MEMPHIS AREA
REGIONAL INTELLIGENT
TRANSPORTATION SYSTEMS (ITS)
ARCHITECTURE

Final Report

Prepared for the

Tennessee Department of Transportation

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1.0 INTRODUCTION

Successful deployment of Intelligent Transportation Systems (ITS) in the Memphis area will involve integration of a wide array of systems. In addition to the technical integration of systems, multiple agencies and organizations must work together toward common goals.

Technical and institutional integration of ITS operations is important since the ultimate transportation services experienced by travelers may occur across a large area served by multiple government agencies. For example, a public street containing traffic signals that receives an extraordinary amount of traffic from an adjacent interstate as part of a diversion strategy may require modified traffic signal coordination timings that account for the increased traffic. However, if this same arterial crosses multiple jurisdictional boundaries, implementing coordinated signal timing plans may be difficult unless the agencies have developed a means for integrating their signal operations. Similarly, effective incident response requires the coordination of responses from multiple agencies.

In order to maximize the effectiveness of integrating Memphis area ITS projects, a regional ITS Architecture was developed for ITS systems proposed in the Memphis area within the next seven years. The architecture is simply a plan showing how the region would like for ITS projects to be deployed. It is not a prescriptive plan. The architecture does not consider the many constraints that exist. Funding for the systems and services shown in the architecture still has to be obtained. Systems for which federal funding is desired must go through the traditional planning process so they must be included in the Transportation Improvement Program.

The architecture will be a guide for the design and implementation of Memphis area ITS systems. The architecture is a functional architecture that describes "what" information should be exchanged electronically between the various transportation-related systems in the Memphis area. Data currently exchanged by phone, radio, fax, e-mail or other non-electronic methods is not shown as existing in the architecture. In many incidences, coordination between agencies in the Memphis area is currently performed via voice communications. The emergency management agencies use a shared tiered radio system for coordinating emergency responses. While the radio system provides the needed coordination, there would be benefits to have the information exchanged electronically between systems. For example, if emergency dispatches were send to mobile data terminals that emergency personnel carried, the incident location could be viewed so there would no misunderstanding of verbal information. In the Memphis area architecture, information exchanges currently performed by radio, phone, fax, etc. are included and shown as planned if there is a benefit to exchanging the data electronically.

By defining the transportation system interfaces and information exchanges, the Memphis Area ITS Architecture identifies integration opportunities that may not have been considered otherwise. The architecture also identifies where and to what extent

systems will be integrated. Therefore, it will serve as a basis for decision-makers to discuss possible agreements and understandings between multiple stakeholders to deliver ITS services in the area.

The Memphis area regional ITS Architecture is based on the National ITS Architecture which was developed by the United States Department of Transportation. ITS projects funded through the Federal Highway Trust Fund are required to conform to the National ITS Architecture. The Turbo Architecture™ software tool based on version 3.0 of the National ITS Architecture was used to develop the Memphis area ITS Architecture.

2.0 MEMPHIS AREA REGIONAL ITS ARCHITECTURE BOUNDARIES

Based on consensus reached at the initial architecture workshop, the timeframe for the Memphis Area ITS Architecture is seven years. This allows the architecture to extend beyond the projects already programmed for the region without extending too far into the future as to be unfeasible. The initial Memphis area architecture was developed in 2002 so it only includes the ITS elements and services planned to be deployed through 2009. However, the architecture will not expire; it is a living plan and will be updated as needed. When it is updated, the time horizon will be extended seven years into the future.

The Memphis region for the ITS Architecture was also defined by stakeholders at the workshop. The Memphis region has been defined to include:
- Shelby County, Tennessee
- Western four miles of Fayette County, Tennessee
- Northern eight miles of DeSoto County, Mississippi,
- Bridges on I-40 and I-55 across the Mississippi River
- I-40 in Arkansas from the bridge to the Route 118 interchange and
- I-55 in Arkansas from the bridge to the Marion interchange.

The Memphis region is shown in Figure 1 on the following page.

The region encompasses all of the Memphis Metropolitan Planning Organization (MPO) area. The region was extended beyond the MPO area due to the critical importance of the Mississippi River crossings to transportation in the region.

The next section presents information regarding the Memphis area stakeholders and their transportation systems followed by a description of the architecture development process. The ITS Architecture development process was a consensus-based process. Multiple stakeholders were involved throughout the process.

Figure 1: Memphis Region

3.0 MEMPHIS ITS STAKEHOLDERS

Identifying key area stakeholders is an important task since effective ITS involves the integration of multiple stakeholders and their transportation systems. Table 1 lists the Memphis area ITS stakeholders and their corresponding transportation system(s).

Table 1: Memphis Area ITS Stakeholders

Stakeholder	Transportation System
Arkansas Highway Patrol	Arkansas Highway Patrol Dispatch
Arkansas State Highway and Transportation Department	Arkansas District 1 FMC
Center City Commission	Center City Downtown Parking System
City of Bartlett Public Works Department	City of Bartlett Public Works
City of Bartlett Traffic Department	City of Bartlett TCC City of Bartlett Traffic Field Equipment
City of Collierville Public Works Department	City of Collierville Public Works
City of Collierville Traffic Department	City of Collierville TCC City of Collierville Traffic Field Equipment
City of Germantown Public Works Department	City of Germantown Public Works
City of Germantown Traffic Department	City of Germantown TCC City of Germantown Traffic Field Equipment
Crittenden County Sheriff Department	Crittenden County Sheriff Dispatch
DeSoto County Sheriff Department	DeSoto County Sheriff Dispatch

Stakeholder	Transportation System
MATA	MATA Automated Call Center
	MATA Fixed Route Vehicles
	MATA Light Rail Vehicles
	MATA Plus Vehicles
	MATA Transit Management Center
	MATA Transit Website Server
	MATA Traveler Info Kiosks
Media	Media
Memphis City Fire Services	Memphis City Fire Dispatch
	Memphis City Fire Vehicles
Memphis City Police Department	Memphis City Police Dispatch
	Memphis City Police Special Event System
	Memphis City Police Vehicles
Memphis City Traffic Department	Memphis City TOC
	Memphis City Traffic Field Equipment
Memphis Light, Gas and Water	Memphis Light, Gas and Water Utility Dispatch
	Memphis Light, Gas and Water Utility Vehicles
Memphis MPO	Memphis MPO Archive
Memphis-Shelby County Emergency Management Agency	Memphis-Shelby County EOC
Memphis-Shelby County Health Department	Memphis-Shelby County Emissions Management System
	Memphis-Shelby County Emissions Sensors
Memphis-Shelby County Planning and Development	Memphis Area Rideshare
Mississippi DOT	Mississippi TMC
Mississippi Highway Patrol	Mississippi Highway Patrol Dispatch
Mississippi Municipalities	Mississippi Municipal TCC
Municipal Fire Prevention Bureau	Municipal Fire Dispatch
	Municipal Fire Vehicles
Municipal Police Department	Municipal Police Dispatch
	Municipal Police Vehicles
Rail Operators	Rail Management Center
Shelby County Engineering	Shelby County TCC
	Shelby County Traffic Field Equipment
Shelby County Fire Department	Shelby County Fire Dispatch
	Shelby County Fire Vehicles
Shelby County Public Works Department	Shelby County Public Works
Shelby County Sheriff Department	Shelby County Sheriff Dispatch
	Shelby County Sheriff Vehicles
TDOT	TDOT Bridge Sensors
	TDOT Environmental Monitoring Sensors
	TDOT Environmental Monitoring Server
	TDOT Freeway Service Patrol Dispatch
	TDOT Freeway Service Patrol Vehicles
	TDOT RTMC
	TDOT RTMC Field Equipment
	TDOT RTMC Website Server

Stakeholder	Transportation System
TDOT Headquarters Planning Office	TDOT Planning Traffic Archive
Tennessee Emergency Management Agency	Tennessee EMA System
Tennessee Highway Patrol	Tennessee Highway Patrol Dispatch Tennessee Highway Patrol Vehicles
University of Memphis	Memphis Research Center
U.S. Coast Guard	Coast Guard System

To make sure the architecture includes all municipalities in the region, some generic stakeholders were used. For example, Municipal Police Department represents any municipal police department except the Memphis City Police they are specifically listed. Other generic stakeholders are Media, Mississippi Municipalities, Municipal Fire Prevention Bureau and Rail Operators. Using generic stakeholders allows the architecture to consider stakeholders before they have ITS systems planned. Once an individual stakeholder has independent plans, they can easily be added and should be added to the architecture.

The contacts for the stakeholders involved in the initial Memphis area architecture are given in Table 2 below.

Table 2: Contacts for Memphis Area ITS Stakeholders

Stakeholder	Contact
Arkansas Highway Patrol	Captain Steve Gray Arkansas Highway Patrol P.O. Box 669 3205 North Washington Forrest City, Arkansas 72335
Arkansas State Highway and Transportation Department	Mr. Ray Woodruff Arkansas State Highway and Transportation Department P.O. Box 278 Wynne, Arkansas 72396-0278
Center City Commission	Mr. Larry Miller Center City Commission The Crump Building 114 N. Main St. Memphis, Tennessee 38103
City of Bartlett Traffic Department	Mr. Rick McClanahan City of Bartlett Traffic Department 3585 Alturia Road Bartlett, Tennessee 38135
City of Collierville Traffic Department	Mr. Harvey Matheny City of Collierville Traffic Department 101 Walnut Collierville, Tennessee 38017

Stakeholder	Contact
City of Germantown Traffic Department	Mr. Jim Yarbrough City of Germantown Traffic Department 1920 South Germantown Road Germantown, Tennessee 38138
MATA	Mr. John Lancaster MATA 1370 Levee Road Memphis, Tennessee 38108
Memphis City Fire Services	Chief Sidney Minton Memphis Division of Fire Services 4341 O.K. Robertson Road Memphis, Tennessee 38127-3233
Memphis City Police Department	Major Mark McClain Memphis City Police Department 1925 Union Avenue Memphis, Tennessee 38104
Memphis City Traffic Department	Mr. Wain Gaskins Mr. Richard Merrill Memphis City Traffic Department 125 N. Main Street, Room 668 Memphis, Tennessee 38103
Memphis Light, Gas and Water	Mr. Chris Bieber Ms. Mary Helen Lovett Memphis Light, Gas and Water P.O. Box 430 Memphis, Tennessee 38101-04304
Memphis MPO	Mr. Carter Gray Mr. Gene Bryan Memphis-Shelby County Department of Regional Services 1075 Mullins Station Memphis, TN 38134
Memphis-Shelby County Emergency Management Agency	Mr. Clint Buchanan Mr. Joe Lowery Memphis-Shelby County Emergency Management Agency 125 N. Main Street, 2B-49 Memphis, Tennessee 38103
Memphis-Shelby County Health Department	Ms. Diane Arnst Memphis-Shelby County Health Department 814 Jefferson Ave, 4th Floor Memphis, Tennessee 38105

Stakeholder	Contact
Memphis-Shelby County Planning and Development	Mr. Carter Gray Memphis-Shelby County Department of Regional Services 1075 Mullins Station Memphis, TN 38134
Mississippi DOT	Mr. Jeff Altman Mississippi DOT District 2 P.O. Box 1850 Jackson, Mississippi 39215
Mississippi Highway Patrol	Captain Roosevelt Howard Mississippi Highway Patrol District 3 Highway 51 North Batesville, Mississippi 38606
Mississippi Municipalities	Mr. Rich Kimmel City of Horn Lake 2285 Goodman Road, W Horn Lake, Mississippi 38637 Mr. Steve Bigelow City of Olive Branch 9189 Pidgeon Roost Road Olive Branch, Mississippi 38654 Mr. Ron Smith City of Southaven 8710 Northwest Drive Southaven, Mississippi 38671
Shelby County Engineering	Mr. Mike Oakes Shelby County Engineering 160 N. Main Room 701 - County Building Memphis, Tennessee 38103
Shelby County Fire Department	Chief Clarence Cash Shelby County Fire Department 1115 Sycamore View Memphis, Tennessee 38134
TDOT	Mr. Don Dahlinger TDOT James K. Polk Building, Suite 400 505 Deaderick Street Nashville, Tennessee 38103 Mr. Joe Warren TDOT Region IV 300 Benchmark Place P.O. Box 429 Jackson, Tennessee 38302

Stakeholder	Contact
TDOT Headquarters Planning Office	Mr. Don Dahlinger TDOT James K. Polk Building, Suite 400 505 Deaderick Street Nashville, Tennessee 37243 Mr. Steve Allen TDOT Planning Division James K. Polk Building, Suite 900 505 Deaderick Street Nashville, TN 37243
Tennessee Highway Patrol	Commanding Officer Tennessee Highway Patrol 6340 Summer Ave. Memphis, Tennessee 38134
U.S. Coast Guard	Chief James T. Dixon MSTC, MSO Memphis, U.S. Coast Guard Port Security and Planning 200 Jefferson Ave, Suite 1301 Memphis, Tennessee 38103-2300 Chief Petty Officer William Garner U.S. Coast Guard Group Lower Mississippi River #2 Auction Avenue Memphis, Tennessee 38105-1502

4.0 MEMPHIS AREA ITS ARCHITECTURE DEVELOPMENT

Development of the Memphis area ITS Architecture began with a Tier II workshop sponsored by FHWA in September 2001. At the workshop, stakeholders began a four-step architecture development process. The first step was to identify the ITS systems that exist or are planned for the area. Each of these systems has an associated stakeholder that owns or operates the system. After the area stakeholders and systems were identified, the services that the systems will provide were identified.

Once the systems and services for the region were identified, opportunities for ITS integration in the Memphis area were determined through development of the ITS Architecture based on version 3.0 of the National ITS Architecture. The opportunities were reviewed and refined in meetings with the primary stakeholders in the region. Diagrams were developed that illustrate the proposed Memphis area ITS integration within the next 7 years. These diagrams, architecture interconnect and architecture flow diagrams, represent the ITS Architecture. The flow diagrams show the relationship of stakeholders and the exchange of information necessary for achieving integrated ITS deployment in Memphis.

The four-step development process is not sequential, it is iterative. Throughout the process, as new stakeholders, inventory elements and services were identified; they were added to the architecture. Stakeholders reviewed and confirmed the initial architecture at a meeting in July 2002.

The development of the initial architecture was guided by an ITS steering committee. Members of the committee were local stakeholders including City of Memphis, FHWA, Memphis-Shelby County Department of Regional Services (who provide the staff of the Memphis MPO), Shelby County and TDOT.

The Turbo Architecture™ software tool was used to create the Memphis Area ITS Architecture. Turbo Architecture™ version 1.1, which uses version 3.0 of the National ITS Architecture, was used. Each of the steps in the Architecture development process, including transportation system inventory, transportation services, system interconnects, and the system information flows, is discussed in the following sections.

4.1 Transportation System Inventory

An inventory of existing and planned transportation systems in the Memphis area was completed in order to begin building the Memphis area ITS Architecture. Specifically, a review of available transportation documents along with stakeholder meetings resulted in a transportation system inventory, which included a description of system elements and the associated stakeholder responsible for system operation. Table 3 lists the various Memphis area transportation systems and the corresponding National ITS Architecture entity classification.

ITS includes many of the systems that agencies have been operating for years. Traffic Control Centers (TCCs) may be traffic signal control systems. Emergency management agencies may use systems to dispatch vehicles to incidents.

Each element identified in the region was classified as one or more National ITS Architecture entities (i.e. subsystems or terminators). This ties the Memphis Area ITS Architecture to the National ITS Architecture. A description of National ITS Architecture entities is given in the next section.

A couple of elements in the Memphis area do not match any entity of the National ITS Architecture. For these elements, an entity was defined specially for the Memphis area architecture. Memphis Research Center was defined as a Data Analysis Center. In addition to being an Emergency Management Subsystem, Memphis Light, Gas and Water Utility Dispatch was defined as a Utility Company.

To include all municipalities in the region in the architecture, some generic elements (and their associated stakeholders) were added. For example, Municipal Police Dispatch represents any municipal police except the Memphis City Police Dispatch since it is a separate element. In addition to providing complete coverage, generic

elements also promote standardization since all of the municipalities are shown as integrating in the same fashion.

Table 3: Memphis Area ITS Inventory

Transportation System	National ITS Architecture Entity
Arkansas Highway Patrol Dispatch	Emergency Management Other EM
Arkansas District 1 FMC	Traffic Management Other TM
Center City Downtown Parking System	Parking Management
City of Bartlett Public Works	Construction and Maintenance
City of Bartlett TCC	Traffic Management Other TM
City of Bartlett Traffic Field Equipment	Roadway
City of Collierville Public Works	Construction and Maintenance
City of Collierville TCC	Traffic Management Other TM
City of Collierville Traffic Field Equipment	Roadway
City of Germantown Public Works	Construction and Maintenance
City of Germantown TCC	Traffic Management Other TM
City of Germantown Traffic Field Equipment	Roadway
Coast Guard System	Other EM
Crittenden County Sheriff Dispatch	Emergency Management Other EM
DeSoto County Sheriff Dispatch	Emergency Management Other EM
MATA Automated Call Center	Information Service Provider Other ISP
MATA Fixed Route Vehicles	Transit Vehicle
MATA Light Rail Vehicles	Transit Vehicle
MATA Plus Vehicles	Transit Vehicle
MATA Transit Management Center	Transit Management Other TRM
MATA Transit Website Server	Information Service Provider Other ISP
MATA Traveler Info Kiosks	Remote Traveler Support
Media	Media
Memphis Area Rideshare	Information Service Provider Other ISP
Memphis City Fire Dispatch	Emergency Management Other EM
Memphis City Fire Vehicles	Emergency Vehicle

Transportation System	National ITS Architecture Entity
Memphis City Police Dispatch	Emergency Management Other EM
Memphis City Police Special Event System	Event Promoters
Memphis City Police Vehicles	Emergency Vehicle
Memphis City TOC	Traffic Management Other TM
Memphis City Traffic Field Equipment	Roadway
Memphis Light, Gas and Water Utility Dispatch	Utility Company Emergency Management Other EM
Memphis Light, Gas and Water Utility Vehicles	Emergency Vehicles
Memphis MPO Archive	Archived Data Management Other Archives
Memphis Research Center	Data Analysis Center
Memphis-Shelby County Emissions Management System	Emissions Management
Memphis-Shelby County Emissions Sensors	Roadway
Memphis-Shelby County EOC	Emergency Management Other EM
Mississippi Highway Patrol Dispatch	Emergency Management Other EM
Mississippi Municipal TCC	Traffic Management Other TM
Mississippi TMC	Traffic Management Other TM
Municipal Fire Dispatch	Emergency Management Other EM
Municipal Fire Vehicles	Emergency Vehicle
Municipal Police Dispatch	Emergency Management Other EM
Municipal Police Vehicles	Emergency Vehicle
Rail Management Center	Rail Operations
Shelby County Fire Dispatch	Emergency Management Other EM
Shelby County Fire Vehicles	Emergency Vehicle
Shelby County Public Works	Construction and Maintenance
Shelby County Sheriff Dispatch	Emergency Management Other EM
Shelby County Sheriff Vehicles	Emergency Vehicle
Shelby County TCC	Traffic Management Other TM
Shelby County Traffic Field Equipment	Roadway

Transportation System	National ITS Architecture Entity
TDOT Bridge Sensors	Roadway
TDOT Environmental Monitoring Sensors	Roadway
TDOT Environmental Monitoring Server	Construction and Maintenance
TDOT Freeway Service Patrol Dispatch	Emergency Management Other EM
TDOT Freeway Service Patrol Vehicles	Emergency Vehicle
TDOT RTMC	Traffic Management Other TM
TDOT RTMC Field Equipment	Roadway
TDOT RTMC Website Server	Information Service Provider Other ISP
TDOT Planning Traffic Archive	Archived Data Management Other Archives
Tennessee EMA System	Emergency Management Other EM
Tennessee Highway Patrol Dispatch	Emergency Management Other EM
Tennessee Highway Patrol Vehicles	Emergency Vehicle

4.1.1 National ITS Architecture Entities: Subsystems and Terminators

Subsystems correspond to systems or parts of transportation systems such as traffic operation centers, field equipment (e.g., signal controllers, dynamic message signs, highway advisory radio, etc.) and mobile data terminals. Terminators represent the people, non-transportation systems, and environment that interface with transportation systems. Subsystems and terminators and the potential interfaces between them are defined in the National ITS Architecture. To take advantage of these interface definitions, the Memphis ITS Architecture is based on the National ITS Architecture. To tie the Memphis ITS Architecture to the National ITS Architecture, each element was mapped to a subsystem or terminator of the National ITS Architecture.

The relationship of the Memphis area elements to the National ITS Architecture is shown in Figure 2 on the following page. The boxes that are highlighted show National ITS Architecture subsystems that are applicable to the Memphis area transportation systems. The boxes that are shaded are subsystems that are not relevant to the Memphis area within the next 7 years.

Figure 2: Mapping to National ITS Architecture Subsystems

4.2 Transportation System Services

Through stakeholder meetings, ITS services were identified to meet the transportation needs in the Memphis area over the next seven years. Table 4 below lists the selected ITS services and the systems involved in them.

Table 4: Memphis Area Regional ITS Services

Service	Participating System
Advanced Railroad Grade Crossing	Memphis City TOC Memphis City Traffic Field Equipment Rail Management Center
Broadcast Traveler Information	Center City Downtown Parking System MATA Transit Management Center MATA Transit Website Server MATA Traveler Info Kiosks Memphis Area Rideshare TDOT RTMC TDOT RTMC Website Server
Demand Response Transit Operations	MATA Plus Vehicles MATA Transit Management Center MATA Transit Website Server Memphis Area Rideshare
Dynamic Ridesharing	MATA Transit Management Center Memphis Area Rideshare

Service	Participating System
Emergency Response	Arkansas Highway Patrol Dispatch Arkansas District 1 FMC City of Bartlett TCC City of Collierville TCC City of Germantown TCC Crittenden County Sheriff Dispatch DeSoto County Sheriff Dispatch Memphis City Fire Dispatch Memphis City Fire Vehicles Memphis City Police Dispatch Memphis City Police Vehicles Memphis City TOC Memphis Light, Gas and Water Utility Dispatch Memphis Light, Gas and Water Utility Vehicles Memphis-Shelby County EOC Mississippi Highway Patrol Dispatch Mississippi TMC Municipal Fire Dispatch Municipal Fire Vehicles Municipal Police Dispatch Municipal Police Vehicles Mississippi Highway Patrol Dispatch Mississippi TMC Municipal Fire Dispatch Municipal Fire Vehicles Municipal Police Dispatch Municipal Police Vehicles Shelby County Fire Dispatch Shelby County Fire Vehicles Shelby County Sheriff Dispatch Shelby County Sheriff Vehicles Shelby County TCC TDOT Freeway Service Patrol Dispatch TDOT Freeway Service Patrol Vehicles TDOT RTMC Tennessee EMA System Tennessee Highway Patrol Dispatch Tennessee Highway Patrol Vehicles
Emergency Routing	Arkansas Highway Patrol Dispatch Arkansas District 1 FMC City of Bartlett Traffic Field Equipment City of Collierville Traffic Field Equipment City of Germantown Traffic Field Equipment Crittenden County Sheriff Dispatch DeSoto County Sheriff Dispatch Memphis City Fire Dispatch Memphis City Fire Vehicles Memphis City Police Dispatch Memphis City Police Vehicles Memphis City Traffic Field Equipment Memphis Light, Gas and Water Utility Dispatch

Service	Participating System
Emergency Routing (con't.)	Memphis Light, Gas and Water Utility Vehicles Memphis-Shelby County EOC Municipal Fire Dispatch Municipal Fire Vehicles Municipal Police Dispatch Municipal Police Vehicles Shelby County Fire Dispatch Shelby County Fire Vehicles Shelby County Sheriff Dispatch Shelby County Sheriff Vehicles Shelby County Traffic Field Equipment TDOT Freeway Service Patrol Dispatch TDOT Freeway Service Patrol Vehicles Tennessee Highway Patrol Dispatch Tennessee Highway Patrol Vehicles
Emissions Monitoring and Management	City of Bartlett TCC City of Collierville TCC City of Germantown TCC Memphis City TOC Memphis-Shelby County Emissions Management System Memphis-Shelby County Emissions Sensors Shelby County TCC TDOT Environmental Monitoring Sensors
Freeway Control	Arkansas District 1 FMC Mississippi TMC TDOT RTMC TDOT RTMC Field Equipment
HAZMAT Management	Arkansas Highway Patrol Dispatch City of Bartlett TCC City of Collierville TCC City of Germantown TCC Memphis City Fire Dispatch Memphis City Police Dispatch Memphis City TOC Memphis-Shelby County EOC Mississippi Highway Patrol Dispatch Municipal Fire Dispatch Municipal Police Dispatch Shelby County Fire Dispatch Shelby County Sheriff Dispatch Shelby County TCC TDOT RTMC Tennessee EMA System Tennessee Highway Patrol Dispatch

Service	Participating System
Incident Management System	Arkansas Highway Patrol Dispatch Arkansas District 1 FMC City of Bartlett TCC City of Collierville TCC City of Germantown TCC Crittenden County Sheriff Dispatch DeSoto County Sheriff Dispatch Media Memphis City Fire Dispatch Memphis City Police Dispatch Memphis City Police Special Event System Memphis City TOC Memphis Light, Gas and Water Utility Dispatch Memphis-Shelby County EOC Mississippi Highway Patrol Dispatch Mississippi TMC Municipal Fire Dispatch Municipal Police Dispatch Shelby County Fire Dispatch Shelby County Sheriff Dispatch Shelby County TCC TDOT Freeway Service Patrol Dispatch TDOT Freeway Service Patrol Vehicles TDOT RTMC TDOT RTMC Field Equipment Tennessee EMA System Tennessee Highway Patrol Dispatch
Interactive Traveler Information	Center City Downtown Parking System MATA Transit Management Center MATA Transit Website Server MATA Traveler Info Kiosks Memphis Area Rideshare TDOT RTMC TDOT RTMC Website Server
ITS Data Mart	TDOT Environmental Monitoring Server TDOT Freeway Service Patrol Dispatch TDOT RTMC TDOT Planning Traffic Archive
ITS Data Warehouse	Arkansas District 1 FMC Center City Downtown Parking System City of Bartlett TCC City of Collierville TCC City of Germantown TCC MATA Transit Management Center Memphis Area Rideshare Memphis City Fire Dispatch Memphis City Police Dispatch Memphis City TOC Memphis MPO Archive

Service	Participating System
ITS Data Warehouse (con't.)	Memphis-Shelby County Emissions Management System Memphis-Shelby County EOC Mississippi TMC Municipal Fire Dispatch Municipal Police Dispatch Shelby County Fire Dispatch Shelby County Sheriff Dispatch Shelby County TCC TDOT Planning Traffic Archive
Multi-modal Coordination	MATA Transit Management Center Memphis City TOC TDOT RTMC
Network Surveillance	Arkansas District 1 FMC City of Bartlett TCC City of Bartlett Traffic Field Equipment City of Collierville TCC City of Collierville Traffic Field Equipment City of Germantown TCC City of Germantown Traffic Field Equipment Memphis City TOC Memphis City Traffic Field Equipment Mississippi TMC Shelby County TCC Shelby County Traffic Field Equipment TDOT RTMC TDOT RTMC Field Equipment
Parking Facility Management	Center City Downtown Parking System MATA Transit Website Server Memphis Area Rideshare
Regional Traffic Control	Arkansas District 1 FMC City of Bartlett TCC City of Collierville TCC City of Germantown TCC Memphis City TOC Mississippi TMC Shelby County TCC TDOT RTMC
Road Weather Information System	TDOT Environmental Monitoring Sensors TDOT RTMC

Service	Participating System
Standard Railroad Grade Crossing	City of Bartlett TCC City of Bartlett Traffic Field Equipment City of Collierville TCC City of Collierville Traffic Field Equipment City of Germantown TCC City of Germantown Traffic Field Equipment Memphis City TOC Memphis City Traffic Field Equipment Shelby County TCC Shelby County Traffic Field Equipment
Surface Street Control	City of Bartlett TCC City of Bartlett Traffic Field Equipment City of Collierville TCC City of Collierville Traffic Field Equipment City of Germantown TCC City of Germantown Traffic Field Equipment Memphis City TOC Memphis City Traffic Field Equipment Shelby County TCC Shelby County Traffic Field Equipment
Traffic Information Dissemination	City of Bartlett TCC City of Bartlett Traffic Field Equipment City of Collierville TCC City of Collierville Traffic Field Equipment City of Germantown TCC City of Germantown Traffic Field Equipment Memphis City TOC Memphis City Traffic Field Equipment Shelby County TCC Shelby County Traffic Field Equipment TDOT RTMC TDOT RTMC Field Equipment
Transit Fixed-Route Operations	MATA Fixed Route Vehicles MATA Transit Management Center MATA Transit Website Server
Transit Maintenance	MATA Fixed Route Vehicles MATA Light Rail Vehicles MATA Plus Vehicles MATA Transit Management Center
Transit Passenger and Fare Management	MATA Fixed Route Vehicles MATA Light Rail Vehicles MATA Plus Vehicles MATA Transit Management Center MATA Traveler Info Kiosks Memphis Area Rideshare

Service	Participating System
Transit Security	MATA Fixed Route Vehicles MATA Light Rail Vehicles MATA Plus Vehicles MATA Transit Management Center MATA Traveler Info Kiosks
Transit Traveler Information	MATA Automated Call Center MATA Transit Management Center MATA Transit Website Server MATA Traveler Info Kiosks
Transit Vehicle Tracking	MATA Fixed Route Vehicles MATA Light Rail Vehicles MATA Plus Vehicles MATA Transit Management Center

5.0 MEMPHIS AREA OPERATIONAL CONCEPT

Of the ITS services planned for the Memphis area, two, regional traffic control and incident management, require coordination between multiple agencies. The operational scenario for both of these services is presented below.

ITS in the Memphis area will be deployed over time. These scenarios assume that the ITS systems planned in the next seven years are fully functional in the region. While this will not be the case for several years, the region will benefit from these services even if the scenarios are not played out in full.

5.1 Regional Traffic Signal Control Scenario

Traffic signals are an important component of traffic management. Signals allow for the safe movement of vehicles through an intersection of roadways. Signal control ranges from local single controllers to interconnected, coordinated signal systems. Advanced traffic signals can adapt to current traffic conditions. Advanced signal systems may even coordinate signal control throughout a region based on current and predicted traffic conditions.

Along several surface streets in the Memphis area, signal timing is already coordinated between multiple agencies. Currently, timing plans are developed off-line based on data collected in the field. These coordinated timing plans are not updated often. As ITS is deployed in the region, this existing coordination will be expanded so that traffic control is coordinated in real-time based on traffic conditions.

The municipal traffic agencies in the region are City of Memphis, City of Bartlett, City of Collierville, City of Germantown, Shelby County and smaller municipalities in Tennessee and Mississippi. Several of the municipalities operate coordinated signal systems. Using a federal earmark, the City of Southaven, Mississippi, plans to interconnect traffic signals at 25 locations.

The municipal traffic agencies will monitor current traffic conditions with CCTV cameras. As the control systems evolve, all of the traffic control systems will be interconnected and able to communicate and share traffic information as well as control and coordination of equipment in real-time.

TDOT will use dynamic message signs (DMS) along the freeways to provide traffic and incident information to drivers while en-route. TDOT will be able to alert the other traffic agencies in the region when a message that may cause traffic to divert onto surface streets will be posted. This will allow signal timing plans to address the diverted traffic to be implemented.

Some freeway ramps in the Memphis area may be metered to prevent the freeways from reaching stop-and-go conditions. Communications between TDOT's Regional Traffic Management Center (RTMC) and the municipal traffic systems will allow the metering algorithms to not only be based on freeway flow but also consider queues on the ramps and surface streets. Additionally, the traffic control (primarily signal control) on the surface streets can be modified based on the current metering patterns.

Coordination of traffic control along surface streets and onto and off of freeways in the Memphis area will benefit the travelers by reducing their travel times. These benefits will be experienced incrementally as ITS is deployed and control systems are coordinated in the region.

5.2 Incident Management Scenario

In a tri-state region, response to incidents can be a complicated matter. Traffic and public safety agencies in the Memphis region are already coordinating their response to incidents. The area has an incident management committee that meets on a regular basis where traffic and public safety professionals discuss coordination. TDOT currently operates the Freeway Service Patrols in the Memphis area. These patrols respond to all types of incidents and try to clear the roadway as soon as possible to minimize the impact on traffic flow. The patrols use radios to communicate with their dispatch and other emergency agencies in the area.

The region's traffic and public safety agencies will correlate information from roadway infrastructure, motorist reports, 911 and other emergency calls for coordinated incident response. The traffic systems will include TDOT RTMC, Freeway Service Patrol, Memphis City TOC, and each of the municipal TCCs. As the traffic centers advance, signal timing plans and canned dynamic message signs (DMS) messages will be developed for on-duty personnel to respond with, and ultimately clear, various types of incident scenarios.

Once the emergency dispatch and traffic management systems are interconnected, each will have access to the latest incident status, suitably filtered for the recipient. The emergency dispatchers will have the capability to view and control the CCTV cameras operated by the RTMC and municipalities to verify incidents. The RTMC will have ultimate control of all of TDOT's CCTV cameras on the freeway. Any public

agency whose duties include emergency response or traffic control desiring a dedicated feed to view and control the camera images will be allowed if they install the required equipment and communications. Images from TDOT's cameras will be available on their website for the agencies and the public to view.

To assist fire vehicles to respond to incidents, fire vehicles in the cities of Memphis and several other municipalities are able to activate vehicle-mounted transmitters to trigger signal preemption at traffic signals. Signal pre-emption for fire vehicles will be expanded throughout the region.

Data on incidents and the response to them will be stored in the Memphis MPO archive to be developed and maintained by the MPO staff that is provided by the Memphis-Shelby County Department of Regional Services. Review of this data will allow the emergency and traffic agencies to revise their response procedures and further coordinate their responses as required.

5.3 Roles and Responsibilities

For these and all ITS services to be effectively delivered, the stakeholders in the region must fulfill certain roles and responsibilities. Table 5 lists the roles and responsibilities of the public sector stakeholders to deliver the ITS services planned for the Memphis area.

Table 5: Memphis Area Stakeholder Roles and Responsibilities

Agency	Role/Responsibility
Arkansas State Highway and Transportation Department	• monitor and enforce commercial vehicle credential requirements • issue special oversize/overweight and HAZMAT permits • maintain electronic clearance program of enrolled, acceptable vehicles and carriers • coordinate with other Commercial Vehicle Administrations (within the region and in other regions and states) for access to credentials and safety information for administration and enforcement functions • perform automated vehicle identification at mainline speeds for credential checking, roadside safety inspections, and weigh-in-motion • maintain historical safety data on which automatic pass or pull-in message is based
Arkansas Highway Patrol	• receive emergency calls and forward to appropriate dispatch center • dispatch highway patrol patrols to incidents • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)

Agency	Role/Responsibility
Arkansas State Highway and Transportation Department	• manage traffic on freeways • monitor traffic on freeways • detect and/or verify incidents freeways including detection and verification of incidents • provide traffic and incident information to drivers en-route • share traffic information including incident information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
Center City Commission	• monitor parking availability in parking facilities electronically • share availability of parking electronically
City of Bartlett Public Works Department	• provide resources when requested by emergency management agency • maintain field equipment • coordinate road closures with traffic management agencies
City of Bartlett Traffic Department	• manage traffic on arterials using traffic signals including pre-emption for emergency vehicles and at highway-rail intersections • monitor traffic on arterials • provide traffic and incident information to drivers en-route • implement traffic control response to incidents • coordinate traffic control response to incidents with emergency and traffic management agencies (within the region and in other regions and states) • share traffic information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
City of Collierville Public Works Department	• provide resources when requested by emergency management agency • maintain field equipment • coordinate road closures with traffic management agencies
City of Collierville Traffic Department	• manage traffic on arterials using traffic signals including pre-emption for emergency vehicles and at highway-rail intersections

Agency	Role/Responsibility
City of Collierville Traffic Department (con't.)	• monitor traffic on arterials • provide traffic and incident information to drivers en-route • implement traffic control response to incidents • coordinate traffic control response to incidents with emergency and traffic management agencies (within the region and in other regions and states) • share traffic information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
City of Germantown Public Works Department	• provide resources when requested by emergency management agency • maintain field equipment • coordinate road closures with traffic management agencies
City of Germantown Traffic Department	• manage traffic on arterials using traffic signals including pre-emption for emergency vehicles and at highway-rail intersections • monitor traffic on arterials • provide traffic and incident information to drivers en-route • implement traffic control response to incidents • coordinate traffic control response to incidents with emergency and traffic management agencies (within the region and in other regions and states) • share traffic information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
Crittenden County Sheriff Department	• dispatch sheriff vehicle to incidents • coordinate dispatch with AHP and MHP • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)
DeSoto County Sheriff Department	• dispatch sheriff vehicle to incidents • coordinate dispatch with AHP and MHP • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)

Agency	Role/Responsibility
MATA	• operate fixed bus routes, para transit services, and light rail service • dispatch transit vehicles • provide transit schedules, fares and other information to travelers • notify appropriate emergency management agency of transit incident • provide fleet for use in evacuations or other major emergencies if requested • maintain transit vehicles
Memphis City Fire Services	• dispatch fire vehicles to respond to fire emergencies • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)
Memphis City Police Department	• receive emergency calls and forward to appropriate dispatch center • dispatch police vehicle to incidents • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states) • issue permits for events requiring street closures • provide planned street closures to other emergency management agencies
Memphis City Traffic Department	• manage traffic on arterials using traffic signals including pre-emption for emergency vehicles and at highway-rail intersections • monitor traffic on arterials • provide traffic and incident information to drivers en-route • implement traffic control response to incidents • coordinate traffic control response to incidents with emergency and traffic management agencies (within the region and in other regions and states) • share traffic information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
Memphis Light, Gas and Water	• dispatch utility vehicles • monitor traffic on arterials in region • route utility vehicles to scene • coordinate road closures with emergency and traffic management agencies

Agency	Role/Responsibility
Memphis Light, Gas and Water (con't.)	• track utility vehicles
Memphis MPO	• store traffic, incident and other data for use in planning, reporting, etc. • provide archived data when requested
Memphis-Shelby County Health Department	• monitor air quality and emissions • issue air quality alerts when warranted
Memphis-Shelby County Emergency Management Agency	• coordinate response to major incidents between emergency and transportation management agencies within the region and in other regions and states
Memphis-Shelby County Planning and Development	• match travelers on similar routes for carpooling • maintain a database of travelers and their work routes
Mississippi DOT	• monitor and enforce commercial vehicle credential requirements • issue special oversize/overweight and HAZMAT permits • maintain electronic clearance program of enrolled, acceptable vehicles and carriers • coordinate with other Commercial Vehicle Administrations (in other regions and states) for access to credentials and safety information for administration and enforcement functions • perform automated vehicle identification at mainline speeds for credential checking, roadside safety inspections, and weigh-in-motion • maintain historical safety data on which automatic pass or pull-in message is based
Mississippi Highway Patrol	• receive emergency calls and forward to appropriate dispatch center • dispatch highway patrol patrols to incidents • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)
Mississippi Municipalities	• manage traffic on arterials using traffic signals including pre-emption for emergency vehicles and at highway-rail intersections • monitor traffic on arterials • provide traffic and incident information to drivers en-route • implement traffic control response to incidents • coordinate traffic control response to incidents with emergency and traffic management agencies (within the region and in other regions and states)

Agency	Role/Responsibility
Mississippi Municipalities (con't.)	• share traffic information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
Mississippi DOT	• manage traffic on freeways • monitor traffic on freeways • detect and/or verify incidents freeways including detection and verification of incidents • provide traffic and incident information to drivers en-route • share traffic information including incident information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
Municipal Fire Prevention Bureau	• dispatch fire vehicles to respond to fire emergencies • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)
Municipal Police Department	• dispatch police vehicle to incidents • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)
Shelby County Fire Department	• dispatch fire vehicles to respond to fire emergencies • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)
Shelby County Public Works Department	• provide resources when requested by emergency management agency • maintain field equipment • coordinate road closures with traffic management agencies
Shelby County Sheriff Department	• dispatch sheriff vehicle to incidents • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)
Shelby County Engineering	• manage traffic on arterials using traffic signals including pre-emption for emergency vehicles and at highway-rail intersections • monitor traffic on arterials • provide traffic and incident information to drivers en-

Agency	Role/Responsibility
Shelby County Engineering (con't.)	route • implement traffic control response to incidents • coordinate traffic control response to incidents with emergency and traffic management agencies (within the region and in other regions and states) • share traffic information with other transportation agencies (within the region and in other regions and states) • share control of field equipment with other transportation agencies (within the region and in other regions and states)
TDOT	• manage traffic on freeways • monitor traffic on freeways • detect and/or verify incidents freeways including detection and verification of incidents • dispatch service patrol vehicles to assist disabled vehicles • provide traffic and incident information to drivers en-route • provide pre-trip traffic and incident information to travelers via website • share traffic information including incident information with other transportation agencies (within the region and in other regions and states) • share traffic information including incident information with emergency management agencies (within the region and in other regions and states) • share traffic information with media • share control of field equipment with other transportation agencies (within the region and in other regions and states)
TDOT Headquarters Planning Office	• store traffic, incident and other data for use in planning, reporting, etc. • provide archived data when requested
Tennessee Department of Safety	• monitor and enforce commercial vehicle credential requirements • issue special oversize/overweight and HAZMAT permits • maintain electronic clearance program of enrolled, acceptable vehicles and carriers • coordinate with other Commercial Vehicle Administrations (in other regions and states) for access to credentials and safety information for administration and enforcement functions • perform automated vehicle identification at mainline

Agency	Role/Responsibility
Tennessee Department of Safety (con't.)	speeds for credential checking, roadside safety inspections, and weigh-in-motion • maintain historical safety data on which automatic pass or pull-in message is based
Tennessee Emergency Management Agency	• coordinate response to major incidents between emergency and transportation management agencies within the region and in other regions and states
Tennessee Highway Patrol	• receive emergency calls and forward to appropriate dispatch center • dispatch highway patrol patrols to incidents • coordinate response to incidents with other emergency management agencies (within the region and in other regions and states)

5.4 High-Level Functional Requirements

Additionally, each system operated by the stakeholders must perform certain functions to effectively deliver the ITS services desired in the Memphis area. The primary functions that each system needs to perform were determined and a requirement for each function was developed. The following lists detail the primary functional requirements for the major ITS elements in the Memphis area. These requirements are high-level functions, not detailed design requirements.

Stakeholder: Arkansas Highway Patrol
System: Arkansas Highway Patrol Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access calls.
- collect available information about the caller and the reported emergency.
- forward information on emergency about emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: Arkansas State Highway and Transportation Department
System: Arkansas District 1 FMC

This system shall:
- collect, store, and provide electronic access to traffic surveillance data.
- control systems for efficient freeway management including integration of surveillance information with freeway geometry, vehicle control such as ramp metering, DMS, and HAR.
- interface to coordinated traffic systems for information dissemination to the public.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of providing traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: Center City Commission
System: Center City Downtown Parking System

This system shall:
- collect and store parking information that is collected in the course of parking system operations.
- provide parking data to operations personnel or other data users and archives in the region.
- support electronic payment of parking fees.
- detect and classify properly equipped vehicles entering and exiting the parking facility
- maintain information on parking availability and pricing structure information.
- enable processing of financial transactions and external coordination.
- detect and classify vehicles entering and exiting the parking facility.
- measure parking facility occupancy to support parking operations and traveler information services.

Stakeholder: City of Bartlett Traffic Department
System: City of Bartlett TCC

This system shall:
- collect, store, and provide electronic access to traffic surveillance data.
- monitor highway-rail intersection (HRI) equipment at the roadside which manages highway traffic.
- receive additional information on approaching trains and detect and report obstructions in the HRI.
- remotely monitor and report the status of the roadside equipment.
- generate status requests and remote control plan updates.
- receive periodic status updates in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- monitor and manage the traffic flow at signalized intersections.
- analyze and reduce the collected data from traffic surveillance equipment and develop and implement control plans for signalized intersections.
- develop and implement control plans that coordinate signals at many intersections.
- disseminate incident related information to travelers, potential travelers, and private information service providers.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.
- notify utility company of problems with utilities.

Stakeholder: City of Bartlett Traffic Department
System: City of Bartlett Traffic Field Equipment

This system shall:
- monitor traffic flow.
- monitor surveillance equipment and interfaces and report detected abnormalities.
- control traffic signals.

- receive vehicle signal priority requests and send requests to traffic signal controllers accordingly.
- monitor the traffic signal equipment and interfaces and report detected abnormalities.
- display traffic information on equipment along the roadway including DMS and HAR.
- monitor DMS and HAR equipment and interfaces and report detected abnormalities.
- manage highway traffic at highway-rail intersections (HRIs).
- provide pre-emption of adjacent signalized intersections when activated on notification by interfaced wayside equipment of an approaching train.
- monitor the HRI equipment and interfaces and report detected abnormalities through the wayside equipment and traffic management center.

Stakeholder: City of Bartlett Public Works Department
System: City of Bartlett Public Works

This system shall:
- respond to resource request.
- send response to requesting agency.
- notify transportation and emergency agencies of planned construction and street closures.

Stakeholder: City of Collierville Traffic Department
System: City of Collierville TCC

This system shall:
- collect, store, and provide electronic access to traffic surveillance data.
- monitor highway-rail intersection (HRI) equipment at the roadside which manages highway traffic.
- receive additional information on approaching trains and detect and report obstructions in the HRI.
- remotely monitor and report the status of the roadside equipment.
- generate status requests and remote control plan updates.
- receive periodic status updates in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- monitor and manage the traffic flow at signalized intersections.

- analyze and reduce the collected data from traffic surveillance equipment and develop and implement control plans for signalized intersections.
- develop and implement control plans that coordinate signals at many intersections.
- disseminate incident related information to travelers, potential travelers, and private information service providers.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: City of Collierville Traffic Department
System: City of Collierville Traffic Field Equipment

This system shall:
- monitor traffic flow.
- monitor surveillance equipment and interfaces and report detected abnormalities.
- control traffic signals.
- receive vehicle signal priority requests and send requests to traffic signal controllers accordingly.
- monitor the traffic signal equipment and interfaces and report detected abnormalities.
- display traffic information on equipment along the roadway including DMS and HAR.
- monitor DMS and HAR equipment and interfaces and report detected abnormalities.
- manage highway traffic at highway-rail intersections (HRIs).
- provide pre-emption of adjacent signalized intersections when activated on notification by interfaced wayside equipment of an approaching train.
- monitor the HRI equipment and interfaces and report detected abnormalities through the wayside equipment and traffic management center.

Stakeholder: City of Collierville Public Works Department
System: City of Collierville Public Works

This system shall:
- respond to resource request.
- send response to requesting agency.
- notify transportation and emergency agencies of planned construction and street closures.

Stakeholder: City of Germantown Traffic Department
System: City of Germantown TCC

This system shall:
- monitor highway-rail intersection (HRI) equipment at the roadside which manages highway traffic.
- receive additional information on approaching trains and detect and report obstructions in the HRI.
- remotely monitor and report the status of the roadside equipment.

- generate status requests and remote control plan updates.
- receive periodic status updates in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- monitor and manage the traffic flow at signalized intersections.
- analyze and reduce the collected data from traffic surveillance equipment and develop and implement control plans for signalized intersections.
- develop and implement control plans that coordinate signals at many intersections.
- disseminate incident related information to travelers, potential travelers, and private information service providers.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: City of Germantown Traffic Department
System: City of Germantown Traffic Field Equipment

This system shall:
- monitor traffic flow.
- monitor surveillance equipment and interfaces and report detected abnormalities.
- control traffic signals.
- receive vehicle signal priority requests and send requests to traffic signal controllers accordingly.
- monitor the traffic signal equipment and interfaces and report detected abnormalities.
- display traffic information on equipment along the roadway including DMS and HAR.
- monitor DMS and HAR equipment and interfaces and report detected abnormalities.
- manage highway traffic at highway-rail intersections (HRIs).
- provide pre-emption of adjacent signalized intersections when activated on notification by interfaced wayside equipment of an approaching train.
- monitor the HRI equipment and interfaces and report detected abnormalities through the wayside equipment and traffic management center.

