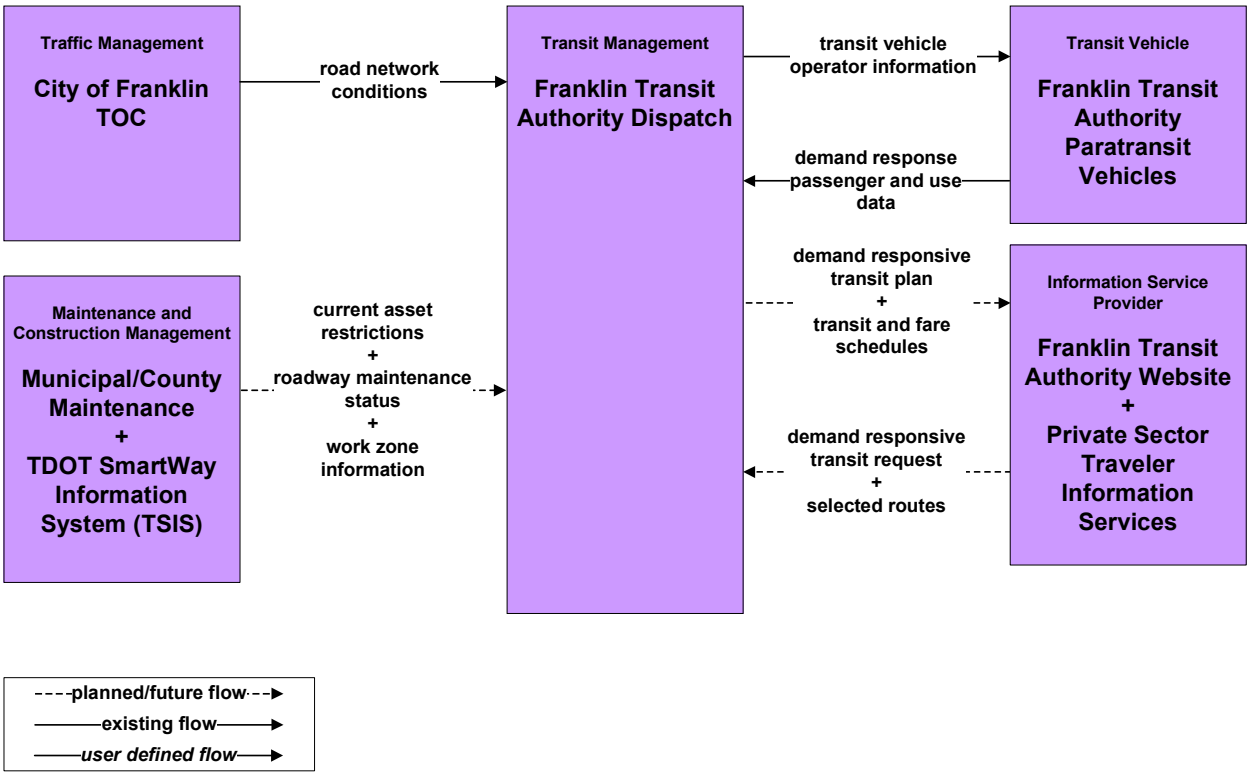




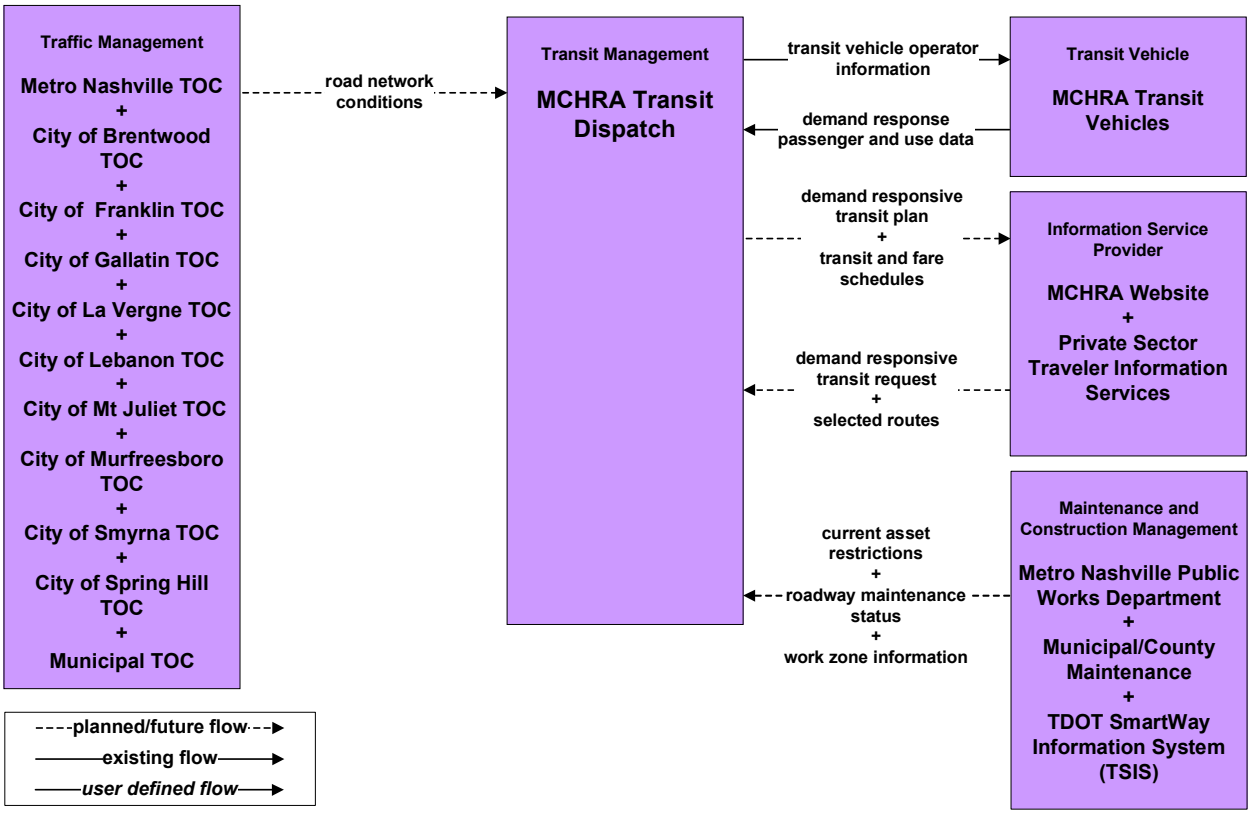
APTS03 – Demand Response Transit Operations
MTA



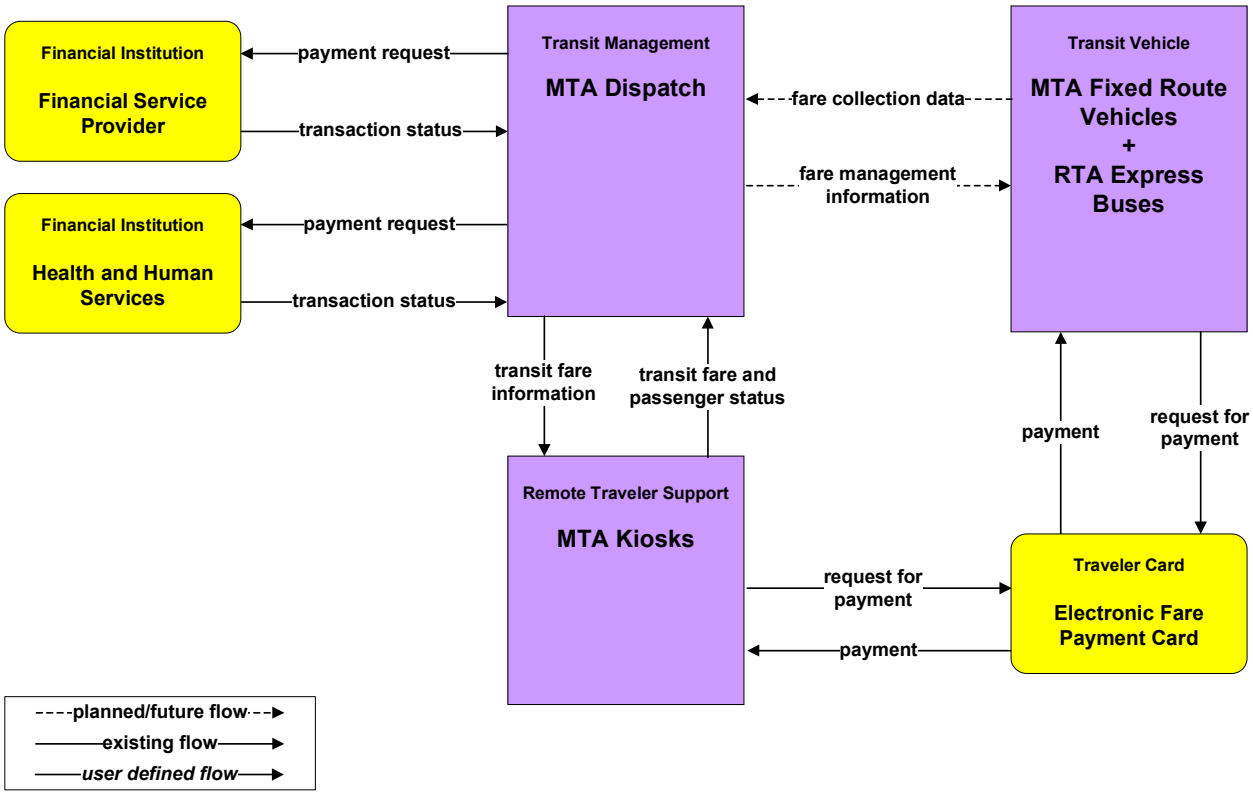
APTS03 – Demand Response Transit Operations
Franklin Transit Authority



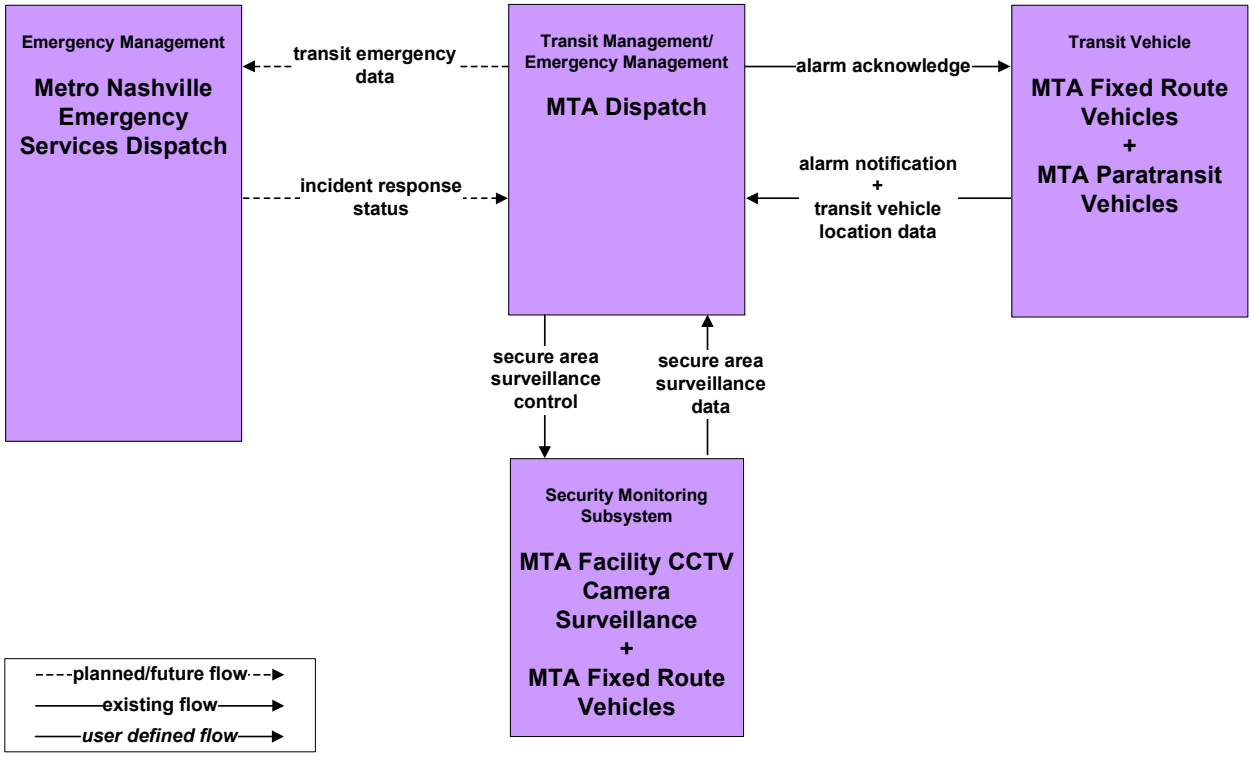
APTS03 – Demand Response Transit Operations
Mid-Cumberland HRA Transit



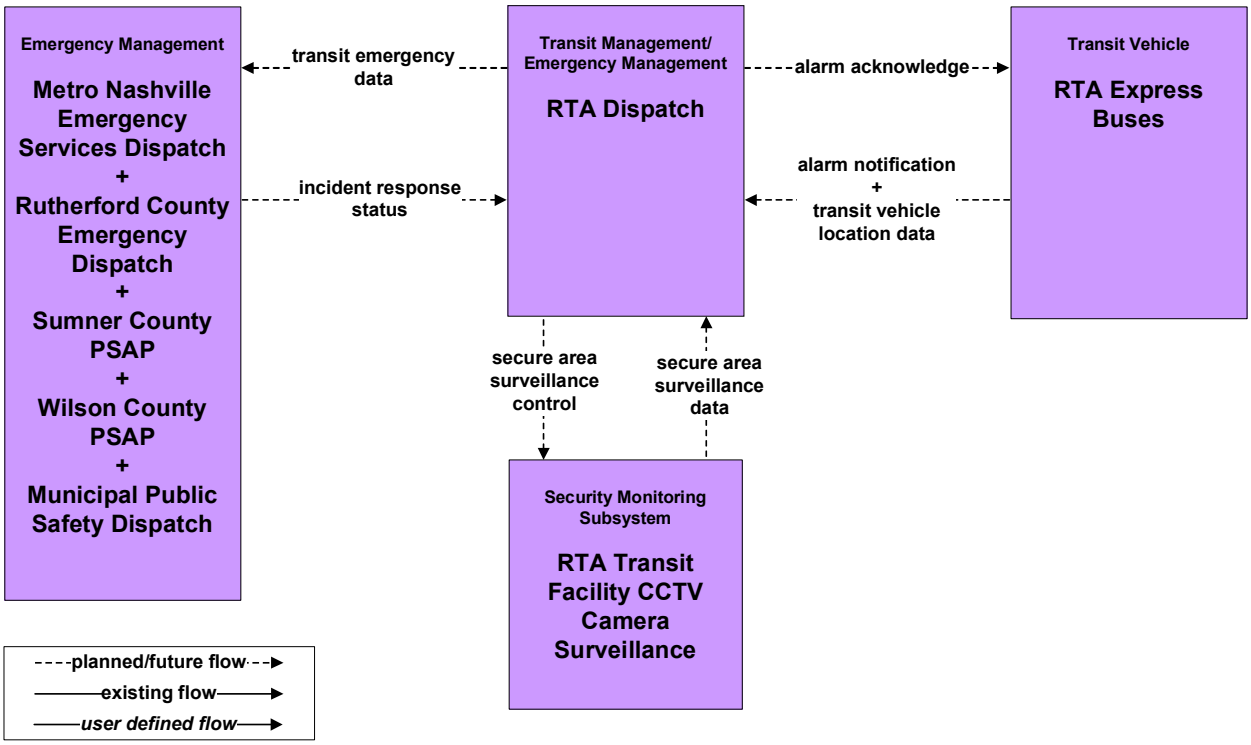
APTS04 – Transit Fare Collection Management
MTA