Stakeholder: City of Germantown Public Works Department
System: City of Germantown Public Works

This system shall:
- respond to resource request.
- send response to requesting agency.
- notify transportation and emergency agencies of planned construction and street closures.

Stakeholder: Crittenden County Sheriff Department
System: Crittenden County Sheriff Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access.
- transfer emergency calls to appropriate system.
- collect available information about the caller and the reported emergency.
- forward information on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: DeSoto County Sheriff Department
System: DeSoto County Sheriff Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access.
- transfer emergency calls to appropriate system.
- collect available information about the caller and the reported emergency.
- forward information on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.

- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: MATA
System: MATA Automated Call Center

This system shall:
- collect, process, store, and disseminate transit traveler information.
- maintain a database of local area transit services available to travelers with up-to-the-minute information.
- include the latest available information on transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence.
- provide users with real-time travel related information en-route to assist the travelers in making decisions about transfers and modification of trips.
- provide interactive traveler information.

Stakeholder: MATA
System: MATA Fixed Route Vehicles

This system shall:
- automate planning and scheduling by collecting data for schedule generation.
- support two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility, on-board safety sensor data to be transmitted from the transit vehicles to a facility, and data transmission from individual facilities to a central facility for processing/analysis.
- use transit vehicle mileage data to automatically generate preventative maintenance schedules for each bus by utilizing vehicle tracking data and storing with a trip computer.
- monitor on board the vehicle in real-time, and transmit information via two-way communication to the management center.
- collect data required to determine accurate ridership levels and implement variable and flexible fare structures.
- support two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility, sensor data to be transmitted from the transit vehicles to a facility, and data transmission from individual facilities to a central facility for processing/analysis if desired.
- support fleet management with automated mileage and fuel reporting and auditing.
- track transit vehicle and transmit location to dispatch.

Stakeholder: MATA
System: MATA Light Rail Vehicles

This system shall:
- use transit vehicle mileage data to automatically generate preventative maintenance schedules for each bus by utilizing vehicle tracking data and storing with a trip computer.
- monitor on board the vehicle in real-time, and transmit information via two-way communication to the management center.
- collect data required to determine accurate ridership levels and implement variable and flexible fare structures.
- support use of a fare medium for all applicable surface transportation services, allow the traveler to pay without stopping, have payment media automatically identified as void and/or invalid and eligibility verified, and allow for third party payment.
- provide expansion into other uses for payment medium such as retail and telephone and for off-line billing for fares paid by agencies shall be supported.
- support two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility, sensor data to be transmitted from the transit vehicles to a facility, and data transmission from individual facilities to a central facility for processing/analysis if desired.
- monitor the safety of transit vehicles using on-board safety sensors, processors and communications from on-board system.
- support fleet management with automated mileage and fuel reporting and auditing.
- request signal priority from equipment on the roadside.
- track transit vehicle and transmit location to dispatch.

Stakeholder: MATA
System: MATA Plus Vehicles

This system shall:
- use transit vehicle mileage data to automatically generate preventative maintenance schedules for each bus by utilizing vehicle tracking data and storing with a trip computer.
- monitor on board the vehicle in real-time, and transmit information via two-way communication to the management center.
- forward paratransit dispatch requests to the driver and forward acknowledgements to the center.
- assist the driver in managing multi-stop runs associated with demand responsive, flexibly routed transit services.
- collect data required to determine accurate ridership levels and implement variable and flexible fare structures.
- track transit vehicle and transmit location to dispatch.

Stakeholder: MATA
System: MATA Transit Management Center

This system shall:
- accept collected data required to determine accurate ridership levels and implement variable and flexible fare structures.

- support use of a fare medium for all applicable surface transportation services, have payment media automatically identified as void and/or invalid and eligibility verified, and allow for third party payment.
- allow two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility, sensor data to be transmitted from the transit vehicles to a facility, and data transmission from individual facilities to a central facility for processing/analysis.
- allow fixed-route services to develop, print and disseminate schedules and automatically update customer service operator systems with the most current schedule information.
- use current vehicle schedule adherence and optimum scenarios for schedule adjustment.
- collect the latest available information for a transit service and make it available to transit customers and to Information Service Providers for further distribution.
- provide information including the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, and special events.
- support schedule coordination between transit properties and coordinates with other surface and air transportation modes.
- monitor key transit locations and transit vehicles with both video and audio systems automatically alerting operators and police of potential incidents.
- support traveler activated alarms including responding to terrorist incidents.
- monitor transit vehicle locations and determine vehicle schedule adherence.
- furnish users with real-time travel related information, continuously updated with real-time information from each transit system within the local area of jurisdiction, inclusive of all transportation modes, from all providers of transportation services, and provide users with the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents conditions, weather conditions, and special events.
- support two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility.
- collect and store transit information that is collected in the course of transit operations.
- provide transit data to operations personnel or other data users and archives in the region.
- provide advanced maintenance functions for the transit property.
- collect operational and maintenance data from transit vehicles, manages vehicle service histories, and monitors drivers and vehicles.
- collect vehicle mileage data and use it to automatically generate preventative maintenance schedules for each vehicle by utilizing vehicle tracking data from a prerequisite vehicle tracking equipment package.
- provide information to proper service personnel to support maintenance activities and records and verify that maintenance work was performed.
- receive special events and real-time incident data from the traffic management center and assigns operators to vehicles and transit routes.
- receive information about incidents involving transit vehicles from the Transit Management system in order to dispatch tow trucks and other repair vehicles.
- automate and support the assignment of transit vehicles and drivers to enhance the daily operation of a transit service.

Stakeholder: MATA
System: MATA Transit Website Server

This system shall:
- collect, process, store, and disseminate transit traveler information.
- include the latest available information on transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence.

Stakeholder: MATA
System: MATA Traveler Info Kiosks

This system shall:
- provide real-time travel-related information to transit users at transit stops, multi-modal transfer points, and other public transportation areas.
- provide the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, and special events.

Stakeholder: Memphis City Fire Services
System: Memphis City Fire Dispatch

This system shall:
- receive transferred emergency calls.
- collect available information about the caller and the reported emergency.
- forward information on emergency on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- track emergency vehicles.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.

Stakeholder: Memphis City Fire Services
System: Memphis City Fire Vehicles

This system shall:
- provide dispatch and routing information.
- track fire vehicle and transmit location to dispatch.
- preempt signals via short range communication directly with traffic control equipment at the roadside.

- provide safe and expedient arrival on the incident scene.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: Memphis City Police Department
System: Memphis City Police Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access.
- transfer emergency calls to appropriate system.
- collect available information about the caller and the reported emergency.
- forward information on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: Memphis City Police Department
System: Memphis City Police Vehicles

This system shall:
- provide dispatch and routing information.
- provide safe and expedient arrival on the incident scene.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: Memphis City Police Department
System: MPD Special Events System

This system shall:
- collect, store and provide planned events that might impact traffic.
- collect, store and provide planned road closures.

Stakeholder: Memphis City Traffic Department
System: Memphis City TOC

This system shall:
- collect, store, and provide electronic access to traffic surveillance data.
- monitor highway-rail intersection (HRI) equipment at the roadside which manages highway traffic.
- receive additional information on approaching trains and detect and report obstructions in the HRI.
- remotely monitor and report the status of the roadside equipment.
- generate status requests and remote control plan updates.
- receive periodic status updates in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- provide traffic signal priority for transit vehicles.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- monitor and manage the traffic flow at signalized intersections.
- analyze and reduce the collected data from traffic surveillance equipment and develop and implement control plans for signalized intersections.
- develop and implement control plans that coordinate signals at many intersections.
- disseminate incident related information to travelers, potential travelers, and private information service providers.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: Memphis City Traffic Department
System: Memphis City Traffic Field Equipment

This system shall:
- monitor traffic flow.
- control traffic signals.
- provide pre-emption of adjacent signalized intersections.

- receive vehicle signal priority requests and send requests to traffic signal controllers accordingly.
- display traffic information on equipment along the roadway including DMS and HAR.
- manage highway traffic at highway-rail intersections (HRIs) when activated on notification by interfaced wayside equipment of an approaching train..
- accept additional information about the arriving train from the wayside equipment so that the train's direction of travel, its estimated time of arrival, and the estimated duration of closure may be derived.
- convey information to the driver prior to, or in context with, warning system activation.
- detect an entrapped or otherwise immobilized vehicle within the HRI and provide an immediate notification to the wayside interface equipment and traffic management.
- monitor the HRI equipment and interfaces and report detected abnormalities through the wayside equipment and traffic management center.

Stakeholder: Memphis Light, Gas and Water
System: Memphis Light, Gas and Water Utility Dispatch

This system shall:
- receive notification of utility request.
- efficiently dispatch utility vehicles to scene.
- provide safe and efficient routes based on real-time traffic information.
- provide request data to utility personnel.
- manage response to utility requests.
- track the availability of resources and assist in the appropriate allocation of resources for a particular response.
- monitor utility vehicle locations and determine response times.

Stakeholder: Memphis Light, Gas and Water
System: Memphis Light, Gas and Water Utility Vehicles

This system shall:
- provide dispatch information.
- provide routing information.
- provide safe and expedient arrival to the scene.
- provide a direct interface between the utility vehicle and dispatchers.
- track utility vehicle and transmit location to dispatch.

Stakeholder: Memphis MPO
System: Memphis MPO Archive

This system shall:
- collect data from multiple data sources.
- store data in a focused repository.
- perform quality checks on the incoming data, error notification, and archive to archive coordination.
- collect a focused set of data and serve a particular user community.

- collect, integrate, and summarize transportation data from multiple sources and serve a broad array of users within a region.
- provide advanced data analysis, summarization, and mining features that facilitate discovery of information, patterns, and correlations in large data sets.
- collect and archive traffic, roadway, and environmental information for use in off-line planning, research, and analysis.

Stakeholder: Memphis-Shelby County Emergency Operations Center
System: Memphis-Shelby County EMA System

This system shall:
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.

Stakeholder: Memphis-Shelby County Health Department
System: Memphis-Shelby County Emissions Management System

This system shall:
- collect and store air quality and emissions information.
- provide air quality and emissions data to operations personnel or other data users and archives in the region.
- assimilate and store air quality measures and roadside collected emissions data.
- distribute general air quality measures as general traveler information and to other agencies in the region.

Stakeholder: Memphis-Shelby County Health Department
System: Memphis-Shelby County Emissions Sensors

This system shall:
- monitor emissions and general air quality and communicate the collected information back to the emissions management system where it can be monitored, analyzed, and used.

Stakeholder: Memphis-Shelby County Planning and Development
System: Memphis Area Rideshare

This system shall:
- collect, process, store, and disseminate traveler ridematching information.
- maintain a database of travelers and their work routes and provide connectivity between travelers taking similar routes.
- provide dynamic rideshare matches including rider and driver information and reservations.
- collect and store traveler information that is collected in the course of ridematching operation.
- provide ridematching data to operations personnel or other data users and archives in the region.

Stakeholder: Mississippi DOT
System: Mississippi TMC

This system shall:
- collect, store, and provide electronic access to traffic surveillance data.
- control systems for efficient freeway management including integration of surveillance information with freeway geometry, vehicle control such as ramp metering, DMS, and HAR.
- interface to coordinated traffic systems for information dissemination to the public.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: Mississippi Highway Patrol
System: Mississippi Highway Patrol Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access calls.

- collect available information about the caller and the reported emergency.
- forward information on emergency about emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: Mississippi Municipalities
System: Mississippi Municipal TCC

This system shall:
- collect, store, and provide electronic access to traffic surveillance data.
- monitor highway-rail intersection (HRI) equipment at the roadside which manages highway traffic.
- receive additional information on approaching trains and detect and report obstructions in the HRI.
- remotely monitor and report the status of the roadside equipment.
- generate status requests and remote control plan updates.
- receive periodic status updates in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- monitor and manage the traffic flow at signalized intersections.
- analyze and reduce the collected data from traffic surveillance equipment and develop and implement control plans for signalized intersections.

- develop and implement control plans that coordinate signals at many intersections.
- disseminate incident related information to travelers, potential travelers, and private information service providers.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: Municipal Fire Prevention Bureau
System: Municipal Fire Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access.
- collect available information about the caller and the reported emergency.
- forward information on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.

Stakeholder: Municipal Fire Prevention Bureau
System: Municipal Fire Vehicles

This system shall:
- provide dispatch and routing information.
- preempt signals via short range communication directly with traffic control equipment at the roadside.
- provide safe and expedient arrival on the incident scene.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: Municipal Police Department
System: Municipal Police Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access.
- collect available information about the caller and the reported emergency.

- forward information on emergency on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: Municipal Police Department
System: Municipal Police Vehicles

This system shall:
- provide dispatch and routing information.
- preempt signals via short range communication directly with traffic control equipment at the roadside.
- provide safe and expedient arrival on the incident scene.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: Shelby County Engineering
System: Shelby County TCC

This system shall:
- monitor and manage the traffic flow at signalized intersections.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- monitor highway-rail intersection (HRI) equipment at the roadside which manages highway traffic.
- receive additional information on approaching trains and detect and report obstructions in the HRI.
- remotely monitor and report the status of the roadside equipment.
- generate status requests and remote control plan updates.
- receive periodic status updates in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.

- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- analyze, control, and optimize area-wide traffic flow.
- perform wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions.
- analyze and reduce the collected data from traffic surveillance equipment and develop and implement control plans for signalized intersections.
- develop and implement control plans that coordinate signals at many intersections.
- disseminate incident related information to travelers, potential travelers, and private information service providers.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.
- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: Shelby County Engineering
System: Shelby County Traffic Field Equipment

This system shall:
- monitor traffic flow.
- monitor surveillance equipment and interfaces and report detected abnormalities.
- control traffic signals.
- receive vehicle signal priority requests and send requests to traffic signal controllers accordingly.
- monitor the traffic signal equipment and interfaces and report detected abnormalities.
- display traffic information on equipment along the roadway including DMS and HAR.
- monitor DMS and HAR equipment and interfaces and report detected abnormalities.
- manage highway traffic at highway-rail intersections (HRIs).
- provide pre-emption of adjacent signalized intersections when activated on notification by interfaced wayside equipment of an approaching train.
- monitor the HRI equipment and interfaces and report detected abnormalities through the wayside equipment and traffic management center.

Stakeholder: Shelby County Fire Department
System: Shelby County Fire Dispatch

This system shall:
- receive transferred emergency calls.
- collect available information about the caller and the reported emergency.
- forward information on emergency on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.

- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.

Stakeholder: Shelby County Fire Department
System: Shelby County Fire Vehicles

This system shall:
- provide dispatch and routing information.
- provide safe and expedient arrival on the incident scene.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: Shelby Public Works Department
System: Shelby County Public Works

This system shall:
- respond to resource request.
- send response to requesting agency.
- notify transportation and emergency agencies of planned construction and street closures.

Stakeholder: Shelby County Sheriff Department
System: Shelby County Sheriff Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access.
- transfer emergency calls to appropriate system.
- collect available information about the caller and the reported emergency.
- forward information on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.

- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: Shelby County Sheriff Department
System: Shelby County Sheriff Vehicles

This system shall:
- provide dispatch and routing information.
- provide safe and expedient arrival on the incident scene.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: TDOT
System: TDOT Bridge Sensors

This system shall:
- measure seismic activity by movement of bridge.

Stakeholder: TDOT
System: TDOT Environmental Monitoring Sensors

This system shall:
- measure environmental conditions and communicate the collected information back to the server where it can be monitored and analyzed.
- measure temperature and, precipitation.
- measure road surface temperature, moisture, icing, salinity, and other measures.

Stakeholder: TDOT
System: TDOT Environmental Monitoring Server

This system shall:
- collect, analyze and store environmental information.
- issue warnings to agencies in the region when hazardous conditions are detected.
- distribute the environmental data to operations personnel or other data users and archives in the region.

Stakeholder: TDOT
System: TDOT Freeway Service Patrol Dispatch

This system shall:
- receive transferred emergency calls.
- collect available information about the caller and the reported emergency.

- forward information on emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- track service patrol vehicles.
- provide safe and efficient routes based on real-time traffic information.

Stakeholder: TDOT
System: TDOT Freeway Service Patrol Vehicles

This system shall:
- receive dispatch and routing information.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: TDOT
System: TDOT RTMC

This system shall:
- collect, store, and provide electronic access to traffic surveillance data.
- control systems for efficient freeway management including integration of surveillance information with freeway geometry, vehicle control such as ramp metering, DMS, and HAR.
- interface to coordinated traffic systems for information dissemination to the public.
- detect and verify incidents.
- analyze and reduce collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
- formulate an incident response minimizing the incident potential, incident impacts, and/or resources required for incident management.
- propose and facilitate the dispatch of emergency response and service vehicles as well as coordinate response with all appropriate agencies.
- communicate with other TMCs to receive and transmit traffic information to other jurisdictions within the region.
- assimilate current and forecast road conditions and weather information using a combination of weather service information and an array of environmental sensors deployed on and about the roadway.
- use information to more effectively deploy road maintenance resources, issue general traveler advisories, and support location specific warnings to drivers.
- disseminate incident related information to travelers, potential travelers, and private information service providers.
- collect and store traffic information that is collected in the course of traffic operations.
- provide traffic data to operations personnel or other data users and archives in the region.

- monitor and diagnosis field equipment remotely to detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Stakeholder: TDOT
System: TDOT RTMC Field Equipment

This system shall:
- monitor traffic flow.
- monitor surveillance equipment and interfaces and report detected abnormalities.
- display traffic information on equipment along the roadway including DMS and HAR.
- monitor DMS and HAR equipment and interfaces and report detected abnormalities.
- control traffic on ramps to freeways.

Stakeholder: TDOT
System: TDOT RTMC Website Server

This system shall:
- collect, process, store, and disseminate traffic information including latest available information on traffic and highway conditions, and current situation information in real-time including incidents, road construction, recommended routes, current speeds on specific routes, and current weather situations.
- provide interactive traveler information.

Stakeholder: TDOT Headquarters Planning Office
System: TDOT Planning Traffic Archive

This system shall:
- collect and store traffic of data in a focused repository.
- perform quality checks on the incoming data, error notification, and archive to archive coordination.
- provide advanced data analysis, summarization, and mining features that facilitate discovery of information, patterns, and correlations in large data sets.
- collect and archive traffic, roadway, and environmental information for use in off-line planning, research, and analysis.
- select and format data to facilitate local, state, and federal government data reporting requirements.

Stakeholder: Tennessee Emergency Management Agency
System: Tennessee EMA System

This system shall:
- assist local emergency management agencies when requested.
- develop and store emergency response plans including hazmat incidents.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.

- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.

Stakeholder: Tennessee Highway Patrol
System: Tennessee Highway Patrol Dispatch

This system shall:
- receive 9-1-1 and 7-digit local access calls.
- collect available information about the caller and the reported emergency.
- forward information on emergency about emergency to other systems that formulate and manage the emergency response.
- collect and store emergency information that is collected in the course of emergency operations.
- provide emergency data to operations personnel and other data users and archives in the region.
- efficiently dispatch emergency vehicles to an incident.
- provide safe and efficient routes based on real-time traffic information.
- develop and store emergency response plans.
- manage overall coordinated response to emergencies.
- track the availability of resources and assist in the appropriate allocation of resources for a particular emergency response.
- provide coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.
- receive mayday messages, determine an appropriate response, and either use internal resources or contact a local agency to provide that response.

Stakeholder: Tennessee Highway Patrol
System: Tennessee Highway Patrol Vehicles

This system shall:
- provide dispatch and routing information.
- provide safe and expedient arrival on the incident scene.
- provide a direct interface between the emergency vehicle and incident management personnel.

Stakeholder: University of Memphis
System: Memphis Research Center

This system shall:
- analyze and reduce collected data from seismic sensors on bridges.
- issue alerts when seismic activity warrants it.

6.0 INTERCONNECT AND ARCHITECTURE FLOW DIAGRAMS

The integration opportunities of the transportation systems in the Memphis area identified from the National ITS Architecture were tailored in stakeholder meetings to

reflect the regional operational concept desired for the Memphis area. Diagrams in this section display the transportation systems in the Memphis area, and more importantly, how these systems will be connected with one another so information can be exchanged and transportation services can be coordinated. Stakeholders may use these diagrams as a starting point for gaining familiarity with the overall transportation system environment in the Memphis area. Each major system in the Memphis area is represented with two types of diagrams, an interconnect context diagram and architecture flow diagrams.

An interconnect context diagram shows a particular system and all other systems with which it shares information. These interconnects are represented as single lines and indicate information sharing without specifying the type of information being shared, or the direction of the information movement. The line type (solid or dashed line) indicates the current status of the interconnect. If the systems exchange information electronically, an interconnect is shown as existing; otherwise it is planned for the future.

After each interconnect context diagram is a series of architecture flow diagrams (one for each interconnect) showing the information (architecture flows) movement between the various systems. Architecture flow descriptions accompany each architecture flow diagram. The status of each architecture flow is shown by the line type. The Memphis Area ITS Architecture shows the electronic exchange of information between systems. Therefore, information currently shared by radio, telephone, fax, e-mail, etc. are shown as planned.

Only the interconnect and architecture flow diagrams for the major transportation systems in the Memphis area are shown in this section. Information for all of the systems in the Memphis area is included in the Turbo Architecture™ database. The interconnect and architecture flow diagrams for any system in the database can easily be created with Turbo Architecture™.

6.1 Arkansas Highway Patrol Dispatch[*]

Shelby County Sheriff Department	Tennessee Highway Patrol
Shelby County Sheriff Dispatch	Tennessee Highway Patrol Dispatch

Arkansas State Highway and Transp...	Crittenden County Sheriff Department	DeSoto County Sheriff Department
Arkansas District 1 FMC	Crittenden County Sheriff Dispatch	DeSoto County Sheriff Dispatch

MATA	Arkansas Highway Patrol	Memphis City Fire Services
MATA Transit Management Center	Arkansas Highway Patrol Dispatch	Memphis City Fire Dispatch

Memphis City Police Department	Memphis-Shelby County Emergency ...	Mississippi Highway Patrol
Memphis City Police Dispatch	Memphis-Shelby County EOC	Mississippi Highway Patrol Dispatch

——————— Existing
——————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.1.1 Arkansas Highway Patrol Dispatch and Arkansas District 1 FMC

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.1.2 Arkansas Highway Patrol Dispatch and Crittenden County Sheriff Dispatch

```
Crittenden County Sheriff Department
    Crittenden County Sheriff Dispatch




                    incident report
                    incident response coordination
                 incident report
            incident response coordination


                                        Arkansas Highway Patrol
                                        Arkansas Highway Patrol Dispatch
```

───────────── Existing
───────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.3 Arkansas Highway Patrol Dispatch and DeSoto County Sheriff Dispatch

DeSoto County Sheriff Department
DeSoto County Sheriff Dispatch

incident report
incident response coordination
incident report
incident response coordination

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.4 Arkansas Highway Patrol Dispatch and MATA Transit Management Center

MATA
MATA Transit Management Center

└─transit emergency coordination data
└─transit emergency data

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

— Existing
— Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.1.5 Arkansas Highway Patrol Dispatch and Memphis City Fire Dispatch

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┌─────────────────────────────────────────┐
│         Memphis City Fire Services       │
│        Memphis City Fire Dispatch        │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
          incident report
          incident response coordination
        incident report
      incident response coordination

                        ┌─────────────────────────────────────┐
                        │        Arkansas Highway Patrol        │
                        │    Arkansas Highway Patrol Dispatch   │
                        │                                       │
                        │                                       │
                        │                                       │
                        └─────────────────────────────────────┘
```

——————————— Existing
——————————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.6 Arkansas Highway Patrol Dispatch and Memphis City Police Dispatch

Memphis City Police Department
Memphis City Police Dispatch

incident report
incident response coordination
incident report
incident response coordination

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.7 Arkansas Highway Patrol Dispatch and Memphis-Shelby County EOC

| Memphis-Shelby County Emergency ... |
| Memphis-Shelby County EOC |

incident report
incident response coordination
incident report
incident response coordination

| Arkansas Highway Patrol |
| Arkansas Highway Patrol Dispatch |

——————————————— Existing
——————————————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.8 Arkansas Highway Patrol Dispatch and Mississippi Highway Patrol Dispatch

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

———————— Existing
———————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.9 Arkansas Highway Patrol Dispatch and Shelby County Sheriff Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

─incident report─
─incident response coordination─
─incident report─
─incident response coordination─

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.10 Arkansas Highway Patrol Dispatch and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.2 Arkansas District 1 FMC[*]

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

MATA
MATA Transit Management Center

Memphis MPO
Memphis MPO Archive

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

Arkansas State Highway and Transp...
Arkansas District 1 FMC

TDOT
TDOT RTMC

—————————— Existing
—————————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.2.1 Arkansas District 1 FMC and Arkansas Highway Patrol Dispatch

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.2.2 Arkansas District 1 FMC and MATA Transit Management Center

MATA
MATA Transit Management Center

—request transit information—
—traffic information for transit—
—transit system data—

Arkansas State Highway and Transp...
Arkansas District 1 FMC

———— Existing
———— Planned

Planned Flows

request transit information	Request for transit service information and current transit status.
traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.2.3 Arkansas District 1 FMC and Memphis MPO Archive

Memphis MPO
Memphis MPO Archive

—traffic archive data—
—archive requests—
—archive status—

Arkansas State Highway and Transp...
Arkansas District 1 FMC

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information

6.2.4 Arkansas District 1 FMC and Memphis-Shelby County EOC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.2.5 Arkansas District 1 FMC and TDOT RTMC

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┌──────────────────────────────────────┐
│                 TDOT                   │
│               TDOT RTMC                │
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│                                        │
│                                        │
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traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

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┌──────────────────────────────────────┐
│   Arkansas State Highway and Transp... │
│          Arkansas District 1 FMC       │
│                                        │
│                                        │
└──────────────────────────────────────┘
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Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.3 City of Bartlett TCC[*]

City of Bartlett Public Works Departm...	City of Bartlett Traffic Department	Memphis City Traffic Department	TDOT
City of Bartlett Public Works	City of Bartlett Traffic Field Equipment	Memphis City TOC	TDOT RTMC

Memphis Light, Gas and Water	City of Bartlett Traffic Department	Memphis MPO
Memphis Light, Gas and Water Utilities	City of Bartlett TCC	Memphis MPO Archive

Municipal Fire Prevention Bureau	Municipal Police Department	Shelby County Public Works Depart...
Municipal Fire Dispatch	Municipal Police Dispatch	Shelby County Public Works

Existing
Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.3.1 City of Bartlett TCC and City of Bartlett Public Works

City of Bartlett Traffic Department
City of Bartlett TCC

- equipment maintenance status
- maintenance resource response
- work zone status
- closure coordination
- maintenance resource request
- traffic equipment status

City of Bartlett Public Works Departm...
City of Bartlett Public Works

Existing
Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.3.2 City of Bartlett TCC and City of Bartlett Traffic Field Equipment

City of Bartlett Traffic Department
City of Bartlett Traffic Field Equipment

hri control data
hri request
roadway information system data
sensor and surveillance control
signal control data
emissions data
environmental conditions
fault reports
hri status
incident data
intersection blockage notification
request for right-of-way
roadway information system status
signal control status
traffic flow
traffic images

City of Bartlett Traffic Department
City of Bartlett TCC

———————— Existing
———————— Planned

Existing Flows

fault reports	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.
hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations.
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation.
signal control data	Information used to configure and control traffic signal systems.
signal control status	Status of surface street signal controls.

Planned Flows

emissions data	Emissions data and associated imagery collected by roadside equipment.
environmental conditions	Current environment conditions (e.g., air temperature, wind speed, surface temperature) as measured by environmental sensors and communicated by supporting field equipment.

hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.
incident data	Data and imagery from the roadside supporting incident detection and verification.
intersection blockage notification	Notification that a highway-rail intersection is obstructed and supporting information.
request for right-of-way	Forwarded request from signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.
sensor and surveillance control	Information used to configure and control sensor and surveillance systems at the roadside.
traffic flow	Raw and/or processed traffic detector information which allows derivation of traffic flow variables (e.g., speed, volume and density measures).
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.

6.3.3 City of Bartlett TCC and Memphis City TOC

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Memphis City Traffic Department
        Memphis City TOC




          traffic control coordination
          traffic information coordination
        traffic control coordination
      traffic information coordination


                                    City of Bartlett Traffic Department
                                            City of Bartlett TCC
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Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.3.4 City of Bartlett TCC and Memphis Light, Gas and Water Utility Dispatch

Memphis Light, Gas and Water
Memphis Light, Gas and Water Utility Dispatch

current network conditions
utility notification
utility status information

City of Bartlett Traffic Department
City of Bartlett TCC

— Existing
— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.3.5 City of Bartlett TCC and Memphis MPO Archive

Memphis MPO	
Memphis MPO Archive	

traffic archive data
archive requests
archive status

City of Bartlett Traffic Department	
City of Bartlett TCC	

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information

6.3.6 City of Bartlett TCC and Municipal Fire Dispatch

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.3.7 City of Bartlett TCC and Municipal Police Dispatch

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┌─────────────────────────────────────────────┐
│        Municipal Police Department           │
│        Municipal Police Dispatch             │
│                                              │
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│                                              │
└─────────────────────────────────────────────┘
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current network conditions
emergency traffic control response
emergency traffic control request
incident information
remote surveillance control

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                    ┌─────────────────────────────────────────────┐
                    │      City of Bartlett Traffic Department     │
                    │           City of Bartlett TCC               │
                    │                                              │
                    │                                              │
                    │                                              │
                    └─────────────────────────────────────────────┘
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————————————— Existing
————————————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.3.8 City of Bartlett TCC and Shelby County Public Works

Planned Flows	
closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
work zone status	Status of maintenance work zone.

6.3.9 City of Bartlett TCC and TDOT RTMC

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TDOT
TDOT RTMC
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traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

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City of Bartlett Traffic Department
City of Bartlett TCC
```

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.4 City of Collierville TCC[*]

Municipal Fire Prevention Bureau	Municipal Police Department	Shelby County Public Works Depart...	TDOT
Municipal Fire Dispatch	Municipal Police Dispatch	Shelby County Public Works	TDOT RTMC

City of Collierville Public Works Depa...	City of Collierville Traffic Department	City of Germantown Traffic Department
City of Collierville Public Works	City of Collierville Traffic Field Equipment	City of Germantown TCC

Memphis City Traffic Department	City of Collierville Traffic Department	Memphis Light, Gas and Water
Memphis City TOC	City of Collierville TCC	Memphis Light, Gas and Water Utilities

Memphis MPO	Mississippi Municipalities	Mississippi DOT
Memphis MPO Archive	Mississippi Municipal TCC	Mississippi TMC

——— Existing
——— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.4.1 City of Collierville TCC and City of Collierville Public Works

Existing
Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.4.2 City of Collierville TCC and City of Collierville Traffic Field Equipment

Existing
Planned

Existing Flows

hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations.
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation.
signal control data	Information used to configure and control traffic signal systems.
signal control status	Status of surface street signal controls.

Planned Flows

emissions data	Emissions data and associated imagery collected by roadside equipment.
environmental conditions	Current environment conditions (e.g., air temperature, wind speed, surface temperature) as measured by environmental sensors and communicated by supporting field equipment.
fault reports	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.

hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.
incident data	Data and imagery from the roadside supporting incident detection and verification.
intersection blockage notification	Notification that a highway-rail intersection is obstructed and supporting information.
request for right-of-way	Forwarded request from signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.
sensor and surveillance control	Information used to configure and control sensor and surveillance systems at the roadside.
traffic flow	Raw and/or processed traffic detector information which allows derivation of traffic flow variables (e.g., speed, volume and density measures).
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.

6.4.3 City of Collierville TCC and City of Germantown TCC

City of Germantown Traffic Department
City of Germantown TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Collierville Traffic Department
City of Collierville TCC

—————————— Existing
—————————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.4.4 City of Collierville TCC and Memphis City TOC

Memphis City Traffic Department
Memphis City TOC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Collierville Traffic Department
City of Collierville TCC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.4.5 City of Collierville TCC and Memphis Light, Gas and Water Utility Dispatch

Memphis Light, Gas and Water
Memphis Light, Gas and Water Utility Dispatch

current network conditions
utility notification
utility status information

City of Collierville Traffic Department
City of Collierville TCC

———— Existing
———— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.4.6 City of Collierville TCC and Memphis MPO Archive

Memphis MPO
Memphis MPO Archive

traffic archive data
archive requests
archive status

City of Collierville Traffic Department
City of Collierville TCC

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.4.7 City of Collierville TCC and Mississippi Municipal TCC

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.4.8 City of Collierville TCC and Mississippi TMC

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.4.9 City of Collierville TCC and Municipal Fire Dispatch

Municipal Fire Prevention Bureau
Municipal Fire Dispatch

current network conditions
emergency traffic control response
emergency traffic control request
incident information
remote surveillance control

City of Collierville Traffic Department
City of Collierville TCC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.4.10 City of Collierville TCC and Municipal Police Dispatch

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┌─────────────────────────────────────────┐
│      Municipal Police Department          │
│         Municipal Police Dispatch         │
│                                           │
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└─────────────────────────────────────────┘
         │ │  ↑  ↑
         │ │  │  │ ─current network conditions──────────────┐
         │ │  │  └─emergency traffic control response──────┐│
         │ │  └─emergency traffic control request────────┐││
         │ └─incident information───────────────────────┐│││
         └─remote surveillance control────────────────┐││││
                                                       ↓↓↓││
                              ┌────────────────────────────────────────┐
                              │   City of Collierville Traffic Department│
                              │        City of Collierville TCC          │
                              │                                          │
                              │                                          │
                              └────────────────────────────────────────┘
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───────────────── Existing
───────────────── Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.4.11 City of Collierville TCC and Shelby County Public Works

Shelby County Public Works Depart...
Shelby County Public Works

closure coordination
maintenance resource request
maintenance resource response
work zone status

City of Collierville Traffic Department
City of Collierville TCC

——— Existing
——— Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
work zone status	Status of maintenance work zone.

6.4.12 City of Collierville TCC and TDOT RTMC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Collierville Traffic Department
City of Collierville TCC

——————————— Existing
——————————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.5 City of Germantown TCC[*]

Municipal Police Department	Shelby County Public Works Depart...	TDOT
Municipal Police Dispatch	Shelby County Public Works	TDOT RTMC

City of Collierville Traffic Department	City of Germantown Public Works De...	City of Germantown Traffic Department
City of Collierville TCC	City of Germantown Public Works	City of Germantown Traffic Field Equipment

Memphis City Traffic Department	City of Germantown Traffic Department	Memphis Light, Gas and Water
Memphis City TOC	City of Germantown TCC	Memphis Light, Gas and Water Utilities

Memphis MPO	Mississippi Municipalities	Municipal Fire Prevention Bureau
Memphis MPO Archive	Mississippi Municipal TCC	Municipal Fire Dispatch

Existing
Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.5.1 City of Germantown TCC and City of Collierville TCC

City of Germantown Traffic Department
City of Germantown TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Collierville Traffic Department
City of Collierville TCC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.5.2 City of Germantown TCC and City of Germantown Public Works

City of Germantown Traffic Department
City of Germantown TCC

equipment maintenance status
maintenance resource response
work zone status
closure coordination
maintenance resource request
traffic equipment status

City of Germantown Public Works De...
City of Germantown Public Works

Existing
Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.5.3 City of Germantown TCC and City of Germantown Traffic Field Equipment

City of Germantown Traffic Department
City of Germantown Traffic Field Equipment

hri control data
hri request
roadway information system data
sensor and surveillance control
signal control data
emissions data
environmental conditions
fault reports
hri status
incident data
intersection blockage notification
request for right-of-way
roadway information system status
signal control status
traffic flow
traffic images

City of Germantown Traffic Department
City of Germantown TCC

Existing
Planned

Existing Flows

hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations.
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation.
signal control data	Information used to configure and control traffic signal systems.
signal control status	Status of surface street signal controls.

Planned Flows

emissions data	Emissions data and associated imagery collected by roadside equipment.
environmental conditions	Current environment conditions (e.g., air temperature, wind speed, surface temperature) as measured by environmental sensors and communicated by supporting field equipment.
fault reports	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.

hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.
incident data	Data and imagery from the roadside supporting incident detection and verification.
intersection blockage notification	Notification that a highway-rail intersection is obstructed and supporting information.
request for right-of-way	Forwarded request from signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.
sensor and surveillance control	Information used to configure and control sensor and surveillance systems at the roadside.
traffic flow	Raw and/or processed traffic detector information which allows derivation of traffic flow variables (e.g., speed, volume and density measures).
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.

6.5.4 City of Germantown TCC and Memphis City TOC

Memphis City Traffic Department
Memphis City TOC

traffic control coordination

traffic information coordination

traffic control coordination

traffic information coordination

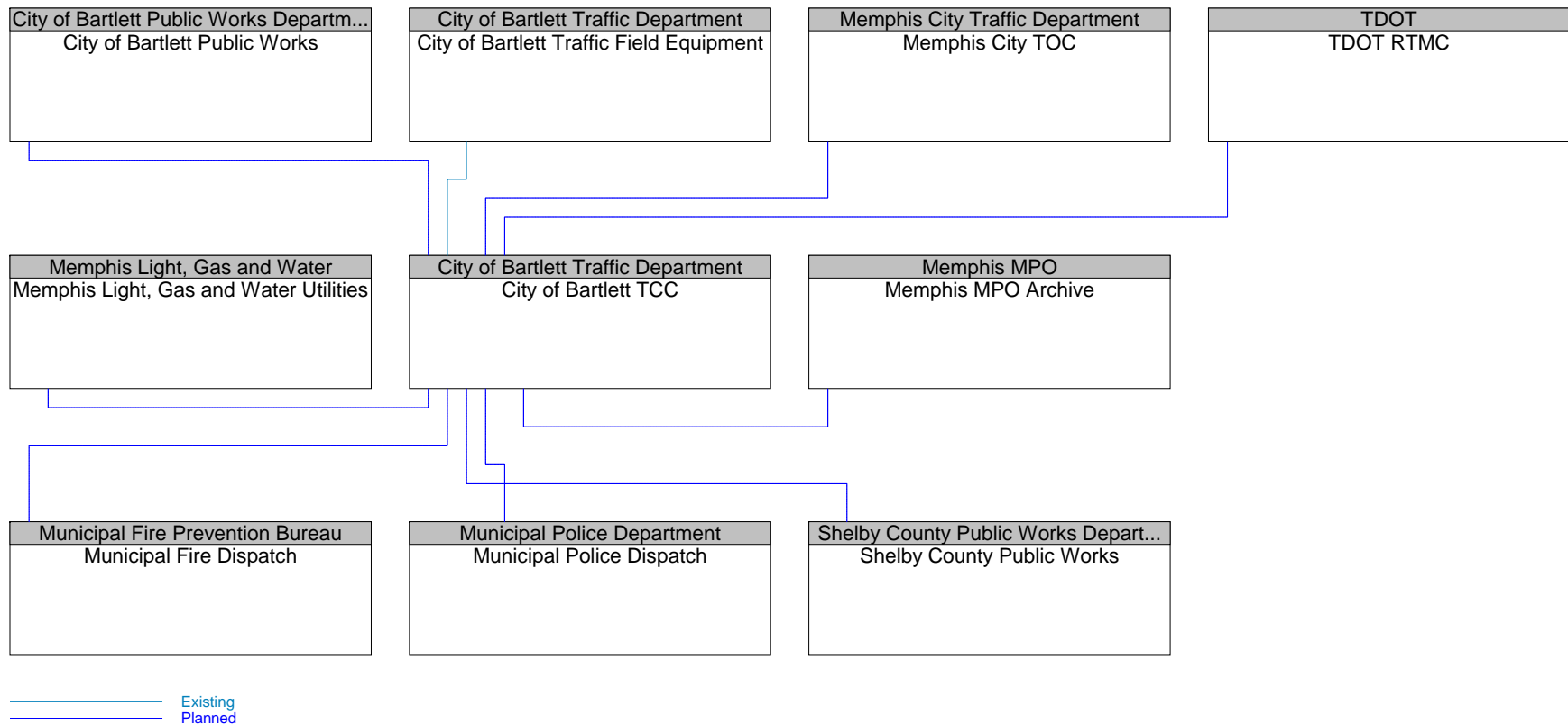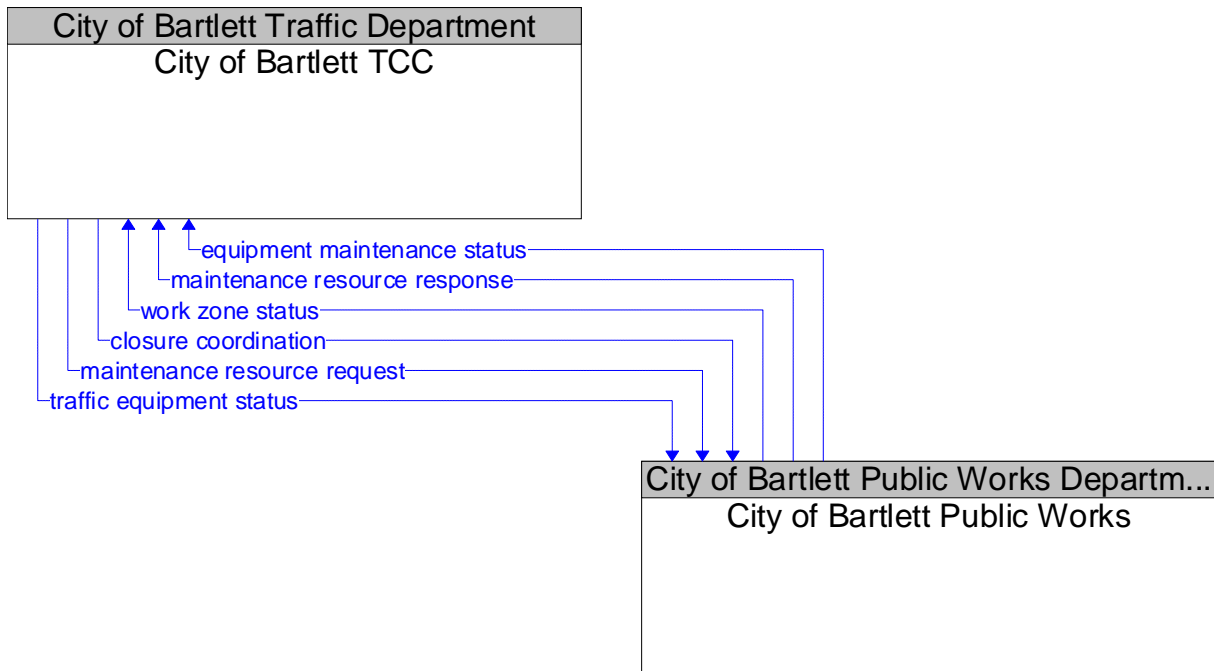| City of Germantown Traffic Department |
| :---: |
| City of Germantown TCC |

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.5.5 City of Germantown TCC and Memphis Light, Gas and Water Utility Dispatch

```
┌─────────────────────────────────────┐
│   Memphis Light, Gas and Water       │
│ Memphis Light, Gas and Water Utility │
│              Dispatch                │
│                                      │
│                                      │
│                                      │
└─────────────────────────────────────┘
      ↑  ↑
      │  └─current network conditions──────────────────┐
      │   └─utility notification───────────────────┐    │
      └─utility status information──────────────┐   │    │
                                                │   │    ↓
                         ┌────────────────────────────────────────┐
                         │ City of Germantown Traffic Department   │
                         │      City of Germantown TCC             │
                         │                                         │
                         │                                         │
                         │                                         │
                         └────────────────────────────────────────┘
```

──────────────── Existing
──────────────── Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.5.6 City of Germantown TCC and Memphis MPO Archive

Memphis MPO
Memphis MPO Archive

─traffic archive data─
─archive requests─
─archive status─

City of Germantown Traffic Department
City of Germantown TCC

─────── Existing
─────── Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.5.7 City of Germantown TCC and Mississippi Municipal TCC

Mississippi Municipalities
Mississippi Municipal TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Germantown Traffic Department
City of Germantown TCC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.5.8 City of Germantown TCC and Municipal Fire Dispatch

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.5.9 City of Germantown TCC and Municipal Police Dispatch

```
Municipal Police Department
     Municipal Police Dispatch
```

current network conditions
emergency traffic control response
emergency traffic control request
incident information
remote surveillance control

```
City of Germantown Traffic Department
        City of Germantown TCC
```

———————————— Existing
———————————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.5.10 City of Germantown TCC and Shelby County Public Works

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
work zone status	Status of maintenance work zone.

6.5.11 City of Germantown TCC and TDOT RTMC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Germantown Traffic Department
City of Germantown TCC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.6 MATA Transit Management Center[*]

Media	Memphis City Fire Services	Memphis City Police Department	Memphis City Traffic Department	Memphis MPO
Media	Memphis City Fire Dispatch	Memphis City Police Dispatch	Memphis City TOC	Memphis MPO Archive

Memphis-Shelby County Health Dep...	Arkansas State Highway and Transp...	Arkansas Highway Patrol	Center City Commission	Memphis-Shelby County Emergency ...
Memphis-Shelby County Emissions Management System	Arkansas District 1 FMC	Arkansas Highway Patrol Dispatch	Center City Downtown Parking System	Memphis-Shelby County EOC

Mississippi Highway Patrol	MATA	MATA	MATA	Mississippi DOT
Mississippi Highway Patrol Dispatch	MATA Automated Call Center	MATA Transit Management Center	MATA Fixed Route Vehicles	Mississippi TMC

Municipal Fire Prevention Bureau	MATA	MATA	MATA	Municipal Police Department
Municipal Fire Dispatch	MATA Light Rail Vehicles	MATA Plus Vehicles	MATA Transit Website Server	Municipal Police Dispatch

	Shelby County Fire Department	Shelby County Sheriff Department	TDOT	Tennessee Highway Patrol
	Shelby County Fire Dispatch	Shelby County Sheriff Dispatch	TDOT RTMC	Tennessee Highway Patrol Dispatch

Existing
Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.6.1 MATA Transit Management Center and Arkansas Highway Patrol Dispatch

MATA
MATA Transit Management Center

└transit emergency coordination data───────
└transit emergency data───────

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

───────── Existing
───────── Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.2 MATA Transit Management Center and Arkansas District 1 FMC

MATA
MATA Transit Management Center

request transit information
traffic information for transit
transit system data

Arkansas State Highway and Transp...
Arkansas District 1 FMC

Existing
Planned

Planned Flows

request transit information	Request for transit service information and current transit status.
traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.6.3 MATA Transit Management Center and Center City Downtown Parking System

MATA
MATA Transit Management Center

transit parking coordination
transit parking lot response

Center City Commission
Center City Downtown Parking System

Existing
Planned

Planned Flows

transit parking coordination	Request for coordinated fare payment and parking lot price data.
transit parking lot response	Response to transit occupancy inquiries and coordination with parking lots.

6.6.4 MATA Transit Management Center and MATA Automated Call Center

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┌─────────────────────────────────────────┐
│                  MATA                     │
│     MATA Transit Management Center        │
│                                           │
│                                           │
│                                           │
└─────────────────────────────────────────┘
          ─demand responsive transit request──────────┐
          ─transit information request──────────┐
          ─demand responsive transit plan──────┐
          ─transit and fare schedules──────┐
                                ┌──────────────────────────────────────┐
                                │                 MATA                   │
                                │       MATA Automated Call Center        │
                                │                                        │
                                │                                        │
                                └──────────────────────────────────────┘
```

Existing

Planned

Existing Flows

demand responsive transit plan	Plan regarding overall demand responsive transit schedules and deployment.
demand responsive transit request	Request for paratransit support.
transit and fare schedules	Specific transit and fare schedule information including schedule adherence.
transit information request	Request for transit operations information including schedule and fare information. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.

6.6.5 MATA Transit Management Center and MATA Fixed Route Vehicles

Existing Flows

fare and payment status	Current fare collection information including the operational status of the fare collection equipment and financial payment transaction data.
fare management information	Transit fare information and transaction data used to manage transit fare processing on the transit vehicle.

Planned Flows

bad tag list	List of invalid transit user tags which may have previously failed a fare payment transaction.
driver instructions	Transit service instructions for both transit and paratransit drivers.
emergency acknowledge	Acknowledge request for emergency assistance and provide additional details regarding actions and verification requirements.
emergency notification	An emergency request for assistance originated by a traveler using an in-vehicle, public access, or personal device. Sufficient information is provided so that the recipient can determine the location of the emergency as a minimum. Additional information identifying the requestor and requesting device and the nature and severity of the emergency may also be provided (and required) by some systems.
request for bad tag list	Request for list of bad vehicle tag IDs.
transit vehicle location data	Current transit vehicle location and related operational conditions

	data provided by a transit vehicle.
transit vehicle passenger and use data	Data collected on board the transit vehicle pertaining to availability and/or passenger count.
transit vehicle schedule performance	Estimated times of arrival and anticipated schedule deviations reported by a transit vehicle.

6.6.6 MATA Transit Management Center and MATA Light Rail Vehicles

Planned Flows

bad tag list	List of invalid transit user tags which may have previously failed a fare payment transaction.
driver instructions	Transit service instructions for both transit and paratransit drivers.
emergency acknowledge	Acknowledge request for emergency assistance and provide additional details regarding actions and verification requirements.
emergency notification	An emergency request for assistance originated by a traveler using an in-vehicle, public access, or personal device. Sufficient information is provided so that the recipient can determine the location of the emergency as a minimum. Additional information identifying the requestor and requesting device and the nature and severity of the emergency may also be provided (and required) by some systems.
fare and payment status	Current fare collection information including the operational status of the fare collection equipment and financial payment transaction data.
fare management information	Transit fare information and transaction data used to manage transit fare processing on the transit vehicle.
request for bad tag list	Request for list of bad vehicle tag IDs.
transit vehicle location data	Current transit vehicle location and related operational conditions data provided by a transit vehicle.
transit vehicle passenger and	Data collected on board the transit vehicle pertaining to availability

use data	and/or passenger count.
transit vehicle schedule performance	Estimated times of arrival and anticipated schedule deviations reported by a transit vehicle.

6.6.7 MATA Transit Management Center and MATA Plus Vehicles

Existing Flows

fare and payment status	Current fare collection information including the operational status of the fare collection equipment and financial payment transaction data.
fare management information	Transit fare information and transaction data used to manage transit fare processing on the transit vehicle.
transit vehicle location data	Current transit vehicle location and related operational conditions data provided by a transit vehicle.

Planned Flows

bad tag list	List of invalid transit user tags which may have previously failed a fare payment transaction.
driver instructions	Transit service instructions for both transit and paratransit drivers.
emergency acknowledge	Acknowledge request for emergency assistance and provide additional details regarding actions and verification requirements.
emergency notification	An emergency request for assistance originated by a traveler using an in-vehicle, public access, or personal device. Sufficient information is provided so that the recipient can determine the location of the emergency as a minimum. Additional information identifying the requestor and requesting device and the nature and severity of the emergency may also be provided (and required) by some systems.

request for bad tag list	Request for list of bad vehicle tag IDs.
transit vehicle passenger and use data	Data collected on board the transit vehicle pertaining to availability and/or passenger count.
transit vehicle schedule performance	Estimated times of arrival and anticipated schedule deviations reported by a transit vehicle.

6.6.8 MATA Transit Management Center and MATA Transit Website Server

```
                    MATA
        MATA Transit Website Server




```
```
                                              MATA
                                  MATA Transit Management Center



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- transit and fare schedules
- transit incident information
- selected routes
- transit information request

Existing
Planned

Existing Flows

transit and fare schedules	Specific transit and fare schedule information including schedule adherence.
transit information request	Request for transit operations information including schedule and fare information. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.

Planned Flows

selected routes	Routes selected based on route request criteria.
transit incident information	Information on transit incidents that impact transit services for public dissemination.

6.6.9 MATA Transit Management Center and Media

Media
Media

—transit incidents for media————
—transit information for media————

MATA
MATA Transit Management Center

————— Existing
————— Planned

Planned Flows

transit incidents for media	Report of an incident impacting transit operations for public dissemination through the media.
transit information for media	Report of transit schedule deviations for public dissemination through the media.

6.6.10 MATA Transit Management Center and Memphis City Fire Dispatch

Memphis City Fire Services
Memphis City Fire Dispatch

transit emergency data
transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.11 MATA Transit Management Center and Memphis City Police Dispatch

Memphis City Police Department
Memphis City Police Dispatch

└─transit emergency data
└─transit emergency coordination data

MATA
MATA Transit Management Center

——— Existing
——— Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.12 MATA Transit Management Center and Memphis City TOC

Memphis City Traffic Department
Memphis City TOC

─transit system data─
─traffic information for transit─

MATA
MATA Transit Management Center

──────── Existing
──────── Planned

Planned Flows

traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.6.13 MATA Transit Management Center and Memphis MPO Archive

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
transit archive data	Data used to describe and monitor transit demand, fares, operations, and system performance. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.6.14 MATA Transit Management Center and Memphis-Shelby County Emissions Management System

MATA
MATA Transit Management Center

emissions information

Memphis-Shelby County Health Dep...
Memphis-Shelby County Emissions Management System

Existing
Planned

Planned Flows

emissions information	emissions info from EMMS to Transit Mgmt for ozone alert days

6.6.15 MATA Transit Management Center and Memphis-Shelby County EOC

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

transit emergency data
transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.16 MATA Transit Management Center and Mississippi Highway Patrol Dispatch

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

—transit emergency data—
—transit emergency coordination data—

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.17 MATA Transit Management Center and Mississippi TMC

Mississippi DOT
Mississippi TMC

—transit system data—
—request transit information—
—traffic information for transit—

MATA
MATA Transit Management Center

———————— Existing
———————— Planned

Planned Flows

request transit information	Request for transit service information and current transit status.
traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.6.18 MATA Transit Management Center and Municipal Fire Dispatch

Municipal Fire Prevention Bureau
Municipal Fire Dispatch

└─transit emergency data
└─transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.19 MATA Transit Management Center and Municipal Police Dispatch

Municipal Police Department
Municipal Police Dispatch

transit emergency data
transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.20 MATA Transit Management Center and Shelby County Fire Dispatch

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┌──────────────────────────────────────────┐
│      Shelby County Fire Department         │
│      Shelby County Fire Dispatch           │
│                                            │
│                                            │
│                                            │
└──────────────────────────────────────────┘
        └─transit emergency data───────────────┐
        └transit emergency coordination data──┐│
                                              ││
                                              ▼│
                          ┌───────────────────────────────────┐
                          │              MATA                  │
                          │   MATA Transit Management Center    │
                          │                                    │
                          │                                    │
                          │                                    │
                          └───────────────────────────────────┘
```

───────────── Existing
───────────── Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

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6.6.21 MATA Transit Management Center and Shelby County Sheriff Dispatch

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.6.22 MATA Transit Management Center and TDOT RTMC

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┌──────────────────────────────────────┐
│                 TDOT                 │
│               TDOT RTMC              │
│                                      │
│                                      │
│                                      │
└──────────────────────────────────────┘
       ┌transit system data──────────────┐
       └traffic information for transit───┐ │
                                        │ │
                                        │ ▼
                          ┌──────────────────────────────────────┐
                          │                 MATA                 │
                          │      MATA Transit Management Center   │
                          │                                      │
                          │                                      │
                          │                                      │
                          └──────────────────────────────────────┘
```

───────────── Existing
───────────── Planned

Planned Flows

traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.6.23 MATA Transit Management Center and Tennessee Highway Patrol Dispatch

```
┌─────────────────────────────────────────┐
│      Tennessee Highway Patrol            │
│  Tennessee Highway Patrol Dispatch       │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
     └transit emergency data────────────┐
     └transit emergency coordination data──┐
                                         ┌──▼──────────────────────────────┐
                                         │            MATA                  │
                                         │  MATA Transit Management Center  │
                                         │                                  │
                                         │                                  │
                                         └──────────────────────────────────┘
```

───────────── Existing
───────────── Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.7 Memphis City Fire Dispatch[*]

Memphis City Traffic Department	Memphis Light, Gas and Water	Memphis MPO	Memphis-Shelby County Emergency ...	Municipal Fire Prevention Bureau
Memphis City TOC	Memphis Light, Gas and Water Utility Dispatch	Memphis MPO Archive	Memphis-Shelby County EOC	Municipal Fire Dispatch

Municipal Police Department	Arkansas Highway Patrol	City of Bartlett Public Works Departm...	City of Collierville Public Works Depa...	Shelby County Fire Department
Municipal Police Dispatch	Arkansas Highway Patrol Dispatch	City of Bartlett Public Works	City of Collierville Public Works	Shelby County Fire Dispatch

Shelby County Public Works Depart...	City of Germantown Public Works De...	Memphis City Fire Services	MATA	Shelby County Sheriff Department
Shelby County Public Works	City of Germantown Public Works	Memphis City Fire Dispatch	MATA Transit Management Center	Shelby County Sheriff Dispatch

TDOT	Memphis City Fire Services	Memphis City Police Department	Memphis City Police Department	Tennessee Highway Patrol
TDOT RTMC	Memphis City Fire Vehicles	Memphis City Police Dispatch	Memphis City Police Special Event System	Tennessee Highway Patrol Dispatch

Existing
Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

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6.7.1 Memphis City Fire Dispatch and Arkansas Highway Patrol Dispatch

Memphis City Fire Services
Memphis City Fire Dispatch

incident report
incident response coordination
incident report
incident response coordination

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.7.2 Memphis City Fire Dispatch and City of Bartlett Public Works

Memphis City Fire Services
Memphis City Fire Dispatch

└─resources response────────────
└─request for resources────────

City of Bartlett Public Works Departm...
City of Bartlett Public Works

———————— Existing
———————— Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.7.3 Memphis City Fire Dispatch and City of Collierville Public Works

Memphis City Fire Services
Memphis City Fire Dispatch

—resources response—
—request for resources—

City of Collierville Public Works Depa...
City of Collierville Public Works

————————— Existing
————————— Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.7.4 Memphis City Fire Dispatch and City of Germantown Public Works

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.7.5 Memphis City Fire Dispatch and MATA Transit Management Center

Memphis City Fire Services
Memphis City Fire Dispatch

transit emergency data
transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.7.6 Memphis City Fire Dispatch and Memphis City Fire Vehicles

Planned Flows

emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information (e.g., a suggested route) and provision of en-route status.
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.
incident command information	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency personnel in the field to implement an effective, safe incident response.
incident command request	Request for resources, commands for relay to other allied response agencies, and other requests that reflect local command of an evolving incident response.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.
suggested route	Suggested route for a dispatched emergency vehicle that may reflect current network conditions and the additional routing options available to en-route emergency vehicles that are not available to the general public.

6.7.7 Memphis City Fire Dispatch and Memphis City Police Dispatch

Memphis City Police Department
Memphis City Police Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis City Fire Services
Memphis City Fire Dispatch

——————————— Existing
——————————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.7.8 Memphis City Fire Dispatch and Memphis City Police Special Event System

Memphis City Police Department
Memphis City Police Special Event System

event confirmation
event plans

Memphis City Fire Services
Memphis City Fire Dispatch

———————— Existing
———————— Planned

Planned Flows

event confirmation	Confirmation that special event details have been received and processed.
event plans	Plans for major events possibly impacting traffic.

6.7.9 Memphis City Fire Dispatch and Memphis City TOC

Memphis City Traffic Department
Memphis City TOC

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

Memphis City Fire Services
Memphis City Fire Dispatch

———— Existing
———— Planned

Existing Flows

emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic

	signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.7.10 Memphis City Fire Dispatch and Memphis Light, Gas and Water Utility Dispatch

```
┌─────────────────────────────────────────┐
│      Memphis Light, Gas and Water        │
├─────────────────────────────────────────┤
│   Memphis Light, Gas and Water Utility   │
│                Dispatch                   │
│                                           │
│                                           │
│                                           │
└─────────────────────────────────────────┘
        └ utility notification ─────────────┐
        └ utility status information ──────┐│
                                           ││
                                    ┌──────────────────────────────┐
                                    │   Memphis City Fire Services  │
                                    ├──────────────────────────────┤
                                    │   Memphis City Fire Dispatch  │
                                    │                               │
                                    │                               │
                                    └──────────────────────────────┘
```

	Existing
	Planned

Planned Flows

utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.7.11 Memphis City Fire Dispatch and Memphis MPO Archive

| Memphis MPO |
| Memphis MPO Archive |

emergency archive data
archive requests
archive status

| Memphis City Fire Services |
| Memphis City Fire Dispatch |

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
emergency archive data	Logged incident information that characterizes the identified incidents and provides a record of the corresponding incident response. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.7.12 Memphis City Fire Dispatch and Memphis-Shelby County EOC

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

────incident report────
────incident response coordination────
────incident report────
────incident response coordination────

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.7.13 Memphis City Fire Dispatch and Municipal Fire Dispatch

Municipal Fire Prevention Bureau
Municipal Fire Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.7.14 Memphis City Fire Dispatch and Municipal Police Dispatch

Municipal Police Department
Municipal Police Dispatch

└incident report
 └incident response coordination
└incident report
└incident response coordination

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.7.15 Memphis City Fire Dispatch and Shelby County Fire Dispatch

```
┌─────────────────────────────────────────┐
│     Shelby County Fire Department        │
│       Shelby County Fire Dispatch        │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
          │   ↑  ↑
          │   │  └─incident report──────────────────────┐
          │   └──incident response coordination────────┐ │
          │─incident report──────────────────────────┐ │ │
          └─incident response coordination──────────┐ │ │ │
                                                     ↓ ↓ │ │
                                      ┌──────────────────────────────┐
                                      │    Memphis City Fire Services │
                                      │    Memphis City Fire Dispatch │
                                      │                               │
                                      │                               │
                                      │                               │
                                      └──────────────────────────────┘
```

──────────────── Existing
──────────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.7.16 Memphis City Fire Dispatch and Shelby County Public Works

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.7.17 Memphis City Fire Dispatch and Shelby County Sheriff Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.7.18 Memphis City Fire Dispatch and TDOT RTMC

```
TDOT
TDOT RTMC
```

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

```
Memphis City Fire Services
Memphis City Fire Dispatch
```

——————— Existing
——————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

| resource deployment status | Status of traffic management center resource deployment identifying the resources available and their current deployment status. |
| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. |

6.7.19 Memphis City Fire Dispatch and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

─incident report─
─incident response coordination─
─incident report─
─incident response coordination─

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8 Memphis City Police Dispatch[*]

Memphis City Police Department	Memphis City Police Department	Memphis City Traffic Department	Memphis Light, Gas and Water	Memphis MPO
Memphis City Police Special Event System	Memphis City Police Vehicles	Memphis City TOC	Memphis Light, Gas and Water Utility Dispatch	Memphis MPO Archive

Memphis-Shelby County Emergency ...	Arkansas Highway Patrol	City of Bartlett Public Works Departm...	City of Collierville Public Works Depa...	Municipal Fire Prevention Bureau
Memphis-Shelby County EOC	Arkansas Highway Patrol Dispatch	City of Bartlett Public Works	City of Collierville Public Works	Municipal Fire Dispatch

Municipal Police Department	City of Germantown Public Works De...	Memphis City Police Department	Crittenden County Sheriff Department	Shelby County Fire Department
Municipal Police Dispatch	City of Germantown Public Works	Memphis City Police Dispatch	Crittenden County Sheriff Dispatch	Shelby County Fire Dispatch

Shelby County Public Works Depart...	DeSoto County Sheriff Department	MATA	Memphis City Fire Services	Shelby County Sheriff Department
Shelby County Public Works	DeSoto County Sheriff Dispatch	MATA Transit Management Center	Memphis City Fire Dispatch	Shelby County Sheriff Dispatch

TDOT	Tennessee Highway Patrol
TDOT RTMC	Tennessee Highway Patrol Dispatch

——————— Existing
——————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.8.1 Memphis City Police Dispatch and Arkansas Highway Patrol Dispatch

Memphis City Police Department
Memphis City Police Dispatch

incident report

incident response coordination

incident report

incident response coordination

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.2 Memphis City Police Dispatch and City of Bartlett Public Works

Memphis City Police Department
Memphis City Police Dispatch

—resources response—
—request for resources—

City of Bartlett Public Works Departm...
City of Bartlett Public Works

Existing
Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.8.3 Memphis City Police Dispatch and City of Collierville Public Works

```
┌─────────────────────────────────────────┐
│      Memphis City Traffic Department     │
│            Memphis City TOC              │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
```

equipment maintenance status
maintenance resource response
work zone status
closure coordination
maintenance resource request
traffic equipment status

```
┌─────────────────────────────────────────┐
│  City of Collierville Public Works Depa... │
│        City of Collierville Public Works │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
```

────────────── Existing
────────────── Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.8.4 Memphis City Police Dispatch and City of Germantown Public Works

Memphis City Police Department
Memphis City Police Dispatch

resources response

request for resources

City of Germantown Public Works De...
City of Germantown Public Works

Existing
Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.8.5 Memphis City Police Dispatch and Crittenden County Sheriff Dispatch

Memphis City Police Department
Memphis City Police Dispatch

incident report
incident response coordination
incident report
incident response coordination

Crittenden County Sheriff Department
Crittenden County Sheriff Dispatch

———————————— Existing
———————————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.6 Memphis City Police Dispatch and DeSoto County Sheriff Dispatch

Memphis City Police Department
Memphis City Police Dispatch

incident report
incident response coordination
incident report
incident response coordination

DeSoto County Sheriff Department
DeSoto County Sheriff Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.7 Memphis City Police Dispatch and MATA Transit Management Center

Memphis City Police Department
Memphis City Police Dispatch

transit emergency data

transit emergency coordination data

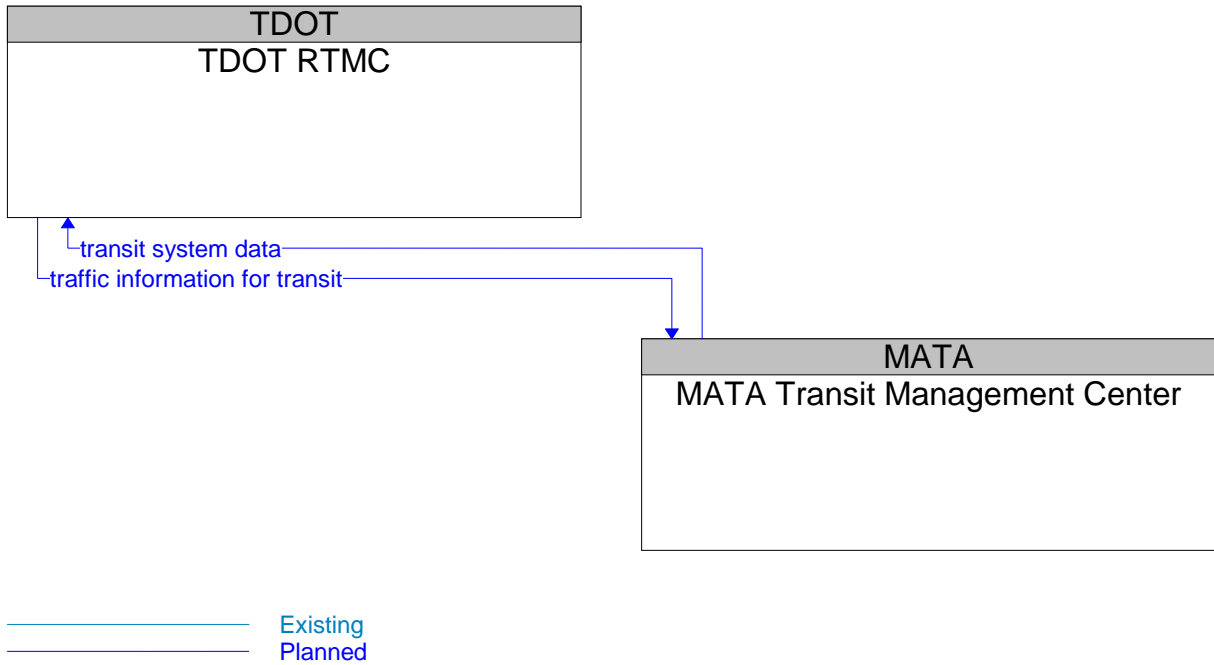| MATA |
|---|
| MATA Transit Management Center |

——————— Existing
——————— Planned

Planned Flows

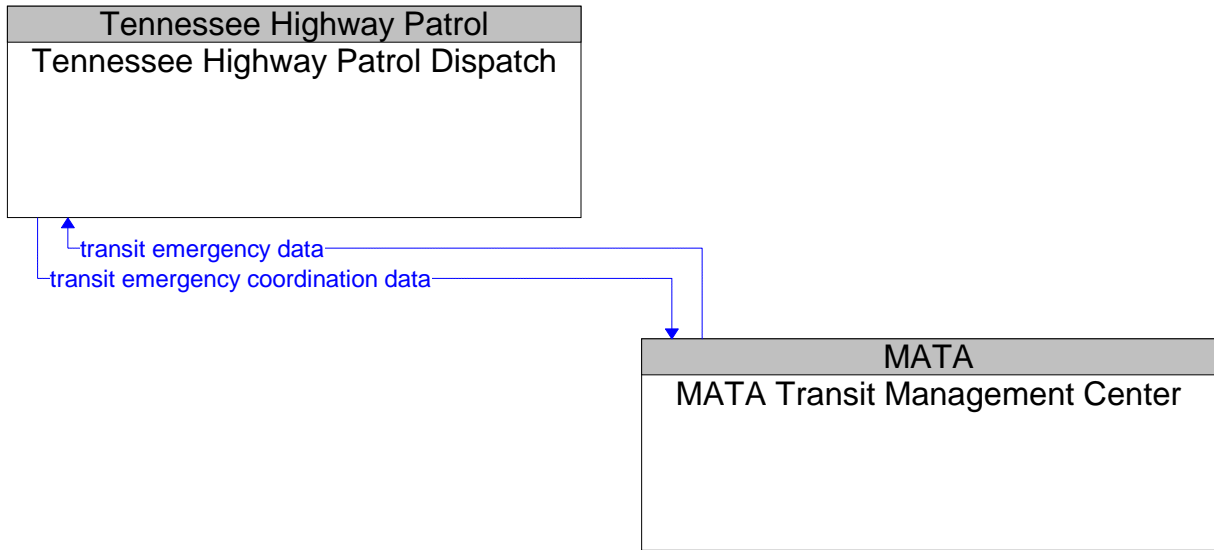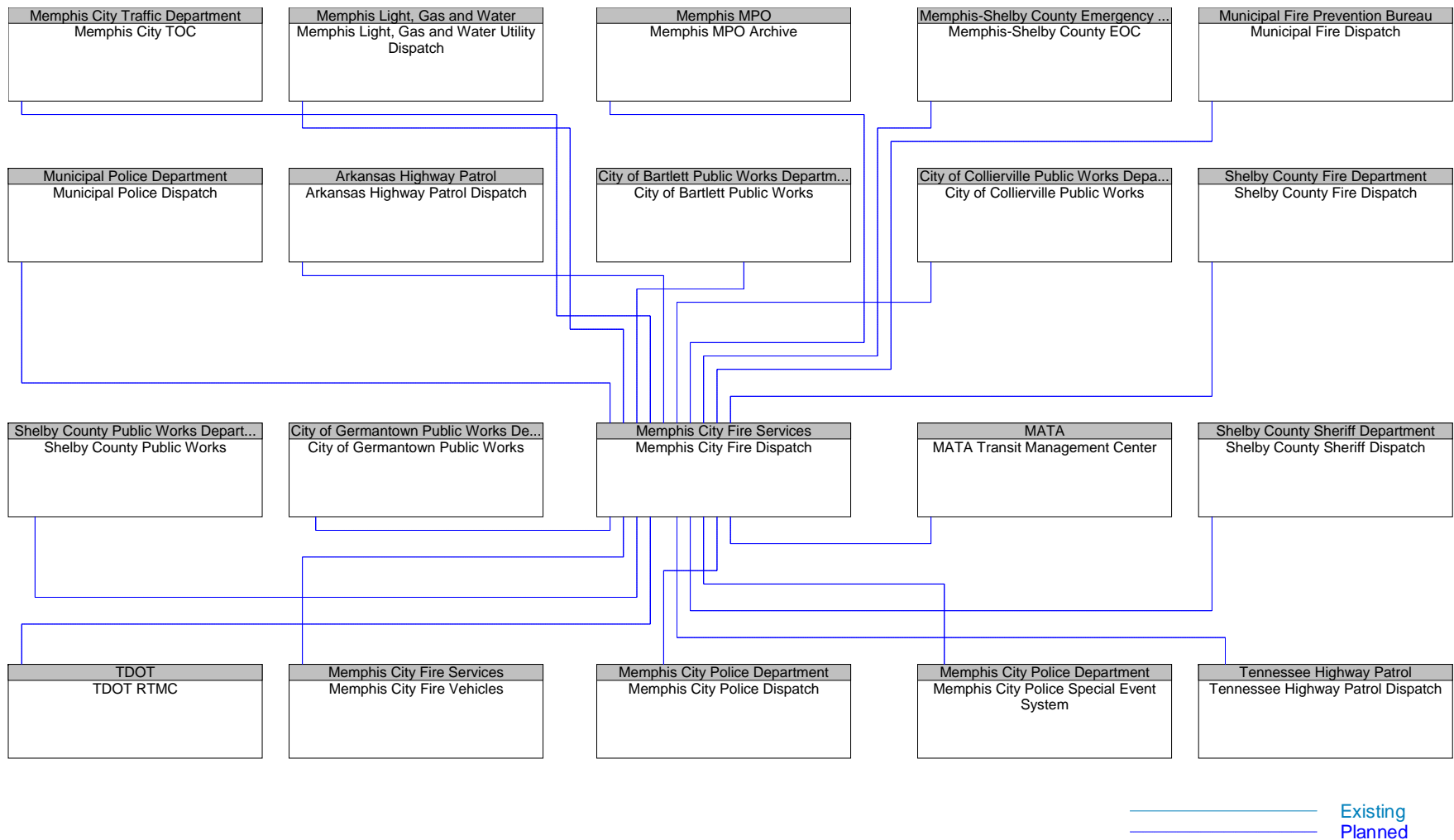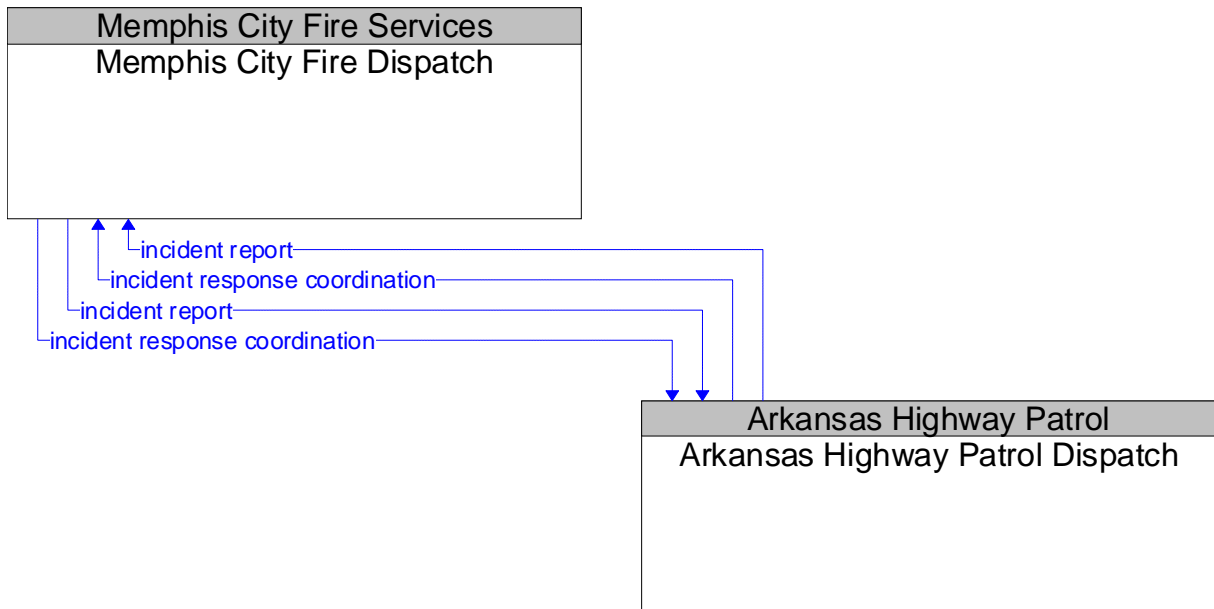| transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.8.8 Memphis City Police Dispatch and Memphis City Fire Dispatch

```
┌─────────────────────────────────────────┐
│     Memphis City Police Department        │
│      Memphis City Police Dispatch         │
│                                           │
│                                           │
│                                           │
│                                           │
└─────────────────────────────────────────┘
```

─incident report
─incident response coordination
─incident report
─incident response coordination

```
                          ┌───────────────────────────────────────┐
                          │       Memphis City Fire Services        │
                          │       Memphis City Fire Dispatch        │
                          │                                         │
                          │                                         │
                          │                                         │
                          └───────────────────────────────────────┘
```
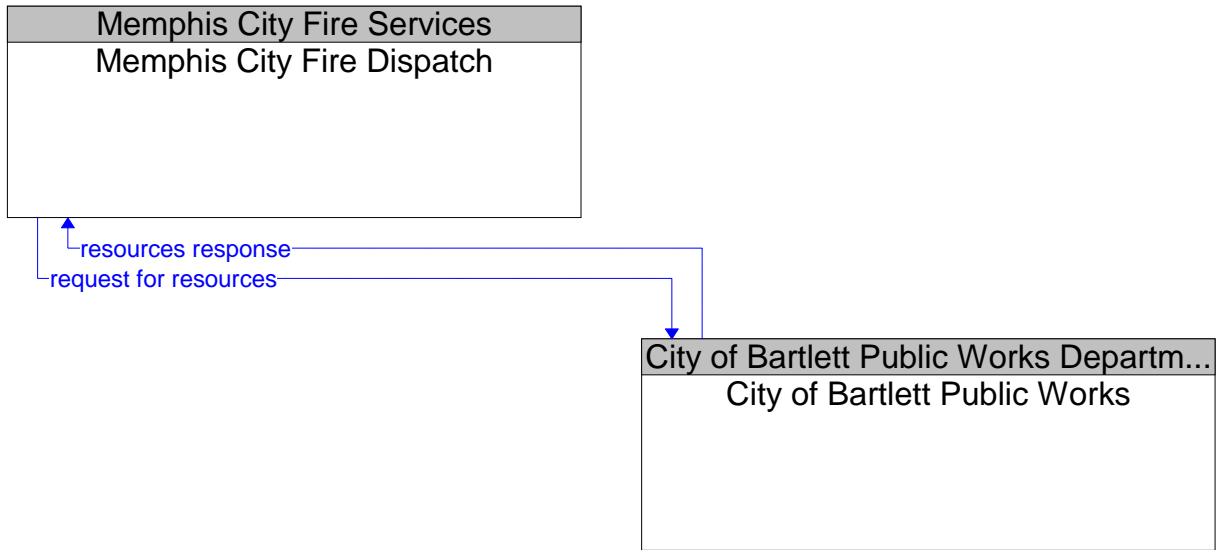
──────────────── Existing
──────────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.9 Memphis City Police Dispatch and Memphis City Police Special Event System

Memphis City Police Department
Memphis City Police Special Event System

event confirmation
event plans

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

event confirmation	Confirmation that special event details have been received and processed.
event plans	Plans for major events possibly impacting traffic.

6.8.10 Memphis City Police Dispatch and Memphis City Police Vehicles

Memphis City Police Department
Memphis City Police Vehicles

emergency dispatch requests
incident command information
suggested route
emergency dispatch response
emergency vehicle tracking data
incident command request
incident status

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information (e.g., a suggested route) and provision of en-route status.
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.
incident command information	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency personnel in the field to implement an effective, safe incident response.
incident command request	Request for resources, commands for relay to other allied response agencies, and other requests that reflect local command of an evolving incident response.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.
suggested route	Suggested route for a dispatched emergency vehicle that may reflect current network conditions and the additional routing options available to en-route emergency vehicles that are not available to the general public.

6.8.11 Memphis City Police Dispatch and Memphis City TOC

Memphis City Traffic Department
Memphis City TOC

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Existing Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.

Planned Flows

incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's

	sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

6.8.12 Memphis City Police Dispatch and Memphis Light, Gas and Water Utility Dispatch

Memphis Light, Gas and Water
Memphis Light, Gas and Water Utility Dispatch

- utility notification
- utility status information

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.8.13 Memphis City Police Dispatch and Memphis MPO Archive

Memphis MPO
Memphis MPO Archive

emergency archive data
archive requests
archive status

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
emergency archive data	Logged incident information that characterizes the identified incidents and provides a record of the corresponding incident response. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.8.14 Memphis City Police Dispatch and Memphis-Shelby County EOC

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

─incident report─
─incident response coordination─
─incident report─
─incident response coordination─

Memphis City Police Department
Memphis City Police Dispatch

──────────── Existing
──────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.15 Memphis City Police Dispatch and Municipal Fire Dispatch

Municipal Fire Prevention Bureau
Municipal Fire Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.16 Memphis City Police Dispatch and Municipal Police Dispatch

Municipal Police Department
Municipal Police Dispatch

─incident report─
─incident response coordination─
─incident report─
─incident response coordination─

Memphis City Police Department
Memphis City Police Dispatch

───── Existing
───── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.17 Memphis City Police Dispatch and Shelby County Fire Dispatch

Shelby County Fire Department
Shelby County Fire Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.18 Memphis City Police Dispatch and Shelby County Public Works

```
Shelby County Public Works Depart...
    Shelby County Public Works
```

request for resources
resources response

```
Memphis City Police Department
   Memphis City Police Dispatch
```

———————— Existing
———————— Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

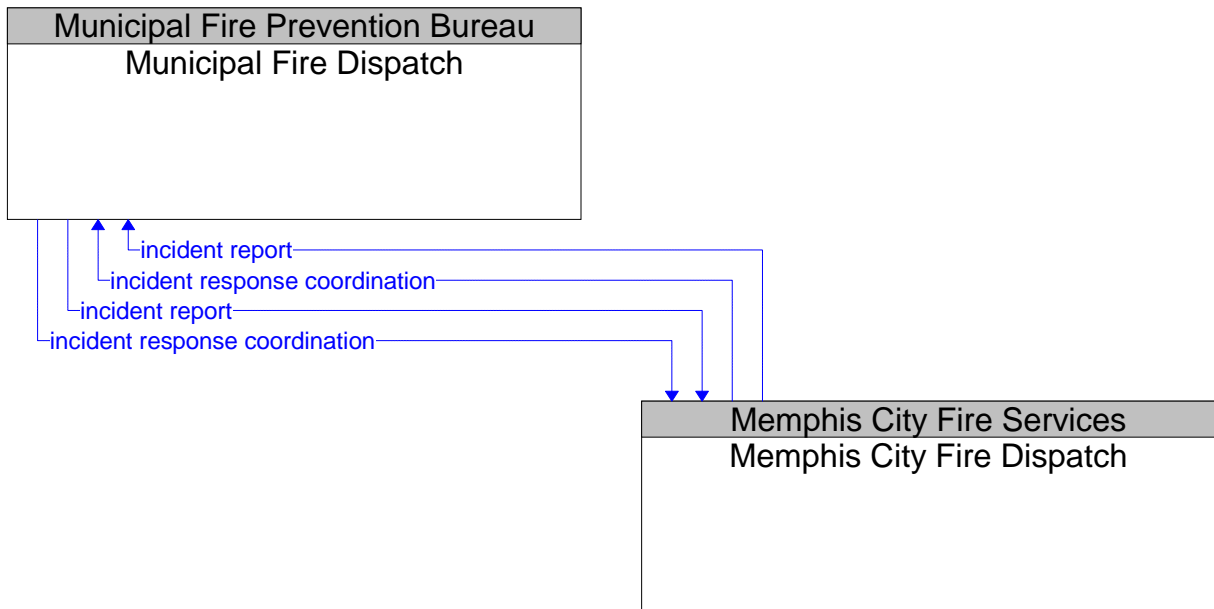6.8.19 Memphis City Police Dispatch and Shelby County Sheriff Dispatch

Planned Flows

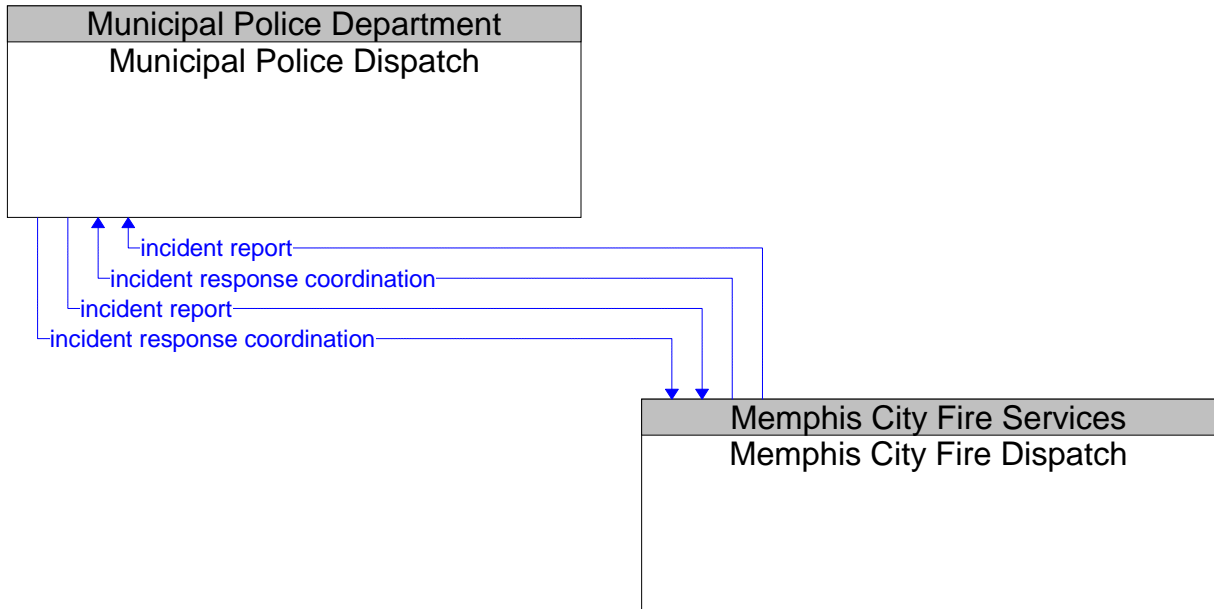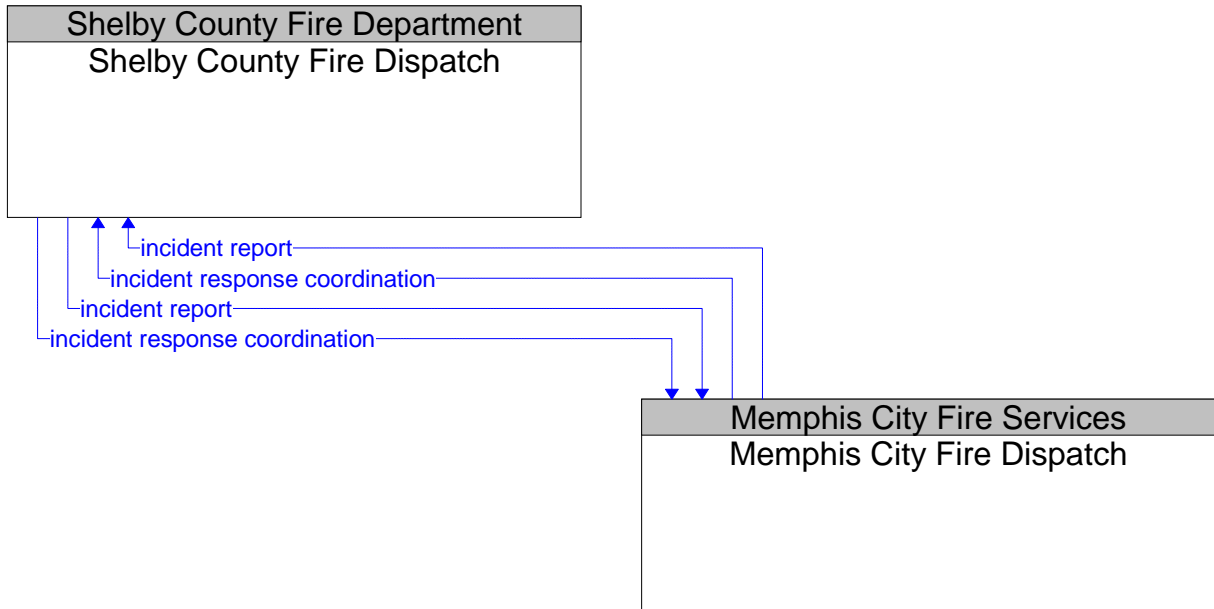| incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.8.20 Memphis City Police Dispatch and TDOT RTMC

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.8.21 Memphis City Police Dispatch and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

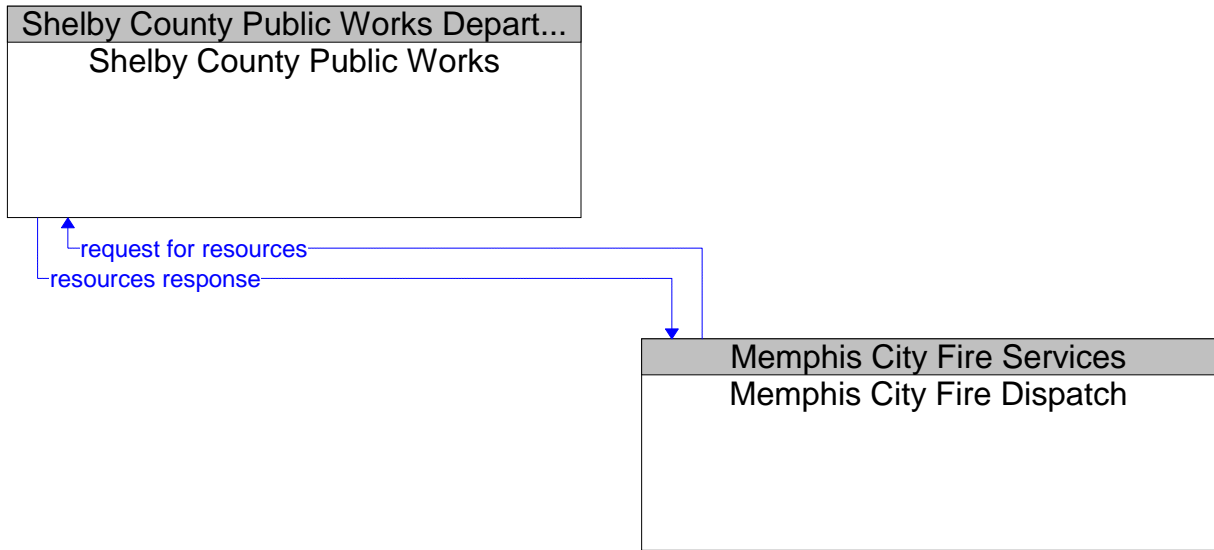| Memphis City Police Department |
|---|
| Memphis City Police Dispatch |

———— Existing
———— Planned

Planned Flows

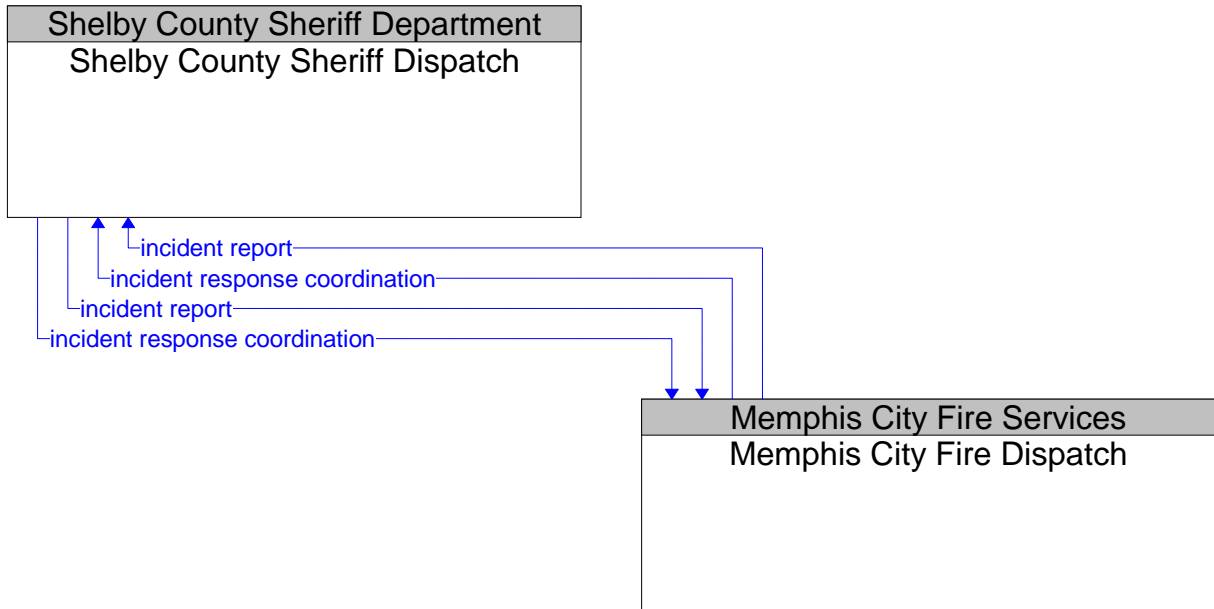| incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.9 Memphis City TOC[*]

Shelby County Sheriff Department	Shelby County Engineering	TDOT	Tennessee Highway Patrol
Shelby County Sheriff Dispatch	Shelby County TCC	TDOT RTMC	Tennessee Highway Patrol Dispatch

Media	Memphis City Fire Services	Memphis City Police Department	Memphis City Police Department	Memphis City Traffic Department
Media	Memphis City Fire Dispatch	Memphis City Police Dispatch	Memphis City Police Special Event System	Memphis City Traffic Field Equipment

Memphis Light, Gas and Water	Center City Commission	City of Bartlett Public Works Departm...	City of Bartlett Traffic Department	Memphis MPO
Memphis Light, Gas and Water Utilities	Center City Downtown Parking System	City of Bartlett Public Works	City of Bartlett TCC	Memphis MPO Archive

Memphis-Shelby County Health Dep...	City of Collierville Public Works Depa...	Memphis City Traffic Department	City of Collierville Traffic Department	Memphis-Shelby County Emergency ...
Memphis-Shelby County Emissions Management System	City of Collierville Public Works	Memphis City TOC	City of Collierville TCC	Memphis-Shelby County EOC

Mississippi Municipalities	City of Germantown Public Works De...	City of Germantown Traffic Department	MATA	Municipal Fire Prevention Bureau
Mississippi Municipal TCC	City of Germantown Public Works	City of Germantown TCC	MATA Transit Management Center	Municipal Fire Dispatch

Existing
Planned

Municipal Police Department	Rail Operators	Shelby County Fire Department	Shelby County Public Works Depart...
Municipal Police Dispatch	Rail Management Center	Shelby County Fire Dispatch	Shelby County Public Works

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

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6.9.1 Memphis City TOC and Center City Downtown Parking System

Memphis City Traffic Department
Memphis City TOC

parking availability

Center City Commission
Center City Downtown Parking System

Existing
Planned

Planned Flows

parking availability	Current parking lot occupancy, parking availability, and cost information.