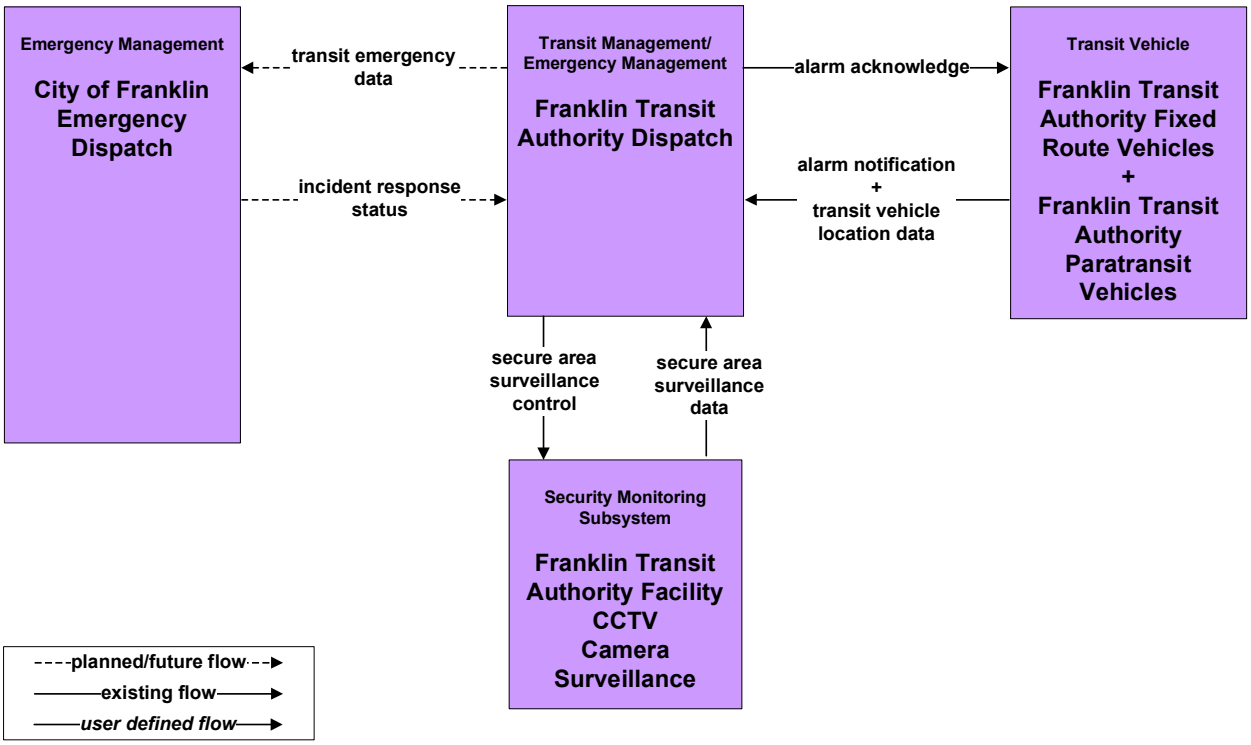
APTS05 – Transit Security
MTA



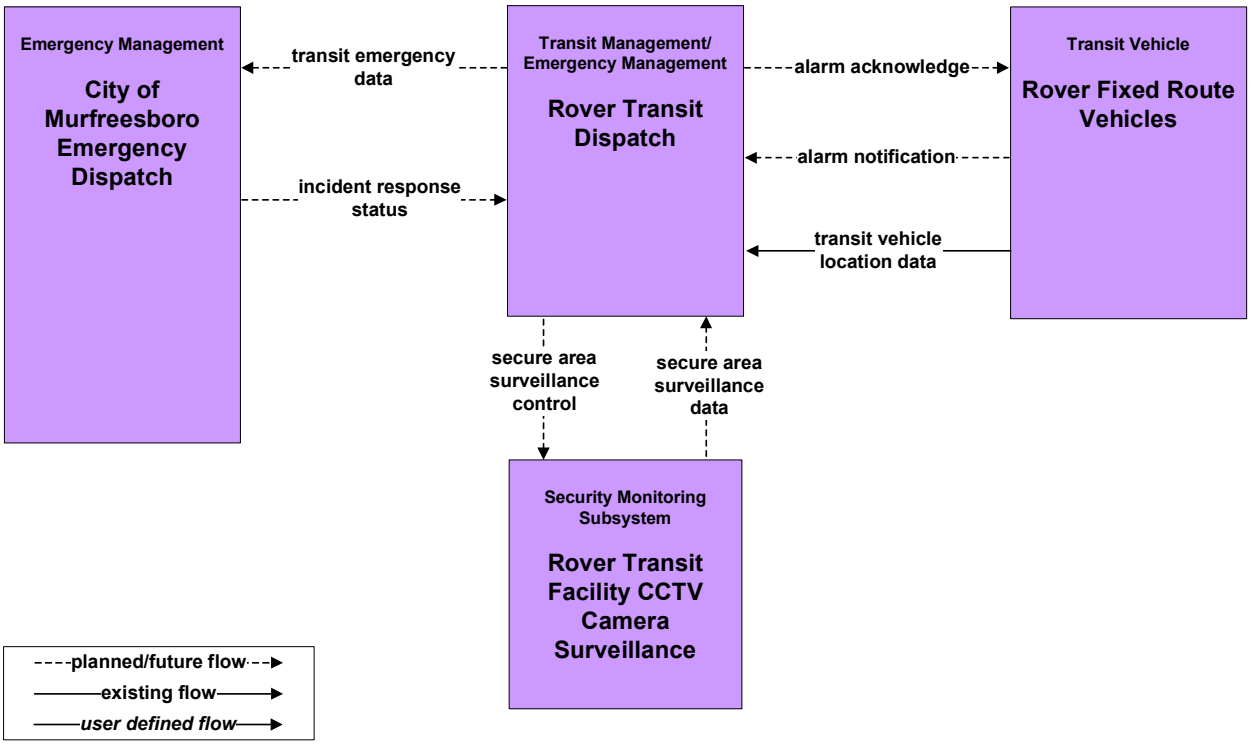
APTS05 – Transit Security
RTA



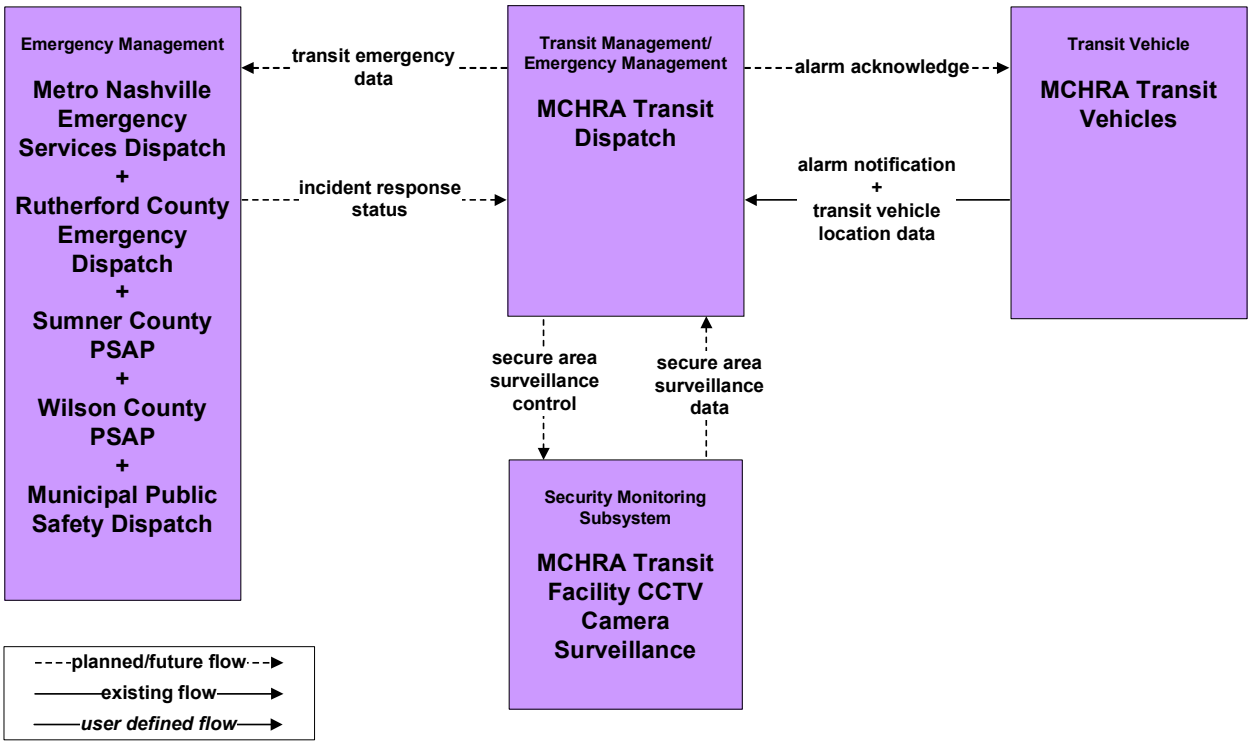
APTS05 – Transit Security
Franklin Transit Authority



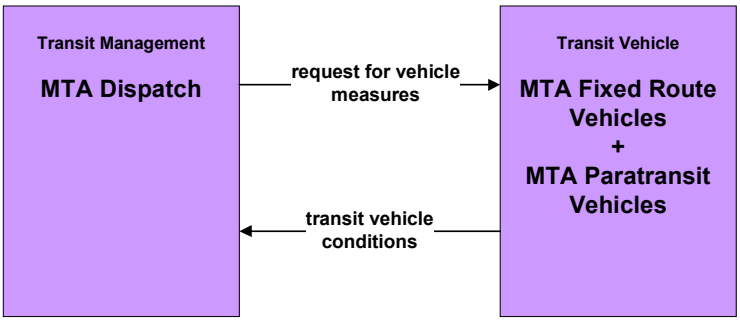
APTS05 – Transit Security
Rover

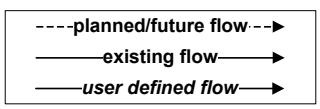


APTS05 – Transit Security
Mid-Cumberland HRA Transit

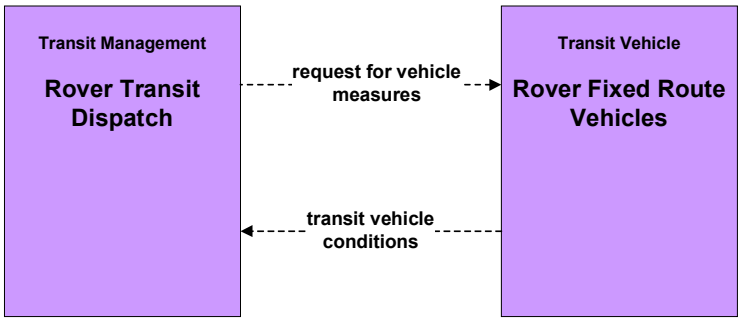


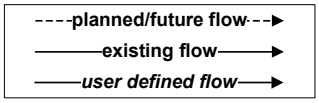
APTS06 – Transit Fleet Management
MTA



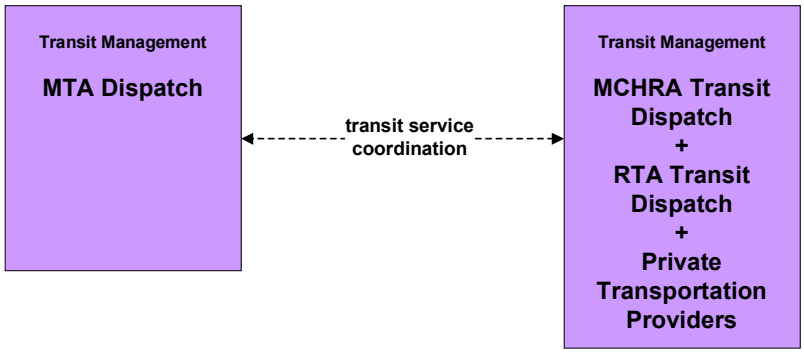


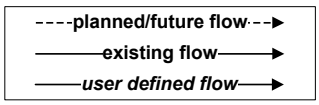
APTS06 – Transit Fleet Management
Rover



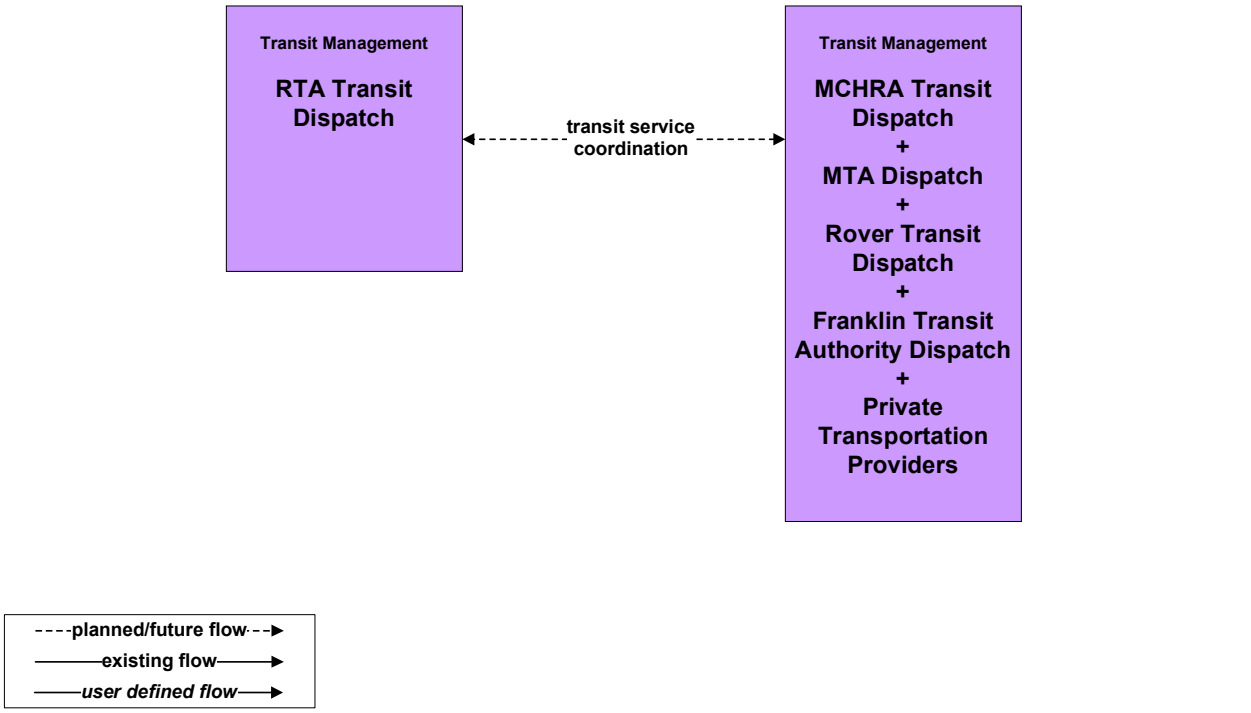


APTS07 – Multi-modal Coordination
MTA

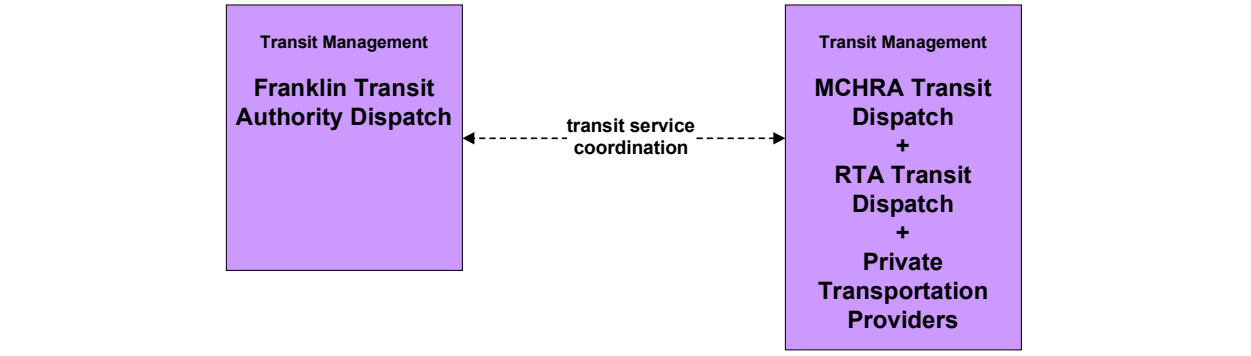


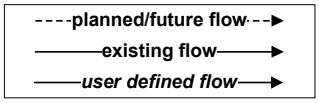


APTS07 – Multi-modal Coordination
RTA

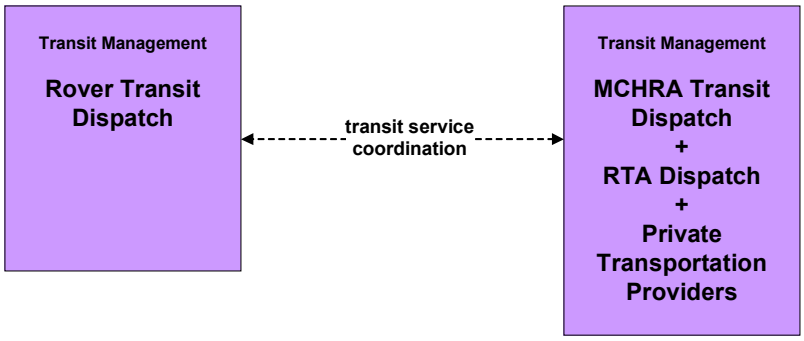


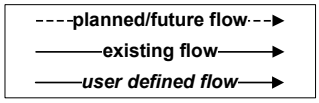
APTS07 – Multi-modal Coordination
Franklin Transit Authority