6.9.2 Memphis City TOC and City of Bartlett Public Works

Existing
Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.9.3 Memphis City TOC and City of Bartlett TCC

Memphis City Traffic Department
Memphis City TOC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Bartlett Traffic Department
City of Bartlett TCC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.9.4 Memphis City TOC and City of Collierville Public Works

Memphis City Traffic Department
Memphis City TOC

equipment maintenance status
maintenance resource response
work zone status
closure coordination
maintenance resource request
traffic equipment status

City of Collierville Public Works Depa...
City of Collierville Public Works

Existing
Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.9.5 Memphis City TOC and City of Collierville TCC

Memphis City Traffic Department
Memphis City TOC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Collierville Traffic Department
City of Collierville TCC

——————— Existing
——————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.9.6 Memphis City TOC and City of Germantown Public Works

```
Memphis City Traffic Department
     Memphis City TOC




          equipment maintenance status
          maintenance resource response
        work zone status
       closure coordination
     maintenance resource request
    traffic equipment status

                              City of Germantown Public Works De...
                                City of Germantown Public Works



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——————————— Existing
——————————— Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.9.7 Memphis City TOC and City of Germantown TCC

Memphis City Traffic Department
Memphis City TOC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Germantown Traffic Department
City of Germantown TCC

——————————— Existing
——————————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.9.8 Memphis City TOC and MATA Transit Management Center

Memphis City Traffic Department
Memphis City TOC

└transit system data
└traffic information for transit

MATA
MATA Transit Management Center

———— Existing
———— Planned

Planned Flows

traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.9.9 Memphis City TOC and Media

Memphis City Traffic Department
Memphis City TOC

external reports
traffic information for media

Media
Media

Existing
Planned

Planned Flows

external reports	Traffic and incident information that is collected by the media through a variety of mechanisms (e.g., radio station call-in programs, air surveillance).
traffic information for media	Report of current traffic conditions, incidents, maintenance activities and other traffic-related information prepared for public dissemination through the media.

6.9.10 Memphis City TOC and Memphis City Fire Dispatch

Memphis City Traffic Department
Memphis City TOC

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's

	sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.9.11 Memphis City TOC and Memphis City Police Dispatch

Memphis City Traffic Department
Memphis City TOC

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

Memphis City Police Department
Memphis City Police Dispatch

——— Existing
——— Planned

Planned Flows

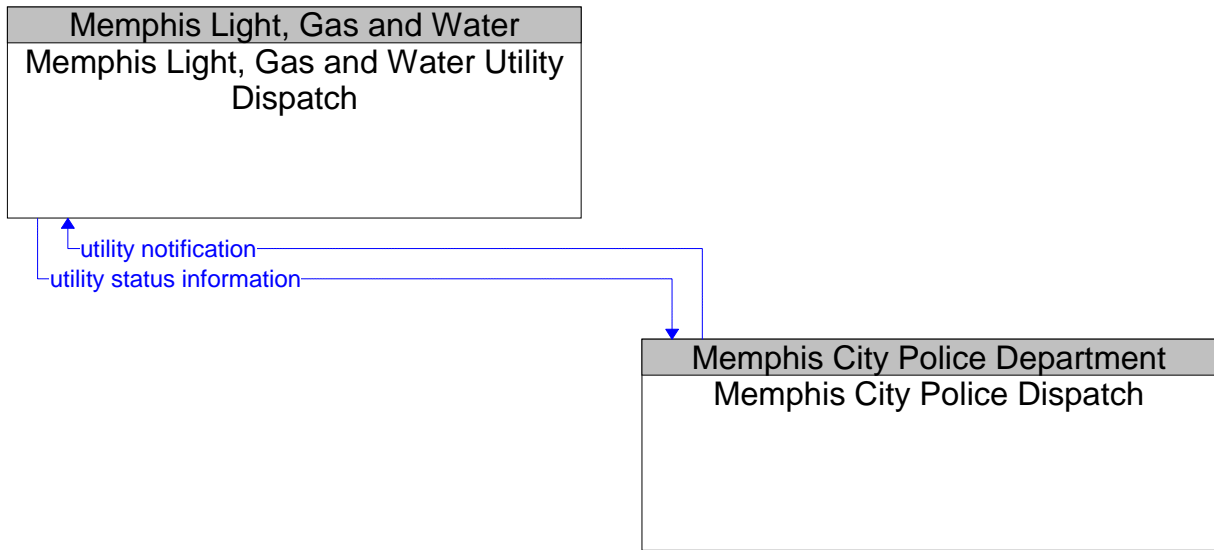|	
current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.9.12 Memphis City TOC and Memphis City Police Special Event System

Memphis City Traffic Department
Memphis City TOC

—event plans—
—event confirmation—

Memphis City Police Department
Memphis City Police Special Event System

———————— Existing
———————— Planned

Planned Flows

event plans	Plans for major events possibly impacting traffic.
event confirmation	Confirmation that special event details have been received and processed.

6.9.13 Memphis City TOC and Memphis City Traffic Field Equipment

Memphis City Traffic Department
Memphis City Traffic Field Equipment

hri control data
hri request
roadway information system data
sensor and surveillance control
signal control data
fault reports
hri status
request for right-of-way
roadway information system status
signal control status
traffic flow
traffic images

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Existing Flows

fault reports	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.
hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations.
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation.
request for right-of-way	Forwarded request from signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.
signal control data	Information used to configure and control traffic signal systems.
signal control status	Status of surface street signal controls.

Planned Flows

hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can

	provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.
sensor and surveillance control	Information used to configure and control sensor and surveillance systems at the roadside.
traffic flow	Raw and/or processed traffic detector information which allows derivation of traffic flow variables (e.g., speed, volume and density measures).
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.

6.9.14 Memphis City TOC and Memphis Light, Gas and Water Utility Dispatch

Memphis Light, Gas and Water
Memphis Light, Gas and Water Utility Dispatch

current network conditions
utility notification
utility status information

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.9.15 Memphis City TOC and Memphis MPO Archive

```
┌─────────────────────────────────────┐
│           Memphis MPO                │
│        Memphis MPO Archive           │
│                                      │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

traffic archive data
archive requests
archive status

```
┌─────────────────────────────────────┐
│   Memphis City Traffic Department    │
│          Memphis City TOC            │
│                                      │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.9.16 Memphis City TOC and Memphis-Shelby County Emissions Management System

Memphis-Shelby County Health Dep...

Memphis-Shelby County Emissions Management System

pollution state data request
widearea statistical pollution information

Memphis City Traffic Department

Memphis City TOC

———————— Existing
———————— Planned

Planned Flows

pollution state data request	Aggregated emissions data information request.
widearea statistical pollution information	Aggregated region-wide measured emissions data and possible pollution incident information or air quality alerts.

6.9.17 Memphis City TOC and Memphis-Shelby County EOC

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status
emergency traffic control request
incident information
incident response status
remote surveillance control
resource request

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

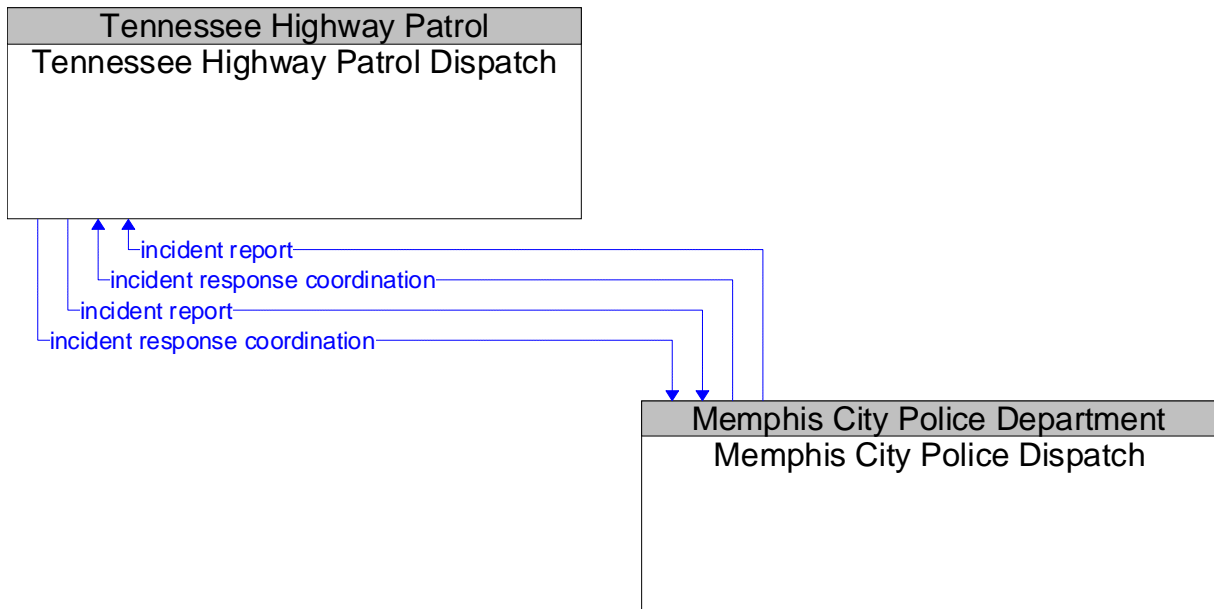|	
current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.9.18 Memphis City TOC and Mississippi Municipal TCC

Mississippi Municipalities
Mississippi Municipal TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.9.19 Memphis City TOC and Municipal Fire Dispatch

```
Municipal Fire Prevention Bureau
     Municipal Fire Dispatch
```

current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status
emergency traffic control request
incident information
incident response status
remote surveillance control
resource request

```
Memphis City Traffic Department
        Memphis City TOC
```

———————— Existing
———————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.9.20 Memphis City TOC and Municipal Police Dispatch

Municipal Police Department
Municipal Police Dispatch

current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status
emergency traffic control request
incident information
incident response status
remote surveillance control
resource request

Memphis City Traffic Department
Memphis City TOC

———— Existing
———— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

| resource deployment status | Status of traffic management center resource deployment identifying the resources available and their current deployment status. |
| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. |

6.9.21 Memphis City TOC and Rail Management Center

Rail Operators
Rail Management Center

hri advisories
railroad advisories
railroad schedules

Memphis City Traffic Department
Memphis City TOC

———— Existing
———— Planned

Planned Flows

hri advisories	Notification of Highway-Rail Intersection equipment failure, intersection blockage, or other condition requiring attention, and maintenance activities at or near highway rail intersections.
railroad advisories	Real-time notification of railway-related incident or advisory.
railroad schedules	Train schedules, maintenance schedules, and other information from the railroad that supports forecast of HRI closures.

6.9.22 Memphis City TOC and Shelby County Fire Dispatch

Shelby County Fire Department	Shelby County Fire Dispatch

current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status
emergency traffic control request
incident information
incident response status
remote surveillance control
resource request

Memphis City Traffic Department	Memphis City TOC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.9.23 Memphis City TOC and Shelby County Public Works

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.9.24 Memphis City TOC and Shelby County Sheriff Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status
emergency traffic control request
incident information
incident response status
remote surveillance control
resource request

Memphis City Traffic Department
Memphis City TOC

—————— Existing
—————— Planned

Planned Flows

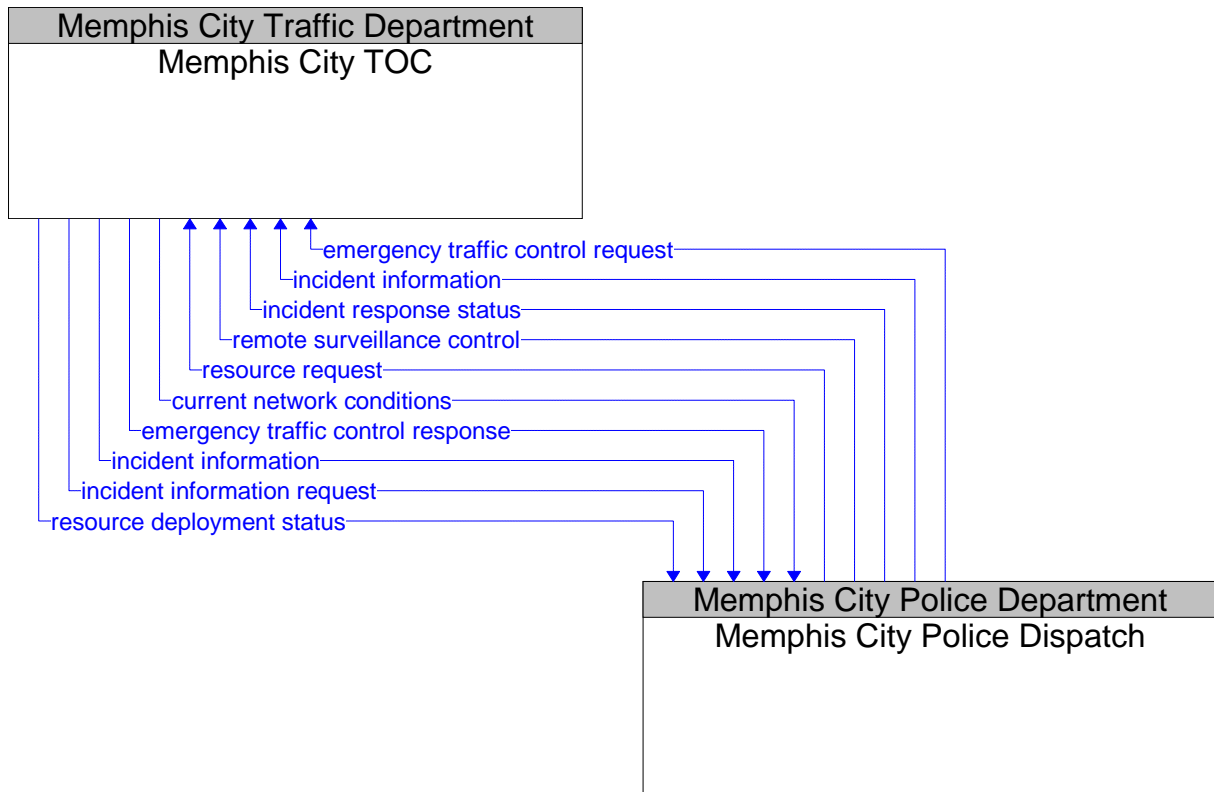| current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

| resource deployment status | Status of traffic management center resource deployment identifying the resources available and their current deployment status. |
| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. |

6.9.25 Memphis City TOC and Shelby County TCC

Shelby County Engineering
Shelby County TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.9.26 Memphis City TOC and TDOT RTMC

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

Planned Flows

6.9.27 Memphis City TOC and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

current network conditions
remote surveillance control

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.10 Memphis-Shelby County EOC[*]

| Tennessee Highway Patrol |
| Tennessee Highway Patrol Dispatch |

| Memphis City Fire Services | Memphis City Police Department | Memphis City Traffic Department | Memphis Light, Gas and Water | Memphis MPO |
| Memphis City Fire Dispatch | Memphis City Police Dispatch | Memphis City TOC | Memphis Light, Gas and Water Utility Dispatch | Memphis MPO Archive |

| Mississippi Highway Patrol | Arkansas State Highway and Transp... | Arkansas Highway Patrol | City of Bartlett Public Works Departm... | Mississippi DOT |
| Mississippi Highway Patrol Dispatch | Arkansas District 1 FMC | Arkansas Highway Patrol Dispatch | City of Bartlett Public Works | Mississippi TMC |

| Municipal Fire Prevention Bureau | City of Collierville Public Works Depa... | Memphis-Shelby County Emergency ... | City of Germantown Public Works De... | Municipal Police Department |
| Municipal Fire Dispatch | City of Collierville Public Works | Memphis-Shelby County EOC | City of Germantown Public Works | Municipal Police Dispatch |

| Shelby County Fire Department | U.S. Coast Guard | MATA | Media | Shelby County Public Works Depart... |
| Shelby County Fire Dispatch | Coast Guard System | MATA Transit Management Center | Media | Shelby County Public Works |

| Shelby County Sheriff Department | Shelby County Engineering | TDOT | Tennessee Emergency Management ... |
| Shelby County Sheriff Dispatch | Shelby County TCC | TDOT RTMC | Tennessee EMA System |

Existing
Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.10.1 Memphis-Shelby County EOC and Arkansas Highway Patrol Dispatch

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

incident report
incident response coordination
incident report
incident response coordination

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.2 Memphis-Shelby County EOC and Arkansas District 1 FMC

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

- current network conditions
- incident information
- incident information request
- resource deployment status
- incident information
- incident response status
- remote surveillance control
- resource request

Arkansas State Highway and Transp...
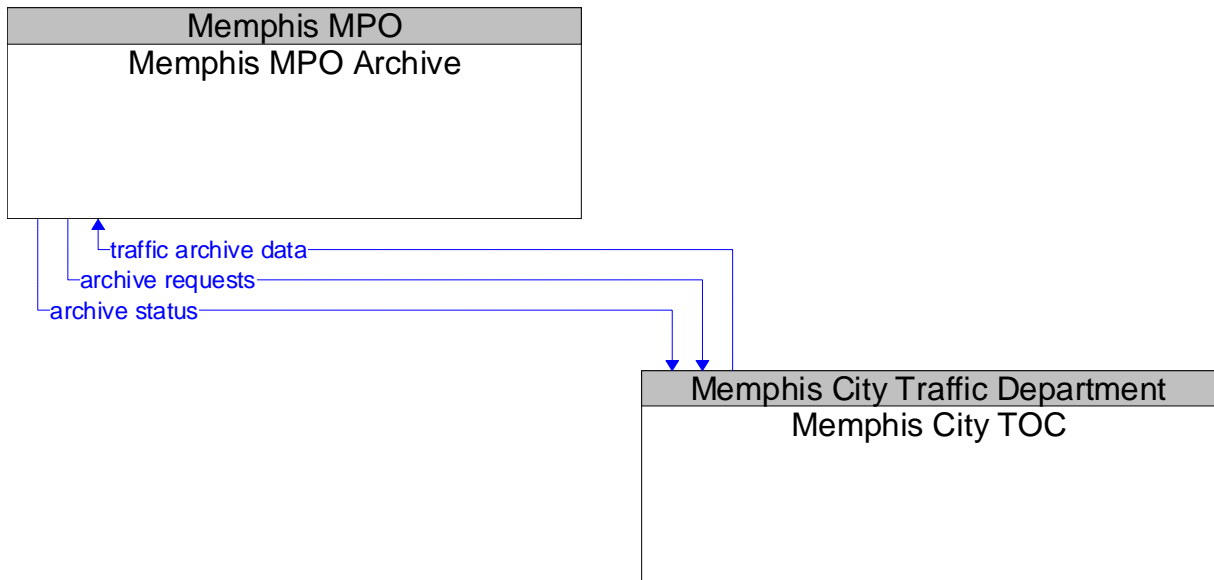Arkansas District 1 FMC

——— Existing
——— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.10.3 Memphis-Shelby County EOC and City of Bartlett Public Works

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

─resources response─
─request for resources─

City of Bartlett Public Works Departm...
City of Bartlett Public Works

Existing
Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.10.4 Memphis-Shelby County EOC and City of Collierville Public Works

| Memphis-Shelby County Emergency ... |
| Memphis-Shelby County EOC |

─resources response───
─request for resources───

| City of Collierville Public Works Depa... |
| City of Collierville Public Works |

─────────── Existing
─────────── Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.10.5 Memphis-Shelby County EOC and City of Germantown Public Works

```
┌─────────────────────────────────────────┐
│ Memphis-Shelby County Emergency ...      │
│        Memphis-Shelby County EOC         │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
     │
     └──resources response────────────────┐
     ┌─request for resources─────────────┐│
                                         ││
                         ┌───────────────▼┴──────────────────┐
                         │ City of Germantown Public Works De...│
                         │    City of Germantown Public Works   │
                         │                                      │
                         │                                      │
                         │                                      │
                         └──────────────────────────────────────┘
```

```
───────────────    Existing
───────────────    Planned
```

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.10.6 Memphis-Shelby County EOC and Coast Guard System

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

—incident report—
—incident response coordination—
—incident report—
—incident response coordination—

U.S. Coast Guard
Coast Guard System

———————— Existing
———————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.7 Memphis-Shelby County EOC and MATA Transit Management Center

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

transit emergency data

transit emergency coordination data

MATA
MATA Transit Management Center

—— Existing
—— Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.10.8 Memphis-Shelby County EOC and Media

Media
Media

←incident information for media──────────┐

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

──────── Existing
──────── Planned

Planned Flows

incident information for media	Report of current desensitized incident information prepared for public dissemination through the media.

6.10.9 Memphis-Shelby County EOC and Memphis City Fire Dispatch

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

incident report
incident response coordination
incident report
incident response coordination

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.10 Memphis-Shelby County EOC and Memphis City Police Dispatch

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

incident report
incident response coordination
incident report
incident response coordination

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.11 Memphis-Shelby County EOC and Memphis City TOC

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status
emergency traffic control request
incident information
incident response status
remote surveillance control
resource request

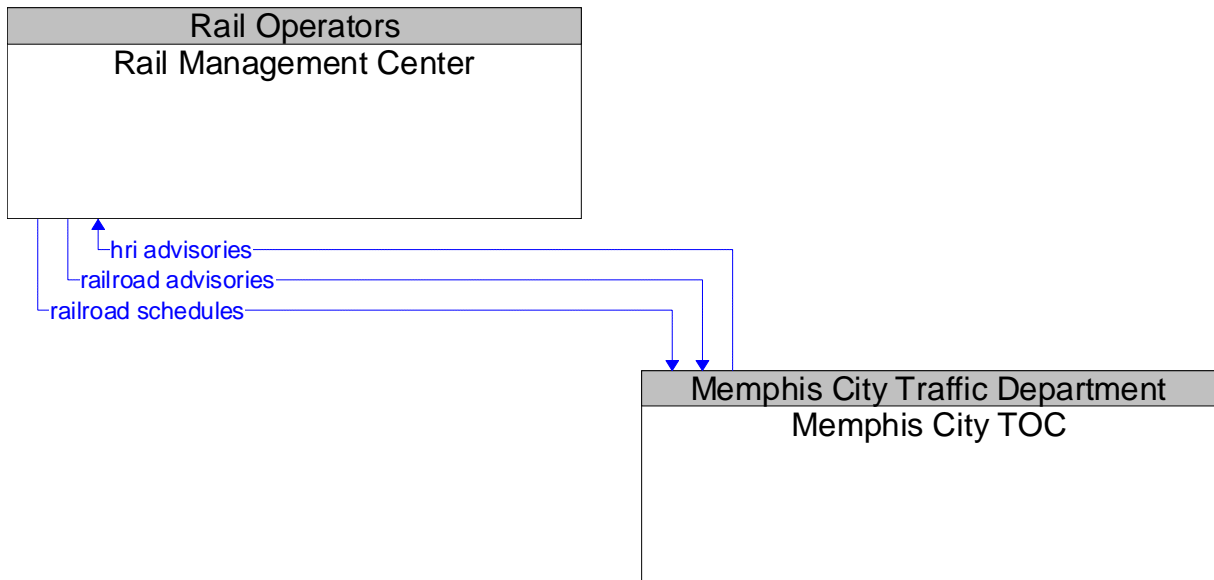| Memphis City Traffic Department |
|---|
| Memphis City TOC |

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.10.12 Memphis-Shelby County EOC and Memphis Light, Gas and Water Utility Dispatch
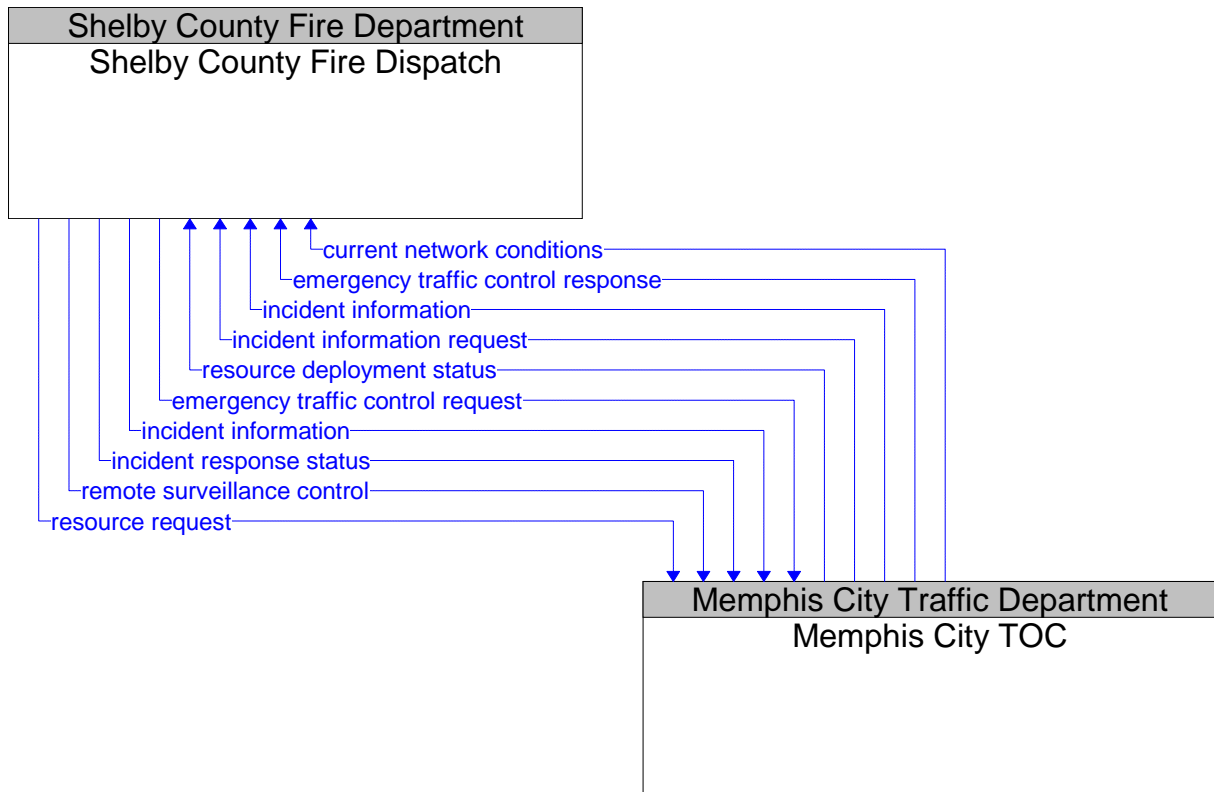
Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

utility status information
utility notification

Memphis Light, Gas and Water
Memphis Light, Gas and Water Utility Dispatch

———————— Existing
———————— Planned

Planned Flows

utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.10.13 Memphis-Shelby County EOC and Memphis MPO Archive

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

archive requests
archive status
emergency archive data

Memphis MPO
Memphis MPO Archive

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
emergency archive data	Logged incident information that characterizes the identified incidents and provides a record of the corresponding incident response. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.10.14 Memphis-Shelby County EOC and Mississippi Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.15 Memphis-Shelby County EOC and Mississippi TMC

Existing Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.

Planned Flows

incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's

	sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.10.16 Memphis-Shelby County EOC and Municipal Fire Dispatch

```
┌─────────────────────────────────────────┐
│    Municipal Fire Prevention Bureau      │
│       Municipal Fire Dispatch            │
│                                          │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
        └──────incident report──────
         └──incident response coordination──
        └──incident report──
       └─incident response coordination──

                        ┌──────────────────────────────────────┐
                        │  Memphis-Shelby County Emergency ...   │
                        │    Memphis-Shelby County EOC           │
                        │                                        │
                        │                                        │
                        │                                        │
                        └──────────────────────────────────────┘
```

——————————— Existing
——————————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.17 Memphis-Shelby County EOC and Municipal Police Dispatch

```
┌─────────────────────────────────────────┐
│     Municipal Police Department          │
│       Municipal Police Dispatch          │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
        │  ↑  ↑
        │  │  │ ┌incident report───────────────────┐
        │  │  └─incident response coordination──────┐│
        │  └incident report──────────────────────┐ ││
        └incident response coordination─────────┐│ ││
                                                 ↓↓ ↓↓
                          ┌──────────────────────────────────────┐
                          │ Memphis-Shelby County Emergency ...   │
                          │    Memphis-Shelby County EOC          │
                          │                                       │
                          │                                       │
                          │                                       │
                          └──────────────────────────────────────┘
```

────────────── Existing
────────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.18 Memphis-Shelby County EOC and Shelby County Fire Dispatch

Shelby County Fire Department
Shelby County Fire Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

—————— Existing
—————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.19 Memphis-Shelby County EOC and Shelby County Public Works

```
┌─────────────────────────────────────────┐
│ Shelby County Public Works Depart...     │
│       Shelby County Public Works         │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
        │
        └─request for resources─────────────┐
        ─resources response─────────────┐   │
                                         │   │
                         ┌───────────────┼───▼───────────────────┐
                         │ Memphis-Shelby County Emergency ...    │
                         │     Memphis-Shelby County EOC          │
                         │                                        │
                         │                                        │
                         └────────────────────────────────────────┘
```

—————————— Existing
—————————— Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.10.20 Memphis-Shelby County EOC and Shelby County Sheriff Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

incident report
incident response coordination
incident report
incident response coordination

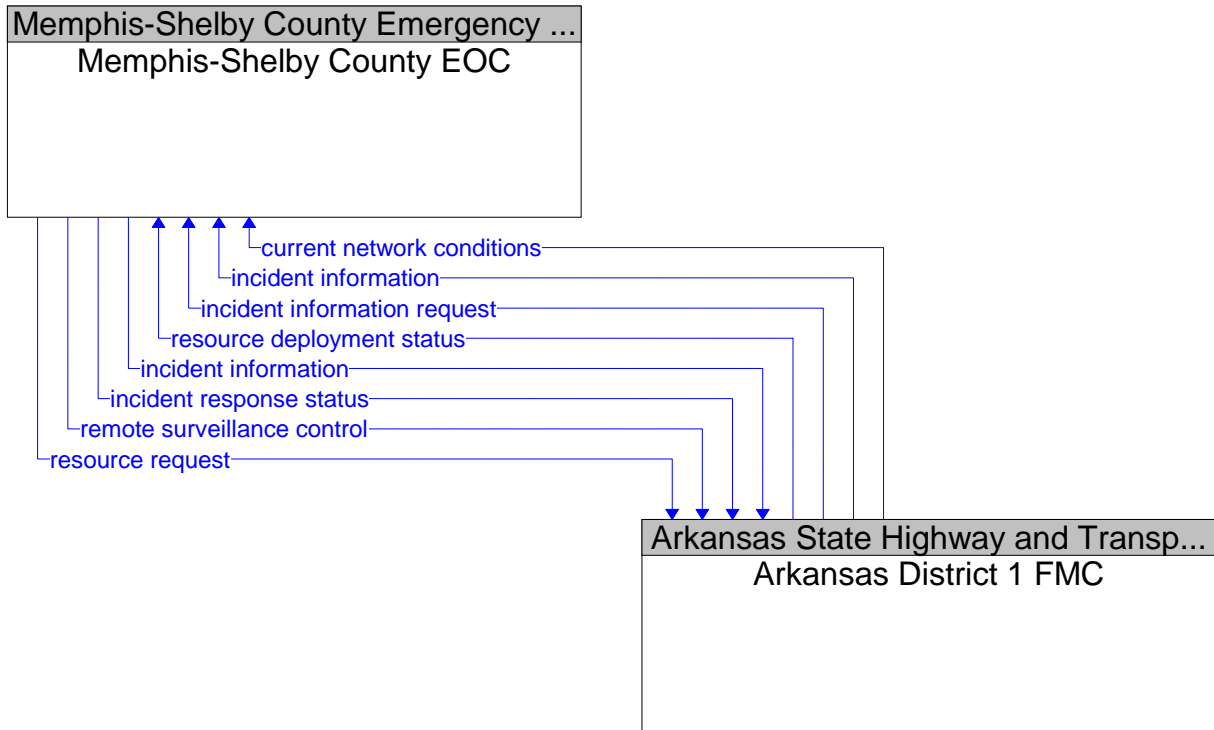Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.21 Memphis-Shelby County EOC and Shelby County TCC
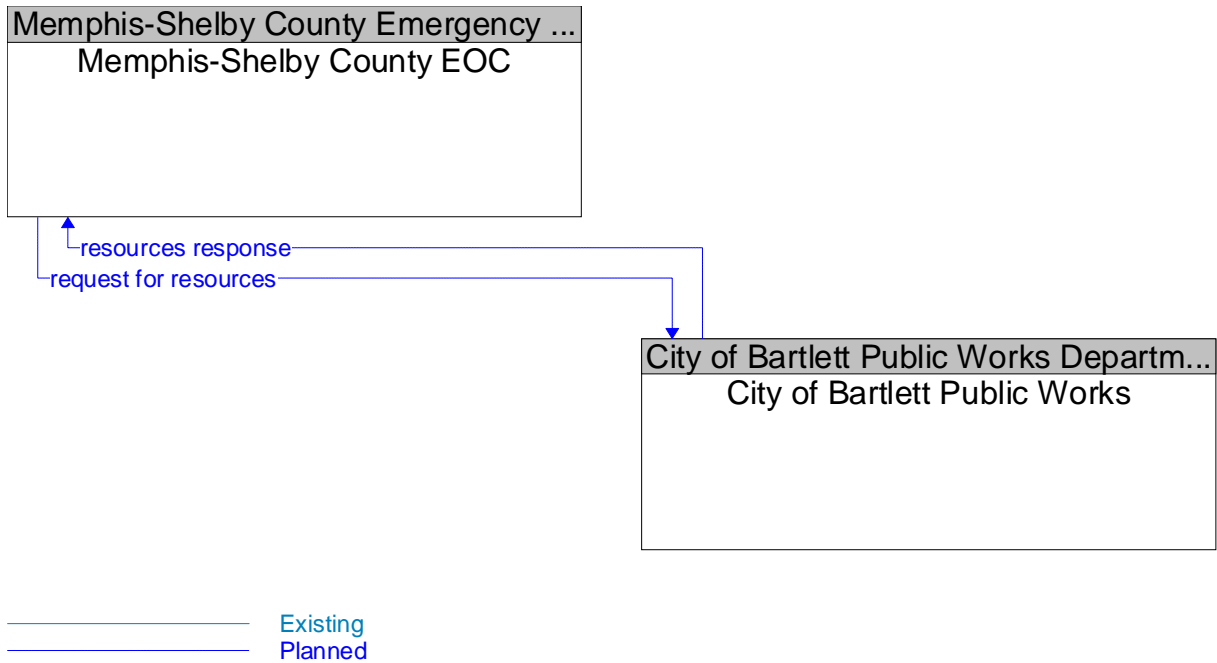
```
Shelby County Engineering
Shelby County TCC
```

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

```
Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC
```

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

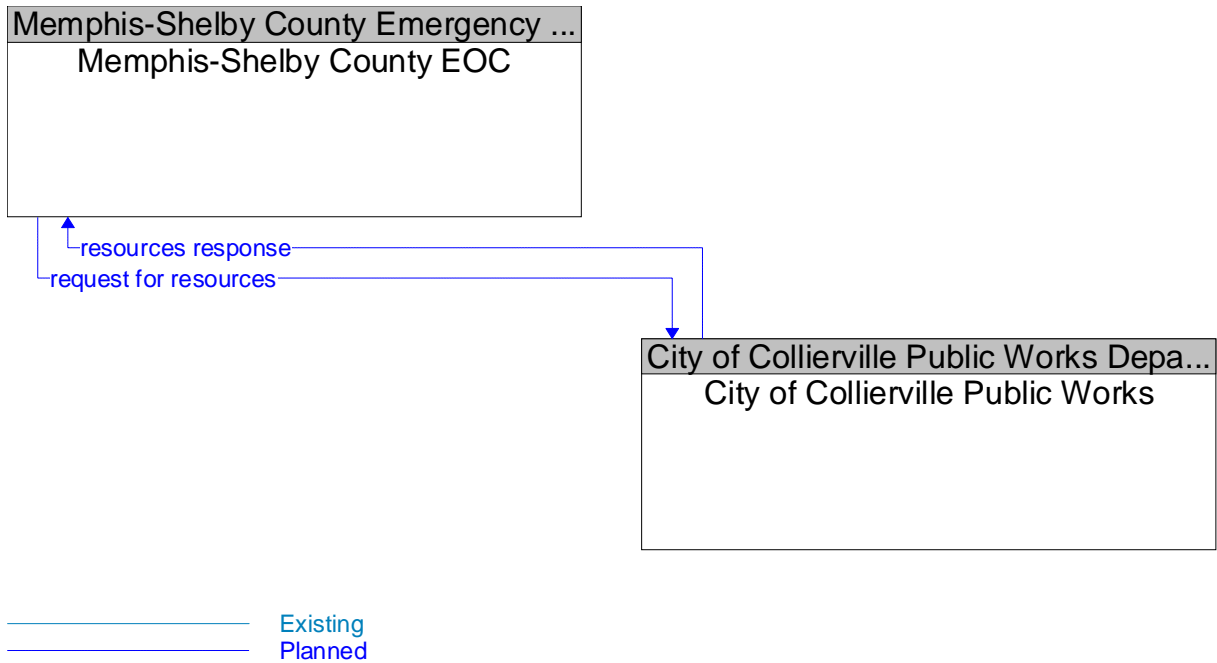| resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.10.22 Memphis-Shelby County EOC and TDOT RTMC

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. |

6.10.23 Memphis-Shelby County EOC and Tennessee EMA System

```
Tennessee Emergency Management ...
Tennessee EMA System




```

incident report
incident response coordination
incident report
incident response coordination

```
Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC



```

———————————— Existing
———————————— Planned

Planned Flows

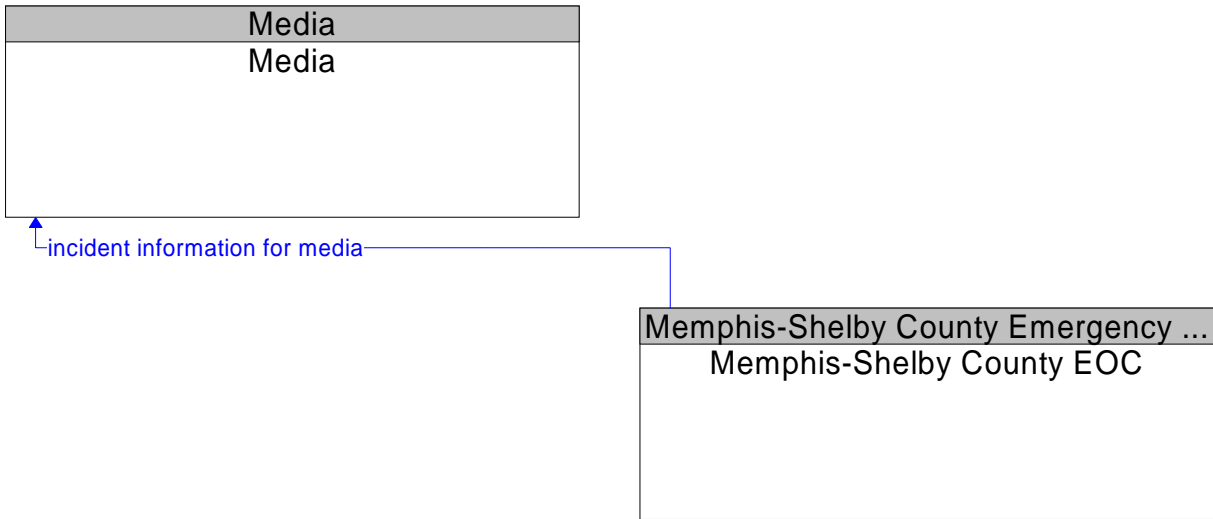| incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.10.24 Memphis-Shelby County EOC and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

—incident report—
—incident response coordination—
—incident report—
—incident response coordination—

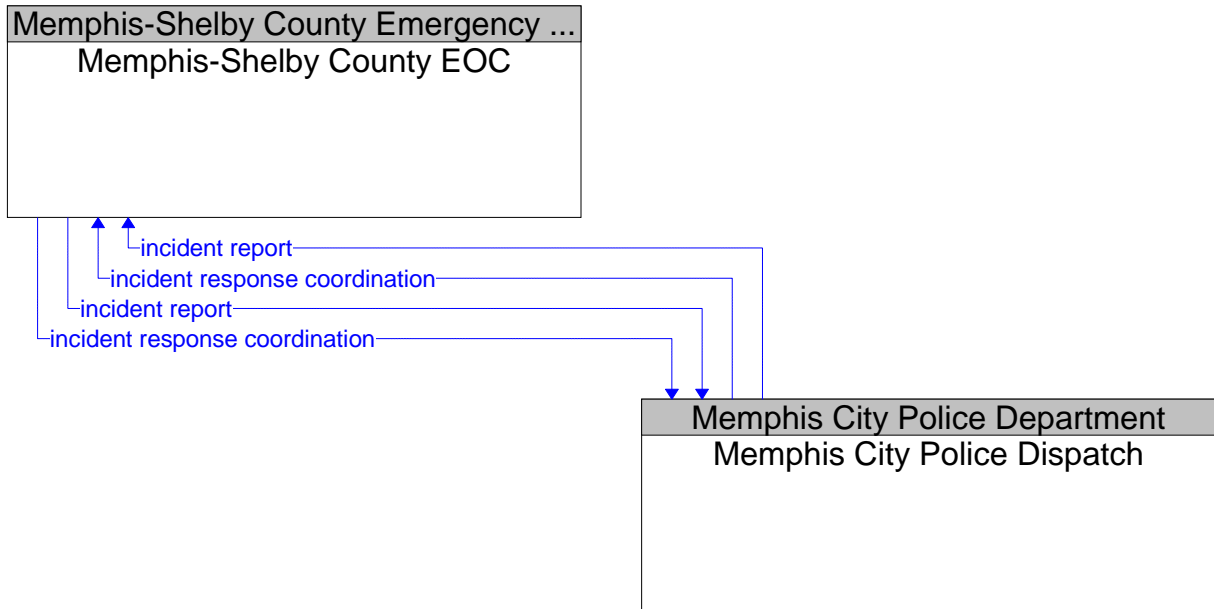**Memphis-Shelby County Emergency ...**
Memphis-Shelby County EOC

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.11 Mississippi Highway Patrol Dispatch[*]

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

Crittenden County Sheriff Department
Crittenden County Sheriff Dispatch

DeSoto County Sheriff Department
DeSoto County Sheriff Dispatch

MATA
MATA Transit Management Center

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

Mississippi DOT
Mississippi TMC

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

———— Existing
———— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.11.1 Mississippi Highway Patrol Dispatch and Arkansas Highway Patrol Dispatch

```
┌─────────────────────────────────────────┐
│        Mississippi Highway Patrol         │
│ Mississippi Highway Patrol Dispatch       │
│                                           │
│                                           │
│                                           │
└─────────────────────────────────────────┘
        incident report
        incident response coordination
      incident report
    incident response coordination

                          ┌──────────────────────────────────────┐
                          │       Arkansas Highway Patrol          │
                          │ Arkansas Highway Patrol Dispatch       │
                          │                                        │
                          │                                        │
                          └──────────────────────────────────────┘
```

────────────────── Existing
────────────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.2 Mississippi Highway Patrol Dispatch and Crittenden County Sheriff Dispatch

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

—incident report—
—incident response coordination—
—incident report—
—incident response coordination—

Crittenden County Sheriff Department
Crittenden County Sheriff Dispatch

———— Existing
———— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.1.3 Mississippi Highway Patrol Dispatch and DeSoto County Sheriff Dispatch

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

DeSoto County Sheriff Department
DeSoto County Sheriff Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.11.4 Mississippi Highway Patrol Dispatch and MATA Transit Management Center

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

transit emergency data

transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.11.5 Mississippi Highway Patrol Dispatch and Memphis-Shelby County EOC

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

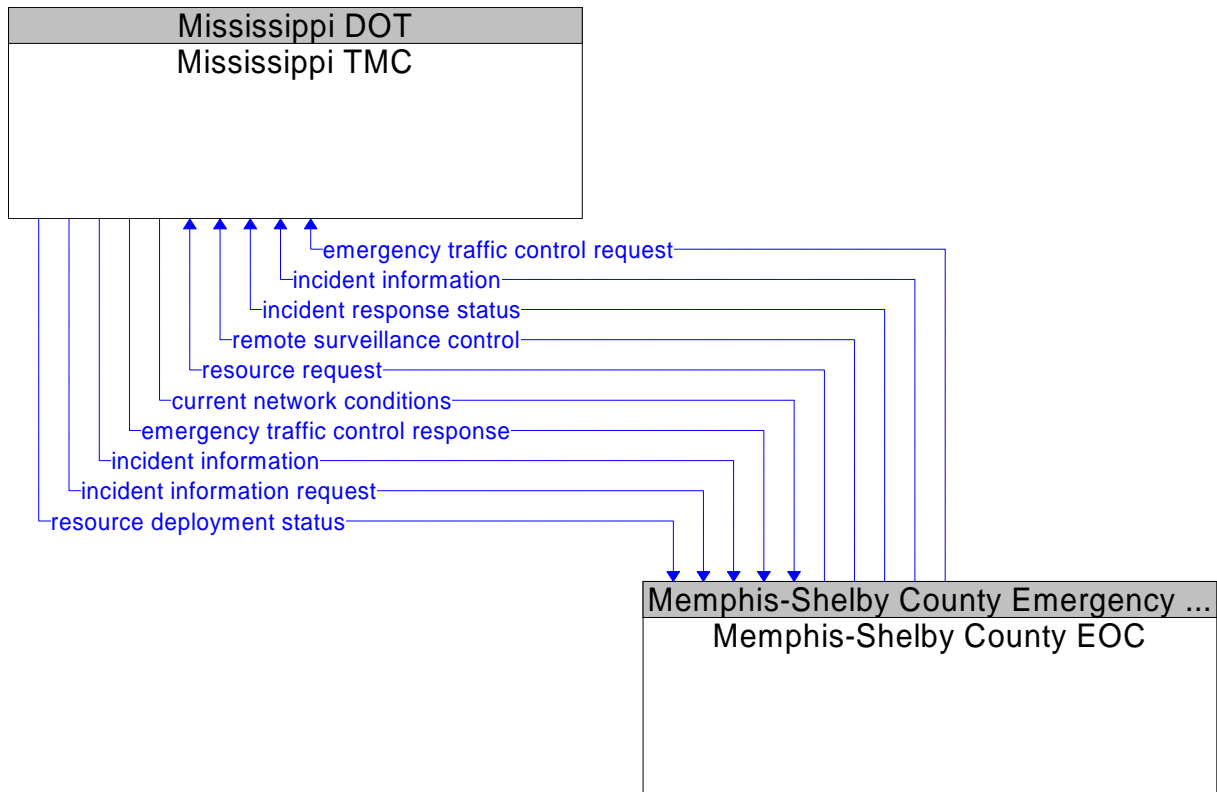| Memphis-Shelby County Emergency ... |
|---|
| Memphis-Shelby County EOC |

———— Existing
———— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.11.6 Mississippi Highway Patrol Dispatch and Mississippi TMC

Mississippi DOT
Mississippi TMC

incident information
incident response status
remote surveillance control
resource request
current network conditions
incident information
incident information request
resource deployment status

Mississippi Highway Patrol
Mississippi Highway Patrol Dispatch

———— Existing
———— Planned

Planned Flows

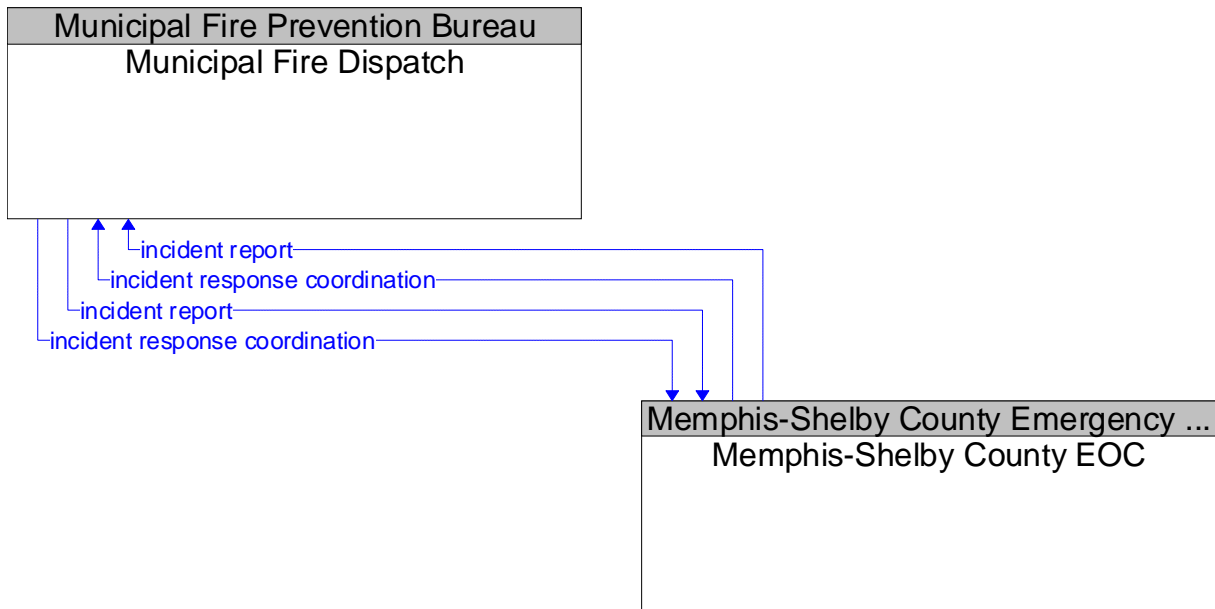| current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.11.7 Mississippi Highway Patrol Dispatch and Shelby County Sheriff Dispatch

	Existing
	Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.11.8 Mississippi Highway Patrol Dispatch and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

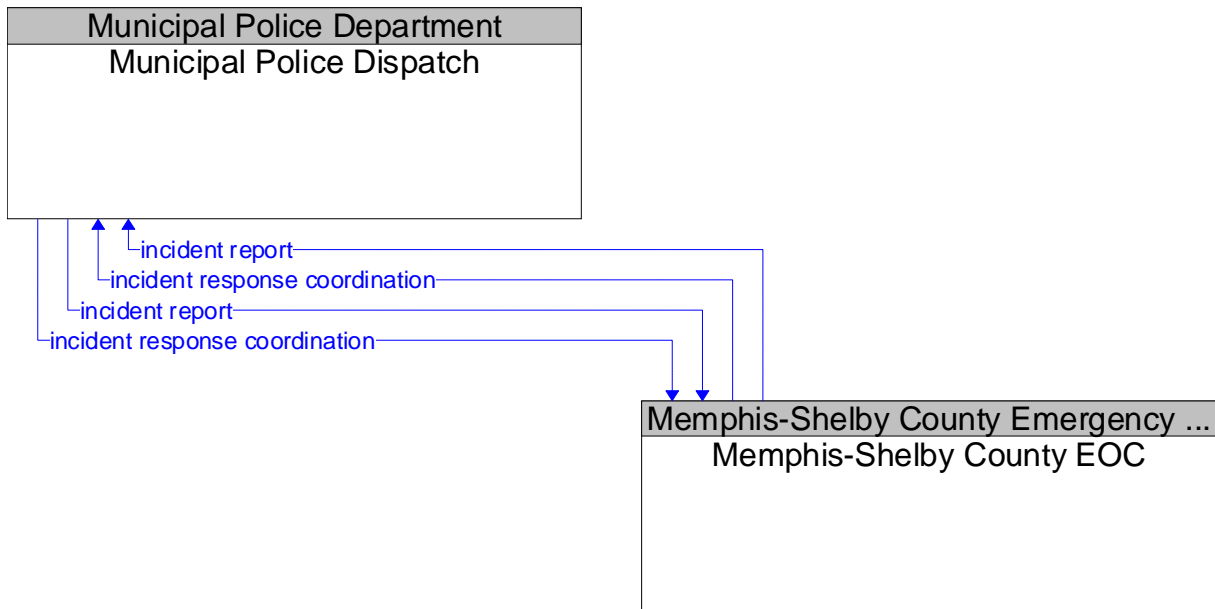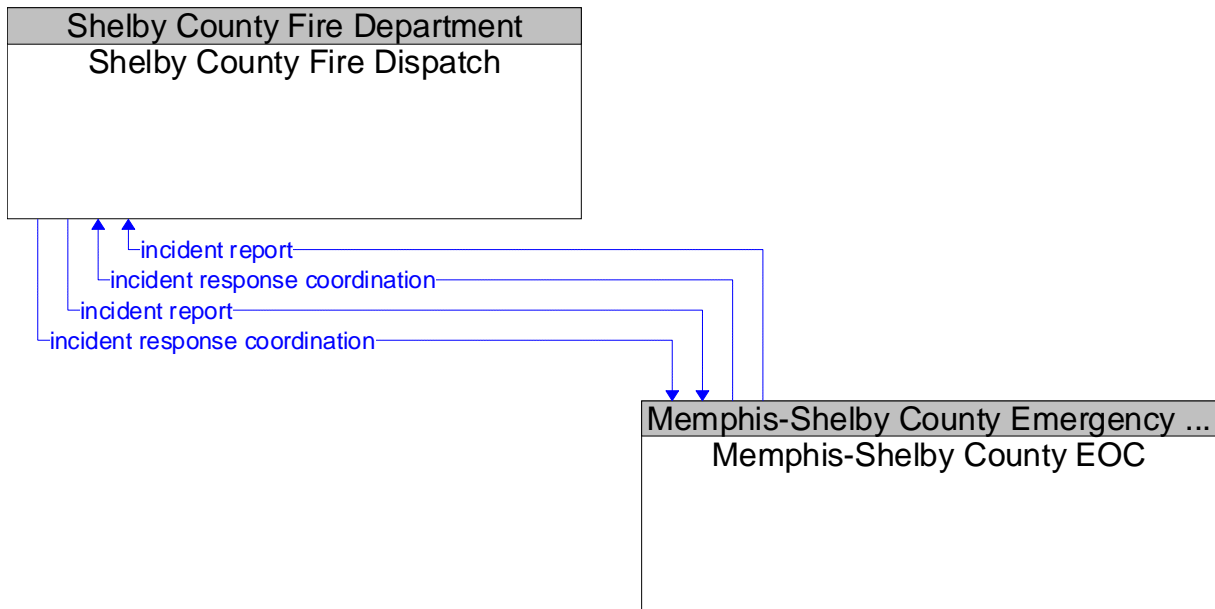**Mississippi Highway Patrol**
Mississippi Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.12 Mississippi Municipal TCC[*]

City of Collierville Traffic Department	City of Germantown Traffic Department	Memphis City Traffic Department
City of Collierville TCC	City of Germantown TCC	Memphis City TOC

Mississippi DOT	Mississippi Municipalities	TDOT
Mississippi TMC	Mississippi Municipal TCC	TDOT RTMC

———————— Existing
———————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.12.1 Mississippi Municipal TCC and City of Collierville TCC

| Mississippi Municipalities |
| Mississippi Municipal TCC |

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

| City of Collierville Traffic Department |
| City of Collierville TCC |

———————— Existing
———————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.12.2 Mississippi Municipal TCC and City of Germantown TCC

Mississippi Municipalities
Mississippi Municipal TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Germantown Traffic Department
City of Germantown TCC

―――――――――――― Existing
―――――――――――― Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.12.3 Mississippi Municipal TCC and Memphis City TOC

Mississippi Municipalities
Mississippi Municipal TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.12.4 Mississippi Municipal TCC and Mississippi TMC

Mississippi DOT
Mississippi TMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Mississippi Municipalities
Mississippi Municipal TCC

——————— Existing
——————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.12.5 Mississippi Municipal TCC and TDOT RTMC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Mississippi Municipalities
Mississippi Municipal TCC

——— Existing
——— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.13 Mississippi TMC[*]

City of Collierville Traffic Department	MATA	Memphis MPO
City of Collierville TCC	MATA Transit Management Center	Memphis MPO Archive

Memphis-Shelby County Emergency ...	Mississippi DOT	Mississippi Highway Patrol
Memphis-Shelby County EOC	Mississippi TMC	Mississippi Highway Patrol Dispatch

Mississippi Municipalities	TDOT
Mississippi Municipal TCC	TDOT RTMC

—————————— Existing
—————————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.13.1 Mississippi TMC and City of Collierville TCC

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┌─────────────────────────────────────┐
│         Mississippi DOT              │
│         Mississippi TMC              │
│                                      │
│                                      │
│                                      │
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traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

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                    ┌─────────────────────────────────────────┐
                    │  City of Collierville Traffic Department │
                    │         City of Collierville TCC         │
                    │                                          │
                    │                                          │
                    │                                          │
                    └─────────────────────────────────────────┘
```

———————— Existing
———————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.13.2 Mississippi TMC and MATA Transit Management Center

Mississippi DOT
Mississippi TMC

transit system data
request transit information
traffic information for transit

MATA
MATA Transit Management Center

———————— Existing
———————— Planned

Planned Flows

request transit information	Request for transit service information and current transit status.
traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.13.3 Mississippi TMC and Memphis MPO Archive

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┌─────────────────────────────────────┐
│          Mississippi DOT             │
│          Mississippi TMC             │
│                                      │
│                                      │
│                                      │
│                                      │
└─────────────────────────────────────┘
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archive requests

archive status

traffic archive data

```
                    ┌─────────────────────────────────────┐
                    │             Memphis MPO              │
                    │         Memphis MPO Archive          │
                    │                                      │
                    │                                      │
                    │                                      │
                    └─────────────────────────────────────┘
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─────────────── Existing
─────────────── Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.13.4 Mississippi TMC and Memphis-Shelby County EOC

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

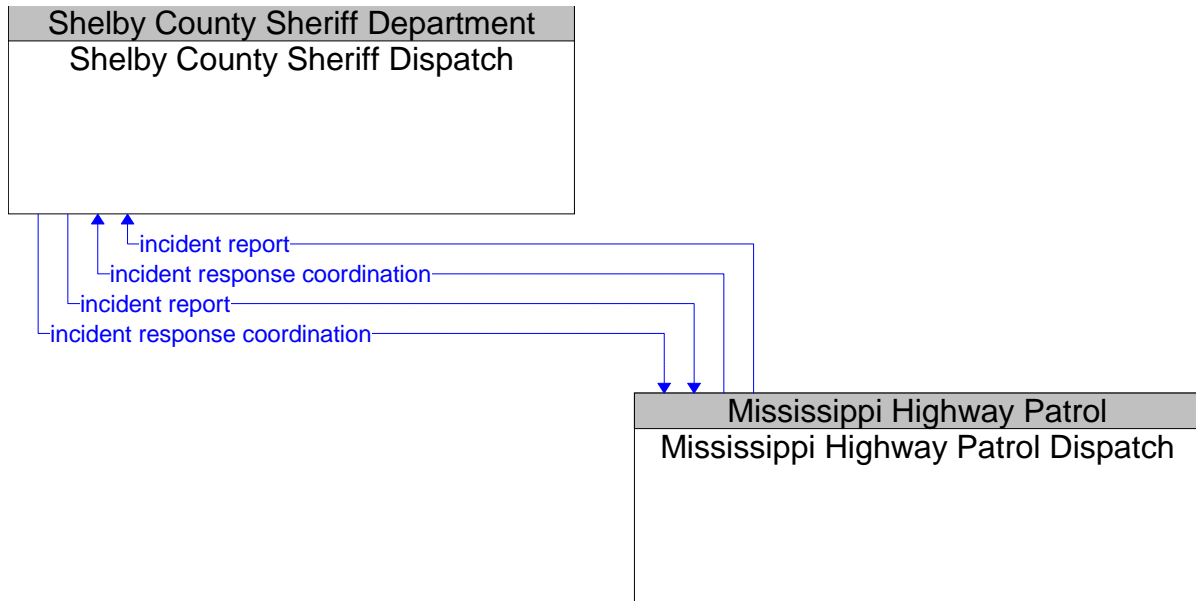## 6.13.5 Mississippi TMC and Mississippi Highway Patrol Dispatch

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.13.6 Mississippi TMC and Mississippi Municipal TCC

Mississippi DOT
Mississippi TMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Mississippi Municipalities
Mississippi Municipal TCC

——————————— Existing
——————————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.13.7 Mississippi TMC and TDOT RTMC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Mississippi DOT
Mississippi TMC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.14 Shelby County Fire Dispatch[*]

Memphis Light, Gas and Water	Memphis MPO	Memphis-Shelby County Emergency ...	Municipal Fire Prevention Bureau	Municipal Police Department
Memphis Light, Gas and Water Utility Dispatch	Memphis MPO Archive	Memphis-Shelby County EOC	Municipal Fire Dispatch	Municipal Police Dispatch

Shelby County Fire Department	City of Bartlett Public Works Departm...	City of Collierville Public Works Depa...	City of Germantown Public Works De...	Shelby County Public Works Depart...
Shelby County Fire Vehicles	City of Bartlett Public Works	City of Collierville Public Works	City of Germantown Public Works	Shelby County Public Works

Shelby County Sheriff Department	MATA	Shelby County Fire Department	Memphis City Fire Services	Shelby County Engineering
Shelby County Sheriff Dispatch	MATA Transit Management Center	Shelby County Fire Dispatch	Memphis City Fire Dispatch	Shelby County TCC

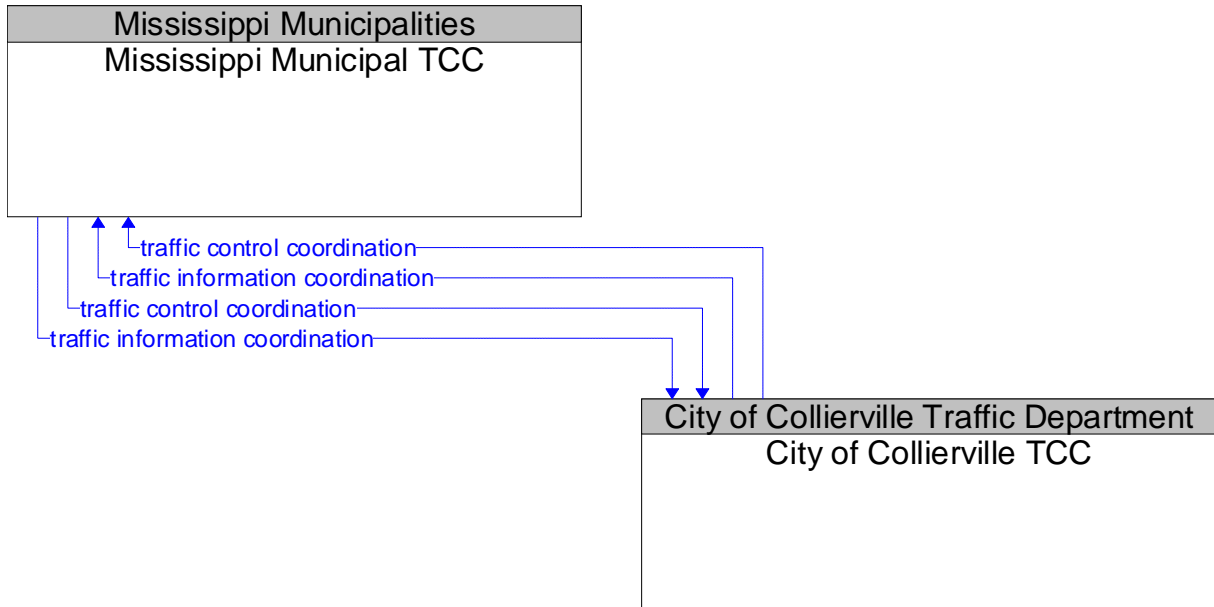| TDOT	Memphis City Police Department	Memphis City Police Department	Memphis City Traffic Department	Tennessee Highway Patrol
TDOT RTMC	Memphis City Police Dispatch	Memphis City Police Special Event System	Memphis City TOC	Tennessee Highway Patrol Dispatch

—————— Existing
—————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.14.1 Shelby County Fire Dispatch and City of Bartlett Public Works

Shelby County Fire Department
Shelby County Fire Dispatch

—resources response—
—request for resources—

City of Bartlett Public Works Departm...
City of Bartlett Public Works

—————— Existing
—————— Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.14.2 Shelby County Fire Dispatch and City of Collierville Public Works

Shelby County Fire Department
Shelby County Fire Dispatch

─resources response─
─request for resources─

City of Collierville Public Works Depa...
City of Collierville Public Works

─── Existing
─── Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.14.3 Shelby County Fire Dispatch and City of Germantown Public Works

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┌─────────────────────────────────────────┐
│   Shelby County Fire Department          │
│   Shelby County Fire Dispatch            │
│                                          │
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└─────────────────────────────────────────┘
     │  └resources response─────────────┐
     └request for resources───────────┐ │
                                       │ │
                            ┌──────────▼─────────────────────┐
                            │ City of Germantown Public Works De...│
                            │  City of Germantown Public Works │
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                            │                                  │
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```

─────────────── Existing
─────────────── Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.14.4 Shelby County Fire Dispatch and MATA Transit Management Center

Shelby County Fire Department
Shelby County Fire Dispatch

transit emergency data
transit emergency coordination data

MATA
MATA Transit Management Center

———————— Existing
———————— Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.14.5 Shelby County Fire Dispatch and Memphis City Fire Dispatch

Shelby County Fire Department
Shelby County Fire Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis City Fire Services
Memphis City Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.14.6 Shelby County Fire Dispatch and Memphis City Police Dispatch

Shelby County Fire Department
Shelby County Fire Dispatch

—incident report—
—incident response coordination—
—incident report—
incident response coordination—

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.14.7 Shelby County Fire Dispatch and Memphis City Police Special Event System

Shelby County Fire Department
Shelby County Fire Dispatch

event plans
event confirmation

Memphis City Police Department
Memphis City Police Special Event System

Existing
Planned

Planned Flows

event plans	Plans for major events possibly impacting traffic.
event confirmation	Confirmation that special event details have been received and processed.

6.14.8 Shelby County Fire Dispatch and Memphis City TOC

Shelby County Fire Department
Shelby County Fire Dispatch

- current network conditions
- emergency traffic control response
- incident information
- incident information request
- resource deployment status
- emergency traffic control request
- incident information
- incident response status
- remote surveillance control
- resource request

Memphis City Traffic Department
Memphis City TOC

— Existing
— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.14.9 Shelby County Fire Dispatch and Memphis Light, Gas and Water Utility Dispatch

Shelby County Fire Department
Shelby County Fire Dispatch

─utility status information─

─utility notification─

Memphis Light, Gas and Water
Memphis Light, Gas and Water Utility Dispatch

Existing
Planned

Planned Flows

utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.14.10 Shelby County Fire Dispatch and Memphis MPO Archive

Shelby County Fire Department	
Shelby County Fire Dispatch	

archive requests
archive status
emergency archive data

Memphis MPO	
Memphis MPO Archive	

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
emergency archive data	Logged incident information that characterizes the identified incidents and provides a record of the corresponding incident response. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.14.11 Shelby County Fire Dispatch and Memphis-Shelby County EOC

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.14.12 Shelby County Fire Dispatch and Municipal Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.14.13 Shelby County Fire Dispatch and Municipal Police Dispatch

Shelby County Fire Department
Shelby County Fire Dispatch

─incident report─
─incident response coordination─
─incident report─
─incident response coordination─

Municipal Police Department
Municipal Police Dispatch

———— Existing
———— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.14.14 Shelby County Fire Dispatch and Shelby County Fire Vehicles

Shelby County Fire Department
Shelby County Fire Vehicles

emergency dispatch requests
incident command information
suggested route
emergency dispatch response
emergency vehicle tracking data
incident command request
incident status

Shelby County Fire Department
Shelby County Fire Dispatch

———— Existing
———— Planned

Planned Flows

emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information (e.g., a suggested route) and provision of en-route status.
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.
incident command information	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency personnel in the field to implement an effective, safe incident response.
incident command request	Request for resources, commands for relay to other allied response agencies, and other requests that reflect local command of an evolving incident response.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.
suggested route	Suggested route for a dispatched emergency vehicle that may reflect current network conditions and the additional routing options available to en-route emergency vehicles that are not available to the general public.

6.14.15 Shelby County Fire Dispatch and Shelby County Public Works

```
Shelby County Public Works Depart...
     Shelby County Public Works




```

request for resources
resources response

```
        Shelby County Fire Department
          Shelby County Fire Dispatch




```

———————————— Existing
———————————— Planned
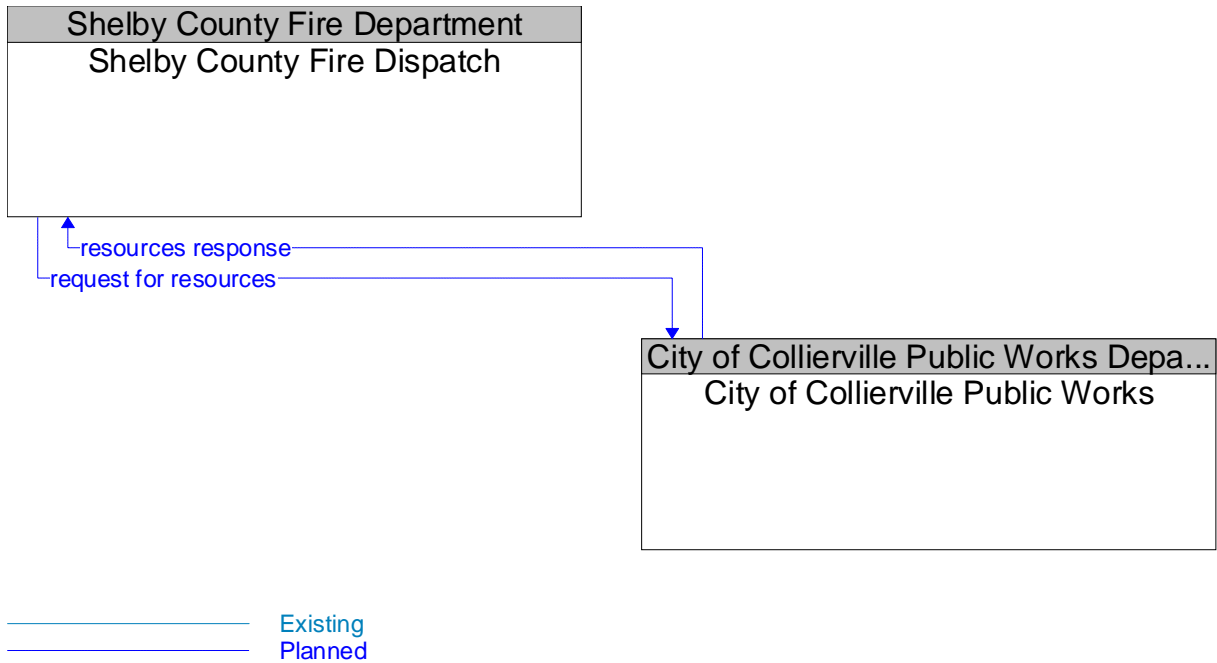
Planned Flows

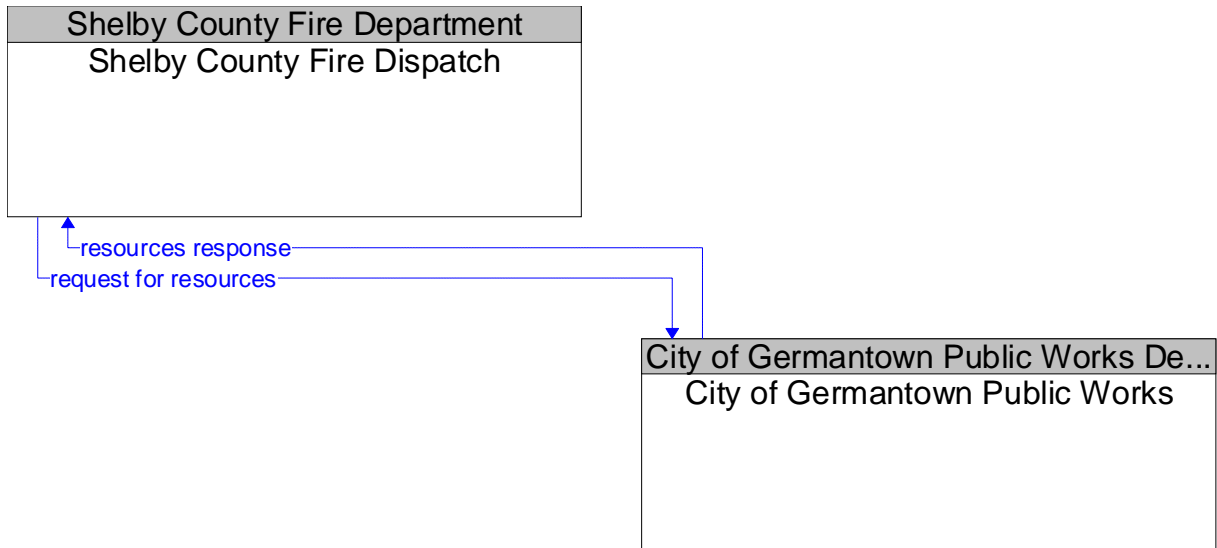| request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.14.16 Shelby County Fire Dispatch and Shelby County Sheriff Dispatch


```
Shelby County Sheriff Department
Shelby County Sheriff Dispatch
```

incident report
incident response coordination
incident report
incident response coordination

```
Shelby County Fire Department
Shelby County Fire Dispatch
```

———————— Existing
———————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.14.17 Shelby County Fire Dispatch and Shelby County TCC

Shelby County Engineering
Shelby County TCC

emergency traffic control request
incident information
remote surveillance control
current network conditions
emergency traffic control response

Shelby County Fire Department
Shelby County Fire Dispatch

— Existing
— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

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6.14.18 Shelby County Fire Dispatch and TDOT RTMC


```
Existing
Planned
```

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate..
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. |

6.14.19 Shelby County Fire Dispatch and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

- incident report
- incident response coordination
- incident report
- incident response coordination

Shelby County Fire Department
Shelby County Fire Dispatch

─────────── Existing
─────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15 Shelby County Sheriff Dispatch[*]

Memphis City Traffic Department	Memphis Light, Gas and Water	Memphis MPO	Memphis-Shelby County Emergency ...	Mississippi Highway Patrol
Memphis City TOC	Memphis Light, Gas and Water Utility Dispatch	Memphis MPO Archive	Memphis-Shelby County EOC	Mississippi Highway Patrol Dispatch

Municipal Fire Prevention Bureau	Arkansas Highway Patrol	City of Bartlett Public Works Departm...	City of Collierville Public Works Depa...	Municipal Police Department
Municipal Fire Dispatch	Arkansas Highway Patrol Dispatch	City of Bartlett Public Works	City of Collierville Public Works	Municipal Police Dispatch

Shelby County Fire Department	City of Germantown Public Works De...	Shelby County Sheriff Department	MATA	Shelby County Public Works Depart...
Shelby County Fire Dispatch	City of Germantown Public Works	Shelby County Sheriff Dispatch	MATA Transit Management Center	Shelby County Public Works

Shelby County Sheriff Department	Memphis City Fire Services	Memphis City Police Department	Memphis City Police Department	Shelby County Engineering
Shelby County Sheriff Vehicles	Memphis City Fire Dispatch	Memphis City Police Dispatch	Memphis City Police Special Event System	Shelby County TCC

TDOT	Tennessee Highway Patrol
TDOT RTMC	Tennessee Highway Patrol Dispatch

—— Existing
—— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

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6.15.1 Shelby County Sheriff Dispatch and Arkansas Highway Patrol Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

─incident report─

─incident response coordination─

─incident report─

─incident response coordination─

Arkansas Highway Patrol
Arkansas Highway Patrol Dispatch

──────── Existing
──────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15.2 Shelby County Sheriff Dispatch and City of Bartlett Public Works

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

─resources response─

─request for resources─

City of Bartlett Public Works Departm...
City of Bartlett Public Works

Existing
Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.15.3 Shelby County Sheriff Dispatch and City of Collierville Public Works

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

resources response
request for resources

City of Collierville Public Works Depa...
City of Collierville Public Works

Existing
Planned

Planned Flows

| request for resources | A request for public works resources such as cones, barricades and heavy equipment for clearing roadway. |
| resources response | Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc. |

6.15.4 Shelby County Sheriff Dispatch and City of Germantown Public Works

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

resources response
request for resources

City of Germantown Public Works De...
City of Germantown Public Works

Existing
Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.15.5 Shelby County Sheriff Dispatch and MATA Transit Management Center

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

transit emergency data

transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.15.6 Shelby County Sheriff Dispatch and Memphis City Fire Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

incident report
incident response coordination
incident report
incident response coordination

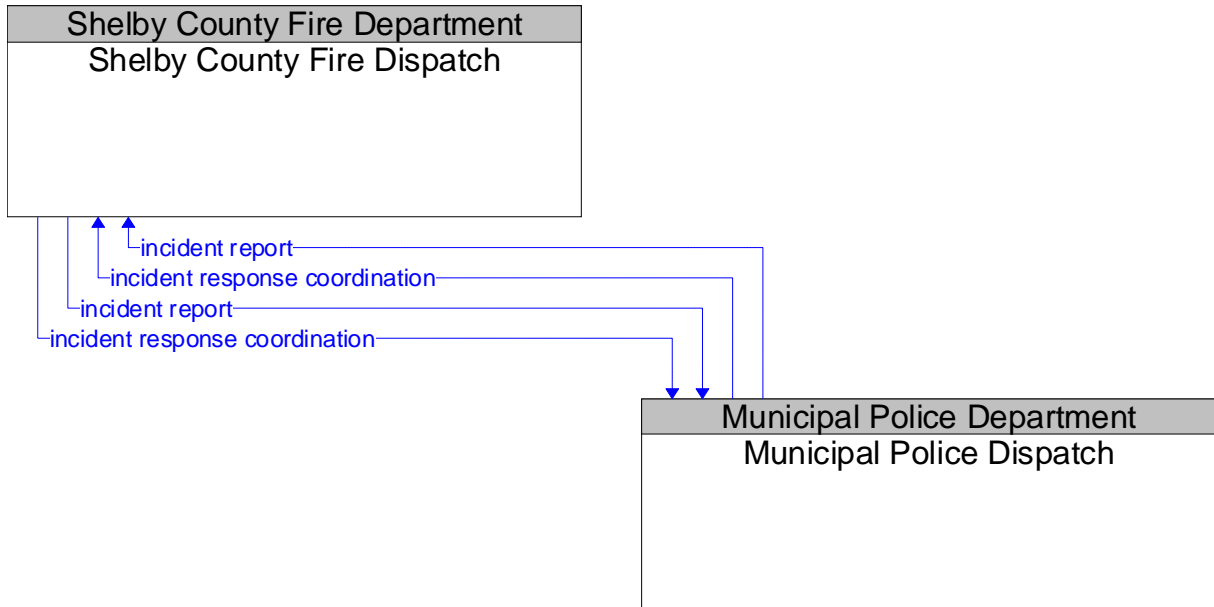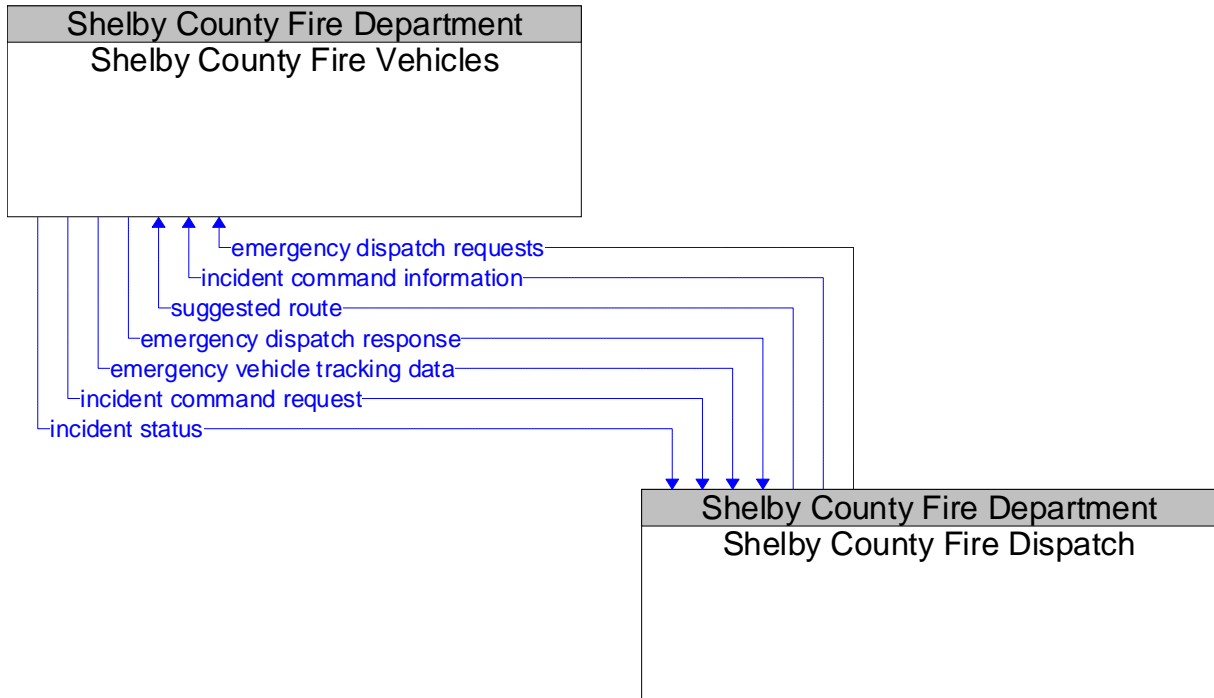| Memphis City Fire Services |
|---|
| Memphis City Fire Dispatch |

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

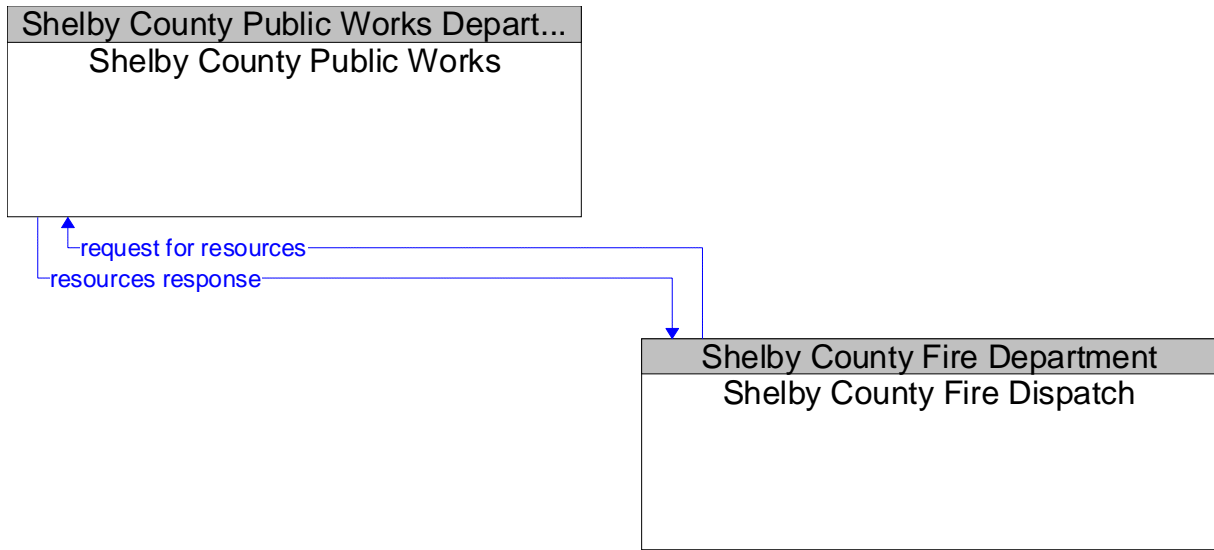6.15.7 Shelby County Sheriff Dispatch and Memphis City Police Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

incident report
incident response coordination
incident report
incident response coordination

Memphis City Police Department
Memphis City Police Dispatch

———————— Existing
———————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15.8 Shelby County Sheriff Dispatch and Memphis City Police Special Event System

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

—event plans—
—event confirmation—

Memphis City Police Department
Memphis City Police Special Event System

Existing
Planned

Planned Flows

event plans	Plans for major events possibly impacting traffic.
event confirmation	Confirmation that special event details have been received and processed.

6.15.9 Shelby County Sheriff Dispatch and Memphis City TOC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

| resource deployment status | Status of traffic management center resource deployment identifying the resources available and their current deployment status. |
| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. |

6.15.10 Shelby County Sheriff Dispatch and Memphis Light, Gas and Water Utility
Dispatch

Planned Flows

utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.15.11 Shelby County Sheriff Dispatch and Memphis MPO Archive

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

archive requests
archive status
emergency archive data

Memphis MPO
Memphis MPO Archive

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
emergency archive data	Logged incident information that characterizes the identified incidents and provides a record of the corresponding incident response. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.15.12 Shelby County Sheriff Dispatch and Memphis-Shelby County EOC

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┌─────────────────────────────────────────────┐
│    Shelby County Sheriff Department          │
│      Shelby County Sheriff Dispatch          │
│                                              │
│                                              │
│                                              │
│                                              │
└─────────────────────────────────────────────┘
         incident report
         incident response coordination
      incident report
   incident response coordination

                          ┌──────────────────────────────────────┐
                          │ Memphis-Shelby County Emergency ...   │
                          │     Memphis-Shelby County EOC         │
                          │                                       │
                          │                                       │
                          │                                       │
                          └──────────────────────────────────────┘
```

—————————————— Existing
—————————————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15.13 Shelby County Sheriff Dispatch and Mississippi Highway Patrol Dispatch

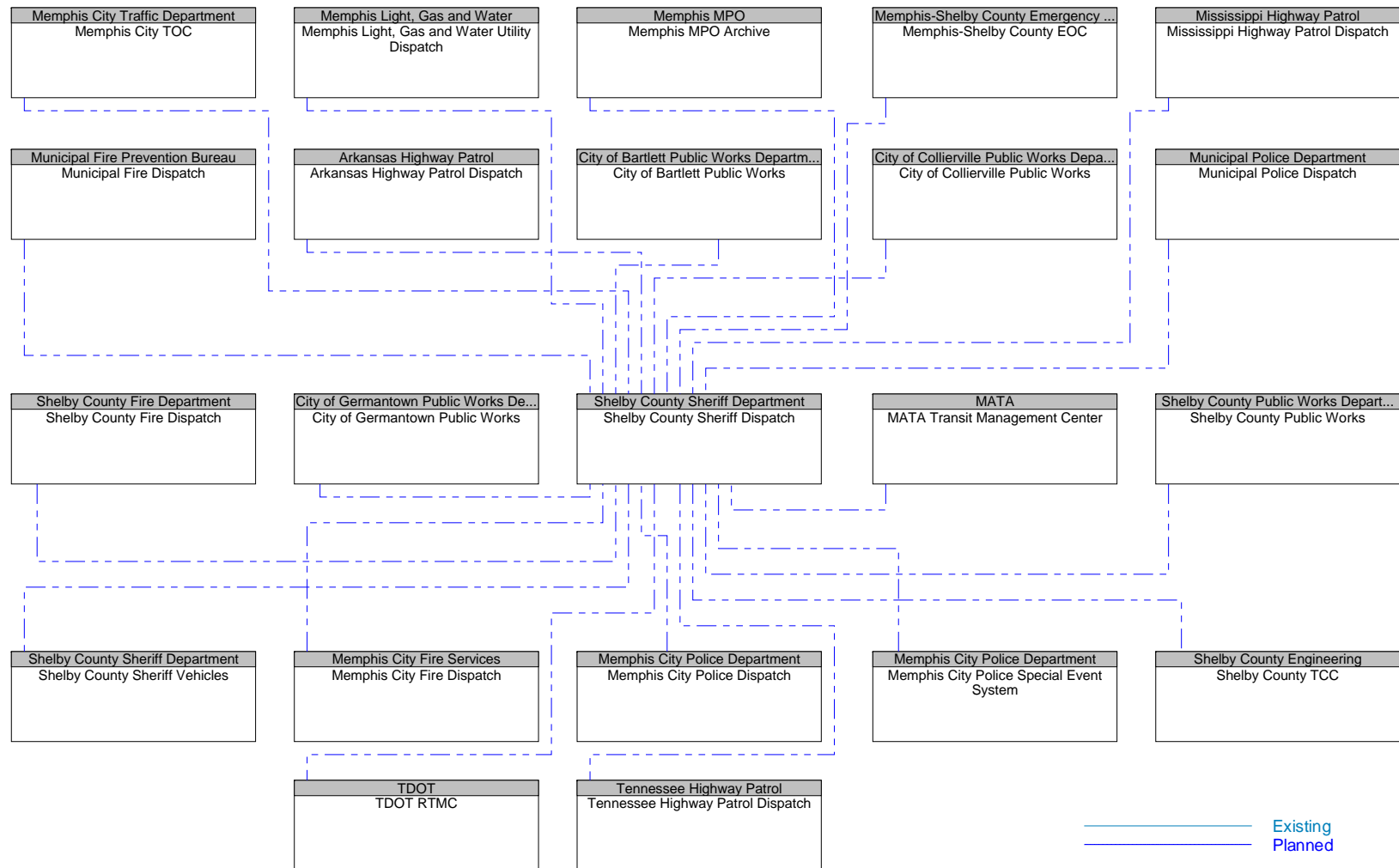### Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15.14 Shelby County Sheriff Dispatch and Municipal Fire Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

incident report
incident response coordination
incident report
incident response coordination

Municipal Fire Prevention Bureau
Municipal Fire Dispatch

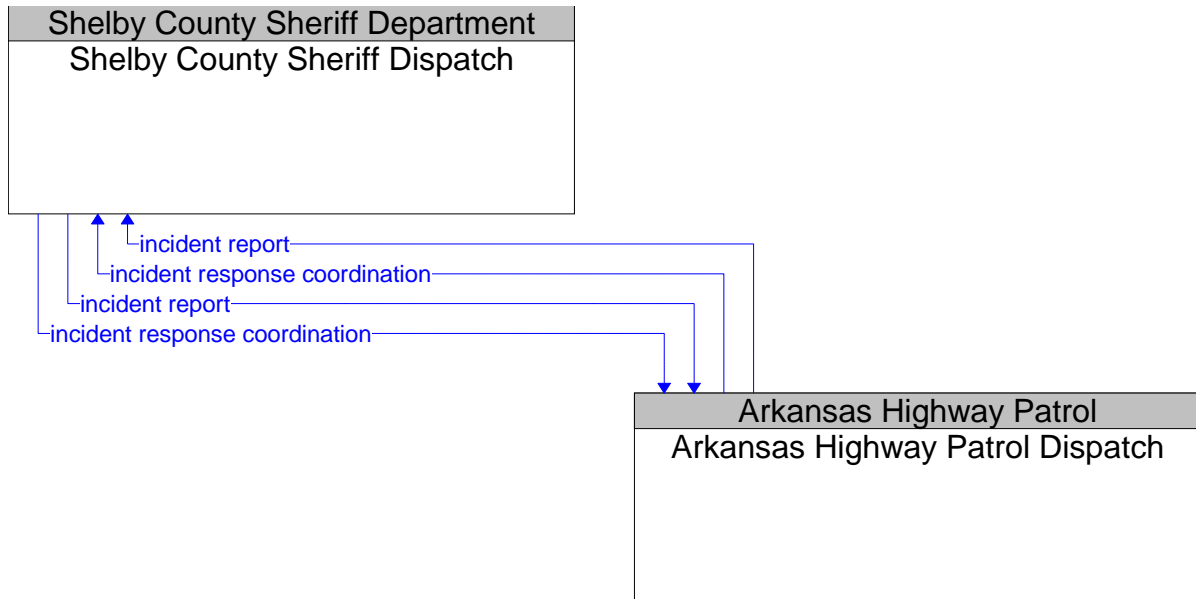——————— Existing
——————— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15.15 Shelby County Sheriff Dispatch and Municipal Police Dispatch

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Shelby County Sheriff Department
Shelby County Sheriff Dispatch



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incident report
incident response coordination
incident report
incident response coordination

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Municipal Police Department
Municipal Police Dispatch


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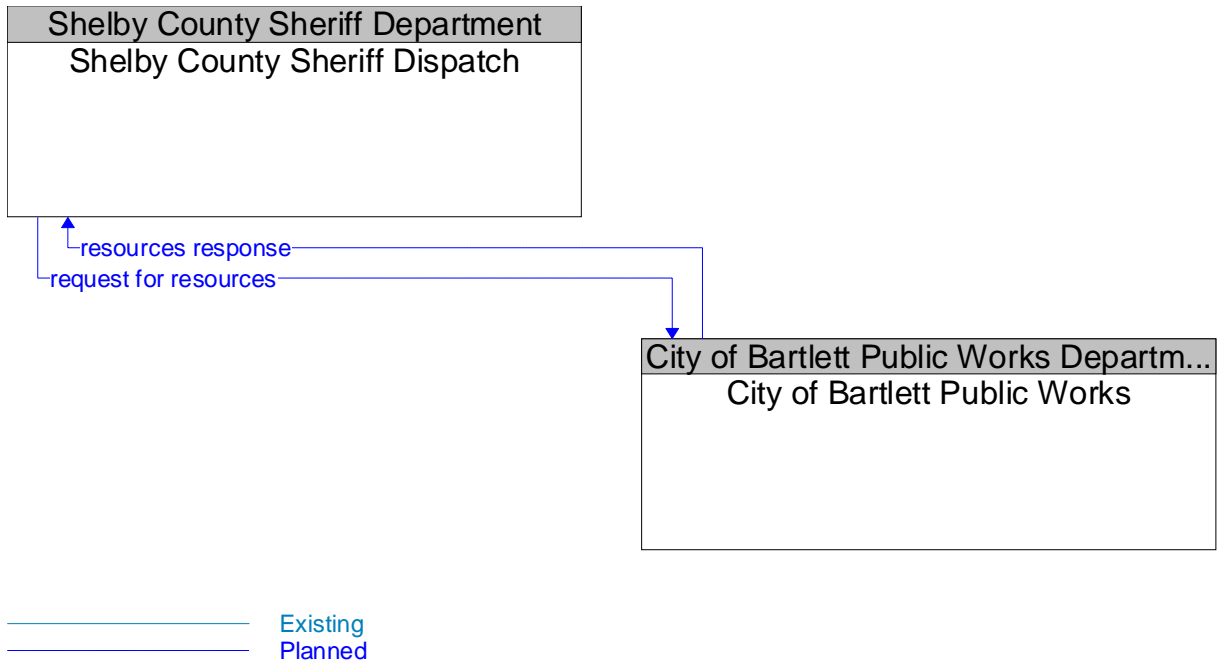
Existing
Planned