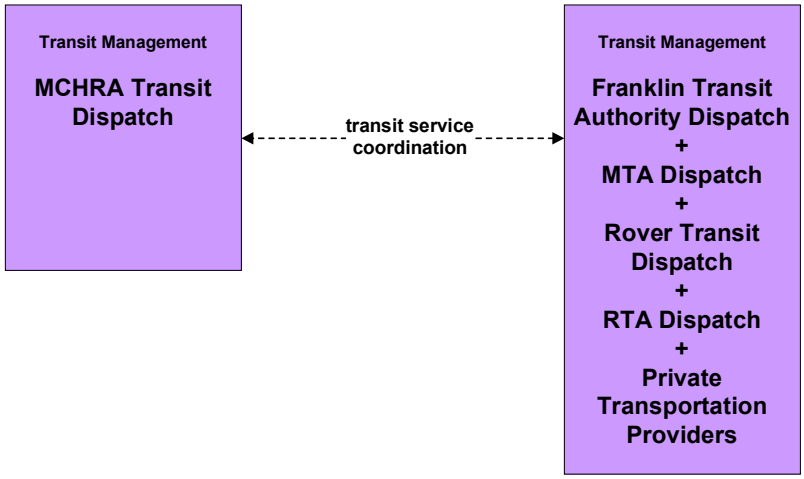


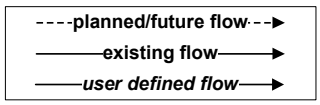
APTS07 – Multi-modal Coordination
Rover



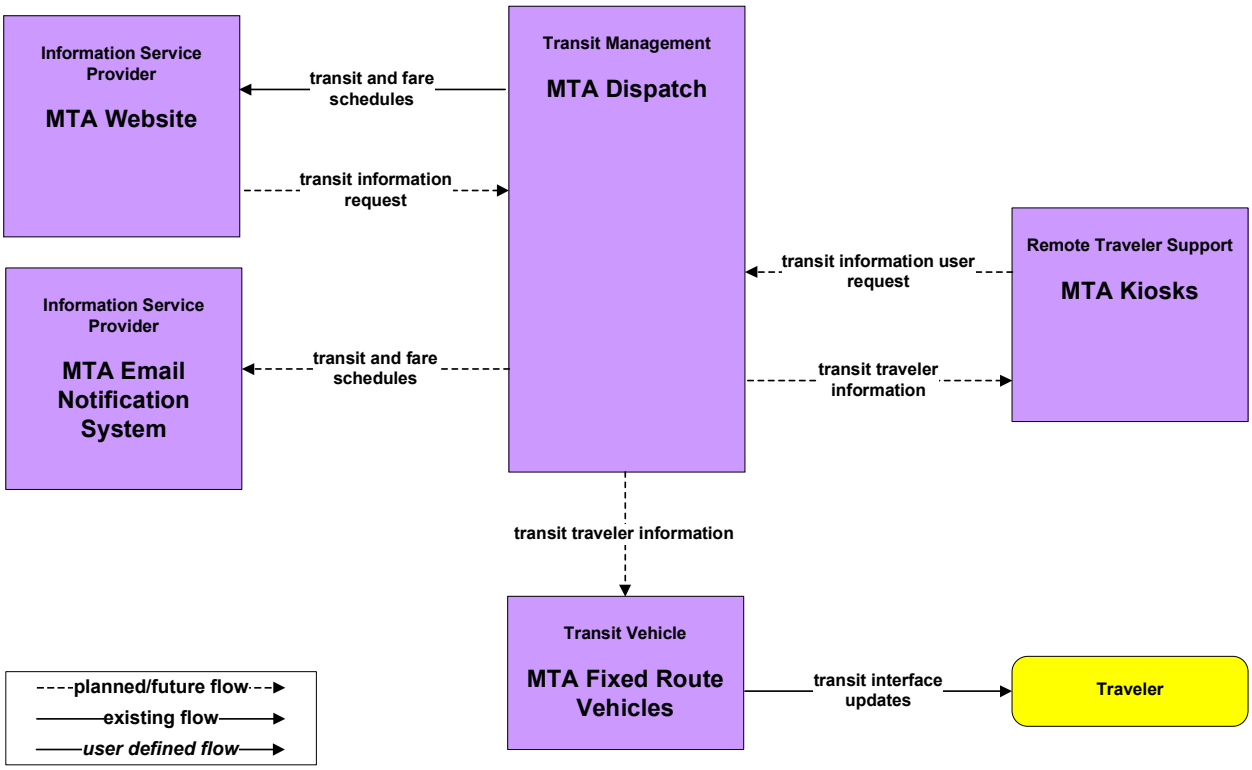


APTS07 – Multi-modal Coordination
Mid-Cumberland HRA Transit

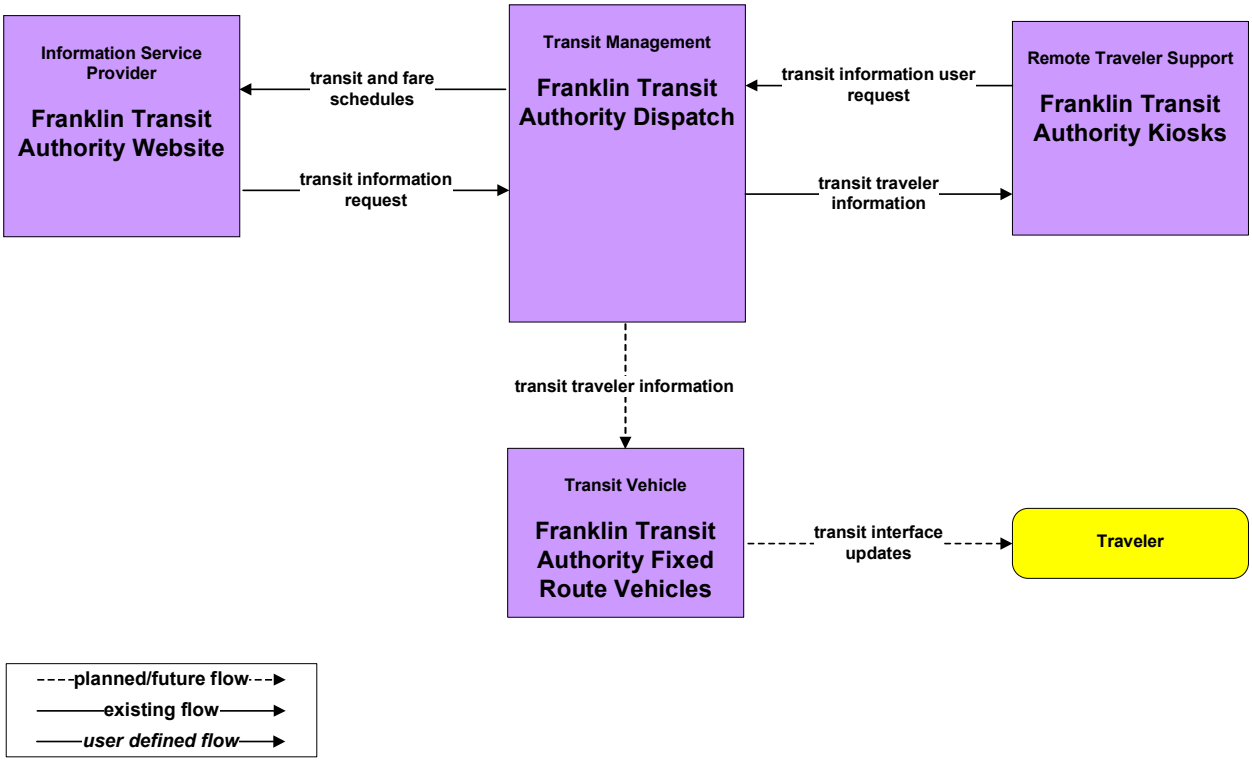




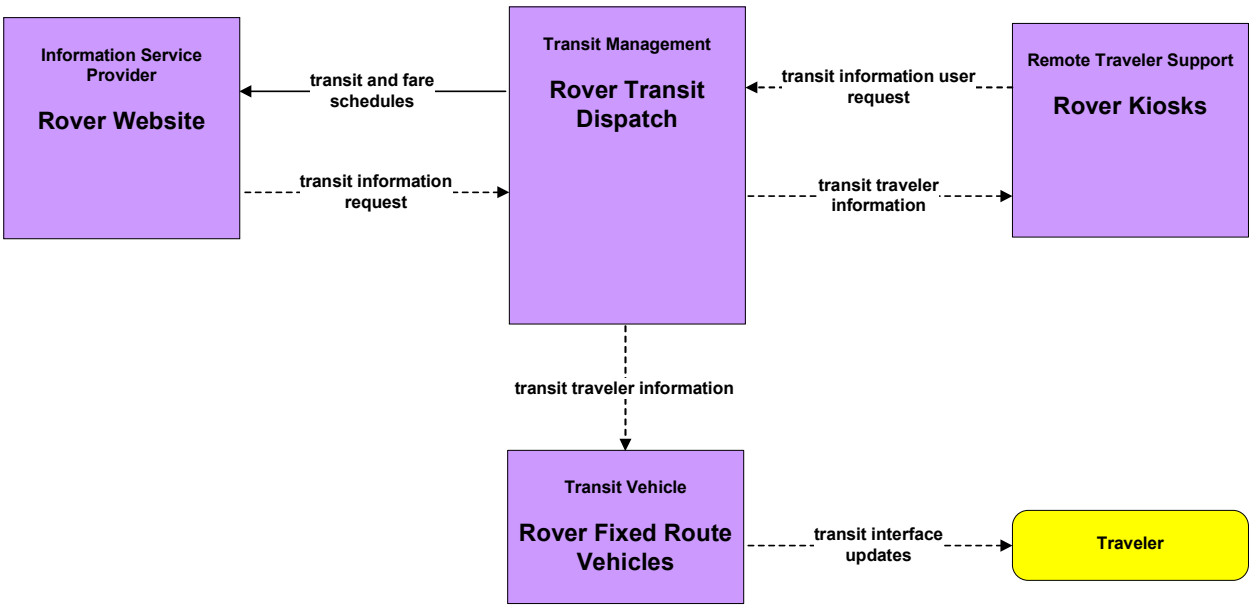
APTS08 – Transit Traveler Information
MTA

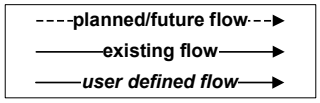


APTS08 – Transit Traveler Information
Franklin Transit Authority

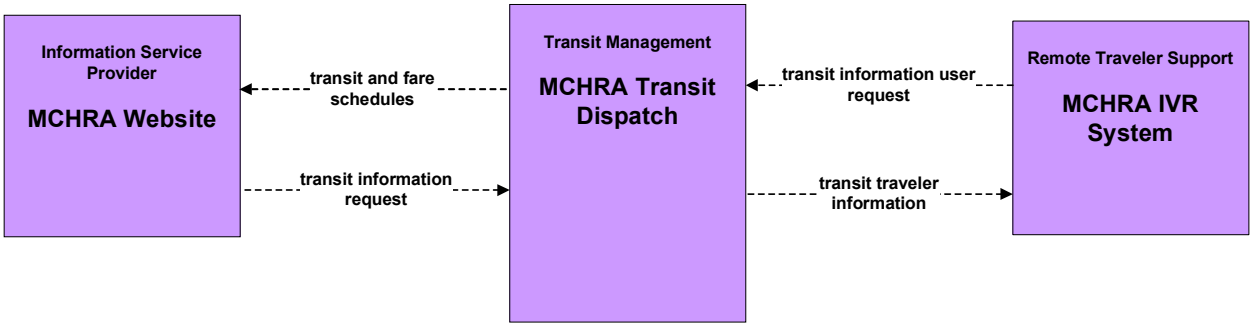


APTS08 – Transit Traveler Information
Rover

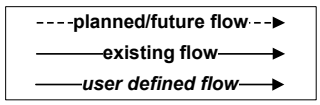




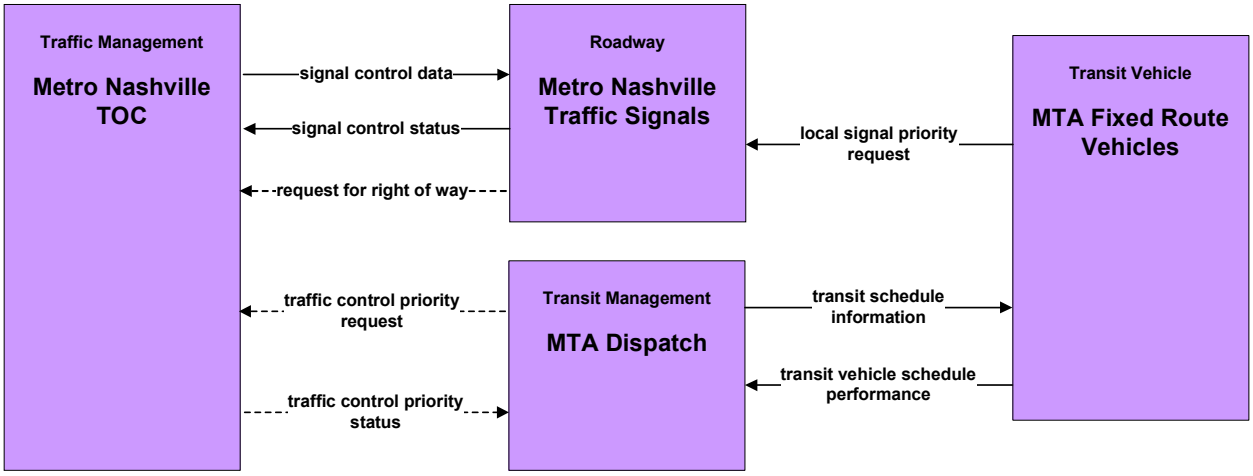
APTS08 – Transit Traveler Information
Mid-Cumberland HRA Transit

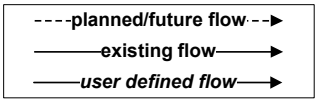


Note:
The automated call out portion of the IVR system is operational, but the interactive features have not yet been implemented.

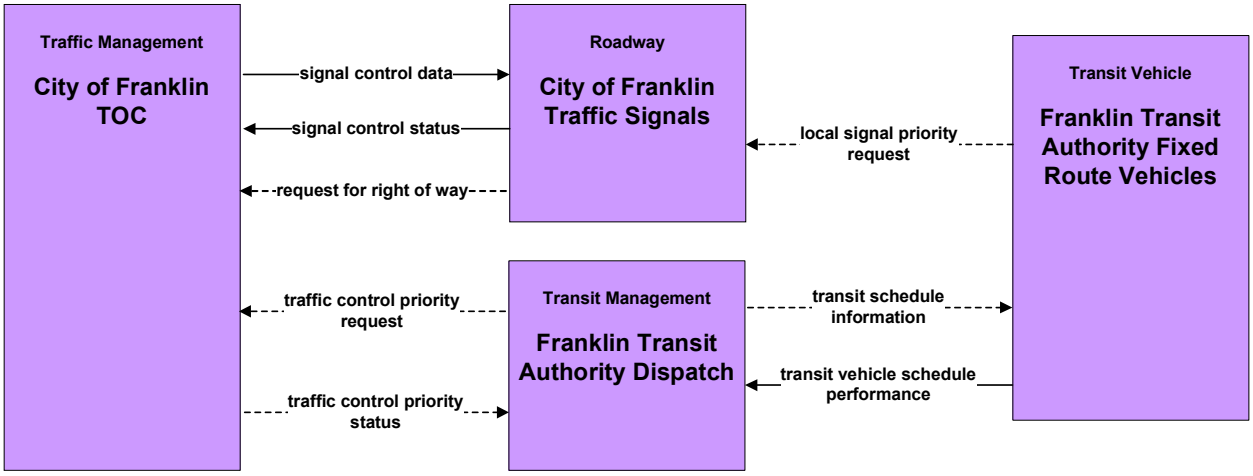


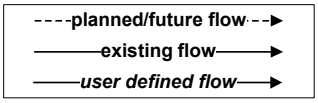
APTS09 – Transit Signal Priority
MTA Bus Rapid Transit



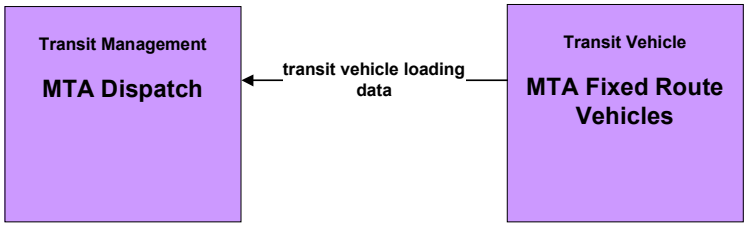


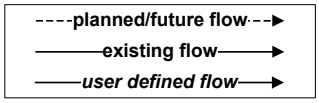
APTS09 – Transit Signal Priority
Franklin Transit Authority