Planned Flows

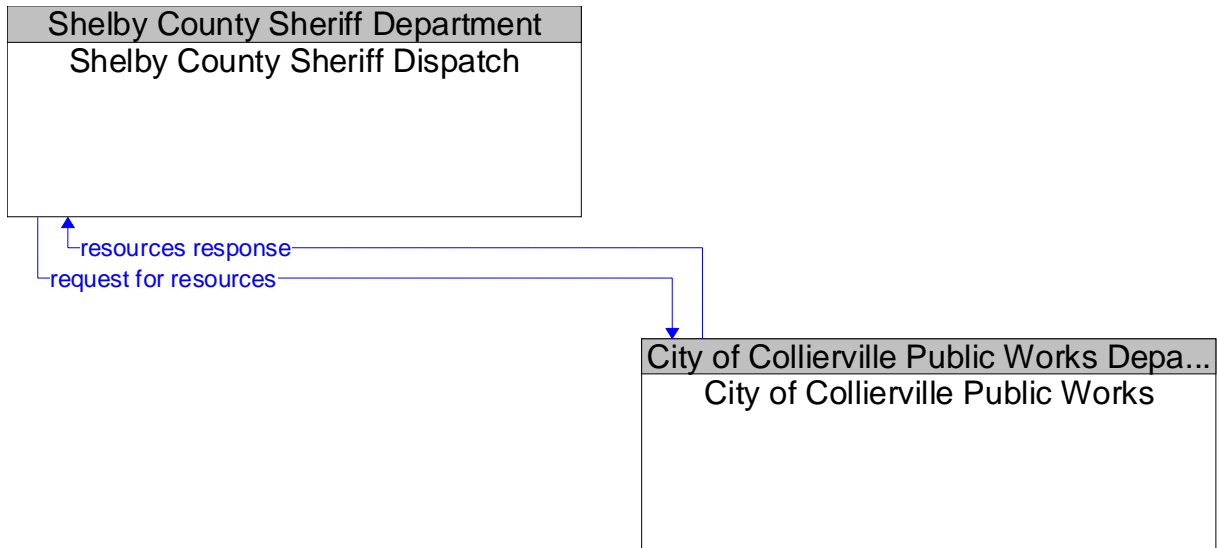| incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15.16 Shelby County Sheriff Dispatch and Shelby County Fire Dispatch

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

incident report
incident response coordination
incident report
incident response coordination

Shelby County Fire Department
Shelby County Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.15.17 Shelby County Sheriff Dispatch and Shelby County Public Works

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

resources response
request for resources

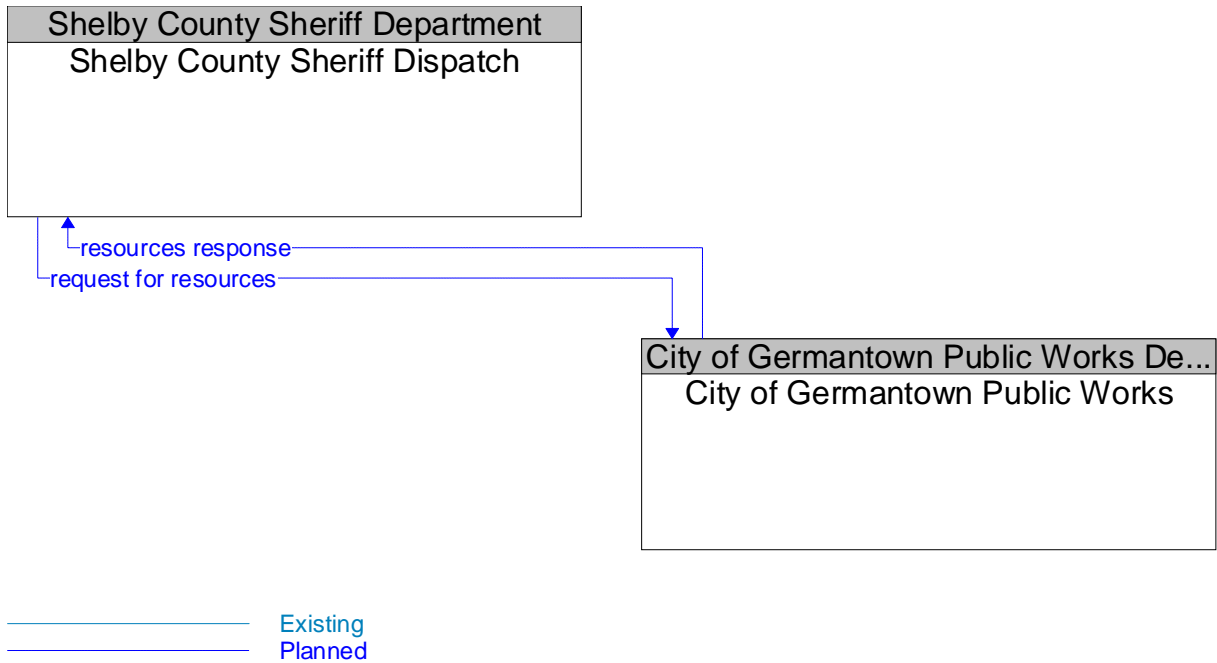| Shelby County Public Works Depart... |
|---|
| Shelby County Public Works |

————————— Existing
————————— Planned

Planned Flows

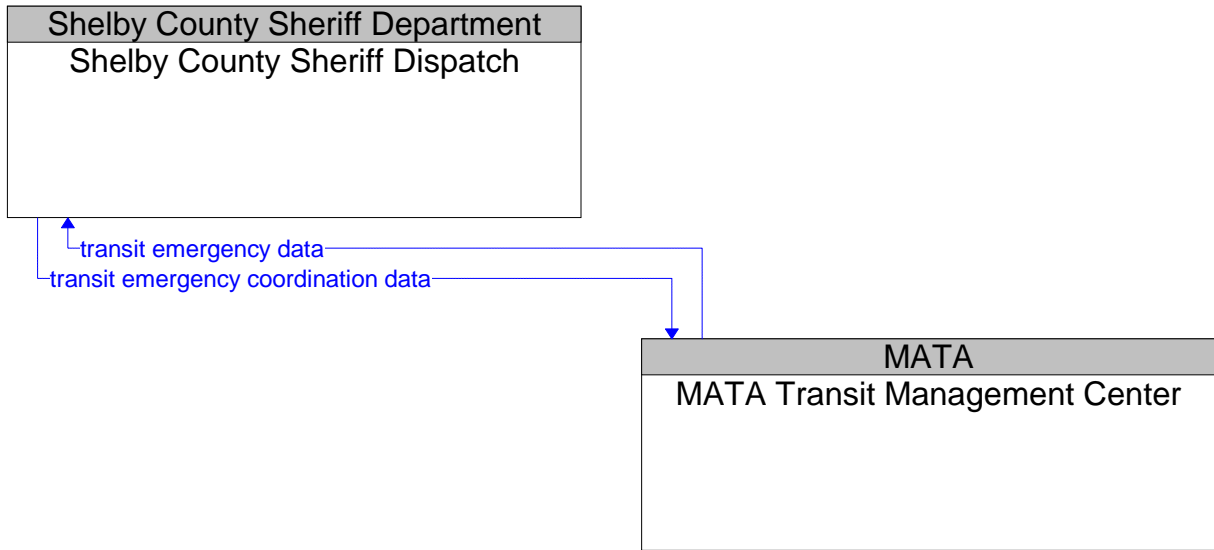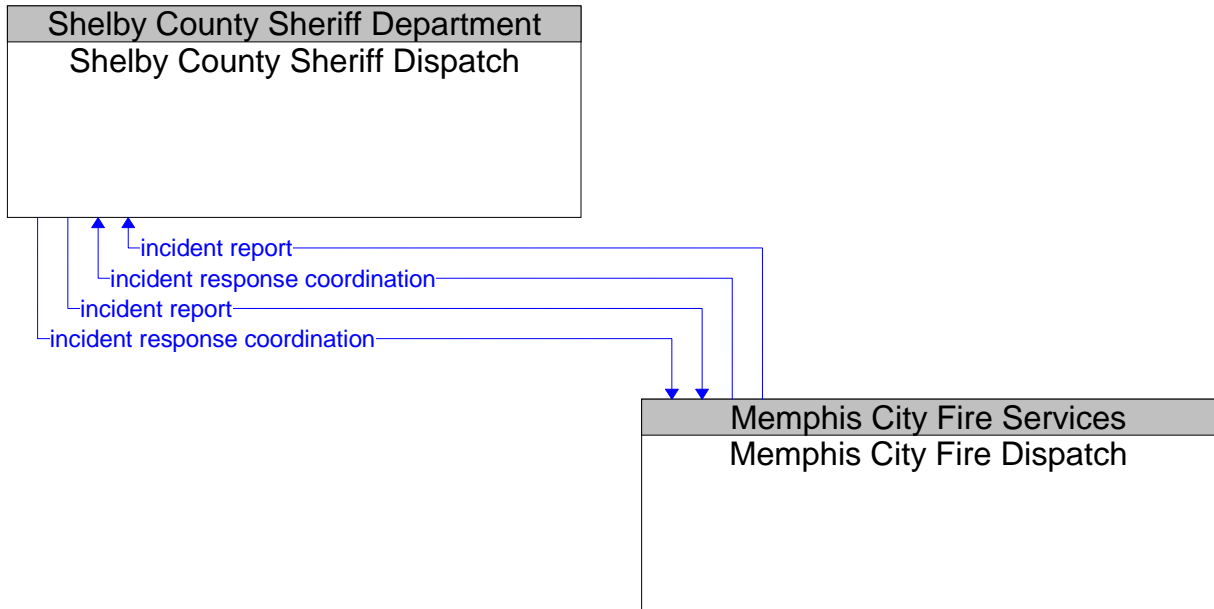| request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.15.18 Shelby County Sheriff Dispatch and Shelby County Sheriff Vehicles

Planned Flows

emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information (e.g., a suggested route) and provision of en-route status.
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.
incident command information	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency personnel in the field to implement an effective, safe incident response.
incident command request	Request for resources, commands for relay to other allied response agencies, and other requests that reflect local command of an evolving incident response.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.
suggested route	Suggested route for a dispatched emergency vehicle that may reflect current network conditions and the additional routing options available to en-route emergency vehicles that are not available to the general public.

6.15.19 Shelby County Sheriff Dispatch and Shelby County TCC

```
Shelby County Engineering
Shelby County TCC




        emergency traffic control request
        incident information
       remote surveillance control
      current network conditions
    emergency traffic control response



                                    Shelby County Sheriff Department
                                    Shelby County Sheriff Dispatch




```

———————————— Existing
———————————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

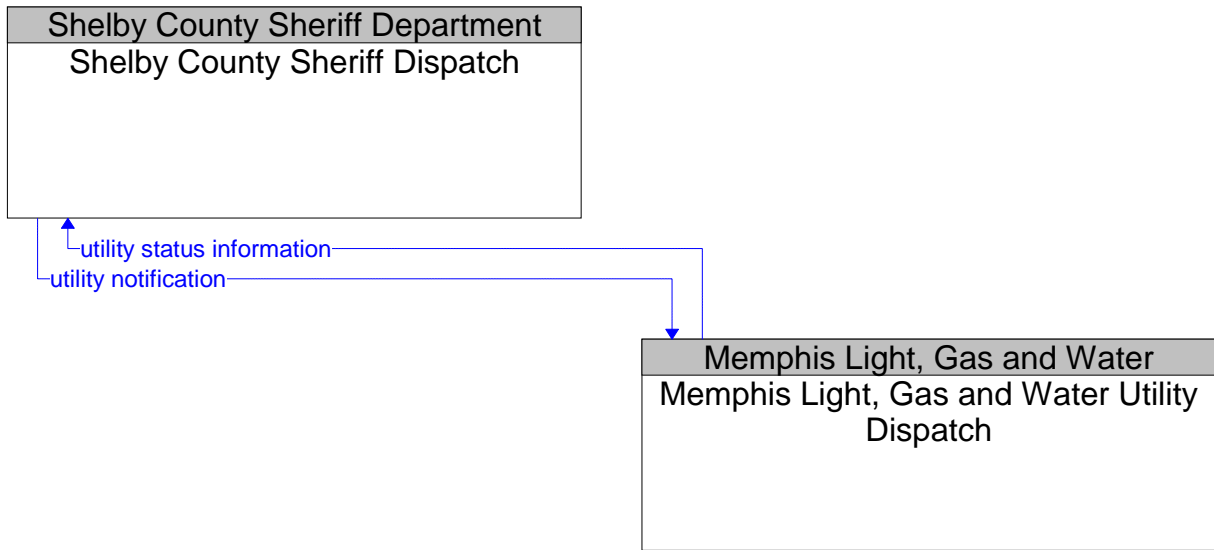## 6.15.20 Shelby County Sheriff Dispatch and TDOT RTMC

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

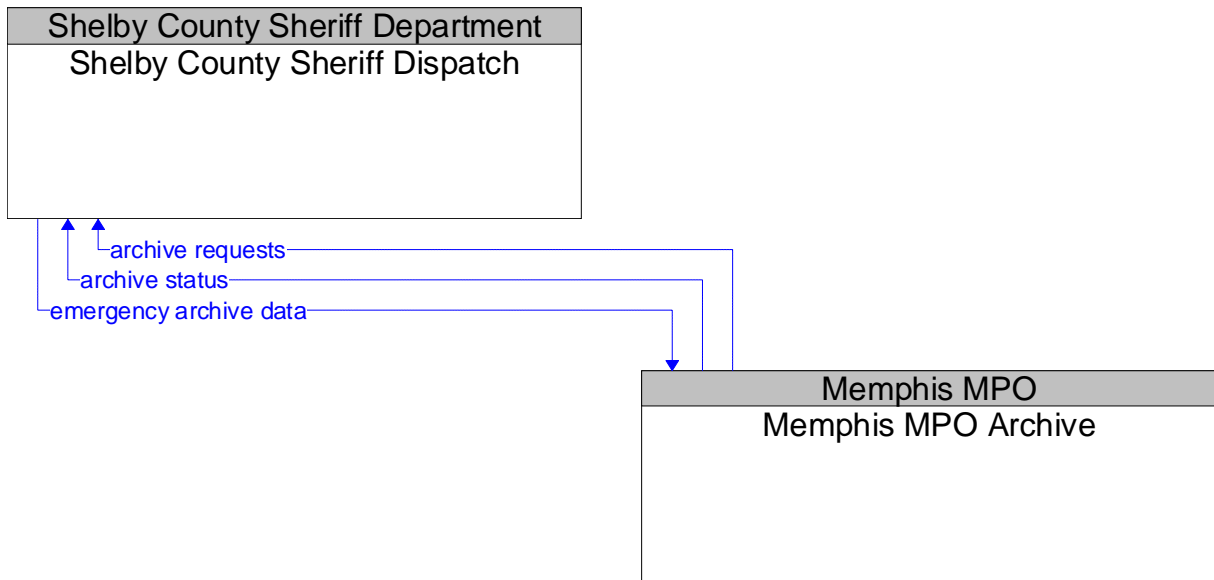## 6.15.21 Shelby County Sheriff Dispatch and Tennessee Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

Shelby County Sheriff Department
Shelby County Sheriff Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.16 Shelby County TCC[*]

Municipal Police Department	Shelby County Fire Department	Shelby County Public Works Depart...	Shelby County Sheriff Department	Shelby County Engineering
Municipal Police Dispatch	Shelby County Fire Dispatch	Shelby County Public Works	Shelby County Sheriff Dispatch	Shelby County Traffic Field Equipment

TDOT	City of Bartlett Public Works Departm...	City of Collierville Public Works Depa...	City of Germantown Public Works De...
TDOT RTMC	City of Bartlett Public Works	City of Collierville Public Works	City of Germantown Public Works

Memphis City Traffic Department	Shelby County Engineering	Memphis Light, Gas and Water
Memphis City TOC	Shelby County TCC	Memphis Light, Gas and Water Utility Dispatch

Memphis MPO	Memphis-Shelby County Emergency ...	Municipal Fire Prevention Bureau
Memphis MPO Archive	Memphis-Shelby County EOC	Municipal Fire Dispatch

Existing
Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.16.1 Shelby County TCC and City of Bartlett Public Works

Shelby County Engineering
Shelby County TCC

equipment maintenance status
maintenance resource response
work zone status
closure coordination
maintenance resource request

City of Bartlett Public Works Departm...
City of Bartlett Public Works

Existing
Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
work zone status	Status of maintenance work zone.

6.16.2 Shelby County TCC and City of Collierville Public Works

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
work zone status	Status of maintenance work zone.

6.16.3 Shelby County TCC and City of Germantown Public Works

Shelby County Engineering
Shelby County TCC

maintenance resource response
work zone status
closure coordination
maintenance resource request

City of Germantown Public Works De...
City of Germantown Public Works

Existing
Planned

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
work zone status	Status of maintenance work zone.

6.16.4 Shelby County TCC and Memphis City TOC

Shelby County Engineering
Shelby County TCC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.16.5 Shelby County TCC and Memphis Light, Gas and Water Utility Dispatch

Shelby County Engineering
Shelby County TCC

- utility status information
- current network conditions
- utility notification

Memphis Light, Gas and Water
Memphis Light, Gas and Water Utility Dispatch

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

6.16.6 Shelby County TCC and Memphis MPO Archive

Shelby County Engineering
Shelby County TCC

archive requests
archive status
traffic archive data

Memphis MPO
Memphis MPO Archive

Existing
Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.16.7 Shelby County TCC and Memphis-Shelby County EOC

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's

	sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.16.8 Shelby County TCC and Municipal Fire Dispatch

Shelby County Engineering
Shelby County TCC

emergency traffic control request

incident information

remote surveillance control

current network conditions

emergency traffic control response

Municipal Fire Prevention Bureau
Municipal Fire Dispatch

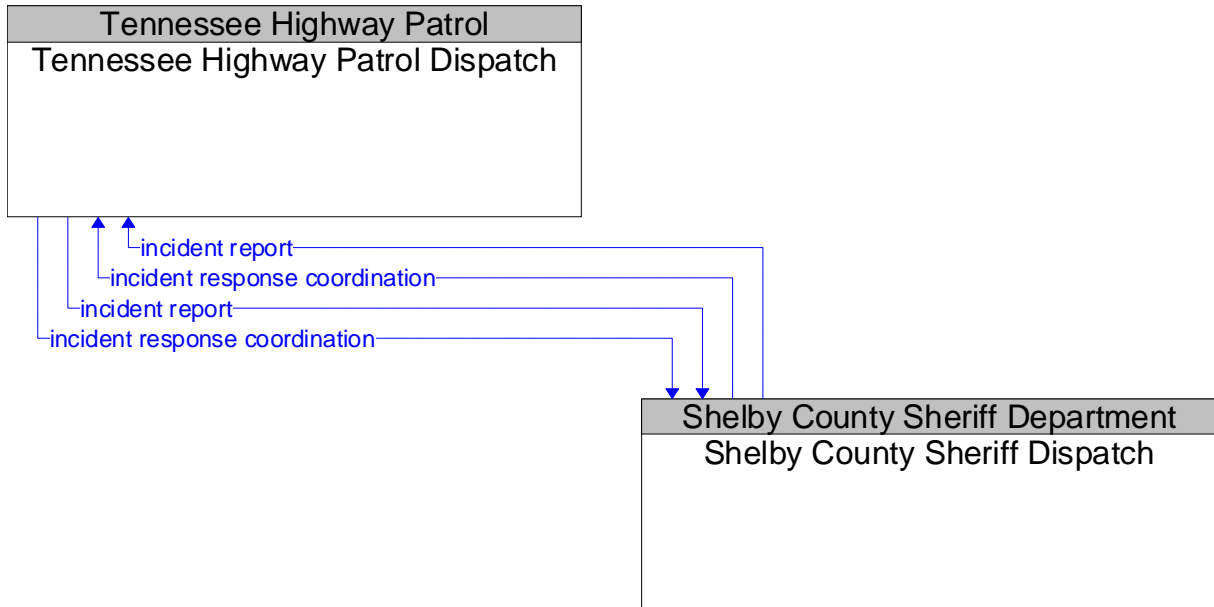——————————— Existing
——————————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.16.9 Shelby County TCC and Municipal Police Dispatch

	Shelby County Engineering
	Shelby County TCC

emergency traffic control request
incident information
remote surveillance control
current network conditions
emergency traffic control response

	Municipal Police Department
	Municipal Police Dispatch

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.16.10 Shelby County TCC and Shelby County Fire Dispatch

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┌─────────────────────────────────────┐
│    Shelby County Engineering         │
│        Shelby County TCC             │
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emergency traffic control request
incident information
remote surveillance control
current network conditions
emergency traffic control response

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                    ┌──────────────────────────────────┐
                    │  Shelby County Fire Department     │
                    │   Shelby County Fire Dispatch      │
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                    │                                    │
                    └──────────────────────────────────┘
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———————— Existing
———————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.16.11 Shelby County TCC and Shelby County Public Works
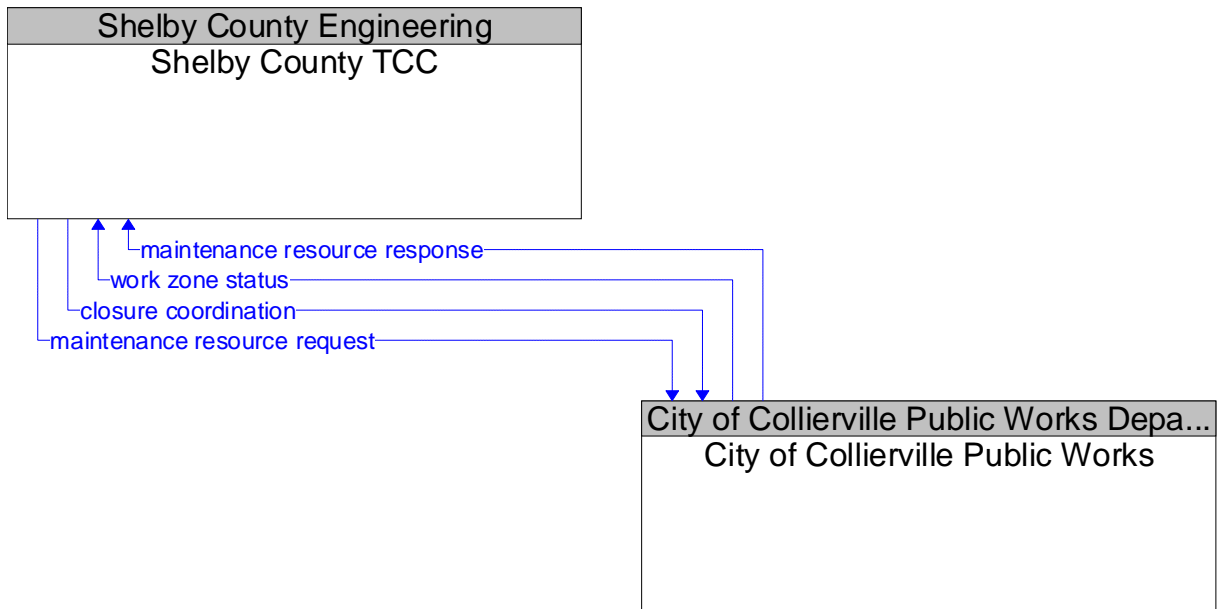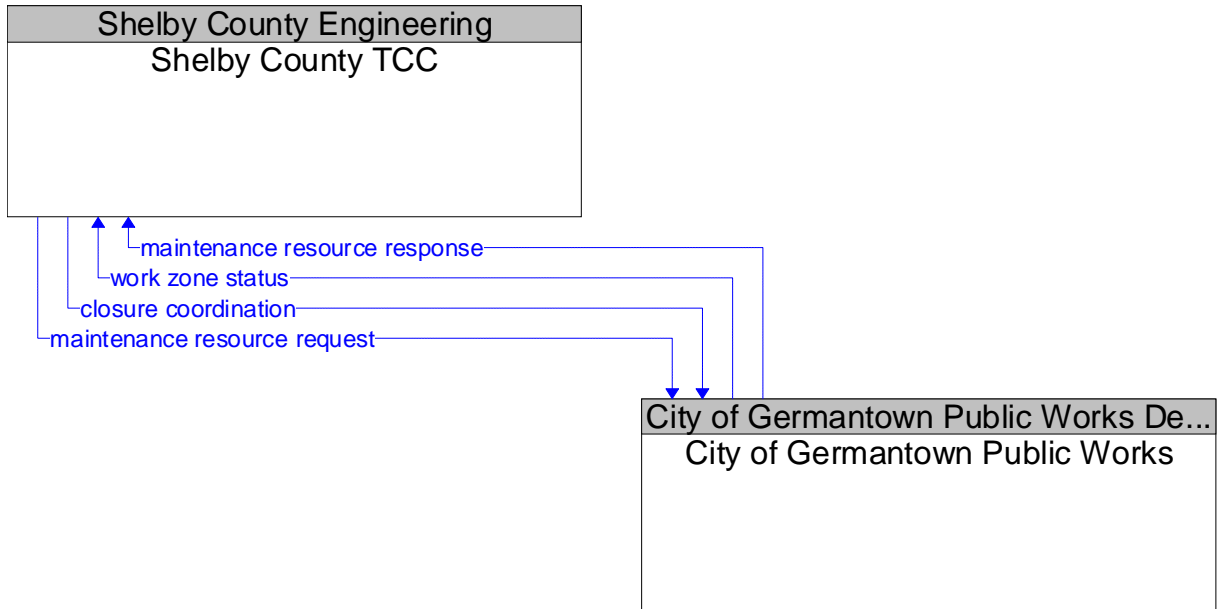

Planned Flows

closure coordination	Coordination between subsystems regarding construction and maintenance closure times and durations.
equipment maintenance status	Current status of field equipment maintenance actions.
maintenance resource request	Request for road maintenance resources that can be used in the diversion of traffic (cones, portable signs), clearance of an incident, and repair of ancillary damage.
maintenance resource response	Current status of maintenance resources included availability and deployment status.
traffic equipment status	Identification of field equipment requiring repair and known information about the associated faults.
work zone status	Status of maintenance work zone.

6.16.12 Shelby County TCC and Shelby County Sheriff Dispatch

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│      Shelby County Engineering           │
│         Shelby County TCC                │
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emergency traffic control request
incident information
remote surveillance control
current network conditions
emergency traffic control response

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                    ┌─────────────────────────────────────────┐
                    │   Shelby County Sheriff Department       │
                    │      Shelby County Sheriff Dispatch      │
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———————————— Existing
———————————— Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, or request another special traffic control plan.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.16.13 Shelby County TCC and Shelby County Traffic Field Equipment

Existing
Planned

Existing Flows

hri control data	Data required for HRI information transmitted at railroad grade crossings and within railroad operations.
hri request	A request for highway-rail intersection status or a specific control request intended to modify HRI operation.

Planned Flows

emissions data	Emissions data and associated imagery collected by roadside equipment.
environmental conditions	Current environment conditions (e.g., air temperature, wind speed, surface temperature) as measured by environmental sensors and communicated by supporting field equipment.
fault reports	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.
hri status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment

	condition.
incident data	Data and imagery from the roadside supporting incident detection and verification.
intersection blockage notification	Notification that a highway-rail intersection is obstructed and supporting information.
request for right-of-way	Forwarded request from signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.
sensor and surveillance control	Information used to configure and control sensor and surveillance systems at the roadside.
signal control data	Information used to configure and control traffic signal systems.
signal control status	Status of surface street signal controls.
traffic flow	Raw and/or processed traffic detector information which allows derivation of traffic flow variables (e.g., speed, volume and density measures).
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.

6.16.14 Shelby County TCC and TDOT RTMC

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│             TDOT RTMC                │
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traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

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                    │     Shelby County Engineering        │
                    │         Shelby County TCC            │
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———————————— Existing
———————————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.17 TDOT Freeway Service Patrol Dispatch[*]

TDOT
TDOT Freeway Service Patrol Vehicles

TDOT
TDOT RTMC

TDOT
TDOT Freeway Service Patrol Dispatch

———————— Existing
———————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

6.17.1 TDOT Freeway Service Patrol Dispatch and TDOT Freeway Service Patrol Vehicles

Planned Flows

emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information (e.g., a suggested route) and provision of en-route status.
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.
incident command information	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency personnel in the field to implement an effective, safe incident response.
incident command request	Request for resources, commands for relay to other allied response agencies, and other requests that reflect local command of an evolving incident response.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.
suggested route	Suggested route for a dispatched emergency vehicle that may reflect current network conditions and the additional routing options available to en-route emergency vehicles that are not available to the general public.

335

6.17.2 TDOT Freeway Service Patrol Dispatch and TDOT RTMC


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TDOT
TDOT RTMC
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emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status
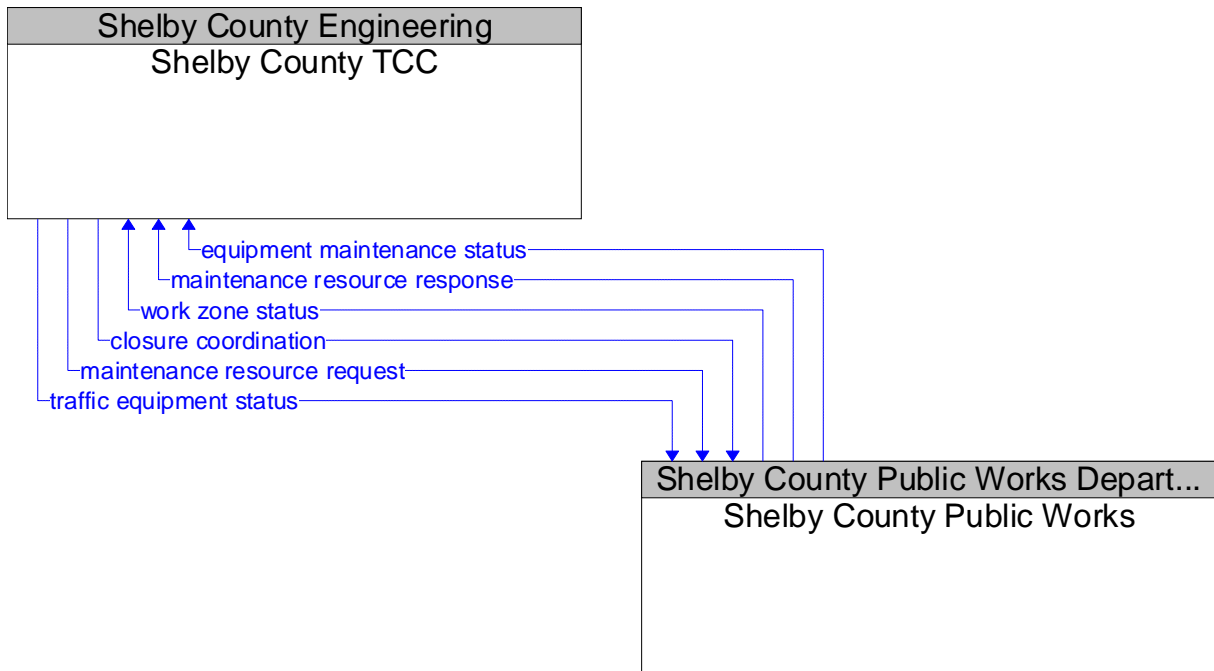
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TDOT
TDOT Freeway Service Patrol Dispatch
```

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.

6.18 TDOT RTMC[*]

TDOT Headquarters Planning Office	TDOT	TDOT	Tennessee Highway Patrol
TDOT Planning Traffic Archive	TDOT RTMC Field Equipment	TDOT RTMC Website Server	Tennessee Highway Patrol Dispatch

Memphis City Police Department	Memphis City Police Department	Memphis City Traffic Department	University of Memphis	Memphis-Shelby County Health Dep...
Memphis City Police Dispatch	Memphis City Police Special Event System	Memphis City TOC	Memphis Research Center	Memphis-Shelby County Emissions Management System

Memphis-Shelby County Emergency ...	Arkansas State Highway and Transp...	City of Bartlett Traffic Department	City of Collierville Traffic Department	Mississippi Municipalities
Memphis-Shelby County EOC	Arkansas District 1 FMC	City of Bartlett TCC	City of Collierville TCC	Mississippi Municipal TCC

Mississippi DOT	City of Germantown Traffic Department	TDOT	U.S. Coast Guard	Municipal Fire Prevention Bureau
Mississippi TMC	City of Germantown TCC	TDOT RTMC	Coast Guard System	Municipal Fire Dispatch

Municipal Police Department	MATA	Media	Memphis City Fire Services	Shelby County Fire Department
Municipal Police Dispatch	MATA Transit Management Center	Media	Memphis City Fire Dispatch	Shelby County Fire Dispatch

	Shelby County Sheriff Department	Shelby County Engineering	TDOT	TDOT
	Shelby County Sheriff Dispatch	Shelby County TCC	TDOT Environmental Monitoring Server	TDOT Freeway Service Patrol Dispatch

— Existing
- - - Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

338

6.18.1 TDOT RTMC and Arkansas District 1 FMC

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│               TDOT RTMC                  │
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        traffic control coordination
        traffic information coordination
        traffic control coordination
        traffic information coordination

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                    │  Arkansas State Highway and Transp...    │
                    │        Arkansas District 1 FMC           │
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———————————— Existing
———————————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.18.2 TDOT RTMC and City of Bartlett TCC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

City of Bartlett Traffic Department
City of Bartlett TCC

Existing
Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.18.3 TDOT RTMC and City of Collierville TCC

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│                 TDOT                     │
│               TDOT RTMC                  │
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     │  ↑  ↑  ──traffic control coordination──────────┐
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     └──traffic information coordination────────┐ │  │  │
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                           │ City of Germantown Traffic Department│
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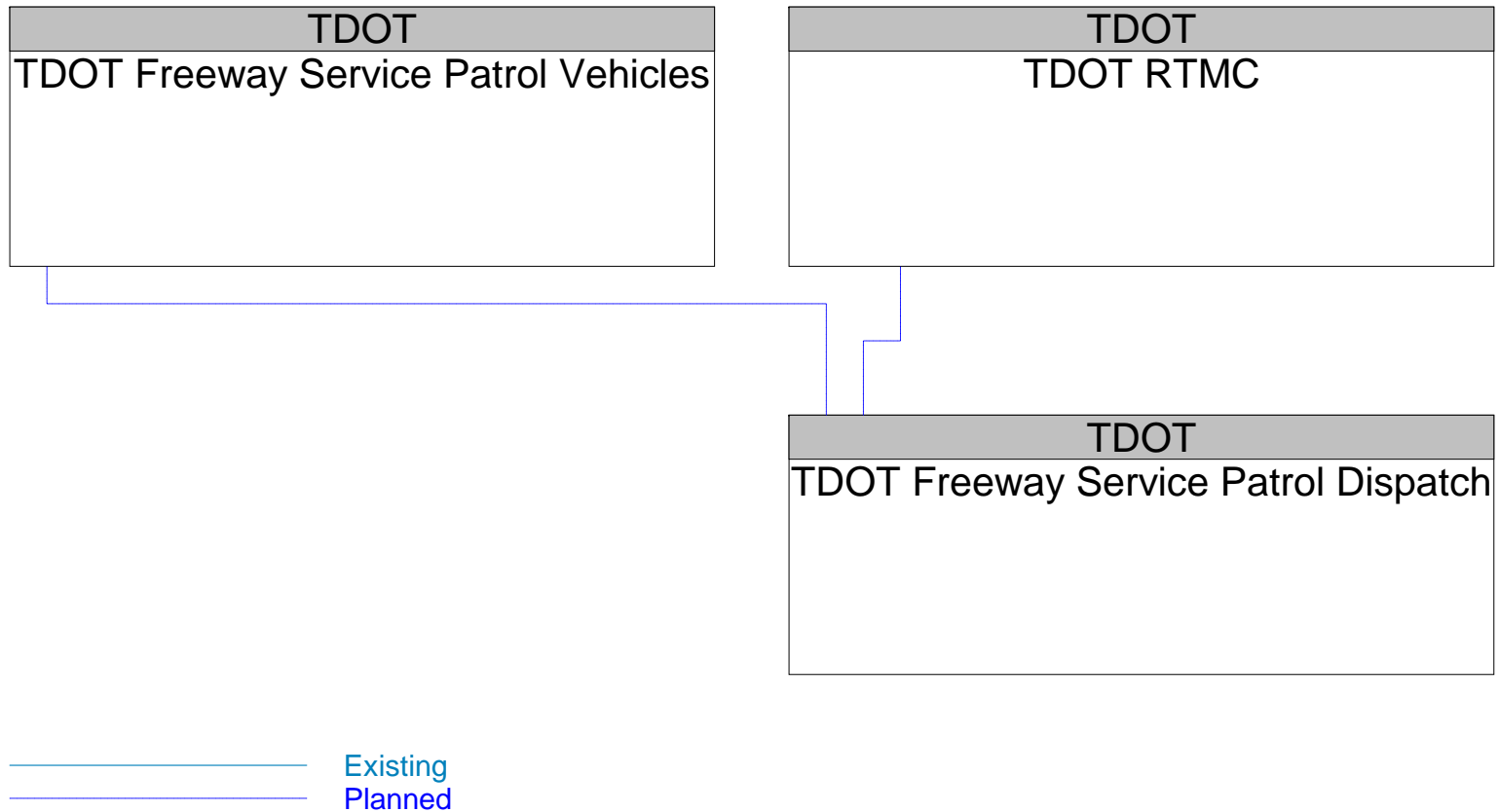```

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───────────────── Existing
───────────────── Planned
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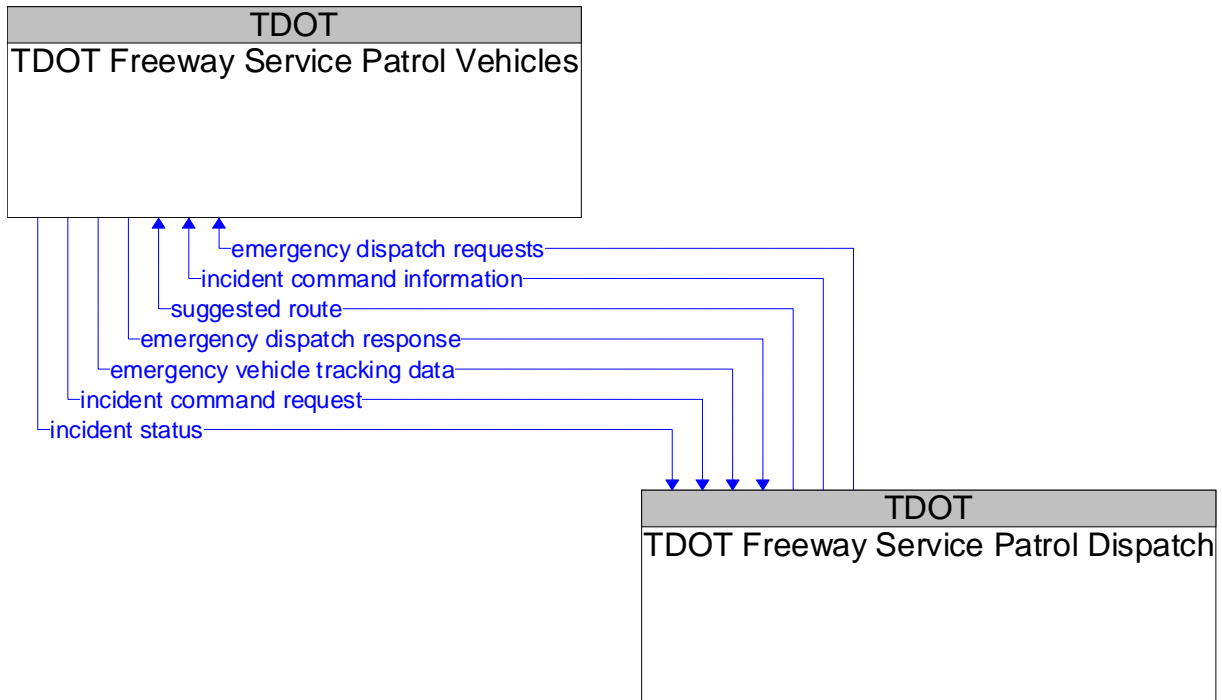
## Planned Flows

| traffic control coordination | Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region. |
|---|---|
| traffic information coordination | Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information. |

## 6.18.4 TDOT RTMC and City of Germantown TCC

| TDOT |
|---|
| TDOT RTMC |

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

| City of Germantown Traffic Department |
|---|
| City of Germantown TCC |

Existing
Planned

## Planned Flows

| traffic control coordination | Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region. |
|---|---|
| traffic information coordination | Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information. |

## 6.18.5 TDOT RTMC and Coast Guard System

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│                TDOT                  │
│             TDOT RTMC                │
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└─────────────────────────────────────┘
        └emergency traffic control request────────┐
         └incident information──────────────────┐ │
          └incident response status───────────┐ │ │
           └remote surveillance control─────┐ │ │ │
            └current network conditions───┐ │ │ │ │
             emergency traffic control response┐ │ │ │
                                          ┌──────────────────────────────┐
                                          │        U.S. Coast Guard       │
                                          │       Coast Guard System      │
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──────────────── Existing
──────────────── Planned

Planned Flows

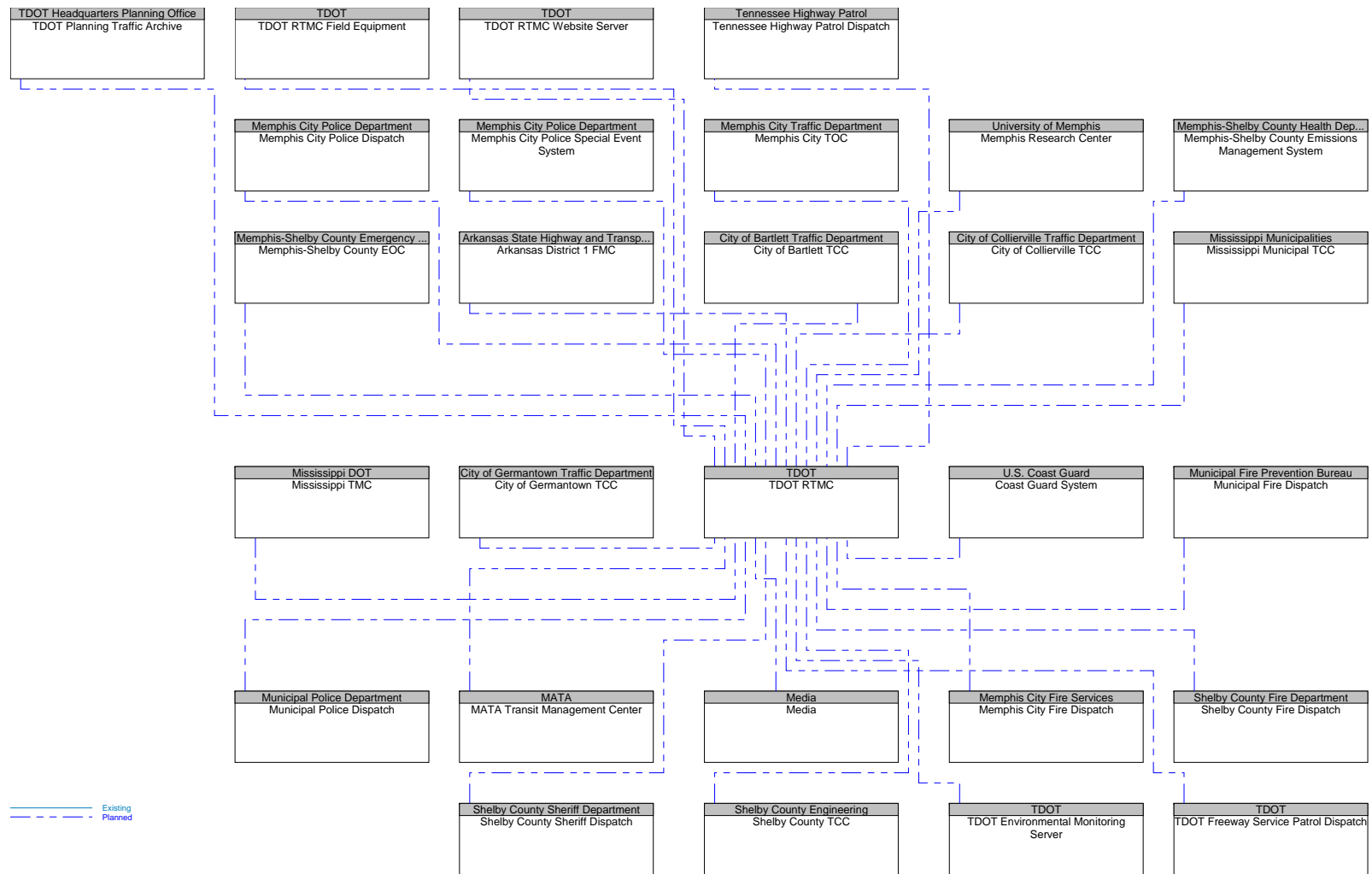| emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.

6.18.6 TDOT RTMC and MATA Transit Management Center

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│                 TDOT                 │
│              TDOT RTMC               │
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     └─transit system data─────────────────┐
     ┌─traffic information for transit──────┐│
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                          │                MATA                  │
                          │    MATA Transit Management Center     │
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────────────── Existing
────────────── Planned

Planned Flows

traffic information for transit	Current and forecasted traffic information and incident information.
transit system data	Current transit system operations information indicating current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.

6.18.7 TDOT RTMC and Media

Planned Flows

external reports	Traffic and incident information that is collected by the media through a variety of mechanisms (e.g., radio station call-in programs, air surveillance).
traffic information for media	Report of current traffic conditions, incidents, maintenance activities and other traffic-related information prepared for public dissemination through the media.

6.18.8 TDOT RTMC and Memphis City Fire Dispatch

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│            TDOT RTMC                 │
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- emergency traffic control request
- incident information
- incident response status
- remote surveillance control
- resource request
- current network conditions
- emergency traffic control response
- incident information
- incident information request
- resource deployment status

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┌─────────────────────────────────────┐
│      Memphis City Fire Services      │
│      Memphis City Fire Dispatch      │
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└─────────────────────────────────────┘
```

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.

6.18.9 TDOT RTMC and Memphis City Police Dispatch

TDOT
TDOT RTMC

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

Memphis City Police Department
Memphis City Police Dispatch

Existing
Planned

Planned Flows

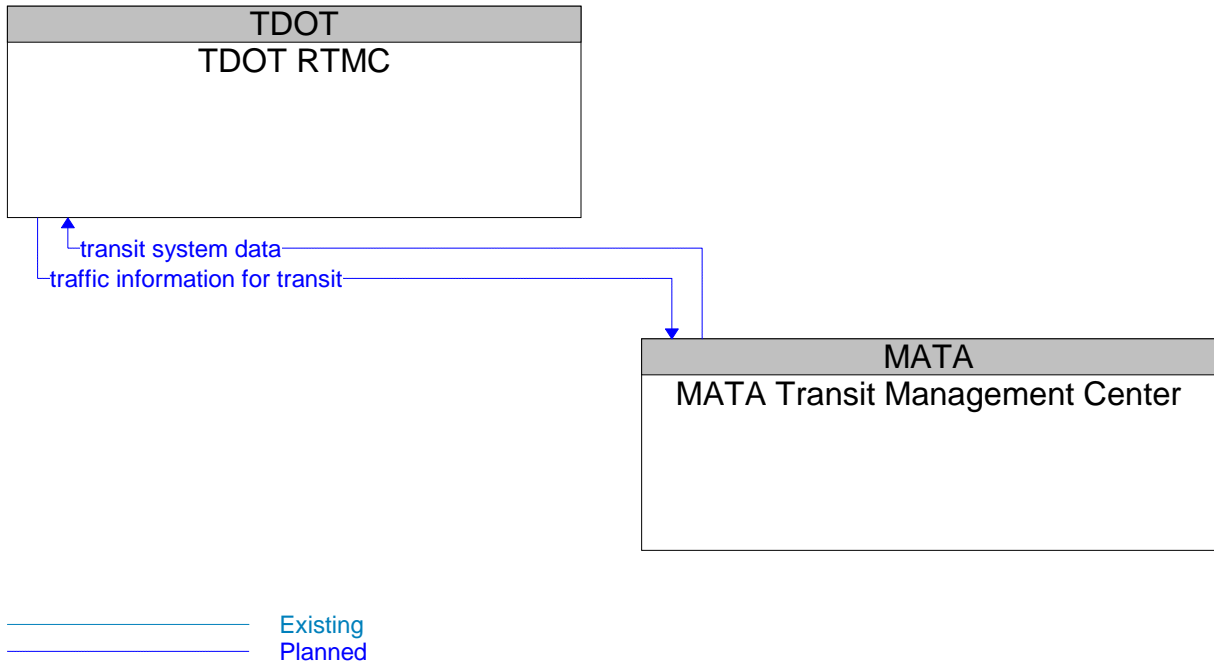|	
current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

| resource deployment status | Status of traffic management center resource deployment identifying the resources available and their current deployment status. |
| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident. |

6.18.10 TDOT RTMC and Memphis City Police Special Event System

TDOT
TDOT RTMC

event plans

event confirmation

Memphis City Police Department
Memphis City Police Special Event System

Existing
Planned

Planned Flows

event plans	Plans for major events possibly impacting traffic.
event confirmation	Confirmation that special event details have been received and processed.

6.18.11 TDOT RTMC and Memphis City TOC

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│                TDOT RTMC                 │
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        traffic control coordination
        traffic information coordination
        traffic control coordination
        traffic information coordination

                    ┌─────────────────────────────────────────┐
                    │      Memphis City Traffic Department      │
                    │           Memphis City TOC               │
                    │                                          │
                    │                                          │
                    │                                          │
                    └─────────────────────────────────────────┘
```

―――――――――――― Existing
―――――――――――― Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.18.12 TDOT RTMC and Memphis Research Center

TDOT
TDOT RTMC

seismic alert

University of Memphis
Memphis Research Center

——————— Existing
——————— Planned

Planned Flow

seismic alert	Alert that movement of bridge detected that warrants inspection of bridge and/or closure of bridge.

6.18.13 TDOT RTMC and Memphis-Shelby County Emissions Management System

TDOT
TDOT RTMC

widearea statistical pollution information

pollution state data request

Memphis-Shelby County Health Dep...
Memphis-Shelby County Emissions Management System

———— Existing
———— Planned

Planned Flows

pollution state data request	Aggregated emissions data information request.
widearea statistical pollution information	Aggregated region-wide measured emissions data and possible pollution incident information or air quality alerts.

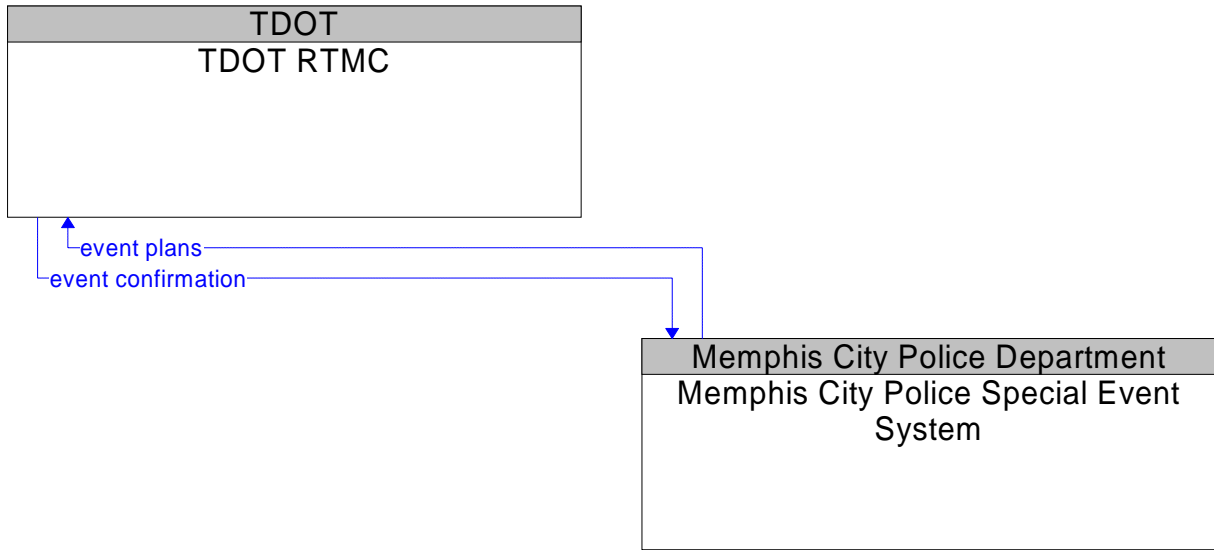## 6.18.14 TDOT RTMC and Memphis-Shelby County EOC

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.
traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.

6.18.15 TDOT RTMC and Mississippi Municipal TCC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

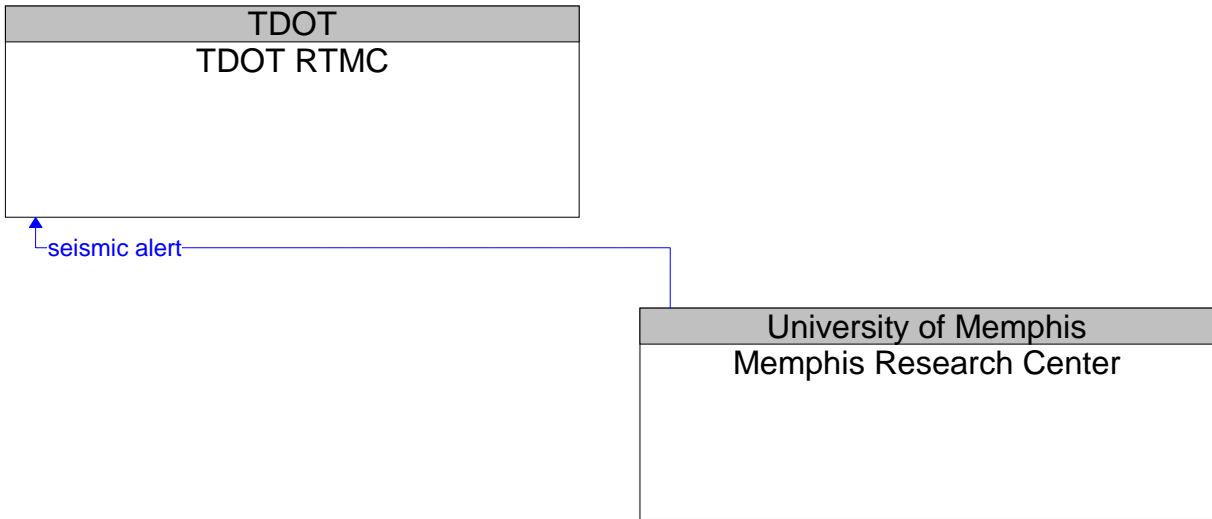| Mississippi Municipalities |
|---|
| Mississippi Municipal TCC |

—————————— Existing
—————————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.18.16 TDOT RTMC and Mississippi TMC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Mississippi DOT
Mississippi TMC

Existing
Planned

Planned Flows

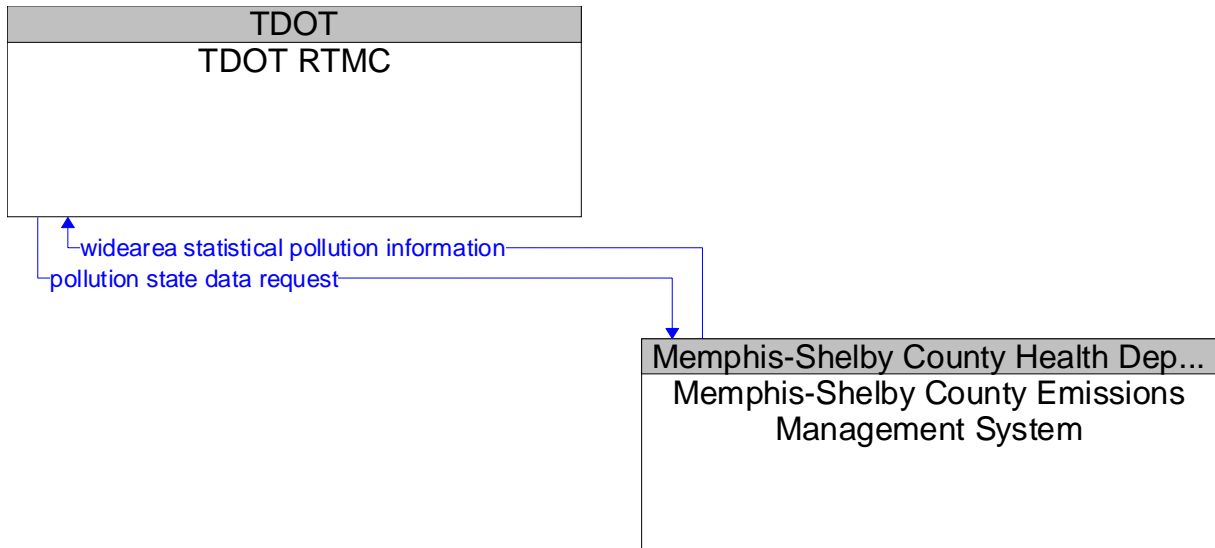| traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

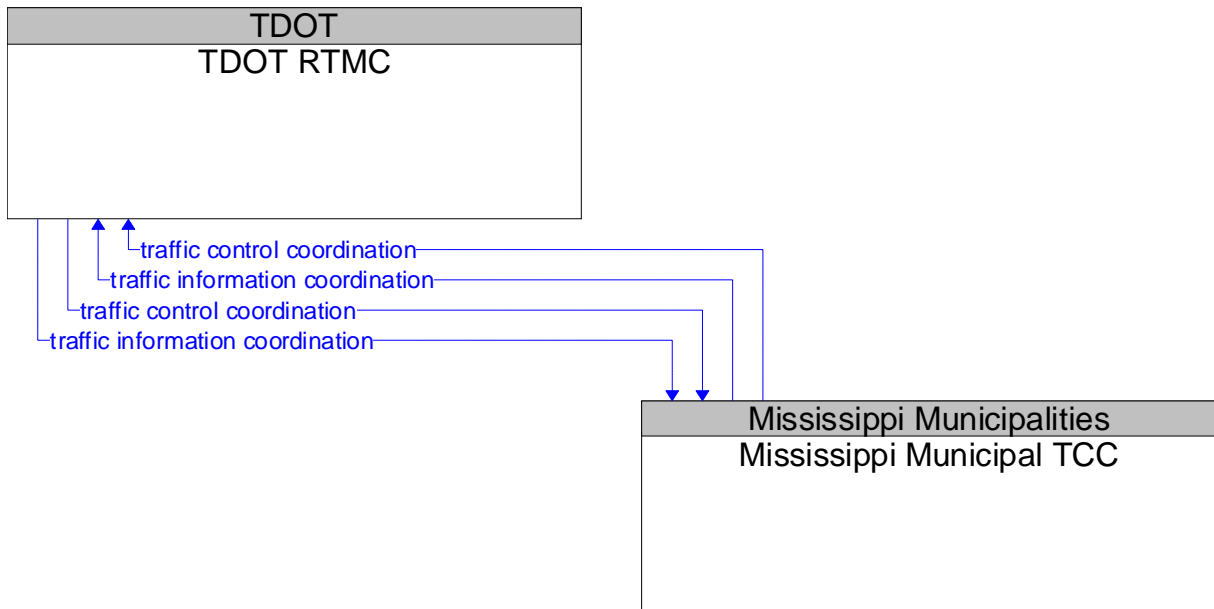## 6.18.17 TDOT RTMC and Municipal Fire Dispatch

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.

6.18.18 TDOT RTMC and Municipal Police Dispatch

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.

6.18.19 TDOT RTMC and Shelby County Fire Dispatch

TDOT
TDOT RTMC

emergency traffic control request
incident information
incident response status
remote surveillance control
resource request
current network conditions
emergency traffic control response
incident information
incident information request
resource deployment status

Shelby County Fire Department
Shelby County Fire Dispatch

Existing
Planned

Planned Flows

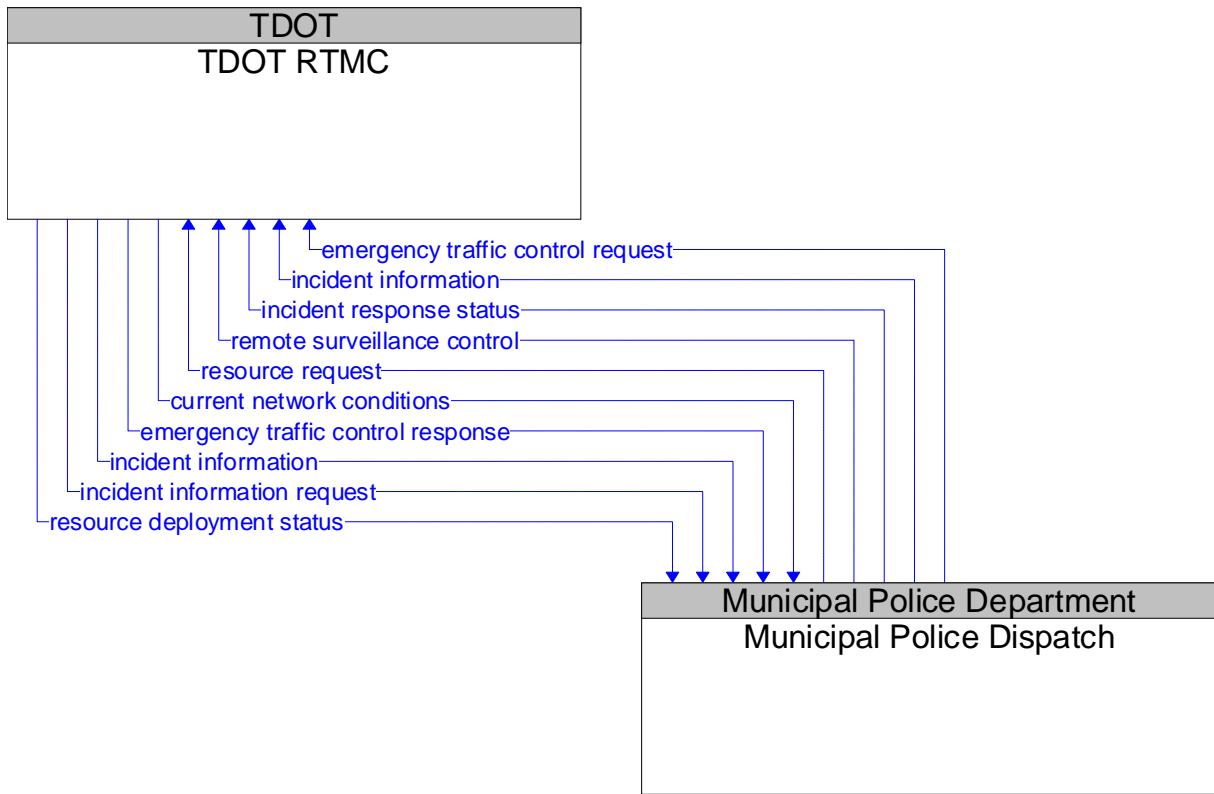| current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.

6.18.20 TDOT RTMC and Shelby County Sheriff Dispatch

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

| resource request | A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident. |

6.18.21 TDOT RTMC and Shelby County TCC

TDOT
TDOT RTMC

traffic control coordination
traffic information coordination
traffic control coordination
traffic information coordination

Shelby County Engineering
Shelby County TCC

———————— Existing
———————— Planned

Planned Flows

traffic control coordination	Information transfers that enable remote monitoring and control of traffic management devices. This flow is intended to allow cooperative access to, and control of, field equipment during incidents and special events and during day-to-day operations. This flow also allows 24-hour centers to monitor and control assets of other centers during off-hours, allows system redundancies and fail-over capabilities to be established, and otherwise enables integrated traffic control strategies in a region.
traffic information coordination	Traffic information exchanged between TMC's. Normally would include incidents, congestion data, traffic data, signal timing plans, and real-time signal control information.

6.18.22 TDOT RTMC and TDOT Environmental Monitoring Server

TDOT
TDOT RTMC

←environmental information

TDOT
TDOT Environmental Monitoring Server

—————————— Existing
—————————— Planned

Planned Flows

environmental information	Information on environmental conditions including current, temperature, precipitation, wind speed, etc.

6.18.23 TDOT RTMC and TDOT Freeway Service Patrol Dispatch

TDOT
TDOT RTMC

- emergency traffic control request
- incident information
- incident response status
- remote surveillance control
- resource request
- current network conditions
- emergency traffic control response
- incident information
- incident information request
- resource deployment status

TDOT
TDOT Freeway Service Patrol Dispatch
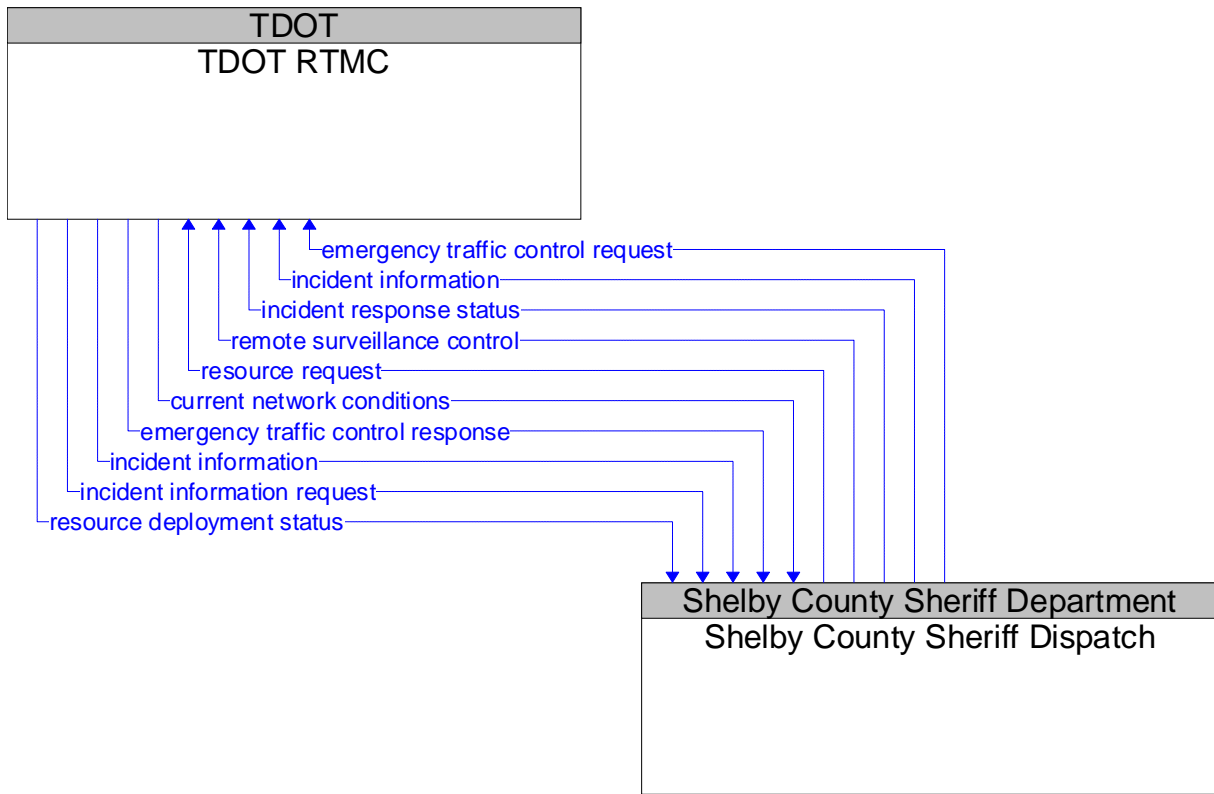
Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident information request	Request for incident information, clearing time, severity. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.

resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.

6.18.24 TDOT RTMC and TDOT RTMC Field Equipment

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                    TDOT
          TDOT RTMC Field Equipment




                    freeway control data
                    roadway information system data
                    sensor and surveillance control
                    fault reports
                    freeway control status
                    incident data
                    roadway information system status
                    traffic flow
                    traffic images

                                          TDOT
                                        TDOT RTMC
```

Existing
Planned

Planned Flows

fault reports	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.
freeway control data	Control commands and operating parameters for ramp meters, dynamic message signs, mainline metering/lane controls and other systems associated with freeway operations.
freeway control status	Current operational status and operating parameters for ramp meters, dynamic message signs, mainline metering/lane controls and other control equipment associated with freeway operations.
incident data	Data and imagery from the roadside supporting incident detection and verification.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.
sensor and surveillance control	Information used to configure and control sensor and surveillance systems at the roadside.

traffic flow	Raw and/or processed traffic detector information which allows derivation of traffic flow variables (e.g., speed, volume and density measures).
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.

6.18.25 TDOT RTMC and TDOT RTMC Website Server

TDOT
TDOT RTMC Website Server

traffic information
request for traffic information

TDOT
TDOT RTMC

Existing
Planned

Planned Flows

request for traffic information	Request for traffic information that specifies the region/route of interest, the desired effective time period, and other parameters that allow preparation of a tailored response. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
traffic information	Current and forecasted traffic information, road and weather conditions, incident information, and pricing data. Either raw data, processed data, or some combination of both may be provided by this architecture flow.

6.18.26 TDOT RTMC and TDOT Planning Traffic Archive

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                      TDOT
                   TDOT RTMC




          ┌archive requests────────────────────┐
          │┌archive status──────────────────┐  │
         ┌┤│                               │  │
         ││└traffic archive data─────────┐ │  │
                                         │ │  │
                                         ▼ │  │
                        TDOT Headquarters Planning Office
                        TDOT Planning Traffic Archive
```

—————————— Existing
—————————— Planned

Planned Flows

archive requests	A request to a data source for information on available data (i.e. "catalog") or a request that defines the data to be archived. The request can be a general subscription intended to initiate a continuous or regular data stream or a specific request intended to initiate a one-time response from the recipient.
archive status	Notification that data provided to an archive contains erroneous, missing, or suspicious data or verification that the data provided appears valid. If an error has been detected, the offending data and the nature of the potential problem are identified.
traffic archive data	Information describing the use and vehicle composition on transportation facilities and the traffic control strategies employed. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.

6.18.27 TDOT RTMC and Tennessee Highway Patrol Dispatch

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┌─────────────────────────────────────┐
│ Tennessee Highway Patrol             │
│ Tennessee Highway Patrol Dispatch    │
│                                      │
└─────────────────────────────────────┘
```

current network conditions
emergency traffic control response
incident information
resource deployment status
emergency traffic control request
incident information
incident response status
remote surveillance control
resource request

```
┌─────────────────────────────────────┐
│ TDOT                                 │
│ TDOT RTMC                            │
│                                      │
└─────────────────────────────────────┘
```

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up and verify an incident.

6.19 Tennessee Highway Patrol Dispatch[*]

Memphis City Traffic Department	Memphis Light, Gas and Water	Memphis-Shelby County Emergency ...	Mississippi Highway Patrol	Municipal Fire Prevention Bureau
Memphis City TOC	Memphis Light, Gas and Water Utility Dispatch	Memphis-Shelby County EOC	Mississippi Highway Patrol Dispatch	Municipal Fire Dispatch

Municipal Police Department	Arkansas Highway Patrol	City of Bartlett Public Works Departm...	City of Collierville Public Works Depa...	Shelby County Fire Department
Municipal Police Dispatch	Arkansas Highway Patrol Dispatch	City of Bartlett Public Works	City of Collierville Public Works	Shelby County Fire Dispatch

Shelby County Public Works Depart...	City of Germantown Public Works De...	Tennessee Highway Patrol	MATA	Shelby County Sheriff Department
Shelby County Public Works	City of Germantown Public Works	Tennessee Highway Patrol Dispatch	MATA Transit Management Center	Shelby County Sheriff Dispatch

TDOT	Memphis City Fire Services	Memphis City Police Department	Memphis City Police Department	Tennessee Highway Patrol
TDOT RTMC	Memphis City Fire Dispatch	Memphis City Police Dispatch	Memphis City Police Special Event System	Tennessee Highway Patrol Vehicles

——————— Existing
——————— Planned

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[*] The architecture represents the electronic exchange of information between systems. Information currently exchanged by voice, fax, e-mail or other non-electronic methods are shown as planned.

375

6.19.1 Tennessee Highway Patrol Dispatch and Arkansas Highway Patrol Dispatch

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.19.2 Tennessee Highway Patrol Dispatch and City of Bartlett Public Works

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.19.3 Tennessee Highway Patrol Dispatch and City of Collierville Public Works

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

—resources response—
—request for resources—

City of Collierville Public Works Depa...
City of Collierville Public Works

——————————— Existing
——————————— Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.19.4 Tennessee Highway Patrol Dispatch and City of Germantown Public Works

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

6.19.5 Tennessee Highway Patrol Dispatch and MATA Transit Management Center

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

transit emergency data
transit emergency coordination data

MATA
MATA Transit Management Center

Existing
Planned

Planned Flows

transit emergency coordination data	Data exchanged between centers dealing with a transit-related incident.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.

6.19.6 Tennessee Highway Patrol Dispatch and Memphis City Fire Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

—incident report—
—incident response coordination—
—incident report—
—incident response coordination—

Memphis City Fire Services
Memphis City Fire Dispatch

—— Existing
—— Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

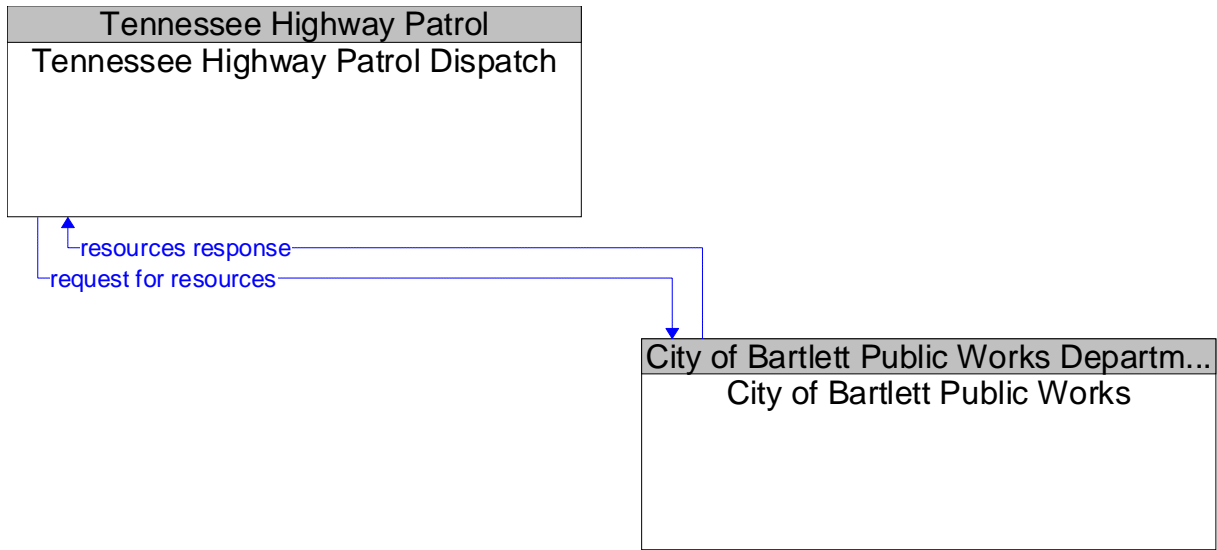## 6.19.7 Tennessee Highway Patrol Dispatch and Memphis City Police Dispatch

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.19.8 Tennessee Highway Patrol Dispatch and Memphis City Police Special Event System
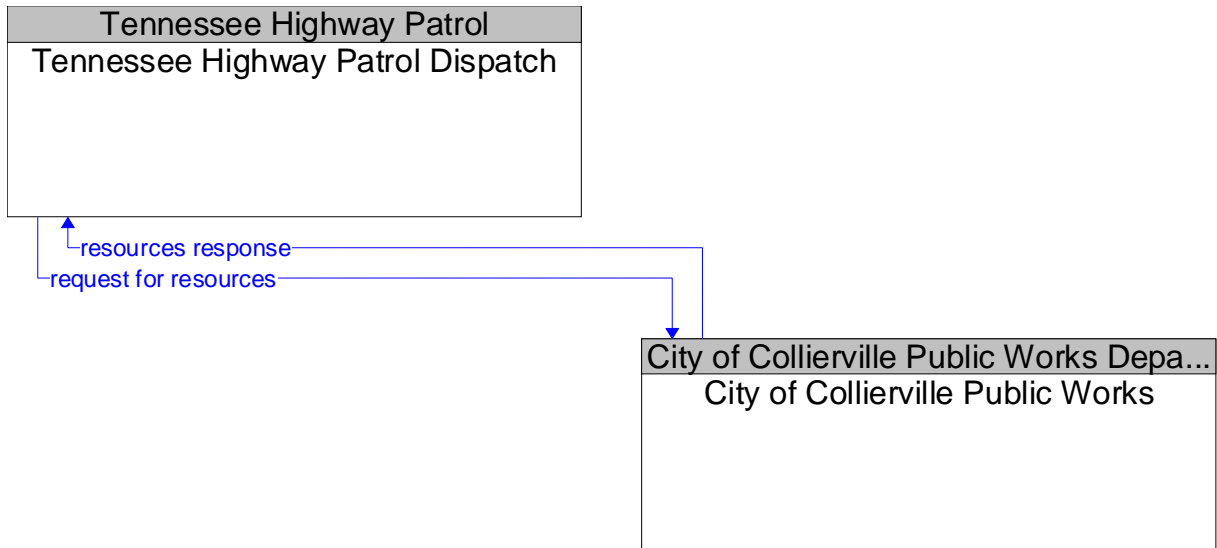

Planned Flows

event plans	Plans for major events possibly impacting traffic.
event confirmation	Confirmation that special event details have been received and processed.

6.19.9 Tennessee Highway Patrol Dispatch and Memphis City TOC

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

current network conditions
remote surveillance control

Memphis City Traffic Department
Memphis City TOC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.

6.19.10 Tennessee Highway Patrol Dispatch and Memphis Light, Gas and Water Utility Dispatch

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┌─────────────────────────────────────────┐
│      Tennessee Highway Patrol             │
│   Tennessee Highway Patrol Dispatch       │
│                                           │
│                                           │
│                                           │
└─────────────────────────────────────────┘

      utility status information
      utility notification


                          ┌────────────────────────────────────┐
                          │     Memphis Light, Gas and Water     │
                          │  Memphis Light, Gas and Water Utility│
                          │              Dispatch                │
                          │                                      │
                          │                                      │
                          └────────────────────────────────────┘
```

────────────── Existing
────────────── Planned

Planned Flows

utility notification	Notification that a problem with a utility including pole down, power outage, etc.
utility status information	Includes power outages, infrastructure events, etc.

385

6.19.11 Tennessee Highway Patrol Dispatch and Memphis-Shelby County EOC

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

────incident report────
───incident response coordination───
─incident report─
incident response coordination

Memphis-Shelby County Emergency ...
Memphis-Shelby County EOC

─────────── Existing
─────────── Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.19.12 Tennessee Highway Patrol Dispatch and Mississippi Highway Patrol Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

Mississippi Highway Patrol
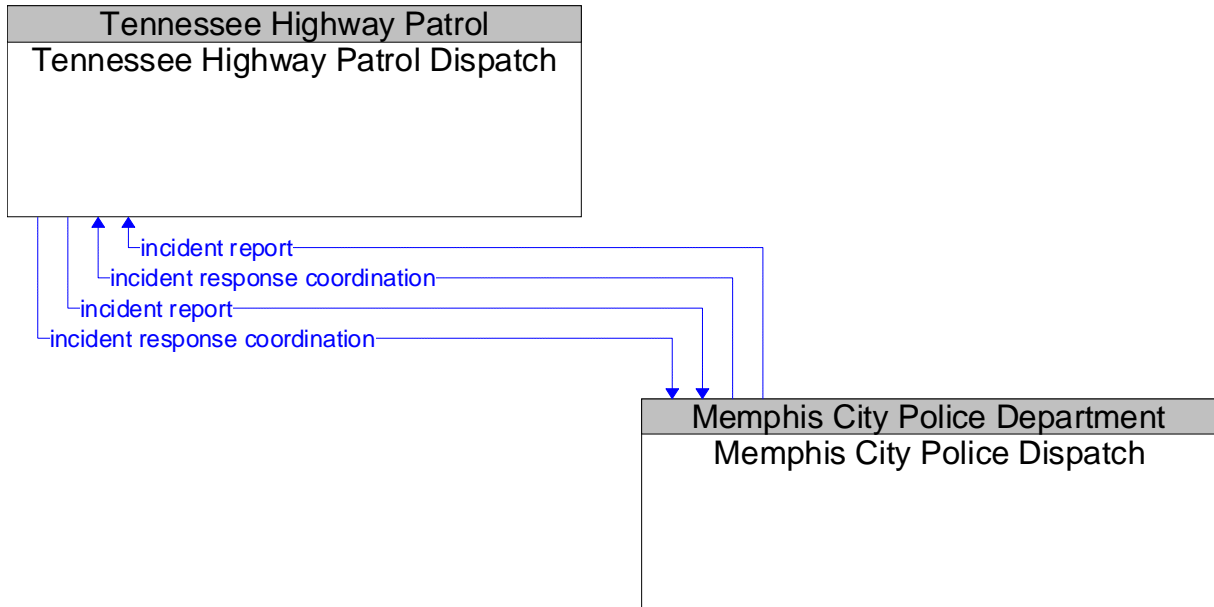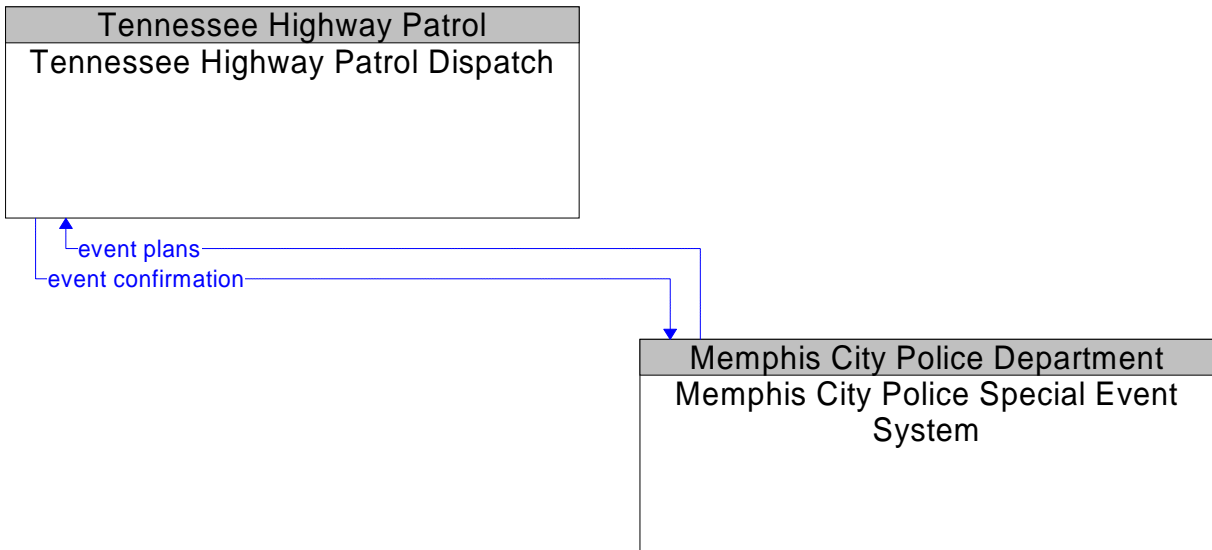Mississippi Highway Patrol Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.19.13 Tennessee Highway Patrol Dispatch and Municipal Fire Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

Municipal Fire Prevention Bureau
Municipal Fire Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

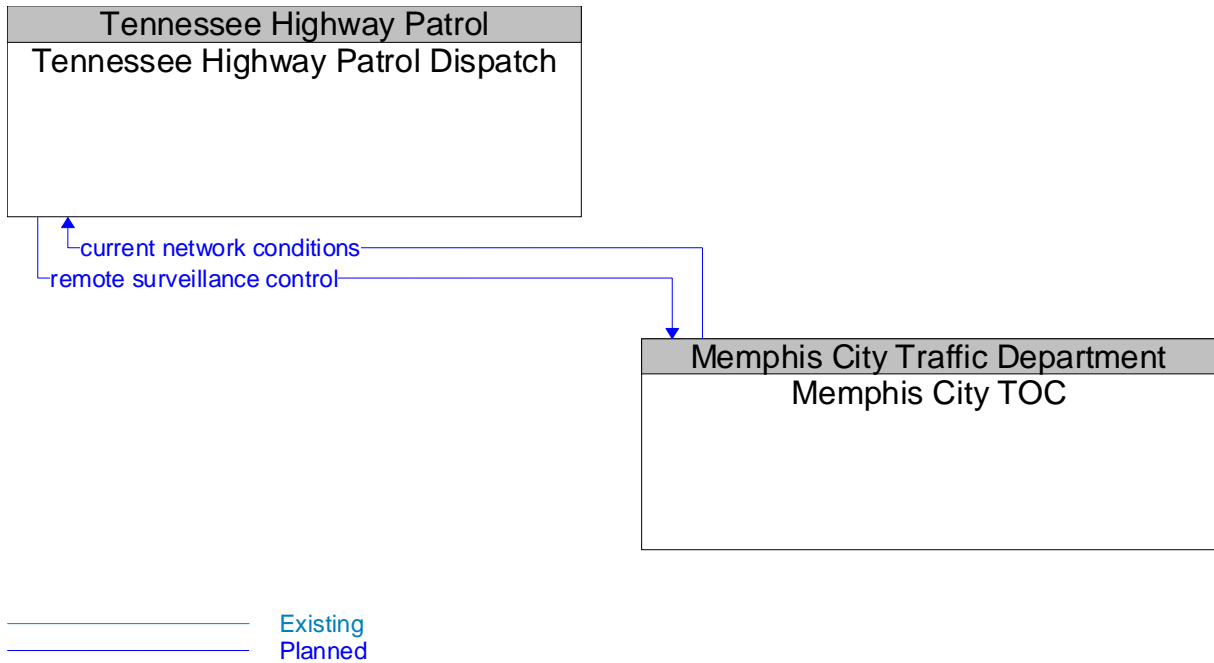## 6.19.14 Tennessee Highway Patrol Dispatch and Municipal Police Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report
incident response coordination
incident report
incident response coordination

Municipal Police Department
Municipal Police Dispatch

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.19.15 Tennessee Highway Patrol Dispatch and Shelby County Fire Dispatch

Tennessee Highway Patrol
Tennessee Highway Patrol Dispatch

incident report

incident response coordination

incident report

incident response coordination

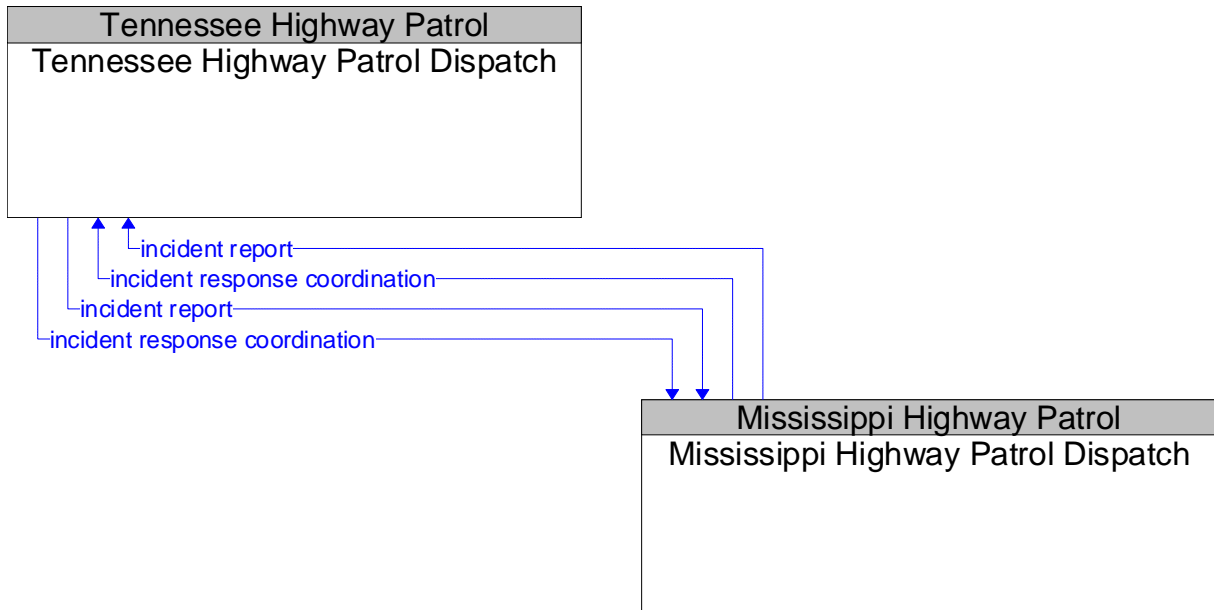| Shelby County Fire Department |
| :---: |
| Shelby County Fire Dispatch |

Existing
Planned

Planned Flows

incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.19.16 Tennessee Highway Patrol Dispatch and Shelby County Public Works

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┌─────────────────────────────────────────┐
│        Tennessee Highway Patrol          │
├─────────────────────────────────────────┤
│  Tennessee Highway Patrol Dispatch       │
│                                          │
│                                          │
│                                          │
└─────────────────────────────────────────┘
         └resources response──────────────────────┐
         └request for resources──────────────────┐│
                                                  ▼│
                          ┌──────────────────────────────────────┐
                          │  Shelby County Public Works Depart... │
                          ├──────────────────────────────────────┤
                          │    Shelby County Public Works         │
                          │                                        │
                          │                                        │
                          │                                        │
                          └──────────────────────────────────────┘
```

────────────── Existing
────────────── Planned

Planned Flows

request for resources	A request for public works resources such as cones, barricades and heavy equipment for clearing roadway.
resources response	Response to request for public works resources such as cones, barricades and heavy equipment for clearing roadway. Response might include availability of requested resource, estimated arrival time, etc.

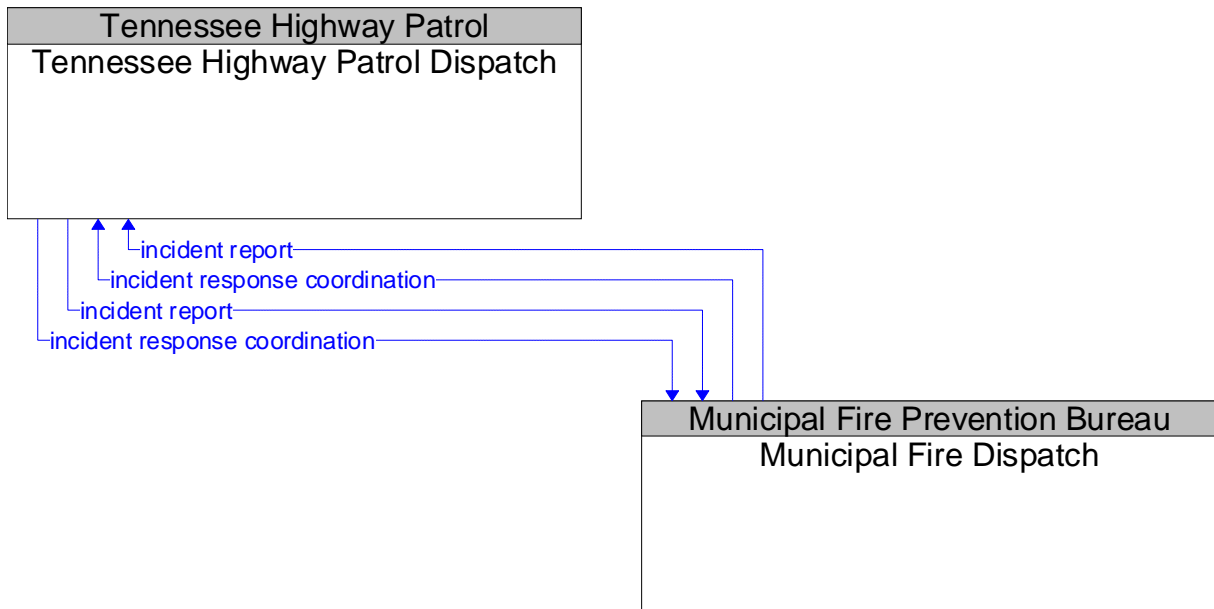6.19.17 Tennessee Highway Patrol Dispatch and Shelby County Sheriff Dispatch
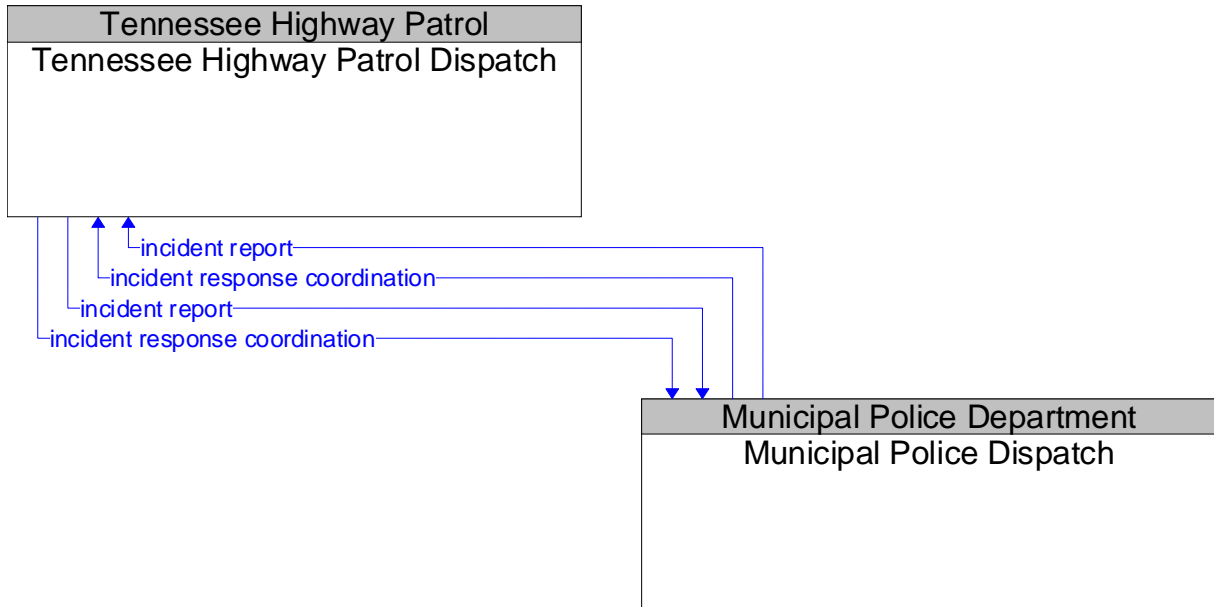

Existing
Planned

Planned Flows

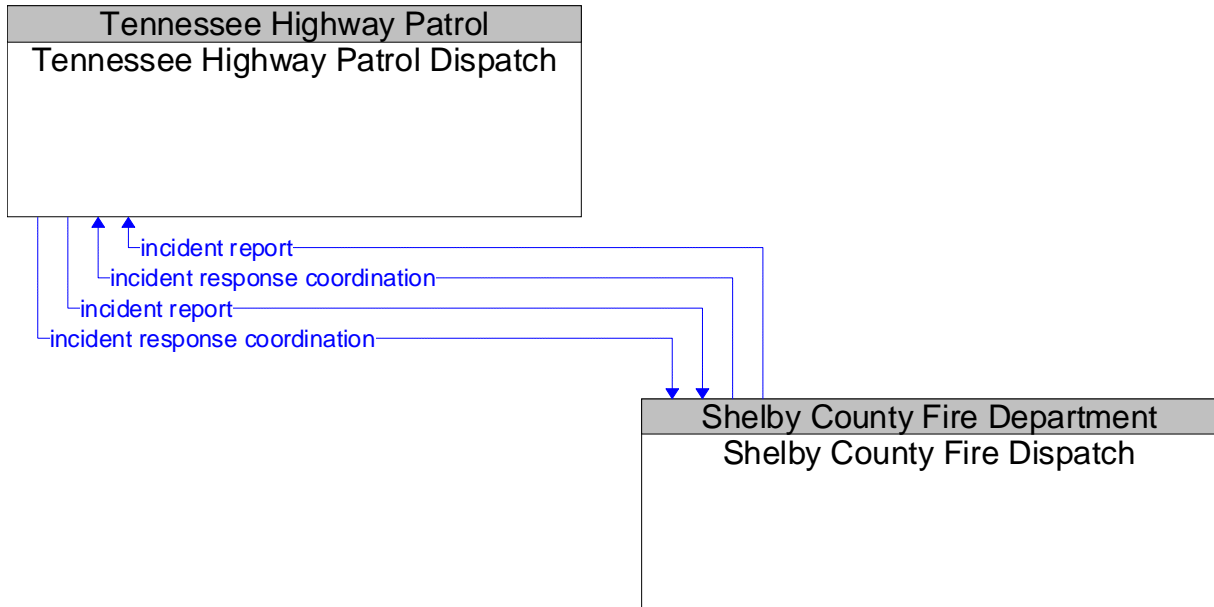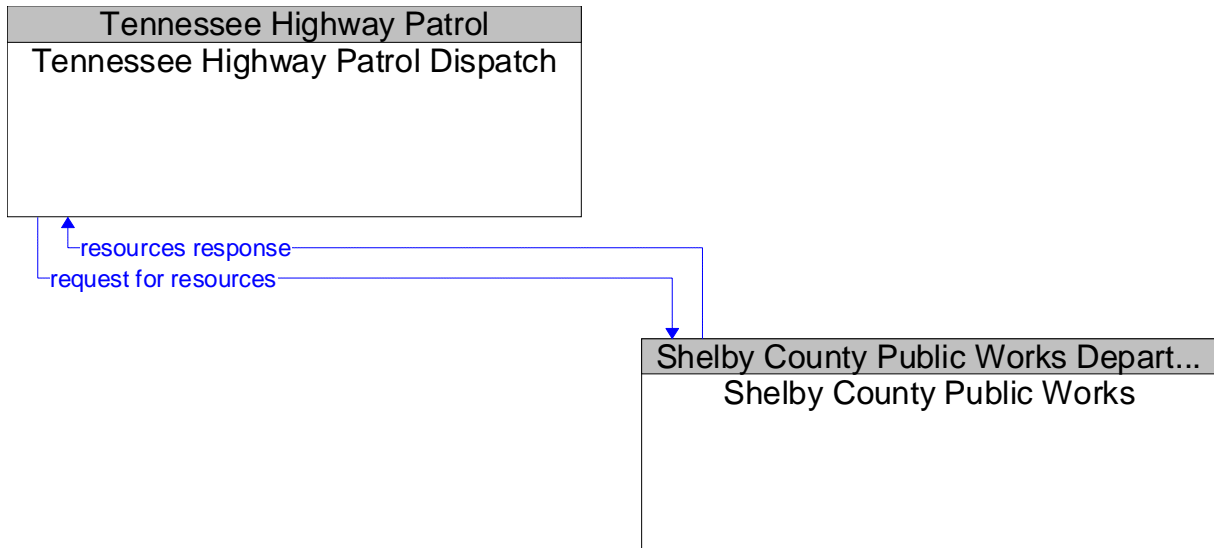| incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures, resource coordination, and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.