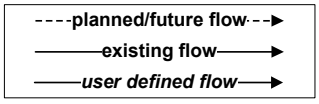


APTS10 – Transit Passenger Counting
MTA

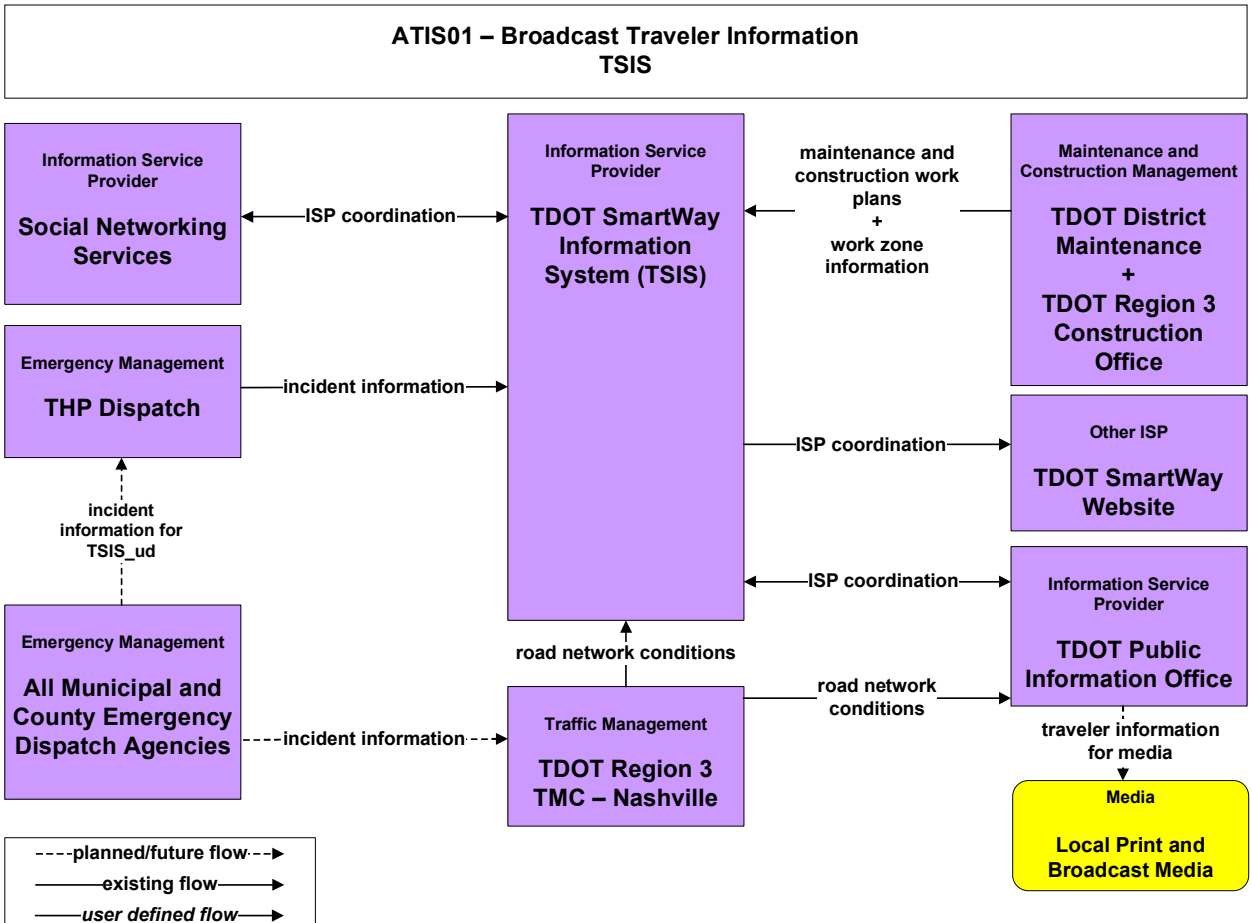




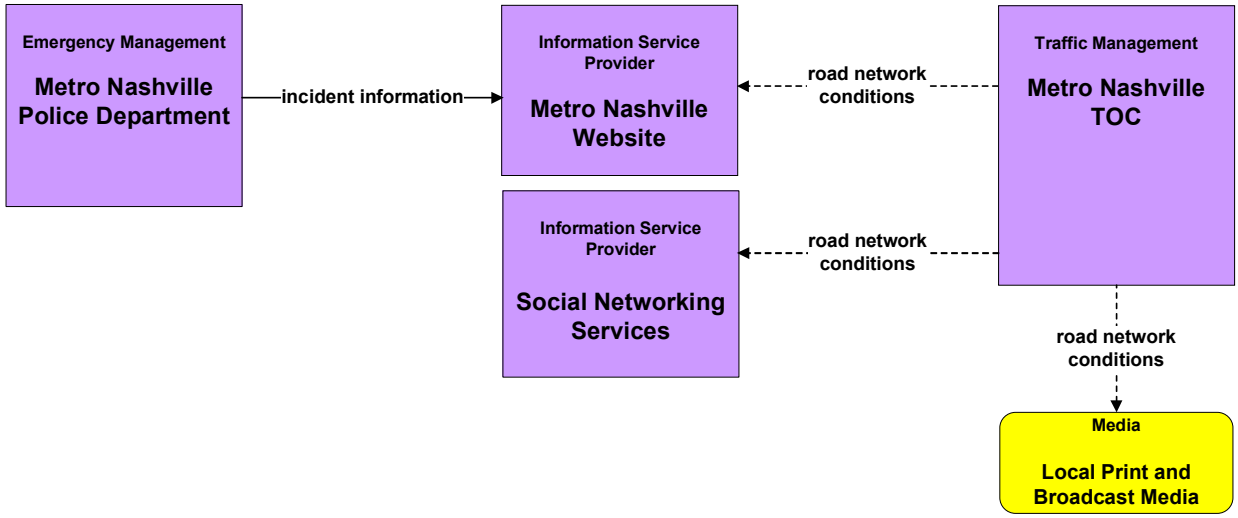
APTS10 – Transit Passenger Counting
Franklin Transit Authority

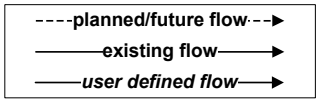


Advanced Traveler Information System

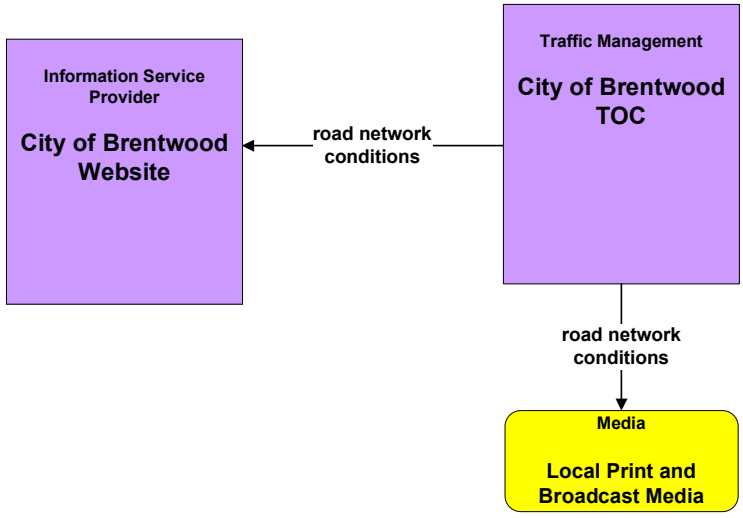


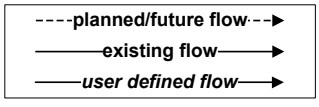
ATIS01 – Broadcast Traveler Information
Metro Nashville



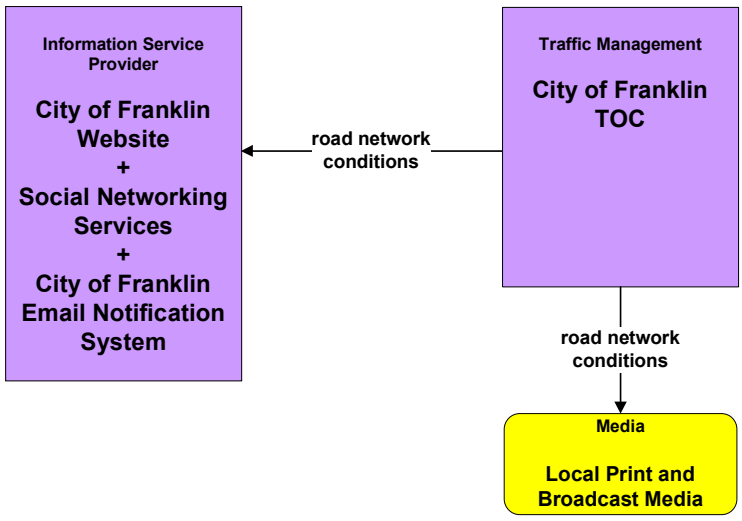


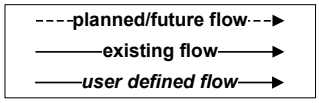
ATIS01 – Broadcast Traveler Information
City of Brentwood



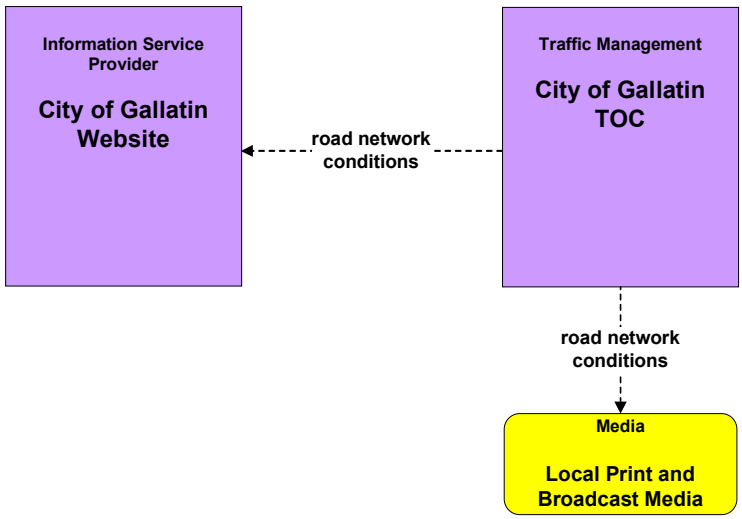


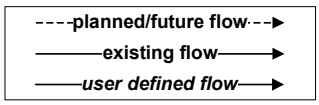
ATIS01 – Broadcast Traveler Information
City of Franklin



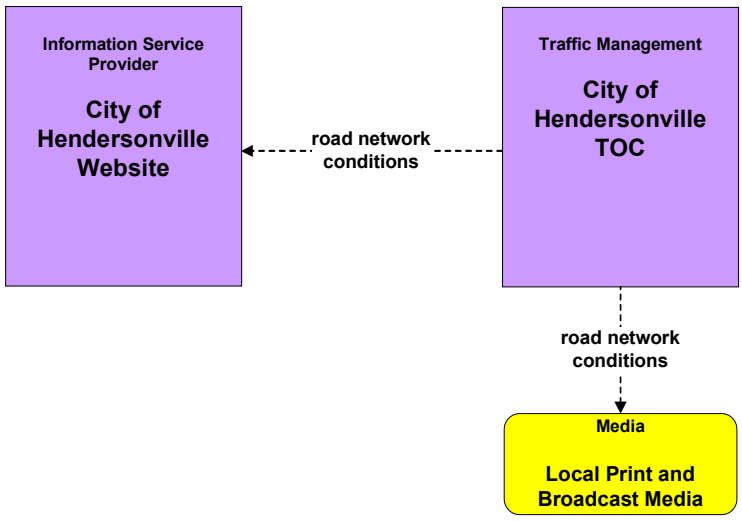


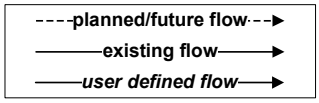
ATIS01 – Broadcast Traveler Information
City of Gallatin



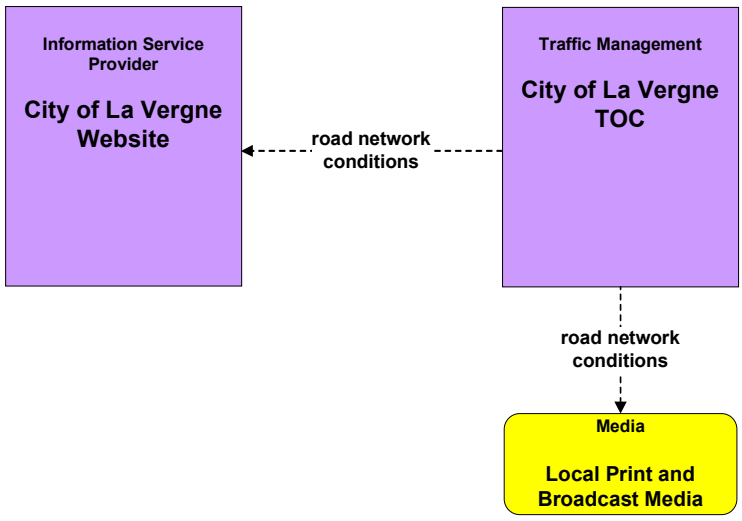


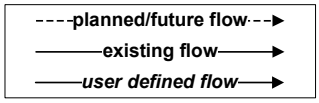
ATIS01 – Broadcast Traveler Information
City of Hendersonville



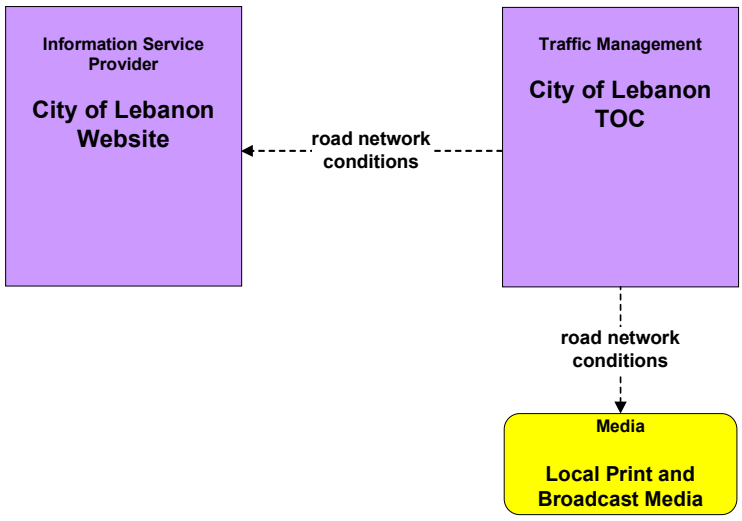


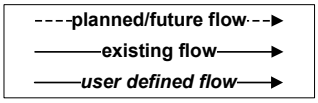
ATIS01 – Broadcast Traveler Information
City of La Vergne



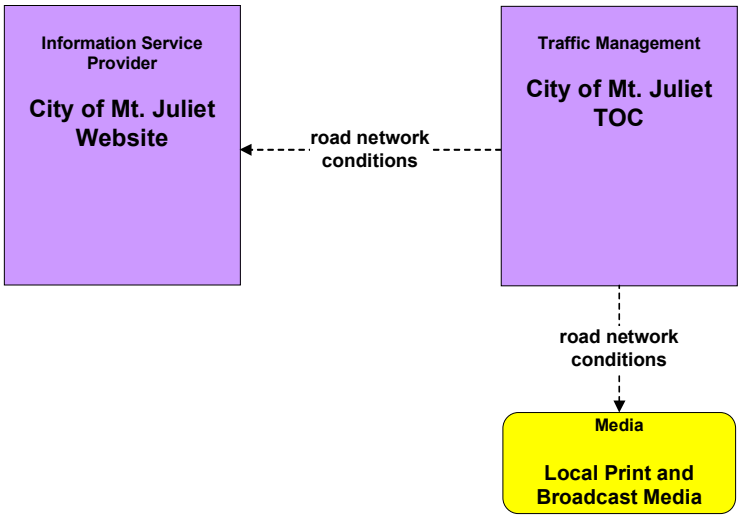


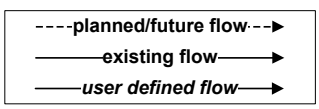
ATIS01 – Broadcast Traveler Information
City of Lebanon



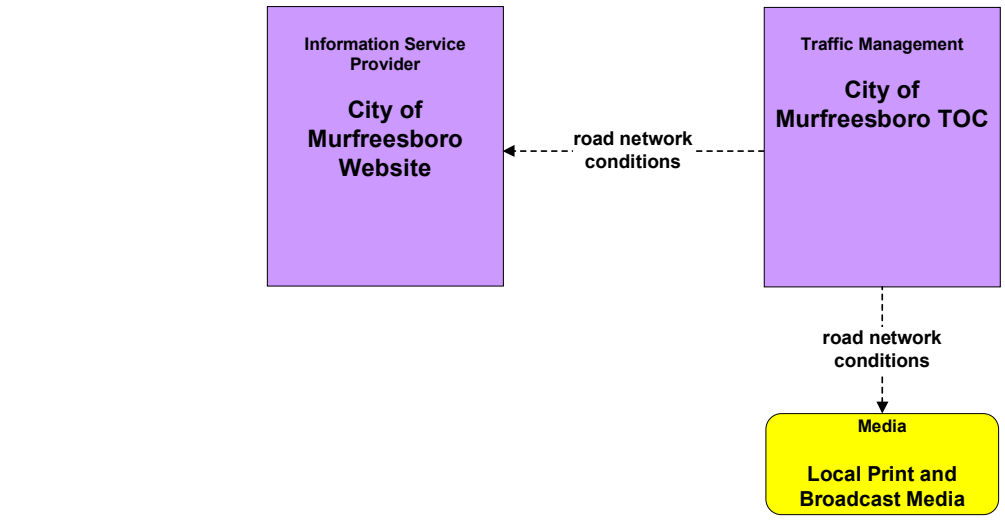


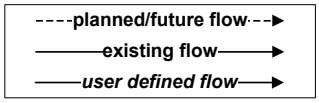
ATIS01 – Broadcast Traveler Information
City of Mt. Juliet



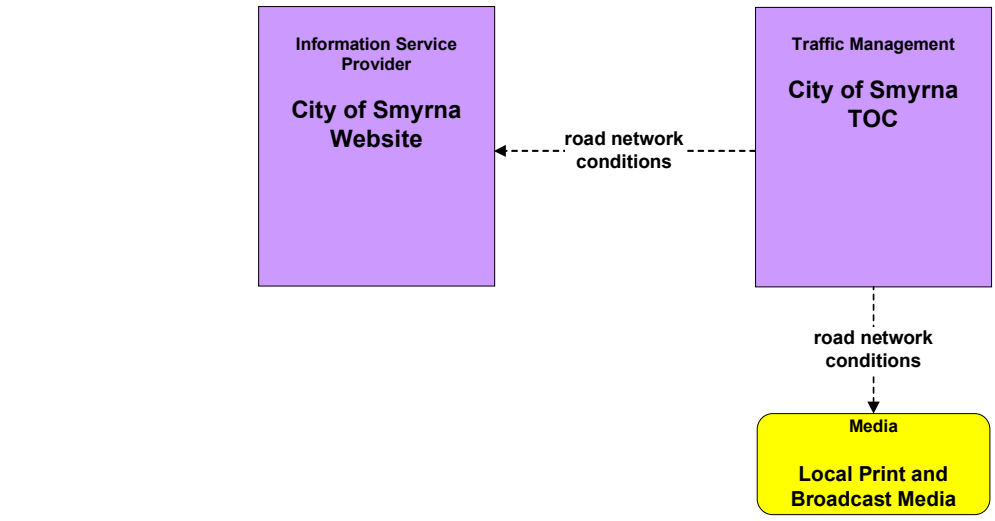


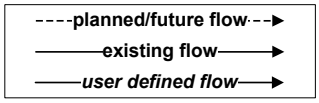
ATIS01 – Broadcast Traveler Information
City of Murfreesboro



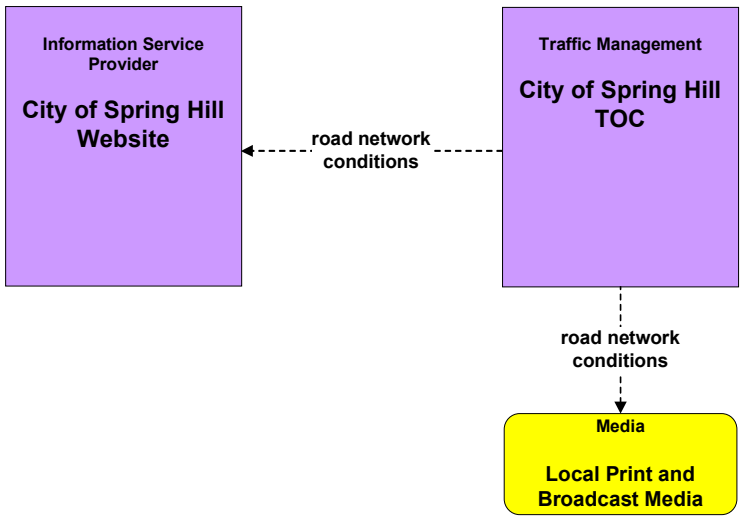


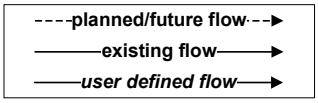
ATIS01 – Broadcast Traveler Information
City of Smyrna



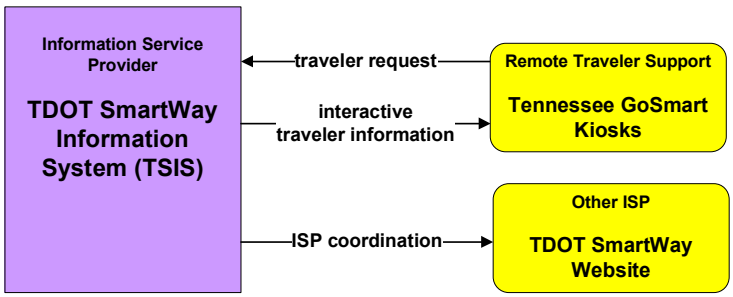


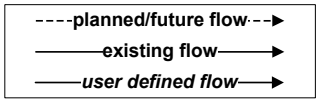
ATIS01 – Broadcast Traveler Information
City of Spring Hill



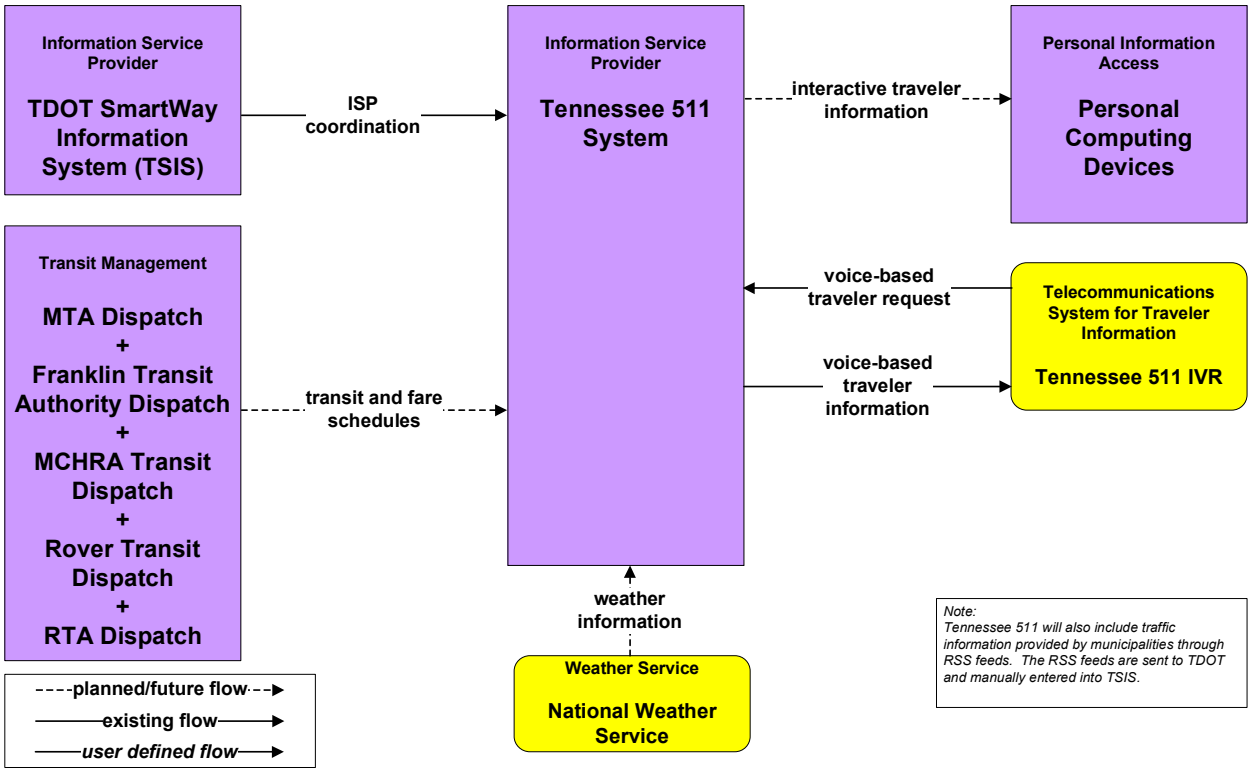


ATIS02 – Interactive Traveler Information
Tennessee GoSmart Kiosks and TDOT SmartWay Website

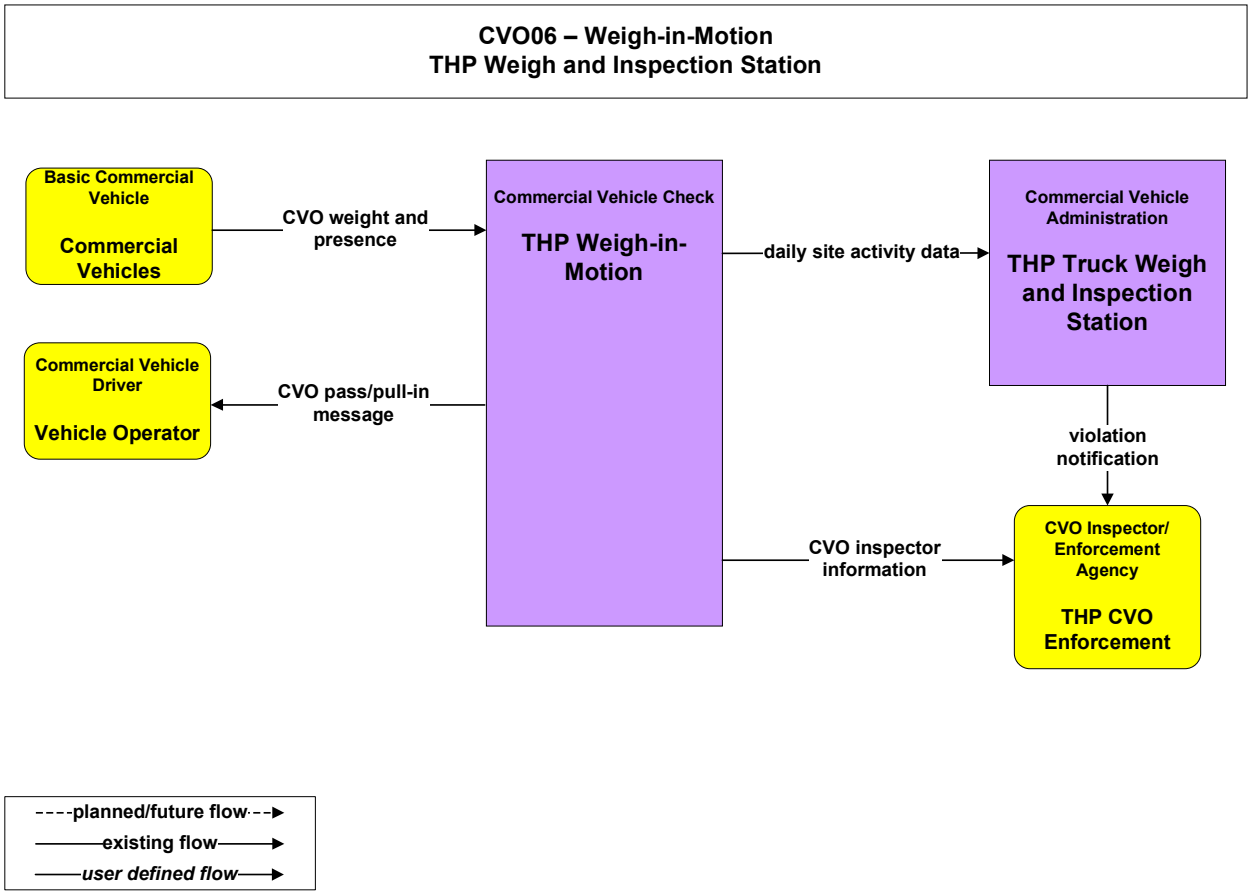




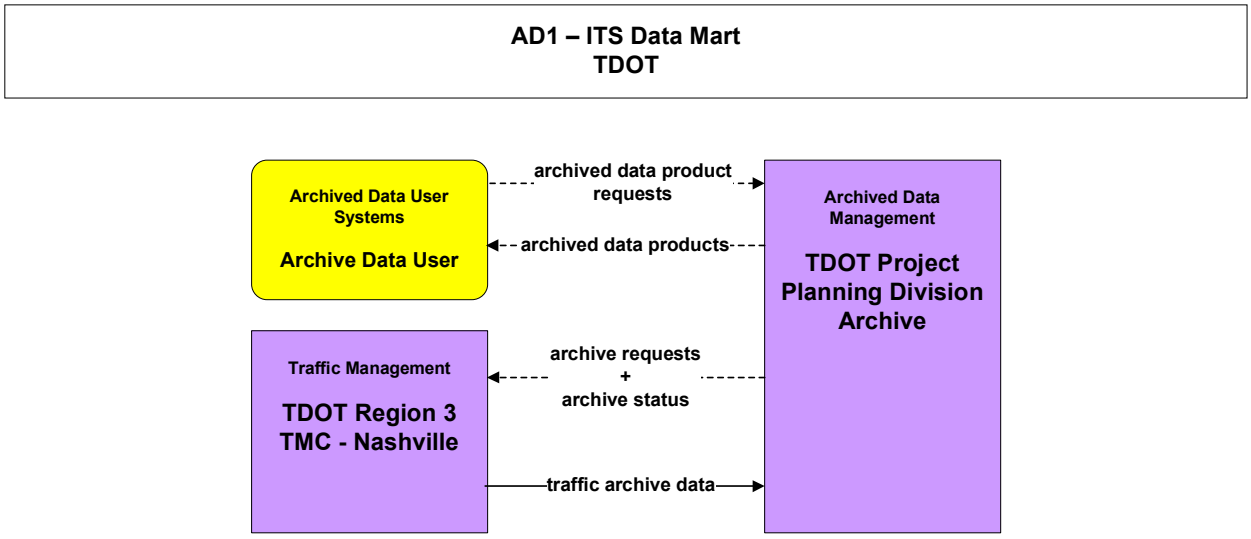
ATIS02 – Interactive Traveler Information
Tennessee 511