6.19.18 Tennessee Highway Patrol Dispatch and TDOT RTMC

Existing
Planned

Planned Flows

current network conditions	Current traffic information, road conditions, and camera images that can be used to locate and verify reported incidents, and plan and implement an appropriate response.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments. For example, this flow can request closure of the interstate.
emergency traffic control response	Status of the special traffic signal control strategy implemented in response to the emergency traffic control request.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident.
incident response status	Status of the current incident response including traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides).
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of traffic management center resource deployment identifying the resources available and their current deployment status.
resource request	A request for traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc.

6.19.19 Tennessee Highway Patrol Dispatch and Tennessee Highway Patrol Vehicles

Existing
Planned

Planned Flows

emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information (e.g., a suggested route) and provision of en-route status.
incident command information	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency personnel in the field to implement an effective, safe incident response.
incident command request	Request for resources, commands for relay to other allied response agencies, and other requests that reflect local command of an evolving incident response.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.

7.0 IMPLEMENTATION BASED ON ARCHITECTURE

7.1 Architecture Use

An ITS Architecture is a framework for the deployment of ITS in a region. The Memphis area ITS Architecture can be used for ITS planning and deployment. The architecture can be used by planning organizations to define projects and the staging and prioritizing of them. The architecture can assist in defining high-level requirements in ITS system design. Very high-level requirements are defined for each element in the Memphis area architecture in the operational concept presented in Section 5 of this document. The architecture flows and market packages that are included in the Memphis area are defined in great detail in the National ITS Architecture. These details are also useful in writing functional requirements for ITS deployments.

7.2 Interagency Agreements[1]

Deployment of ITS in a region involves unprecedented coordination among various agencies at many levels. In general, the purpose of ITS systems is to be responsive to traffic and incident conditions without regard to jurisdictional boundaries. Providing ITS systems that appear seamless to the traveling public becomes more challenging when they are deployed and operated in the context of decentralized functions and responsibilities. Formally defining roles and responsibilities in agreements can help eliminate battles over turf, duplication of work and delays in deployment caused by unresolved issues.

There are no existing agreements for ITS in the Memphis area. However, stakeholders in the region currently coordinate operations based on informal agreements. As discussed in the regional operational concept, traffic control is currently coordinated across jurisdictional boundaries. Additionally, there are probably agreements in place that cover after-hours coverage, equipment maintenance, mutual aid, etc. These agreements may be a starting point for agreements required for ITS deployments.

For ITS projects, agreements may be required between stakeholders regarding transportation system operation and corresponding information exchanges. Agreements will ensure that respective roles and responsibilities are clearly understood and that a full commitment of all involved has been made. There are many types of agreements. Inter-agency agreements range from informal verbal agreements to formal legal documents. Types of agreements include handshake agreements, memorandums of understanding, operational agreements, funding agreements and master agreements. The type of agreement required will depend upon the agencies involved and the complexity of the project.

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[1] Based on Nashville Area Regional ITS Architecture, Tennessee Department of Transportation, 2000.

The approach recommended for the Memphis region assumes decentralized implementation of ITS functions. Individual agencies will implement their own ITS projects that must integrate with other systems in the region. With each agency developing individual systems, reaching prior agreements on interface points between systems is important. This consideration is paramount to effective communication between systems and in establishing protocols for coordinated operations.

In order to maximize effectiveness, the proposed ITS systems must be operated in a cooperative manner that includes the involvement of multiple state and local agencies. A series of formal agreements are recommended to establish and support a cooperative working relationship. Multiple written agreements are advisable (instead of a single document) since this provides flexibility as system operation evolves. This also prevents a change in one area from adversely impacting other areas.

Below are examples of issues that may need to be addressed in written agreements:
- Ownership of transportation data
- Ability to distribute transportation data
- Camera control
- Jurisdiction at incidents for police, fire and rescue, and TDOT staff
- When signal timing will be modified and who can make the modifications
- How and when incident notification will occur
- When traffic can be diverted to other roadways
- Internal and external security of information
- Funding of capital cost
- Funding for operations
- Funding for maintenance
- Responsibility for maintenance
- Timing of system upgrades (operating systems, application software)
- Requirement for advanced notice of system upgrades
- Use of video for law enforcement
- Taping of video (liability issue)
- Responsibility for design, testing and implementation
- Staff availability (weekday 8:00 to 5:00 vs. 24-7)
- Joint statement of support for the ITS system
- Control center roles
- Field equipment ownership
- Administration and management

- Staffing
- Communication responsibilities of the TMC
- On site coordination (incident manager, call for tow trucks, etc.)
- Roles and limitations of service patrols
- Identification and management of diversion routes
- Operation of dynamic message signs and motorist information systems
- Data links between centers (CCTV, traffic counts, operating speeds, etc.)
- Control plans for recurring special events
- Control plans for unique special events
- Maintenance of traffic during construction
- Control plans for special incidents, such as HAZMAT spills

While the Tennessee Department of Transportation (TDOT) and the other stakeholders deploying ITS have the responsibility for establishing the agreements needed for the Memphis area. The Memphis-Shelby County Department of Regional Services (that provides the staff of the Memphis MPO) will take the lead in determining the agreements that are required in the region.

For more information on the development of agreements, see US DOT's *Regional ITS Architecture Guidance Document* (available as document #13598 on the US DOT Electronic Document Library).

7.3 Architecture Maintenance

The Memphis Area regional ITS architecture is not static. It must change as plans and priorities change, ITS projects are implemented, and the ITS needs and services evolve in the region. The Memphis Area ITS Architecture was originally developed with a seven year time horizon. As the architecture is updated, it will be extended further into the future. The goal of maintaining the architecture is to keep an up-to-date regional ITS architecture that is accessible and easily used for deploying ITS in the Memphis area.

The key aspects of the maintenance process, which are defined in this section are:

- Who is responsible for architecture maintenance
- What is the architecture baseline
- What is the architecture change management process

7.3.1 Architecture Maintenance Team

Just as a group of stakeholders was key to the development of the Memphis Area architecture, it is imperative that they stay involved in the on-going maintenance of it. However, to ensure that the architecture stays up-to-date, an agency must accept formal responsibility for maintaining the architecture.

The Memphis-Shelby County Department of Regional Services provides the technical and professional staff to the metropolitan planning organization (MPO) for the Memphis area. The metropolitan Memphis area covered by the MPO is a bi-state region including many municipalities in Tennessee and Mississippi. As such, the Memphis-Shelby County Regional Services has existing relationships with the stakeholders within the region. Therefore, the Memphis Area regional ITS architecture will be maintained by the Memphis-Shelby County Regional Services with support from stakeholders as necessary.

Because changes can arise from many sources, and very likely will arise from some sources outside the technical expertise of a single agency, it is a good idea for a group of people from different stakeholder areas to be involved in maintenance of the architecture. Representatives from traffic, transit, emergency management, and other key stakeholders from the team that developed the architecture should be involved in the architecture maintenance. Considering the expected revisions to the Memphis Area Regional ITS Architecture, there will not be a formal maintenance group but Memphis-Shelby County Regional Services will call on appropriate stakeholders as needed. Getting input from the stakeholders will guarantee that the architecture continues to reflect the desires of the stakeholders in the region.

7.3.2 Architecture Baseline

The architecture baseline is the most current version of the architecture. To establish a baseline, the architecture parts that will be maintained must first be identified. The Memphis Area regional ITS architecture is stored in a database and is represented through a set of outputs including reports and diagrams. The architecture will be maintained through updates in the electronic database using Turbo Architecture™. Only this database will be updated and maintained for the Memphis area regional ITS architecture.

To aid Memphis-Shelby County Regional Services in architecture version control, the filename of the database will contain the date on which the architecture was updated. This will allow the current version to be easily identified.

The following information will be maintained in the architecture database:
1. Description of the Region
2. List of Stakeholders, including key contact information
3. Inventory of existing and planned ITS systems in the region
4. Documented regional needs and ITS services associated with supporting systems in the region
5. Existing and planned interconnects and information flows for the region

Outputs such as interconnect and architecture flow diagrams, inventory lists, stakeholder lists and other diagrams and reports can be produced by the Turbo Architecture™ tool so they are by-products of the architecture database. These outputs can be updated as necessary for meetings or outreach activities.

The operational concept and system functional requirements included in this document represent high-level views of the Memphis Area architecture and do not necessarily need to be modified each time a revision is made to the architecture. These documents will be modified as the architecture is broadened to address new needs and services. They should be reviewed at least every three years with a comprehensive architecture update to ensure that they accurately represent the region.

To allow stakeholders to use the architecture for their planning and deployment activities, the current architecture database will be available from the Memphis-Shelby County Regional Services. For easy access, the architecture database and all other current documentation could be available for download from their website.

In addition to maintaining the architecture, this maintenance plan should be reviewed periodically for required changes. This maintenance plan was developed during the initial development of the Memphis Area Regional ITS Architecture. Use of the architecture and modifications to it may differ from what was anticipated. Revising the plan will ensure that the goal of architecture maintenance is realized.

7.3.3 Architecture Change Management Process

The change management process is the procedure for modifying the architecture baseline. It specifies how changes are identified, how often they will be made, and how the changes will be defined, reviewed, implemented and released.

How Changes are Identified

The Memphis Area regional ITS architecture was created as a consensus view of what ITS systems the stakeholders in the region have currently implemented and what systems they plan to implement in the future. The architecture will need to be updated to reflect changes resulting from project implementation or resulting from the planning process itself. There are many actions that may cause a need to update the architecture.

- Changes for Project Definition When actually defined, a project may add, subtract or modify elements, interfaces, or information flows from the regional ITS architecture. Because the architecture is meant to describe not only ITS planned for the region, but also the current ITS implementations, it must be updated to correctly reflect the deployed projects.

  There are several generic stakeholders in the Memphis Area architecture. These generic stakeholders group multiple stakeholders from the region. For example, the municipal traffic departments in DeSoto County, Mississippi are grouped into "Mississippi Municipalities." As stakeholders covered by these generic stakeholders and their respective elements plan and deploy ITS systems, they must be added as separate elements and stakeholders in the architecture.

- Changes for Project Addition/Deletion Occasionally a project will be added, deleted or modified during the planning process. When this occurs, the aspects

of the regional ITS architecture that are associated with the project have to be added, deleted or modified.

- <u>Changes in Project Status</u> As projects are deployed, the status of the architecture elements, services and flows that are part of the project will have to be changed from planned to existing. Elements, services and flows will be considered to exist when they are substantially complete in that they have been turned on, tested and are currently being used.

- <u>Changes in Project Priority</u> Due to funding constraints, technological changes or other considerations, a project planned of the region may be delayed or accelerated. Such changes will need to be reflected in the Memphis Area ITS Architecture.

- <u>Changes in Regional Needs</u> Over time the needs in a region can change and the corresponding aspects of the regional ITS architecture will have to be updated.

While the Memphis Area ITS Architecture was developed with input from several stakeholders in the region, not all stakeholders could or wanted to participate. As ITS is implemented in the region and additional stakeholders become interested in ITS, the architecture must be updated to reflect their place in the regional view of ITS. The systems they operate and their interfaces will have to be added or revised.

Additionally, the National ITS Architecture may be expanded and updated from time to time to include new user services or refine existing services. These changes should also be considered as the Memphis Area regional ITS architecture is updated. The National ITS Architecture may have expanded to include a user service that has been discussed in a region, but not been included in the regional ITS architecture, or been included in only a limited manner.

How often Changes are Made

A comprehensive architecture update should be completed every three years, concurrent with the update of the Memphis Metropolitan Area Long Range Transportation Plan. The comprehensive update would include involving new stakeholders, reviewing services planned for the area, etc. Minor revisions, such as changes in the status of an architecture flow, should be made as the information is known.

Change Definition, Review, Implementation, and Release

Any stakeholder in the Memphis region can propose a change to the regional architecture. Stakeholders must inform Memphis-Shelby County Regional Services of the status of any projects with ITS aspects. To properly maintain the architecture, Memphis-Shelby County Regional Services must be informed not only of when projects are planned; but also when projects are completed or when changes made during design or construction impact the regional architecture.

Stakeholders should propose changes in writing to the Memphis-Shelby County Regional Services. Proposals should clearly define the architecture aspects to be added, deleted or revised. The reasons for proposed modifications should be given. Each proposal should include contact information for the person proposing the change so he or she can be contacted if questions arise.

Each proposed modification will be reviewed by Memphis-Shelby County Regional Services. If the proposal impacts other stakeholders, Memphis-Shelby County Regional Services will contact the stakeholders to confirm their agreement with the modification. If the issue warrants it, a stakeholder meeting to discuss the modification may be held. If consensus in favor of the modification is reached, Memphis-Shelby County Regional Services will make the revision in the architecture database.

Once the regional architecture has been modified, the stakeholders in the region must be notified. Memphis-Shelby County Regional Service will maintain a list of stakeholders and their contact information. The stakeholders will be notified of architecture updates and informed on how to obtain the latest version of the architecture. The latest version of the architecture will be available from the Department of Regional Services. A notification process ensures that stakeholders have knowledge of and access to the most current regional architecture for use in planning and deploying ITS in the Memphis area.

8.0 STANDARDS TO CONSIDER

Standardizing the flow of information between the systems in the Memphis region is essential to integrating ITS throughout the region.   Standards Development Organizations (SDO) are developing ITS standards that support interoperability and interchangeability.   Several of the standards overlap in applicability; a few are redundant with other listed standards. This provides flexibility in the design of ITS systems.   Before systems are designed, the stakeholders should agree upon the standards that will be used.

The following tables list the lead SDOs and standards that pertain to each architecture flow used in the Memphis architecture.

8.1 Architecture Flow: air quality information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.2 Architecture Flow: archive coordination

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD

8.3 Architecture Flow: archive requests

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD

8.4 Architecture Flow: archive status

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD

8.5 Architecture Flow: bad tag list

Lead SDO	Standard Name	Document ID
ITE	TCIP - Fare Collection (FC) Business Area Standard	NTCIP 1408

8.6 Architecture Flow: broadcast information

Lead SDO	Standard Name	Document ID
EIA/CEA	Data Radio Channel (DARC) System	CEA/EIA-794
EIA/CEA	Subcarrier Traffic Information Channel (STIC) System	CEA/EIA-795
SAE	ISP-Vehicle Location Referencing Standard	SAE J1746
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Standard for ATIS Message Sets Delivered Over Bandwidth Restricted Media	SAE J2369
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.7 Architecture Flow: closure coordination

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.8 Architecture Flow: current network conditions

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Message Set for Weather Reports	NTCIP 1301
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.9 Architecture Flow: demand responsive transit plan

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.10 Architecture Flow: demand responsive transit request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.11 Architecture Flow: driver instructions

Lead SDO	Standard Name	Document ID
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405
ITE	TCIP - Control Center (CC) Business Area Standard	NTCIP 1407

8.12 Architecture Flow: emergency archive data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000

8.13 Architecture Flow: emergency notification

Lead SDO	Standard Name	Document ID
ITE	TCIP - Incident Management (IM) Business Area Standard	NTCIP 1402
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405

8.14 Architecture Flow: emergency traffic control request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE P1512.1
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.15 Architecture Flow: emergency traffic control response

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE P1512.1
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.16 Architecture Flow: emissions archive data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD

8.17 Architecture Flow: emissions data

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Environmental Sensor Stations & Roadside Weather Information System	NTCIP 1204
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301
AASHTO	Application Profile for Trivial File Transfer Protocol	NTCIP 2302
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303

8.18 Architecture Flow: environmental conditions

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Environmental Sensor Stations & Roadside Weather Information System	NTCIP 1204
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.19 Architecture Flow: equipment maintenance status

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.20 Architecture Flow: event confirmation

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.21 Architecture Flow: event plans

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.22 Architecture Flow: external reports

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.23 Architecture Flow: fare and payment status

Lead SDO	Standard Name	Document ID
ITE	TCIP - Fare Collection (FC) Business Area Standard	NTCIP 1408

8.24 Architecture Flow: fare management information

Lead SDO	Standard Name	Document ID
ITE	TCIP - Fare Collection (FC) Business Area Standard	NTCIP 1408

8.25 Architecture Flow: fault reports

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.26 Architecture Flow: freeway control data

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Ramp Meter Controller Objects	NTCIP 1207
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.27 Architecture Flow: freeway control status

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Ramp Meter Controller Objects	NTCIP 1207
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.28 Architecture Flow: hri advisories

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.29 Architecture Flow: incident data

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Transportation System Sensor Objects	NTCIP 1209
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301
AASHTO	Application Profile for Trivial File Transfer Protocol	NTCIP 2302
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303

8.30 Architecture Flow: incident information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE P1512.1
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.31 Architecture Flow: incident information for media

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000

8.32 Architecture Flow: incident information request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE P1512.1
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.33 Architecture Flow: incident notification

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000

8.34 Architecture Flow: incident report

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Public Safety IMMS for use by EMCs	IEEE P1512.2
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000

8.35 Architecture Flow: incident response coordination

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Public Safety IMMS for use by EMCs	IEEE P1512.2
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405

8.36 Architecture Flow: incident response status

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE P1512.1
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.37 Architecture Flow: intersection blockage notification

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.38 Architecture Flow: ISP coordination

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.39 Architecture Flow: local signal preemption request

Lead SDO	Standard Name	Document ID
AASHTO	Objects for Signal Control Priority	NTCIP 1211
ASTM	Standard Specification for 5.9 GHz Data Link Layer	ASTM N/A
ASTM	Specification for Dedicated Short Range Communication (DSRC) Data Link Layer: Medium Access and Logical Link Control	ASTM PS 105-99
ASTM	Specification for Dedicated Short Range Communication (DSRC) Physical Layer using Microwave in the 902-928 MHz	ASTM PS 111-98
IEEE	Security/Privacy of Vehicle/RS Communications including Smart Card Communications	IEEE P1556

8.40 Architecture Flow: local signal priority request

Lead SDO	Standard Name	Document ID
AASHTO	Objects for Signal Control Priority	NTCIP 1211

8.41 Architecture Flow: maintenance resource request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.42 Architecture Flow: maintenance resource response

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.43 Architecture Flow: parking archive data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD

8.44 Architecture Flow: parking availability

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.45 Architecture Flow: parking information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.46 Architecture Flow: parking lot data request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.47 Architecture Flow: pollution data

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Environmental Sensor Stations & Roadside Weather Information System	NTCIP 1204
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301
AASHTO	Application Profile for Trivial File Transfer Protocol	NTCIP 2302
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303

8.48 Architecture Flow: pollution state data request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.49 Architecture Flow: railroad advisories

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.50 Architecture Flow: railroad schedules

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.51 Architecture Flow: remote surveillance control

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.52 Architecture Flow: request for right-of-way

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.53 Architecture Flow: request for traffic information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.54 Architecture Flow: request transit information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.55 Architecture Flow: resource deployment status

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE P1512.1
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.56 Architecture Flow: resource request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE P1512.1
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.57 Architecture Flow: roadway information system data

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Dynamic Message Signs	NTCIP 1203
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303

8.58 Architecture Flow: roadway information system status

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Dynamic Message Signs	NTCIP 1203
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.59 Architecture Flow: selected routes

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.60 Architecture Flow: sensor and surveillance control

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Environmental Sensor Stations & Roadside Weather Information System	NTCIP 1204
AASHTO	Data Dictionary for Closed Circuit Television (CCTV)	NTCIP 1205
AASHTO	Data Collection & Monitoring Devices	NTCIP 1206
AASHTO	Object Definitions for Video Switches	NTCIP 1208
AASHTO	Transportation System Sensor Objects	NTCIP 1209
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.61 Architecture Flow: signal control data

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Actuated Traffic Signal Controller Units	NTCIP 1202
AASHTO	Objects for Signal Systems Master	NTCIP 1210
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.62 Architecture Flow: signal control status

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Actuated Traffic Signal Controller Units	NTCIP 1202
AASHTO	Objects for Signal Systems Master	NTCIP 1210
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.63 Architecture Flow: traffic archive data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.64 Architecture Flow: traffic control coordination

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Objects for Signal Systems Master	NTCIP 1210
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.65 Architecture Flow: traffic equipment status

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.66 Architecture Flow: traffic flow

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Data Collection & Monitoring Devices	NTCIP 1206
AASHTO	Transportation System Sensor Objects	NTCIP 1209
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301
AASHTO	Application Profile for Trivial File Transfer Protocol	NTCIP 2302
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303

8.67 Architecture Flow: traffic information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Message Set for Weather Reports	NTCIP 1301
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.68 Architecture Flow: traffic information coordination

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.69 Architecture Flow: traffic information for media

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.70 Architecture Flow: traffic information for transit

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Message Set for Weather Reports	NTCIP 1301
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

8.71 Architecture Flow: transit and fare schedules

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	TCIP - Common Public Transportation (CPT) Business Area Standard	NTCIP 1401
ITE	TCIP - Scheduling/Runcutting (SCH) Business Area Standard	NTCIP 1404
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405

8.72 Architecture Flow: transit archive data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD
ITE	TCIP - Common Public Transportation (CPT) Business Area Standard	NTCIP 1401
ITE	TCIP - Passenger Information (PI) Business Area Standard	NTCIP 1403
ITE	TCIP - Onboard (OB) Business Area Standard	NTCIP 1406
ITE	TCIP - Control Center (CC) Business Area Standard	NTCIP 1407
ITE	TCIP - Fare Collection (FC) Business Area Standard	NTCIP 1408

8.73 Architecture Flow: transit emergency coordination data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405

8.74 Architecture Flow: transit emergency data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE P1512-2000
ITE	TCIP - Common Public Transportation (CPT) Business Area Standard	NTCIP 1401
ITE	TCIP - Incident Management (IM) Business Area Standard	NTCIP 1402
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405

8.75 Architecture Flow: transit incident information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	TCIP - Common Public Transportation (CPT) Business Area Standard	NTCIP 1401
ITE	TCIP - Incident Management (IM) Business Area Standard	NTCIP 1402
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405

8.76 Architecture Flow: transit incidents for media

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.77 Architecture Flow: transit information for media

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.78 Architecture Flow: transit information request

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	TCIP - Passenger Information (PI) Business Area Standard	NTCIP 1403
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.79 Architecture Flow: transit parking coordination

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405

8.80 Architecture Flow: transit parking lot response

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.81 Architecture Flow: transit system data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	TCIP - Traffic Management (TM) Business Area Standard	ITE TS 3.TM
ITE	TCIP - Common Public Transportation (CPT) Business Area Standard	NTCIP 1401
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405
ITE	TCIP - Control Center (CC) Business Area Standard	NTCIP 1407

8.82 Architecture Flow: transit vehicle location data

Lead SDO	Standard Name	Document ID
ITE	TCIP - Common Public Transportation (CPT) Business Area Standard	NTCIP 1401
ITE	TCIP - Onboard (OB) Business Area Standard	NTCIP 1406

8.83 Architecture Flow: transit vehicle passenger and use data

Lead SDO	Standard Name	Document ID
ITE	TCIP - Onboard (OB) Business Area Standard	NTCIP 1406

8.84 Architecture Flow: transit vehicle schedule performance

Lead SDO	Standard Name	Document ID
ITE	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405
ITE	TCIP - Onboard (OB) Business Area Standard	NTCIP 1406
ITE	TCIP - Control Center (CC) Business Area Standard	NTCIP 1407

8.85 Architecture Flow: traveler archive data

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ASTM	ADMS Standard Guidelines	ASTM AG
ASTM	ADMS Data Dictionary Specifications	ASTM DD
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.86 Architecture Flow: traveler information

Lead SDO	Standard Name	Document ID
SAE	ISP-Vehicle Location Referencing Standard	SAE J1746
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.87 Architecture Flow: traveler request

Lead SDO	Standard Name	Document ID
SAE	ISP-Vehicle Location Referencing Standard	SAE J1746
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.88 Architecture Flow: trip plan

Lead SDO	Standard Name	Document ID
SAE	ISP-Vehicle Location Referencing Standard	SAE J1746
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.89 Architecture Flow: trip request

Lead SDO	Standard Name	Document ID
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

8.90 Architecture Flow: vehicle pollution criteria

Lead SDO	Standard Name	Document ID
AASHTO	Simple Transportation Management Framework (STMF)	NTCIP 1101
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Simple Transportation Management Protocol (STMP)	NTCIP 1103
AASHTO	Global Object Definitions	NTCIP 1201
AASHTO	Object Definitions for Environmental Sensor Stations & Roadside Weather Information System	NTCIP 1204
AASHTO	Class B Profile	NTCIP 2001
AASHTO	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
AASHTO	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
AASHTO	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Transportation Transport Profile	NTCIP 2201
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301

8.91 Architecture Flow: widearea statistical pollution information

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502

8.92 Architecture Flow: work zone status

Lead SDO	Standard Name	Document ID
AASHTO	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
AASHTO	Subnet Profile for Ethernet	NTCIP 2104
AASHTO	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
AASHTO	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
AASHTO	Application Profile for Data Exchange ASN.1 (DATEX)	NTCIP 2304
AASHTO	Application Profile for Common Object Request Broker Architecture (CORBA)	NTCIP 2305
AASHTO	Information Profile for DATEX	NTCIP 2501
AASHTO	Information Profile for CORBA	NTCIP 2502
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01

APPENDIX A: ACRONYM LIST

A

AASHTO	American Association of State Highway and Transportation Officials
ADMS	Archived Data Management Subsystem
ADUS	Archived Data User Service
AFD	Architecture Flow Diagram
AID	Architecture Interconnect Diagram
AHS	Automated Highway System
ANSI	American National Standards Institute
APTS	Advanced Public Transportation System
ASTM	American Society for Testing and Materials
ATIS	Advanced Traveler Information System
ATMS	Advanced Traffic Management System
AVCS	Advanced Vehicle Control System
AVI	Automated Vehicle Identification
AVL	Automated Vehicle Location

C

CADD	Computer Aided Dispatch
CCTV	Closed Circuit TV
CD	Compact Disk
CD-ROM	CD Read Only Memory
CMS	Changeable Message System

D

DD	Data Dictionary
DDE	Data Dictionary Element
DFD	Data Flow Diagram
DMS	Dynamic Message Sign
DMV	Department of Motor Vehicles
DOT	Department of Transportation
DSRC	Dedicated Short Range Communications

E

E9-1-1	Emergency 9-1-1
EDI	Electronic Data Interchange
EDP	Early Deployment Plan
EPA	Environmental Protection Agency
EM	Emergency Management Subsystem
EMC	Emergency Management Center
EMMS	Emissions Management Subsystem
EMS	Emergency Management Subsystem
EOC	Emergency Operation Center
ETTM	Electronic Toll and Traffic Management
ETS	Emergency Telecommunications System

F

FCC	Federal Communications Commission for the U.S.

FHWA   Federal Highway Administration
FMC   Freeway Management Center
FMCSA   Federal Motor Carrier Safety Administration
FMS   Fleet Management Subsystem
FTA   Federal Transit Administration

G
GIS   Geographic Information System
GPS   Global Positioning System

H
HAR   Highway Advisory Radio
HAZMAT   HAZardous MATerial(s)
HRI   Highway Rail Intersection
HOV   High Occupancy Vehicle

I
IEEE   Institute of Electrical and Electronics Engineers, Inc.
IP   Internet Protocol
ISO   International Standards Organization
ISP   Information Service Provider
ISTEA   Intermodal Surface Transportation Efficiency Act
ITE   Institute of Transportation Engineers
ITS   Intelligent Transportation Systems
ITSA or ITS America   Intelligent Transportation Society of America
IVHS   Intelligent Vehicle Highway Systems

M
MATA   Memphis Area Transit Authority
MPO   Metropolitan Planning Organization

N
NEMA   National Electrical Manufacturers Association
NTCIP   National Transportation Communications for ITS Protocol

P
PDA   Personal Digital Assistant
PIAS   Personal Information Access Subsystem
PMS   Parking Management Subsystem

R
RS   Roadway Subsystem
RTS   Remote Traveler Support Subsystem

S
SAE   Society of Automotive Engineers
SDO   Standards Development Organization
SNMP   Simple Network Management Protocol
STIP   Statewide Transportation Improvement Program
STMF   Simple Transportation Management Framework
STMP   Simple Transportation Management Protocol

T
TAS   Toll Administration Subsystem

TCC	Traffic Control Center
TCIP	Transit Communications Interface Profiles
TCS	Toll Collection Subsystem
TDM	Travel Demand Management
TDOT	Tennessee Department of Transportation
TDOT RTMC	TDOT Regional Transportation Management Center
TIP	Transportation Improvement Program
TM	Traffic Management Subsystem
TMC	Traffic Management Center
TMDD	Traffic Management Data Dictionary
TMS	Traffic Management Subsystem
TOC	Traffic Operations Center
TRB	Transportation Research Board
TRMC	Transit Management Center
TRMS	Transit Management Subsystem
TRVS	Transit Vehicle Subsystem

U

USDOT	United States Department of Transportation
USR	User Service Requirement

V

VMS	Variable Message Sign
VS	Vehicle Subsystem

W

WIM	Weigh–in Motion
WWW	World Wide Web

APPENDIX B: GLOSSARY

Architecture

A framework within which a system can be built. An Architecture functionally defines what the pieces of the system are and the information that is exchanged between them. An Architecture is not technology specific which allows the Architecture to remain effective over time. It defines "what must be done," not "how it will be done".

Architecture Baseline

The clear identification of the architecture products that will be maintained, including specific format and version information. Changes to the Architecture Baseline must follow an approved change management process typically documented in a Maintenance Plan. The Architecture Baseline will change over time as the Architecture is revised.

Architecture Flow

Information that is exchanged among Subsystems and between Subsystems and Terminators in the Physical Architecture view of the National ITS Architecture. These Architecture Flows and their communication requirements define the Interfaces, which form the basis for much of the ongoing Standards work in the National ITS program. In the Regional ITS Architecture development process architecture flows are the primary tool that is used to define the Regional ITS Architecture Interfaces. In the guidance document, the terms "architecture flow)" (i.e. the term used by the National ITS Architecture) and "information flow" are used interchangeably.

Architecture Interconnect

Communications paths that carry information between Subsystems and Terminators in the Physical Architecture view of the National ITS Architecture. Several different types of Interconnects are defined in the National ITS Architecture to reflect the range of Interface requirements in ITS. Four different types of communications links are defined: Wireline, Wide Area Wireless, Dedicated Short Range Communications, and Vehicle to Vehicle communications. In addition to these types, several specialized Interconnects are also defined to reflect other Interface requirements, including human interface (e.g., what the system user sees and hears) and physical/environmental (e.g., what the ITS sensors sense).

Center Subsystems

Subsystems that provide management, administrative, and support functions for the transportation system. The Center Subsystems each communicate with other centers to enable coordination between modes and across jurisdictions. Some examples of center subsystems are Traffic Management, Transit Management, Commercial Vehicle Administration, Planning, Emissions Management, Toll Administration, Emergency Management, Information Service Provider, and Fleet and Freight Management. One of four general Subsystem classes defined in the National ITS Architecture.

Data Dictionary Entry (DDE)

Every Data Flow included in the Logical Architecture view of the National ITS Architecture is defined in a Data Dictionary Entry (DDE). Each DDE contains a textual description of the Data Flow and identifies any lower level data elements that make up the Data Flow.

Data Flow

Data Flows are modeled in the Logical Architecture view of the National ITS Architecture. Data Flows represent data flowing between Processes or between a Process and a terminator. A Data Flow is shown as an arrow on a Data Flow Diagram and is defined in a Data Dictionary Entry in the Logical Architecture. Data flows are aggregated together to form high-level Architecture Flows in the Physical Architecture view of the National ITS Architecture.

Data Flow Diagram

The diagrams in the Logical Architecture view of the National ITS Architecture that show the functions that are required for ITS and the data that moves between these functions. Only four different symbols are used on the diagrams. Circles represent the Processes or functions that do the work. Arrows represent the Data Flows that show how data moves through the system. Parallel lines represent Data Stores that represent "data at rest" in the system. Finally, rectangles represent the terminators that define the Architecture boundary. A hierarchy of these diagrams depict the ITS functionality and Data Flow requirements in successively greater detail.

Data Store

A Data Store represents "data at rest" in a Data Flow Diagram. Data Stores represent data repositories that are required to support data aggregation or archival functions in the Logical Architecture.

Dedicated Short Range Communications (DSRC)

A wireless communications channel used for close-proximity communications between vehicles and the immediate infrastructure. It supports location-specific communications for ITS services such as toll collection, transit vehicle management, driver information, and automated commercial vehicle operations. One of the four types of Architecture Interconnects defined in the National ITS Architecture.

Element

This is the basic building block of a Regional ITS Architecture. It is the name used by the Stakeholders to describe a system or piece of a system.

Entity

The term that refers to the National ITS Architecture subsystem or terminator component during the "mapping" process of a regional ITS system or piece of a system to the National ITS Architecture. *Example: The local traffic management element is mapped to the National ITS Architecture entity (i.e. subsystem), Traffic Management.*

Equipment Package

Equipment Packages are the building blocks of the Physical Architecture Subsystems. Equipment Packages group like Processes of a particular Subsystem together into an "implementable" package. Since Equipment Packages are both the most detailed elements of the Physical Architecture view of the National ITS Architecture and are tied to specific Market Packages, they provide the common link between the interface-oriented Architecture definition and the deployment-oriented Market Packages.

Federal Highway Administration (FHWA)

An agency of the United States Department of Transportation that funds highway planning and programs.

Federal Transit Administration (FTA)

An agency of the United States Department of Transportation that funds transit planning and programs.

Functional Requirements Specification

A description of WHAT a system must do to address the needs or provide the services that have been identified for the region. The description should use formal "shall" language and document the functions in terms that the stakeholders, particularly the system implementers, will understand. In a Regional ITS Architecture, the Functional Requirements focus on the high-level requirements that support regional integration.

Highway Trust Fund (HTF)

Established as a federal mechanism for financing the accelerated highway program, the HTF is a source of funds from which ISTEA and later TEA-21 authorizes expenditures.

Information Flow

Information that is exchanged between elements of a Regional ITS Architecture.   In the guidance document, the terms "Information Flow" and "Architecture Flow" are used interchangeably.

Institutional Integration

Institutional Integration represents the process of combining existing and emerging institutional constraints and arrangements. Integration is at least two-fold in a region; technical integration involves the functional act of integration while institutional integration addresses the agency and/or regional environment for integration. Both are necessary components for interoperable systems.

Intelligent Transportation System (ITS)

Electronics, communications, and information processing that are integrated to improve the efficiency or safety of surface transportation.

ITS Architecture

Defines an Architecture of interrelated systems that work together to deliver transportation Services. An ITS Architecture defines how systems functionally operate and the interconnection of information exchanges that must take place between these systems to accomplish transportation Services.

ITS Project

Any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS User Services.

Interconnect

See Architecture Interconnect.

Interface

The connection between two systems.   In the regional ITS architecture, an interface is described by the architecture interconnect – the line of communications between the two systems – and the information flows that define the types of information that will be shared over the interconnect.

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

Legislative initiative by the United States Congress that restructured funding for transportation programs. ISTEA authorized increased levels of highway and transportation funding and an increased role for regional planning commissions/MPOs in funding decisions. The Act also requires comprehensive Regional and Statewide long-term Transportation Plans and places an increased emphasis on public participation and transportation alternatives.

Inventory

See System Inventory.

Logical Architecture

The Logical Architecture view of the National ITS Architecture defines what has to be done to support the ITS User Services. It defines the Processes that perform ITS functions and the information or Data Flows that are shared between these Processes. The Logical Architecture was developed using Structured Analysis techniques and consists of Data Flow Diagrams, Process Specifications, and Data Dictionary Entries. The Logical Architecture is not technology specific, nor does it dictate a particular implementation. This implementation independence makes the Logical Architecture accommodating to innovation, scaleable from small-scale implementations to large regional systems, and supportive of widely varied system designs.

Maintenance Plan

Description of configuration control and update guidelines for Regional and/or Project ITS Architectures. The primary purpose of the Maintenance Plan is to maintain an Architecture Baseline.

Major ITS Project

Any ITS project that implements part of a regional ITS initiative that is multi-jurisdictional, multi-modal, or otherwise affects regional integration of ITS systems.

Map

A term used for the process of identifying regional elements with the National ITS Architecture entities. *Example: A local traffic management center can be mapped to the National ITS Architecture "Traffic Management" subsystem.*

Market Package

Market Packages identify the pieces of the Physical Architecture that are required to implement a particular transportation Service. They provide an accessible, service oriented, perspective to the National ITS Architecture. They are tailored to fit - separately or in combination - real world transportation problems and needs. Market Packages collect together one or more Equipment Packages that must work together to deliver a given transportation Service and the Architecture Flows that connect them and other important external systems.

Metropolitan Planning Organization (MPO)

The forum for cooperative decision making for the metropolitan planning area.

National ITS Architecture

A common, established framework for developing integrated transportation systems. The National ITS Architecture is comprised of the Logical Architecture and Physical Architecture, which satisfy a defined set of User Services. The National ITS Architecture is maintained by the United States Department of Transportation (USDOT).

Operational Concept (Ops Concept)

An operational concept identifies the roles and responsibilities of participating agencies and stakeholders. It defines the institutional and technical vision for the region and describes how the system will work at a very high-level, frequently using operational scenarios as a basis.

Physical Architecture

The Physical Architecture is the part of the National ITS Architecture that provides agencies with a physical representation (though not a detailed design) of the important ITS Interfaces and major system components. The principal elements in the Physical Architecture are the Subsystems, Terminators and Architecture Flows that connect these Subsystems and Terminators into an overall framework. At the next level of detail, the Physical Architecture identifies Equipment Packages for each Subsystem and assigns Processes identified in the Logical Architecture to these Equipment Packages. Similarly, the Data Flows from the Logical Architecture are grouped together and assigned to Architecture Flows.

Process

A function or activity identified in the Logical Architecture view of the National ITS Architecture that is required to support the ITS User Services. The Logical Architecture presents Processes in a top-down fashion beginning with general Processes (e.g., "Manage Traffic") that are then decomposed into more detailed Processes (e.g., "Provide Traffic Surveillance", "Monitor HOV Lane Use"). General Processes are defined in terms of more detailed Processes using Data Flow Diagrams. The most detailed Processes are defined in Process Specifications (PSpecs).

Process Specification (PSpec)

The textual definition of the most detailed Processes identified in the Logical Architecture view of the National ITS Architecture. The Process Specification includes an overview, a set of functional requirements, a complete set of inputs and outputs, and a list of the User Service requirements that are satisfied by the PSpec.

Project ITS Architecture

A framework that identifies the institutional agreement and technical integration necessary to define an ITS project and its interfaces with other ITS projects and systems.

Project Sequencing

The order in which projects are deployed. An important part of the transportation planning process is the sequence or order that ITS projects are deployed. The Regional ITS Architecture provides a new way to look at these ITS projects relationships or "dependencies". By taking these dependencies into account, an efficient sequence can be developed so that projects incrementally build on each other.

PSpec

Abbreviation for Process Specification.

Region

The geographical area that identifies the boundaries of the Regional ITS Architecture and is defined by and based on the needs of the participating agencies and other Stakeholders. In metropolitan areas, a Region should be no less than the boundaries of the metropolitan planning area.

Regional ITS Architecture

A specific, tailored framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects in a particular Region. It functionally defines what pieces of the system are linked to others and what information is exchanged between them.

Roadside Subsystems

One of four general classes of Subsystems defined in the National ITS Architecture. This class includes the intelligent infrastructure distributed along the transportation network which perform surveillance, information provision, and control functions. This includes ITS field equipment on roadway facilities as well as ITS equipment at parking facilities, toll systems, and commercial vehicle check systems that are also at or near the roadside.

Sausage Diagram

A diagram which depicts all Subsystems in the National ITS Architecture and the basic communication channels between these Subsystems. The "Sausage Diagram" is a top-level Architecture Interconnect diagram. Variations of the Sausage Diagram are sometimes used to depict Regional ITS Architectures at a high level.

Stakeholders

Anyone with a vested interest or "stake" in the regional ITS architecture. This includes public agencies, private organizations, special interests, and the traveling public.

Standards

Documented technical specifications sponsored by a Standards Development Organization (SDO) to be used consistently as rules, guidelines, or definitions of characteristics for the interchange of data. A broad array of ITS Standards is currently under development that will specifically define the Interfaces identified in the National ITS Architecture.

Statewide Transportation Improvement Program (STIP)

This is a document prepared by each state that is a staged, multi-year, statewide, intermodal program of transportation projects which is consistent with the Statewide Transportation Plan and planning processes and Metropolitan Transportation Plans, TIPs and processes.

Subsystem

The principal structural entity of the Physical Architecture view of the National ITS Architecture. Subsystems are individual pieces of the Intelligent Transportation System defined by the National ITS Architecture. Subsystems are grouped into four classes: Centers, Roadside, Vehicles, and Travelers. Example Subsystems are the Traffic Management Subsystem, the Vehicle Subsystem, and the Roadway Subsystem. These correspond to the physical world: respectively traffic operations centers, automobiles, and roadside signal controllers. Due to this close correspondence between the physical world and the Subsystems, the Subsystem interfaces are prime candidates for standardization.

Systems Engineering

A structured process for arriving at a final design of a system. The final design is selected from a number of alternatives that would accomplish the same objectives and considers the total Life-Cycle of the project including not only the technical merits of potential solutions but also the costs and relative value of alternatives.

System Inventory

The collection of all ITS-related Elements in a Regional ITS Architecture.

Terminator

Terminators define the boundary of an Architecture. The National ITS Architecture Terminators represent the people, systems, and general environment that interface to ITS. The Interfaces between Terminators and the Subsystems and Processes within the National ITS Architecture are defined, but no functional requirements are allocated to Terminators. The Logical and Physical Architecture views of the National ITS Architecture both have exactly the same set of Terminators.

Transportation Equity Act for the 21st Century (TEA-21)

Passed in 1997 by Congress to address the need to begin work toward regional integration of transportation systems. TEA-21 is the successor reauthorization of the ISTEA legislation.

Transportation Improvement Program (TIP)

This is a document prepared by each Metropolitan Planning Organization (MPO) listing projects to be funded with FHWA/FTA funds for the next one to three year period. It is consistent with the Metropolitan Transportation Plan.

Transportation Plan

Also called the "Long Range Transportation Plan", this plan defines the state or metropolitan area's long-term approach to constructing, operating, and maintaining the multi-modal transportation system.

Traveler Subsystems

Equipment used by travelers to access ITS services pre-trip and en-route. This includes services that are owned and operated by the traveler as well as services that are owned by transportation and information providers. One of four general Subsystem classes defined in the National ITS Architecture.

Turbo Architecture™

An automated software tool used to create Regional ITS Architectures and Project Architectures. The tool allows the user to input and manage System Inventory, Market Packages, Interconnects and Architecture Flows with regard to a Regional ITS Architecture.

United States Department of Transportation (USDOT)

The principal direct Federal funding agency for transportation facilities and programs. Includes the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Federal Railroad Administration (FRA), the Federal Motor Carrier Safety Administration (FMCSA), and others.

User Service

User Services document what ITS should do from the user's perspective. A broad range of users are considered, including the traveling public as well as many different types of system operators. User Services form the basis for the National ITS Architecture development effort. The initial User Services were jointly defined by USDOT and ITS America with significant Stakeholder input and documented in the National Program Plan (NPP). Over time, new or updated User Services will continue to be developed and the National ITS Architecture will be updated to support these User Service changes.

User Service Requirement (USR)

A specific functional requirement statement of what must be done to support the ITS User Services. The User Service Requirements were developed specifically to serve as a requirements baseline to drive National ITS Architecture development. The User Service Requirements are not requirements to system/architecture implementers, but rather are requirements on the development of the National ITS Architecture.

Vehicle Subsystems

Covers ITS related elements on vehicle platforms. Vehicle Subsystems include general driver information and safety systems applicable to all vehicle types. Four fleet Vehicle Subsystems (Transit, Emergency, Commercial, and Maintenance and Construction Vehicles) add ITS capabilities unique to these special vehicle types. One of four general Subsystem classes defined in the National ITS Architecture.

Vehicle-to-Vehicle Communications

Dedicated wireless system handling high data rate, low probability of error, line of sight communications between vehicles. Advanced vehicle services may use this link in the future to support advanced collision avoidance implementations, road condition information sharing, and active coordination to advanced control systems. One of the four types of Architecture Interconnects defined in the National ITS Architecture.

Wide Area Wireless Communications

A communications link that provides communications via a wireless device between user and an infrastructure based system. Both broadcast (one-way) and interactive (two-way) communications services are grouped into wide-area wireless communications in the National ITS Architecture. These links support a range of services in the National ITS Architecture including real-time traveler information and various forms of fleet communications. One of the four types of Architecture Interconnects defined in the National ITS Architecture.

Wireline Communications

A communications link serving fixed locations. It may be implemented using a variety of public or private communications networks that may physically include wireless (e.g., microwave) as well as wireline infrastructure. Both dedicated and shared communications resources may be used. One of the four types of Architecture Interconnects defined in the National ITS Architecture.