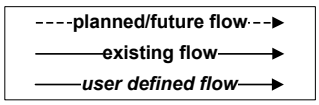


Commercial Vehicle Operations

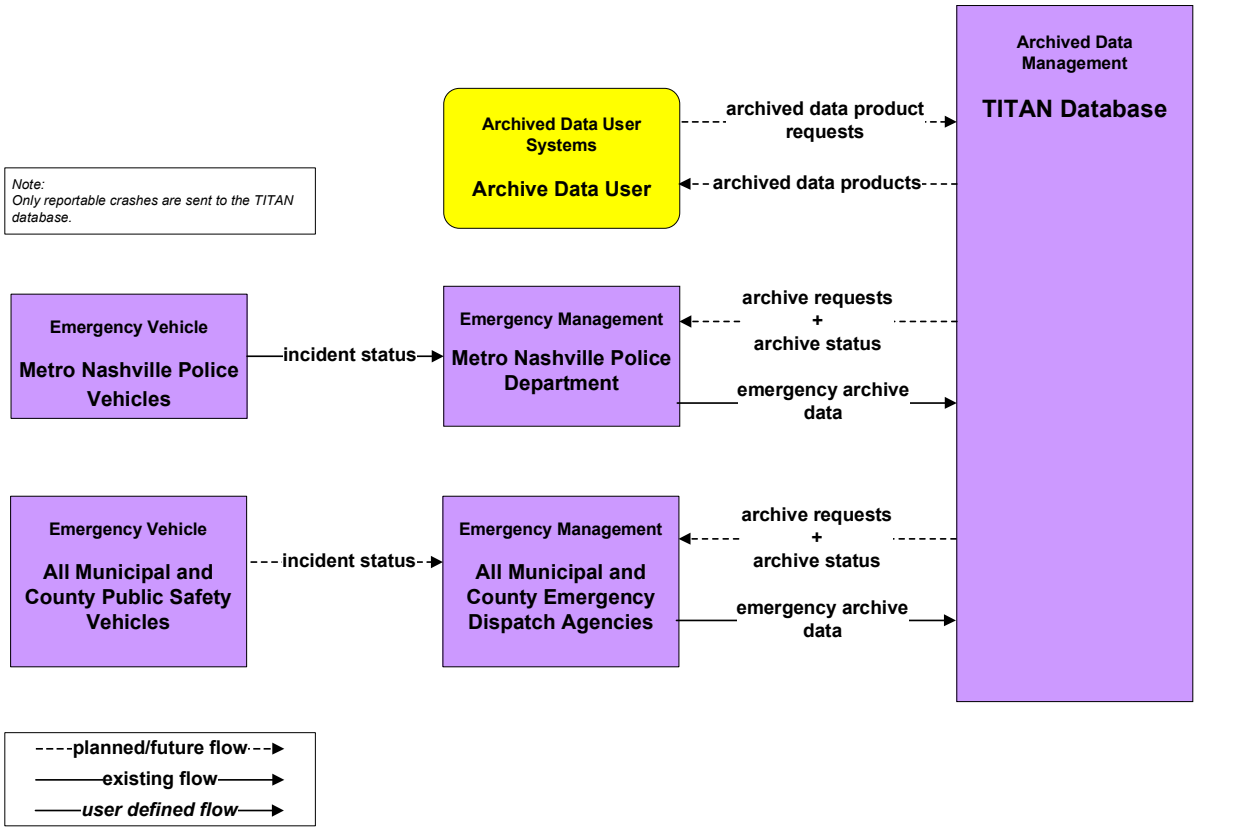


Archived Data

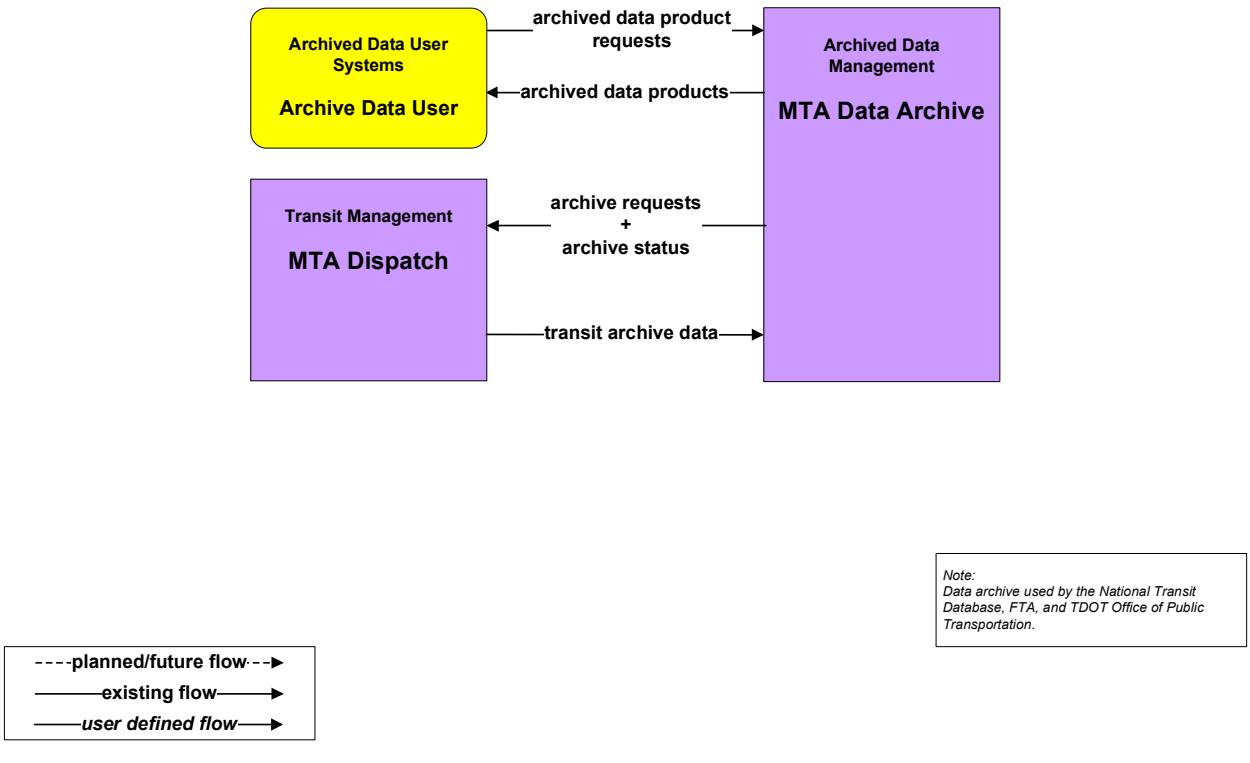




AD1 – ITS Data Mart
TITAN



AD1 – ITS Data Mart
MTA



AD1 – ITS Data Mart
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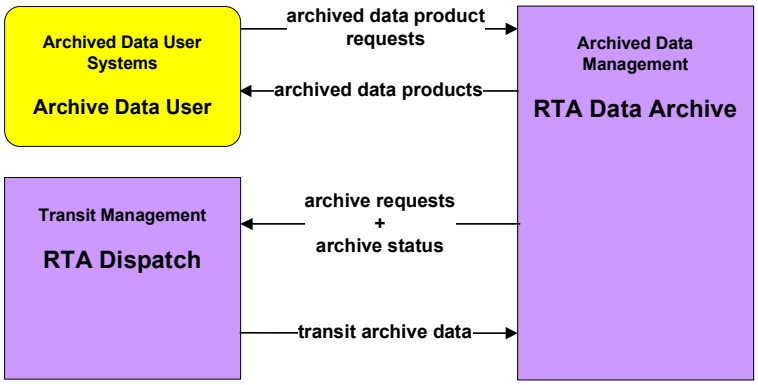
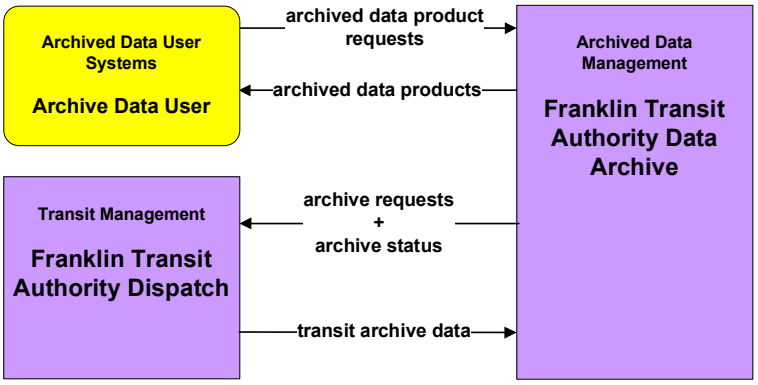


Note:
Data archive used by the National Transit Database, FTA, and TDOT Office of Public Transportation.

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

AD1 – ITS Data Mart
Franklin Transit Authority

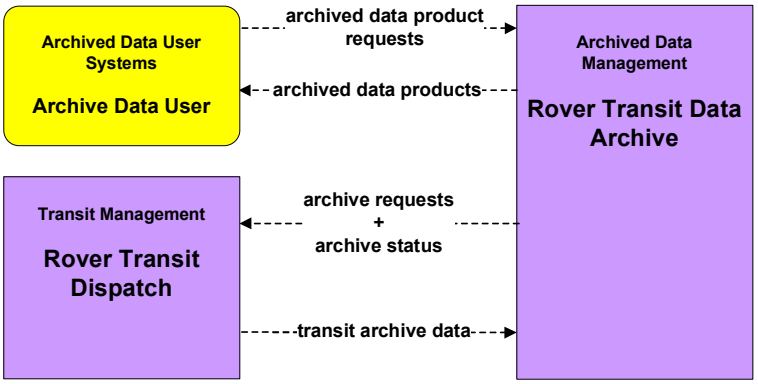


Note:
Data archive will be hosted by Route Match.

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

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

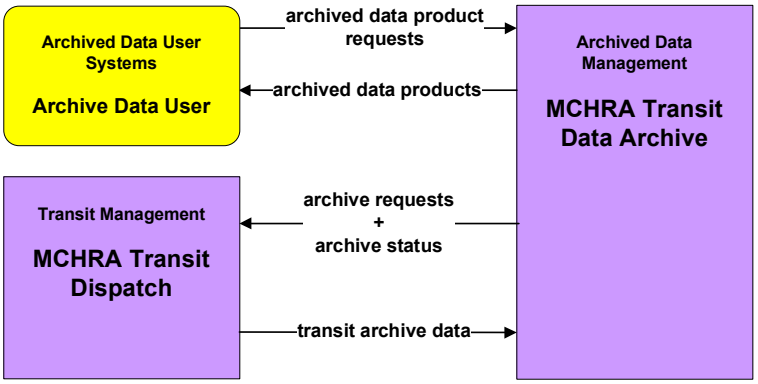
AD1 – ITS Data Mart
Rover



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

planned/future flow
existing flow
user defined flow

AD1 – ITS Data Mart
Mid-Cumberland HRA Transit

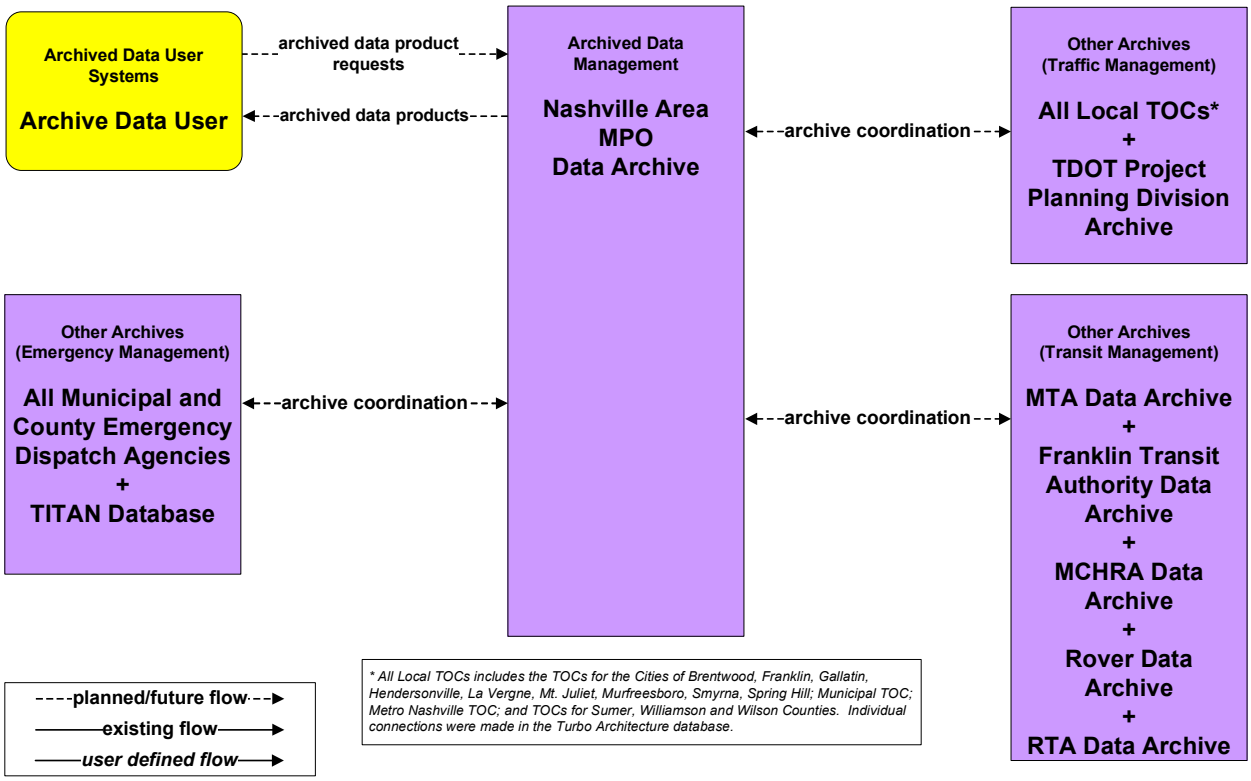


Note:
Data archive will be hosted by Route Match.

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

planned/future flow
existing flow
user defined flow

AD3 – ITS Virtual Data Warehouse
Nashville Area MPO



APPENDIX C – ELEMENT FUNCTIONS

Element Name	Equipment Package (Function)
Alabama DOT	TMC Regional Traffic Management
All Municipal and County Emergency Dispatch Agencies	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
	Emergency Data Collection
City of Brentwood CCTV Cameras	Roadway Basic Surveillance
City of Brentwood DMS	Roadway Traffic Information Dissemination
City of Brentwood Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of Brentwood Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Brentwood Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Brentwood Maintenance Vehicles	MCV Work Zone Support
City of Brentwood Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Brentwood Portable DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
City of Brentwood Rail Notification System	Standard Rail Crossing
City of Brentwood Smart Work Zone Equipment	Roadway Work Zone Traffic Control
City of Brentwood TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Traffic Information Dissemination
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	HRI Traffic Management
	TMC Reversible Lane Management
	Traffic Maintenance
	TMC Work Zone Traffic Management

Element Name	Equipment Package (Function)
City of Brentwood Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
	Standard Rail Crossing
	Roadway Equipment Coordination
City of Brentwood Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Franklin CCTV Cameras	Roadway Basic Surveillance
City of Franklin DMS	Roadway Traffic Information Dissemination
City of Franklin Email Notification System	ISP Traveler Data Collection
	Basic Information Broadcast
	ISP Traveler Information Alerts
City of Franklin Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
	Emergency Environmental Monitoring
City of Franklin Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Franklin Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Franklin Incident Response Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Franklin Police Department	Service Patrol Management
	Emergency Data Collection
City of Franklin Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Franklin Portable DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
City of Franklin Rail Notification System	Standard Rail Crossing
City of Franklin Reversible Lane Equipment	Roadway Equipment Coordination
	Roadway Reversible Lanes
City of Franklin RWIS	Roadway Environmental Monitoring
City of Franklin Smart Work Zone Equipment	Roadway Work Zone Traffic Control
City of Franklin Speed Monitoring Equipment	Roadway Speed Monitoring

Element Name	Equipment Package (Function)
City of Franklin TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Traffic Information Dissemination
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	TMC Environmental Monitoring
	HRI Traffic Management
	TMC Speed Monitoring
	Traffic Maintenance
	TMC Work Zone Traffic Management
	TMC Multimodal Coordination
City of Franklin Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
	Standard Rail Crossing
	Roadway Equipment Coordination
City of Franklin Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Gallatin CCTV Cameras	Roadway Basic Surveillance
City of Gallatin Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of Gallatin Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Gallatin Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Gallatin Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Gallatin Portable DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
City of Gallatin Rail Notification System	Standard Rail Crossing

Element Name	Equipment Package (Function)
City of Gallatin TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	HRI Traffic Management
	Traffic Maintenance
	TMC Work Zone Traffic Management
City of Gallatin Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
	Standard Rail Crossing
	Roadway Equipment Coordination
City of Gallatin Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Hendersonville CCTV Cameras	Roadway Basic Surveillance
City of Hendersonville Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of Hendersonville Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Hendersonville Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Hendersonville Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Hendersonville Rail Notification System	Standard Rail Crossing
City of Hendersonville TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support

Element Name	Equipment Package (Function)
City of Hendersonville TOC (continued)	HRI Traffic Management
	Traffic Maintenance
	TMC Work Zone Traffic Management
City of Hendersonville Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Standard Rail Crossing
	Roadway Equipment Coordination
City of Hendersonville Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of La Vergne CCTV Cameras	Roadway Basic Surveillance
City of La Vergne Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of La Vergne Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of La Vergne Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of La Vergne Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of La Vergne TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	Traffic Maintenance
	TMC Work Zone Traffic Management
City of La Vergne Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Equipment Coordination
City of La Vergne Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Lebanon CCTV Cameras	Roadway Basic Surveillance

Element Name	Equipment Package (Function)
City of Lebanon Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of Lebanon Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Lebanon Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Lebanon Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Lebanon Portable DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
City of Lebanon TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	Traffic Maintenance
	TMC Work Zone Traffic Management
City of Lebanon Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
	Roadway Equipment Coordination
City of Lebanon Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Mt. Juliet CCTV Cameras	Roadway Basic Surveillance
City of Mt. Juliet Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of Mt. Juliet Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination

Element Name	Equipment Package (Function)
City of Mt. Juliet Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Mt. Juliet Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Mt. Juliet TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	Traffic Maintenance
	TMC Work Zone Traffic Management
City of Mt. Juliet Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Equipment Coordination
City of Mt. Juliet Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Murfreesboro CCTV Cameras	Roadway Basic Surveillance
City of Murfreesboro DMS	Roadway Traffic Information Dissemination
City of Murfreesboro Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of Murfreesboro Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Murfreesboro Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Murfreesboro Police Vehicles	On-board EV En Route Support
City of Murfreesboro Rail Notification System	Standard Rail Crossing
City of Murfreesboro TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Traffic Information Dissemination
	TMC Regional Traffic Management
	TMC Incident Detection

Element Name	Equipment Package (Function)
City of Murfreesboro TOC (continued)	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	HRI Traffic Management
	Traffic Maintenance
	TMC Work Zone Traffic Management
City of Murfreesboro Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Standard Rail Crossing
	Roadway Equipment Coordination
City of Murfreesboro Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Nashville Fire and EMS Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Smyrna CCTV Cameras	Roadway Basic Surveillance
City of Smyrna Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
City of Smyrna Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
City of Smyrna Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Smyrna Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
City of Smyrna Portable DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
City of Smyrna TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	Traffic Maintenance
	TMC Work Zone Traffic Management

Element Name	Equipment Package (Function)
City of Smyrna Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
City of Smyrna Website	ISP Traveler Data Collection
	Basic Information Broadcast
City of Spring Hill CCTV Cameras	Roadway Basic Surveillance
City of Spring Hill Emergency Dispatch	City of Spring Hill Emergency Dispatch
	City of Spring Hill Emergency Dispatch
	City of Spring Hill Emergency Dispatch
	City of Spring Hill Emergency Dispatch
	City of Spring Hill Emergency Dispatch
	City of Spring Hill Emergency Dispatch
City of Spring Hill Field Sensors	City of Spring Hill Field Sensors
	City of Spring Hill Field Sensors
	City of Spring Hill Field Sensors
City of Spring Hill Fire Vehicles	City of Spring Hill Fire Vehicles
	City of Spring Hill Fire Vehicles
City of Spring Hill Police Vehicles	City of Spring Hill Police Vehicles
	City of Spring Hill Police Vehicles
City of Spring Hill TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	Traffic Maintenance
City of Spring Hill Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Equipment Coordination
City of Spring Hill Website	ISP Traveler Data Collection
	Basic Information Broadcast
Franklin Transit Authority Data Archive	ITS Data Repository
	Government Reporting Systems Support
Franklin Transit Authority Dispatch	Center Secure Area Surveillance
	Center Secure Area Alarm Support

Element Name	Equipment Package (Function)
Franklin Transit Authority Dispatch (continued)	Transit Center Vehicle Tracking
	Transit Center Fixed-Route Operations
	Transit Center Paratransit Operations
	Transit Center Passenger Counting
	Transit Center Signal Priority
	Transit Center Security
	Transit Vehicle Operator Assignment
	Transit Center Information Services
	Transit Center Multi-Modal Coordination
	Transit Evacuation Support
	Transit Data Collection
Franklin Transit Authority Facility CCTV Camera Surveillance	Field Secure Area Surveillance
Franklin Transit Authority Fixed-Route Vehicles	On-board Transit Trip Monitoring
	On-board Schedule Management
	On-board Passenger Counting
	On-board Transit Security
	On-board Transit Signal Priority
	On-board Transit Information Services
Franklin Transit Authority Kiosks	Remote Transit Information Services
Franklin Transit Authority Paratransit Vehicles	On-board Transit Trip Monitoring
	On-board Paratransit Operations
	On-board Transit Security
Franklin Transit Authority Website	ISP Traveler Data Collection
	Infrastructure Provided Trip Planning
Kentucky Transportation Cabinet	TMC Regional Traffic Management
Local School Bus Dispatch	Transit Environmental Monitoring
MCHRA IVR System	Remote Interactive Information Reception
	Remote Transit Information Services
MCHRA Transit Data Archive	ITS Data Repository
	Government Reporting Systems Support
MCHRA Transit Dispatch	Center Secure Area Surveillance
	Center Secure Area Alarm Support
	Transit Center Vehicle Tracking
	Transit Center Paratransit Operations
	Transit Center Security
	Transit Vehicle Operator Assignment

Element Name	Equipment Package (Function)
MCHRA Transit Dispatch	Transit Center Information Services
	Transit Center Multi-Modal Coordination
	Transit Evacuation Support
	Transit Data Collection
MCHRA Transit Facility CCTV Camera Surveillance	Field Secure Area Surveillance
MCHRA Transit Vehicles	On-board Transit Trip Monitoring
	On-board Paratransit Operations
	On-board Transit Security
MCHRA Website	ISP Traveler Data Collection
	Infrastructure Provided Trip Planning
Metro Nashville CCTV Cameras	Roadway Basic Surveillance
Metro Nashville DMS	Roadway Traffic Information Dissemination
Metro Nashville Emergency Services Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
	Emergency Environmental Monitoring
Metro Nashville Field Sensors	Roadway Basic Surveillance
	Roadway Equipment Coordination
Metro Nashville Incident Response Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Metro Nashville Maintenance Vehicles	MCV Vehicle Location Tracking
	MCV Work Zone Support
Metro Nashville OEM	Incident Command
	Service Patrol Management
	Emergency Response Management
	Emergency Evacuation Support
Metro Nashville Police Department	Emergency Data Collection
Metro Nashville Police Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Metro Nashville Portable DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control

Element Name	Equipment Package (Function)
Metro Nashville Public Works Department	MCM Vehicle Tracking
	MCM Environmental Information Collection
	MCM Environmental Information Processing
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Work Zone Management
	MCM Work Activity Coordination
Metro Nashville Rail Notification System	Roadway Traffic Information Dissemination
	Standard Rail Crossing
Metro Nashville Reversible Lane Equipment	Roadway Equipment Coordination
	Roadway Reversible Lanes
Metro Nashville RWIS	Roadway Environmental Monitoring
Metro Nashville Speed Monitoring Equipment	Roadway Speed Monitoring
Metro Nashville TOC	Collect Traffic Surveillance
	TMC Probe Information Collection
	TMC Signal Control
	TMC Freeway Management
	TMC Traffic Information Dissemination
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	TMC Environmental Monitoring
	HRI Traffic Management
	TMC Reversible Lane Management
	TMC Speed Monitoring
	Traffic Maintenance
	TMC Work Zone Traffic Management
	TMC Multimodal Coordination
Metro Nashville Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
	Standard Rail Crossing
	Roadway Equipment Coordination
Metro Nashville Website	ISP Traveler Data Collection
	Basic Information Broadcast

Element Name	Equipment Package (Function)
MTA Data Archive	ITS Data Repository
	Government Reporting Systems Support
MTA Dispatch	Center Secure Area Surveillance
	Center Secure Area Alarm Support
	Transit Center Vehicle Tracking
	Transit Center Fixed-Route Operations
	Transit Center Paratransit Operations
	Transit Center Fare Management
	Transit Center Passenger Counting
	Transit Center Signal Priority
	Transit Center Security
	Transit Vehicle Operator Assignment
	Transit Garage Maintenance
	Transit Vehicle Assignment
	Transit Center Information Services
	Transit Center Multi-Modal Coordination
	Transit Evacuation Support
	Transit Data Collection
MTA Email Notification System	Basic Information Broadcast
	ISP Traveler Information Alerts
MTA Facility CCTV Camera Surveillance	Field Secure Area Surveillance
MTA Fixed Route Vehicles	On-board Transit Trip Monitoring
	On-board Schedule Management
	On-board Transit Fare Management
	On-board Passenger Counting
	On-board Transit Security
	On-board Maintenance
	On-board Transit Signal Priority
	On-board Transit Information Services
MTA Kiosks	Remote Transit Information Services
	Remote Transit Fare Management
MTA Paratransit Vehicles	On-board Transit Trip Monitoring
	On-board Schedule Management
	On-board Paratransit Operations
	On-board Transit Security
	On-board Maintenance

Element Name	Equipment Package (Function)
MTA Website	ISP Traveler Data Collection
	Infrastructure Provided Trip Planning
Municipal CCTV Cameras	Roadway Basic Surveillance
Municipal Field Sensors	Roadway Basic Surveillance
Municipal Public Safety Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Municipal Public Safety Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Municipal TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Freeway Management
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support
	TMC Environmental Monitoring
	Traffic Maintenance
	TMC Work Zone Traffic Management
Municipal Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
	Roadway Equipment Coordination
Municipal/County Maintenance	MCM Vehicle Tracking
	MCM Environmental Information Collection
	MCM Environmental Information Processing
	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Work Zone Management
	MCM Work Activity Coordination
Municipal/County Maintenance Vehicles	MCV Vehicle Location Tracking
	MCV Work Zone Support
Municipal/County Portable DMS	Roadway Work Zone Traffic Control
Municipal/County RWIS	Roadway Environmental Monitoring

Element Name	Equipment Package (Function)
Nashville Area MPO Data Archive	ITS Data Repository
	Government Reporting Systems Support
	Virtual Data Warehouse Services
Other Davidson County Emergency Dispatch Agencies	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Personal Computing Devices	Personal Interactive Information Reception
Private Probe Data Provider	ISP Probe Information Collection
Private Transportation Providers	Transit Center Multi-Modal Coordination
Private Vehicle	Vehicle Location Determination
	Vehicle Toll/Parking Interface
	Vehicle Traffic Probe Support
Rover Fixed-Route Vehicles	On-board Transit Trip Monitoring
	On-board Schedule Management
	On-board Transit Security
	On-board Maintenance
	On-board Transit Information Services
Rover Kiosks	Remote Transit Information Services
Rover Transit Data Archive	ITS Data Repository
	Government Reporting Systems Support
Rover Transit Dispatch	Center Secure Area Surveillance
	Center Secure Area Alarm Support
	Transit Center Vehicle Tracking
	Transit Center Fixed-Route Operations
	Transit Center Security
	Transit Vehicle Operator Assignment
	Transit Garage Maintenance
	Transit Vehicle Assignment
	Transit Center Information Services
	Transit Center Multi-Modal Coordination
	Transit Evacuation Support
	Transit Data Collection
Rover Transit Facility CCTV Camera Surveillance	Field Secure Area Surveillance

Element Name	Equipment Package (Function)
Rover Website	ISP Traveler Data Collection
	Infrastructure Provided Trip Planning
RTA Data Archive	ITS Data Repository
	Government Reporting Systems Support
RTA Dispatch	Emergency Evacuation Support
	Center Secure Area Surveillance
	Center Secure Area Alarm Support
	Transit Center Vehicle Tracking
	Transit Center Fixed-Route Operations
	Transit Center Security
	Transit Vehicle Operator Assignment
	Transit Center Multi-Modal Coordination
	Transit Evacuation Support
	Transit Data Collection
RTA Express Buses	On-board Transit Trip Monitoring
	On-board Schedule Management
	On-board Transit Fare Management
	On-board Transit Security
RTA Facility CCTV Camera Surveillance	Field Secure Area Surveillance
RTA Regional Rail	On-board Transit Trip Monitoring
	On-board Schedule Management
Rutherford County EMA	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Rutherford County Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
	Center Secure Area Alarm Support
Rutherford County EMS Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Rutherford County Sheriff Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Rutherford County Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Equipment Coordination

Element Name	Equipment Package (Function)
Social Networking Services	ISP Traveler Data Collection
	Basic Information Broadcast
Sumner County EMA	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Sumner County EMS Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
Sumner County EMS Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Sumner County PSAP	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Sumner County Sheriff Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Sumner County TOC	Collect Traffic Surveillance
	TMC Signal Control
	Traffic Maintenance
Sumner County TOC	TMC Work Zone Traffic Management
Sumner County Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Equipment Coordination
TDOT CCTV Cameras	Roadway Basic Surveillance
TDOT District Maintenance	MCM Vehicle Tracking
	MCM Incident Management
	MCM Work Zone Management
TDOT District Maintenance	MCM Work Activity Coordination
TDOT DMS	Roadway Traffic Information Dissemination
	Roadway Work Zone Traffic Control
TDOT Emergency Services Coordinator	MCM Incident Management
	MCM Roadway Maintenance and Construction
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support

Element Name	Equipment Package (Function)
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 HOV Lane Field Equipment	Roadway HOV Control
	Roadway Equipment Coordination
TDOT Maintenance Headquarters	MCM Environmental Information Collection
	MCM Environmental Information Processing
TDOT Maintenance Vehicles	MCV Vehicle Location Tracking
	MCV Work Zone Support
TDOT Project Planning Division Archive	ITS Data Repository
	Government Reporting Systems Support
TDOT Public Information Office	ISP Traveler Data Collection
	Basic Information Broadcast
TDOT Ramp Metering Equipment	Roadway Basic Surveillance
	Roadway Freeway Control
	Roadway Traffic Information Dissemination
	Roadway Equipment Coordination
TDOT Region 1 TMC - Knoxville	TMC Regional Traffic Management
TDOT Region 2 TMC - Chattanooga	TMC Regional Traffic Management
TDOT Region 3	Toll Administration
TDOT Region 3 Construction Office	MCM Roadway Maintenance and Construction
	MCM Work Activity Coordination
TDOT Region 3 HELP Dispatch	Service Patrol Management
TDOT Region 3 Maintenance	MCM Incident Management
	MCM Roadway Maintenance and Construction
	MCM Work Activity Coordination
TDOT Region 3 TMC - Nashville	Collect Traffic Surveillance
	TMC Freeway Management
	TMC HOV Lane Management
	TMC Traffic Information Dissemination
	TMC Regional Traffic Management
	TMC Incident Detection
	TMC Incident Dispatch Coordination/Communication
	TMC Evacuation Support

Element Name	Equipment Package (Function)
TDOT Region 3 TMC – Nashville (continued)	TMC Environmental Monitoring
	Traffic Maintenance
	TMC Work Zone Traffic Management
	Traffic Data Collection
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)	ISP Traveler Data Collection
	Basic Information Broadcast
	ISP Traveler Information Alerts
	Interactive Infrastructure Information
	ISP Emergency Traveler Information
	MCM Work Activity Coordination
TDOT SmartWay Website	ISP Traveler Data Collection
	Basic Information Broadcast
	ISP Traveler Information Alerts
	Interactive Infrastructure Information
	ISP Emergency Traveler Information
TDOT Toll Plazas	Toll Plaza Toll Collection
TEMA	Emergency Response Management
	Emergency Evacuation Support
Tennessee 511 System	ISP Traveler Data Collection
	ISP Traveler Information Alerts
	Interactive Infrastructure Information
	Traveler Telephone Information
	ISP Emergency Traveler Information
Tennessee Bureau of Investigation	Incident Command
	Emergency Early Warning System
Tennessee Fusion Center	Incident Command
	Emergency Response Management
Tennessee GoSmart Kiosks	Remote Interactive Information Reception
THP Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Early Warning System
	Emergency Response Management
	Emergency Evacuation Support
	Emergency Environmental Monitoring

Element Name	Equipment Package (Function)
THP Truck Weigh and Inspection Station	Roadside WIM
THP Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
THP Weigh-in-Motion	Roadside WIM
TITAN Database	ITS Data Repository
	Government Reporting Systems Support
WEMA EMS Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
WEMA Fire Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Williamson County EMA	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Williamson County Emergency Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Emergency Routing
	Incident Command
	Emergency Response Management
	Emergency Environmental Monitoring
	MCM Environmental Information Collection
	MCM Environmental Information Processing
Williamson County RWIS	Roadway Environmental Monitoring
Williamson County Sheriff Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Williamson County TOC	Collect Traffic Surveillance
	TMC Signal Control
	TMC Incident Dispatch Coordination/Communication
	Traffic Maintenance
	TMC Work Zone Traffic Management
Williamson County Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Signal Priority
	Roadway Equipment Coordination
Wilson County EMA	Incident Command
	Emergency Response Management
	Emergency Evacuation Support

Element Name	Equipment Package (Function)
Wilson County EMA Dispatch	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Wilson County PSAP	Emergency Call-Taking
	Emergency Dispatch
	Incident Command
	Emergency Response Management
	Emergency Evacuation Support
Wilson County Sheriff Vehicles	On-board EV En Route Support
	On-board EV Incident Management Communication
Wilson County TOC	Collect Traffic Surveillance
	TMC Signal Control
	Traffic Maintenance
	TMC Work Zone Traffic Management
Wilson County Traffic Signals	Roadway Basic Surveillance
	Roadway Signal Controls
	Roadway Equipment Coordination

APPENDIX D – STAKEHOLDER DATABASE

Nashville Area Regional ITS Architecture Stakeholder Attendance Record

	Invitees		Workshop Attendance			
Organization	**First Name**	**Last Name**	**Kick-Off**	**ITS Architecture**	**ITS Deployment**	**Comment Resolution**
Cheatham County Emergency Management Agency	Edwin	Hogan	☐	☐	☐	☐
Cheatham County Sheriff	John	Holder	☐	☐	☐	☐
City of Ashland City Fire Department	Chuck	Walker	☐	☐	☐	☐
City of Ashland City Police Department	Marc	Coulon	☐	☐	☐	☐
City of Belle Meade	George	Bartlett	☐	☐	☐	☐
City of Belle Meade	Tim	Eades	☐	☐	☐	☐
City of Berry Hill	Mike	Cash	☐	☐	☐	☐
City of Berry Hill	Robert	Bennet	☐	☐	☐	☐
City of Brentwood Fire Department	Kenny	Lane	☐	☐	☐	☐
City of Brentwood Police Department	Ricky	Watson	☐	☐	☐	☐
City of Brentwood TOC	Robbie	Allen	☐	☐	☐	☐
City of Columbia Fire Department	Don	Martin	☐	☐	☐	☐
City of Columbia Police Department	Joseph	Bishop	☐	☐	☐	☐
City of Columbia Public Works	Ken	Donaldson	☐	☐	☐	☐
City of Eagleville	Amy	Miller	☐	☐	☐	☐
City of Eagleville	David	Martin	☐	☐	☐	☐
City of Eagleville	Truman	Jones	☐	☐	☐	☐
City of Fairview	Mike	Cooper	☐	☐	☐	☐
City of Fairview	Wade	Hooper	☐	☐	☐	☐
City of Fairview	Terry	Harris	☐	☐	☐	☐

Organization	First Name	Last Name	Kick-Off	ITS Architecture	ITS Deployment	Comment Resolution
City of Forest Hills	Al	Deck	☐	☐	☐	☐
City of Franklin	Kevin	Comstock	☐	☑	☐	☐
City of Franklin	Carl	Baughman	☑	☐	☐	☐
City of Franklin Fire Department	Rocky	Garzarek	☐	☐	☐	☐
City of Franklin Police Department	Jackie	Moore	☐	☐	☐	☐
City of Gallatin Fire Department	William	Crook	☑	☑	☐	☐
City of Gallatin Police Department	John	Tisdale	☐	☐	☐	☐
City of Gallatin Public Works	Ronnie	Stiles	☐	☐	☐	☐
City of Goodlettsville Fire	Phillip	Gibson	☐	☐	☐	☐
City of Goodlettsville Police	Richard	Pope	☐	☐	☐	☐
City of Goodlettsville Public Works	Bill	Brasier	☐	☐	☐	☐
City of Greenbrier Fire Department	Billy	Wilson	☐	☐	☐	☐
City of Greenbrier Police Department	Richard	Hatfield	☐	☐	☐	☐
City of Hendersonville Fire Department	Jamie	Steele	☐	☐	☐	☐
City of Hendersonville Police Department	Terry	Frizzell	☐	☐	☐	☐
City of Hendersonville Public Works	Paul	Durham	☐	☐	☐	☐
City of La Vergne Fire Department	James	Gafford	☐	☐	☐	☐
City of La Vergne Police Department	Ted	Boyd	☐	☐	☐	☐
City of La Vergne Public Works	Guy	Patterson	☐	☐	☐	☐
City of Lakewood	Brad	Hutchinson	☐	☐	☐	☐
City of Lakewood	K.D.	Smith	☐	☐	☐	☐
City of Lebanon	Magi	Tilton	☑	☐	☐	☐
City of Lebanon Fire Department	Chris	Dowell	☐	☐	☐	☐
City of Lebanon Police	Scott	Bowen	☐	☐	☐	☐

Organization	First Name	Last Name	Kick-Off	ITS Architecture	ITS Deployment	Comment Resolution
City of Lebanon Public Works	Jeff	Baines	☐	☐	☐	☐
City of Millersville	Kirt	Brinkley	☐	☐	☐	☐
City of Millersville	Ronnie	Williams	☐	☐	☐	☐
City of Millersville	Frank	Wilkerson	☐	☐	☐	☐
City of Mt. Juliet Police Department	Andy	Garrett	☐	☐	☐	☐
City of Mt. Juliet Public Works	Marlin	Keel, P.E.	☑	☐	☐	☐
City of Murfreesboro Fire Department	Cumbey	Gaines	☐	☐	☐	☐
City of Murfreesboro Police Department	Glen	Chrisman	☑	☐	☐	☐
City of Murfreesboro Traffic Department	Dana	Richardson	☐	☐	☐	☐
City of Nashville Fire Department	Stephen	Halford	☐	☐	☐	☐
City of Oak Hill	Kevin	Helms	☐	☐	☐	☐
City of Portland Fire Department	John	Klum	☐	☐	☐	☐
City of Portland Police Department	Al	West	☐	☐	☐	☐
City of Portland Public Works	Brian	Goodwin	☐	☐	☐	☐
City of Spring Hill Fire Department	Jim	Swindle	☐	☐	☐	☐
City of Spring Hill Police Department	John	Smith	☐	☐	☐	☐
City of Spring Hill Public Works	John	McCord	☐	☐	☐	☐
City of Springfield Fire Department	Maynor	Schott	☐	☐	☐	☐
City of Springfield Police Department	Mike	Wilhoit	☐	☐	☐	☐
City of Springfield Public Works	Allan	Ellis, PE	☐	☐	☐	☐
City of White House Fire Department	Joe	Palmer	☐	☐	☐	☐
City of White House Police Department	Gerald	Herman	☐	☐	☐	☐
City of White House Public Works	Ed	Hickman	☐	☐	☐	☐
Federal Highway Administration - Tennessee Division	Tameka	Macon	☐	☐	☐	☐

Organization	First Name	Last Name	Kick-Off	ITS Architecture	ITS Deployment	Comment Resolution
Federal Highway Administration - Tennessee Division	Britta	Stein	☐	☑	☐	☑
Federal Highway Administration - Tennessee Division	Don	Gedge	☑	☑	☑	☑
Federal Transit Authority - Region IV	Abigail	Rivera	☐	☐	☐	☐
Federal Transit Authority - Region IV	Brandy	Smith	☐	☐	☐	☐
Federal Transit Authority - Region IV	David	Schilling	☐	☐	☐	☐
Franklin Transit Authority	Debbie	Henry	☐	☐	☐	☐
Franklin Transit Authority	Diane	Thorne	☐	☐	☑	☐
Franklin Transit Authority	Sue	Connor	☑	☑	☐	☐
Gallatin Police Department	Bill	Vahldiek	☑	☐	☐	☐
Greater Nashville Regional Council	Jim	White	☐	☐	☐	☐
Gresham, Smith and Partners	Ed	Turbyfill	☑	☐	☐	☐
Gresham, Smith and Partners	Dowell	Squier	☑	☐	☐	☐
Metro Nashville Emergency Communications Center	Duane	Phillips	☑	☐	☐	☐
Metro Nashville Emergency Management Agency	Stephen	Halford	☐	☐	☐	☐
Metro Nashville Police Department	Ronal	Serpas	☐	☑	☐	☐
Metro Nashville Public Works	Jonathan	Cleghon	☑	☑	☑	☐
Metro Nashville Public Works	Chip	Knauf	☐	☐	☐	☐
Metro Nashville Public Works	Mark	Macy	☐	☐	☐	☐
Metro Nashville Public Works	Robert	Weithofer	☑	☑	☑	☑
Metro Nashville Public Works	Devin	Doyle	☐	☐	☑	☐
Metro Nashville Public Works	John	Gregor	☐	☐	☐	☐
Metropolitan Nashville Airport Authority	Steve	Heim	☐	☐	☐	☐

Organization	First Name	Last Name	Kick-Off	ITS Architecture	ITS Deployment	Comment Resolution
Mid-Cumberland Human Resource Agency Public Transit	Jeff	Simpson	☐	☑	☐	☐
Mid-Cumberland Human Resource Agency Public Transit	Jeff	Pancirov	☐	☑	☐	☐
Mid-Cumberland Human Resource Agency Public Transit	Cheryl	Hunter	☐	☑	☐	☑
Nashville Area Metropolitan Planning Organization	Michael	Skipper	☑	☐	☐	☐
Nashville Area Metropolitan Planning Organization	Eric	Howell	☐	☐	☑	☐
Nashville Area Metropolitan Planning Organization	Max	Baker	☑	☑	☑	☑
Nashville Fire Department	Charles	Scott	☐	☐	☑	☐
Nashville Fire Department	Tim	Henderson	☐	☐	☑	☐
Nashville Metropolitan Transit Authority	Andy	Zimmerman	☑	☑	☐	☐
Nashville Metropolitan Transit Authority	Robert	Baulsir	☐	☐	☐	☐
Nashville Metropolitan Transit Authority	Robert	Greene	☐	☑	☑	☐
Nashville Metropolitan Transit Authority	Rob	McElhaney	☐	☐	☑	☐
Nashville Metropolitan Transit Authority	James	McAteer	☐	☐	☐	☐
Nashville Office of Emergency Management	Karl	Dean	☐	☐	☐	☐
Robertson County Emergency Management Agency	R.L.	Douglas	☐	☐	☐	☐
Robertson County Highway Department	Delvin	Hester	☐	☐	☐	☐
Robertson County Sheriff's Department	Gene	Bollinger	☐	☐	☐	☐
Rutherford County Emergency Management Agency	Roger	Allen	☐	☐	☐	☐
Rutherford County Highway Department	Mike	Williams	☐	☐	☐	☐
Rutherford County Sheriff's Department	Truman	Jones, Jr.	☐	☐	☐	☐
Sumner County Emergency Management Agency	Ken	Weidner	☐	☐	☐	☐

Organization	First Name	Last Name	Kick-Off	ITS Architecture	ITS Deployment	Comment Resolution
Sumner County Sheriff's Office	Bob	Barker	☐	☐	☐	☐
TDOT - Design Division	Jeff	Jones	☑	☐	☐	☐
TDOT - Community Relations Division	Luanne	Grandinetti	☑	☐	☐	☐
TDOT - Community Relations Division	John	Hall	☑	☐	☐	☐
TDOT - Long Range Planning Division	Angela	Midgett	☐	☐	☐	☐
TDOT - Long Range Planning Division	Terry	Gladden	☑	☑	☑	☑
TDOT - Long Range Planning Division	Mike	Presley	☑	☑	☑	☑
TDOT - Maintenance Division	Mike	Tugwell	☐	☐	☐	☐
TDOT - Office of Incident Management	Frank	Horne	☑	☐	☑	☐
TDOT - Office of Incident Management	Gary	Ogletree	☐	☐	☐	☐
TDOT - Office of Passenger Transportation	Susan	Ralph	☐	☐	☐	☐
TDOT - Project Planning Division	Steve	Allen	☐	☑	☐	☐
TDOT - Region 3	Ali	Farhangi	☑	☑	☐	☐
TDOT - Region 3	Ray	Hallavant	☑	☑	☑	☐
TDOT - Traffic Engineering Office	Gerald	Gregory	☐	☐	☐	☐
Tennessee Bureau of Investigation	Jason	Locke	☐	☐	☐	☐
Tennessee Bureau of Investigation	Jerri	Powell	☐	☐	☐	☐
Tennessee Bureau of Investigation	Margie	Quin	☐	☐	☐	☐
Tennessee Highway Patrol District 3	Vic	Donoho	☐	☐	☐	☐
Town of Nolensville	Bob	Hays	☐	☐	☐	☐
Town of Nolensville	Presley	Hughes	☐	☐	☐	☐
Town of Nolensville	Paul	Rigsby	☐	☐	☐	☐
Town of Smyrna	Kevin	Rigsby	☑	☐	☐	☐
Town of Smyrna Fire Department	Bill	Culbertson	☐	☐	☐	☐

Organization	First Name	Last Name	Kick-Off	ITS Architecture	ITS Deployment	Comment Resolution
Town of Smyrna Police Department	Kevin	Arnold	☐	☐	☐	☐
Town of Smyrna Public Works	David	King	☑	☐	☐	☐
Town of Thompson's Station	Wendy	Deats	☐	☐	☐	☐
Town of Westmoreland	Jonathan	Pullen	☐	☐	☐	☐
Town of Westmoreland	Mark	Jenkins	☐	☐	☐	☐
Town of Westmoreland	Carla	Etheridge	☐	☐	☐	☐
Vanderbilt University	Mark	Abkowitz	☐	☐	☐	☐
Vanderbilt University - VECTOR	Jimmy	Dobbins	☐	☐	☐	☐
Watertown	Joe	Hall	☐	☐	☐	☐
Watertown	John	Jewell	☐	☐	☐	☐
Williamson County Emergency Management Agency	Mike	Thompson	☑	☐	☐	☐
Williamson County Highway Department	Eddie	Hood	☐	☐	☐	☐
Williamson County Sheriff's Department	Jeff	Long	☐	☐	☐	☐
Wilson County	Tom	Brashear	☑	☐	☐	☐
Wilson County Emergency Management Agency	John	Jewell	☐	☐	☐	☐
Wilson County Sheriff's Office	Terry	Ashe	☐	☐	☐	☐

APPENDIX E – ARCHITECTURE MAINTENANCE DOCUMENTATION FORM

Nashville Area
Regional ITS Architecture
ITS Architecture Maintenance Documentation Form

Please complete the following form to document changes to the 2010 Nashville Area Regional ITS Architecture. Forms should be submitted to the Nashville Area Metropolitan Planning Organization (MPO) for review and acceptance. All accepted changes will be kept on file by the MPO and shared with the TDOT Long Range Planning Division. Changes will be incorporated into the 2010 Nashville Area Regional ITS Architecture during the next scheduled update.

Contact Information

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

Change Information

Please indicate the type of change to the Regional ITS Architecture or Deployment Plan:

- ☐ Administrative Change: Basic changes that do not affect the structure of the ITS market packages in the Regional ITS Architecture.
  Examples include: Changes to stakeholder or element name, element status, or data flow status.
- ☐ Functional Change – Single Agency: Structural changes to the ITS market packages that impact only one agency in the Regional ITS Architecture.
  Examples include: Addition of a new ITS market package or changes to data flow connections of an existing ITS market package. The addition or changes would only impact a single agency.
- ☐ Functional Change – Multiple Agencies: Structural changes to the ITS market packages that have the potential to impact multiple agencies in the Regional ITS Architecture.
  Examples include: Addition of a new ITS market package or changes to data flow connections of an existing ITS market package. The addition or changes would impact multiple agencies and require coordination between the agencies.
- ☐ Project Change: Addition, modification, or removal of a project in the Regional ITS Deployment Plan.
- ☐ Other: _____
  _____

Submittal

Please submit ITS Architecture Maintenance Documentation form to:

Nashville Area Metropolitan Planning Organization
800 Second Avenue South
Nashville, Tennessee 37210
Phone: 615-862-7204
Fax: 615-880-2450

Form Submittal Date: _____

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Question 1 Describe the requested change to the Regional ITS Architecture or Deployment Plan.	*Example: City A is planning to deploy CCTV cameras for network surveillance on arterial streets. In the Regional ITS Architecture, the City A Traffic Operations Center (TOC) is shown as the only center controlling the CCTV cameras. The City A TOC is now planning to provide images and control of the CCTV cameras to the City A Police Department for use during incidents.*
Question 2 Are any of the Regional ITS Architecture market packages impacted by the proposed change?	☐ Yes: Please complete Questions 2A and 2B ☐ No: Please proceed to Question 3 ☐ Unknown: Please coordinate with the Nashville Area MPO to determine impacts of the change to the Regional ITS Architecture
Question 2A List all of the ITS market packages impacted by the proposed change.	*Example: ATMS08 – Traffic Incident Management System* *ATMS01 – Network Surveillance*
Question 2B Include a copy of the ITS market packages impacted by the proposed change and mark any proposed modifications to the ITS market packages. Add any additional notes on proposed changes in this section.	*Example: A sketch of the ATMS08 – Traffic Incident Management System market package diagram for City A is attached. Changes have been marked by hand to indicate the new data connections that will be established to allow the City A TOC to send traffic images to the City A Police Department and for the City A Police Department to control the CCTV cameras. The deployment of the CCTV cameras will also result in several of the data flows in ATMS01 – Network Surveillance being changed from planned to existing. These have also been marked on the market package diagram. (Note: The ITS market package diagrams can be found in Appendix B of the Regional ITS Architecture.)*
Question 3 Does the proposed change impact any stakeholder agencies other than the agency completing this form?	☐ Yes: Please complete Questions 3A and 3B ☐ No: Form is complete ☐ Unknown: Please coordinate with the Nashville Area MPO to determine impacts of change to other agencies in the Regional ITS Architecture
Question 3A Identify the stakeholder agencies impacted by the change and a contact person for each agency.	*Example: The City A TOC and City A Police Department are the two agencies impacted by this change. (Note: Assuming the City A TOC representative is completing this form, the contact person from the City A Police Department working on this project should be listed.)*
Question 3B Describe the coordination that has occurred with the stakeholder agencies and the results of the coordination?	*Example: The City A TOC and City A Police Department have had several meetings in the last year to discuss the operations of the arterial CCTV cameras. An operational agreement for the joint operations of the CCTV cameras is currently being developed.*