



Regional Intelligent Transportation Systems (ITS) Architecture

Adopted: February 2017

Amended: October 2019

Evansville MPO



Henderson • Vanderburgh • Warrick

RESOLUTION NO. 19-01- ITS

A RESOLUTION APPROVING AN AMENDMENT TO THE EVANSVILLE METROPOLITAN PLANNING ORGANIZATION'S INNETLLIGENT TRANSPORTATION SYSTEM ARCHITECTURE

WHEREAS, the Evansville Metropolitan Planning Organization is the organization designated by the Governor as the Metropolitan Planning Organization responsible, together with the State, for carrying out the provisions of 23 U.S.C. 134 (Federal-Aid Highway planning requirements), and capable of meeting the requirements of 49 U.S.C. 1603(a) (Federal Transit planning requirements) in the Evansville Urbanized Area; and

WHEREAS, Federal Highway Administration Final Rule and Federal Transit Administration policy were issued on January 8, 2001, to implement section 5026 (e) of the Transportation Equity Act for the 21 Century (TEA 21). This final rule/policy and the Fixing America's Surface Transportation (FAST) Act requires that ITS projects funded by the Highway Trust Fund and the Mass Transit Account conform to the National ITS Architecture, as well as to USDOT adopted ITS Standards; and

WHEREAS, the Policy Committee is the policy body of the Evansville Metropolitan Planning Organization; and

WHEREAS, the Evansville Metropolitan Planning Organization region is implementing ITS projects and therefore must amend the regional ITS Architecture to guide their deployment; and

WHEREAS, the Policy Committee of the Evansville Metropolitan Planning Organization reviewed the amended Regional ITS Architecture and finds it consistent with federal requirements, to help reduce congestion and improve safety through the use of technology initiatives, and promote the sharing of data and information, and

BE IT THEREFORE RESOLVED, that the Evansville Metropolitan Planning Organization's Regional ITS Architecture is amended to add the signal pre-emption project for the signal system in the City of Evansville fire department service area.

ADOPTED by the Policy Committee of the Evansville Metropolitan Planning Organization on this 10th day of October, 2019.

ATTEST:


Jack Corn, Chairman
Evansville Metropolitan Planning Organization
Policy Committee


Seyed Shokouhzadeh, Executive Director
Evansville Metropolitan Planning Organization

Intelligent Transportation Systems (ITS)

The Regional ITS Architecture Guidance published by the US Department of Transportation defines Intelligent Transportation Systems as: “the application of advanced sensor, computer, electronics, and communications technologies and management strategies in an integrated manner to improve safety and efficiency of the surface transportation system”.

ITS technologies are used to make the transportation network and transit system more safe and efficient for movement of goods and people. ITS involves the integration of software, hardware and information flow between various agencies associated with the provision of transportation services. The roadway variable message boards that inform drivers of current weather, traffic, accident or construction ahead and available alternate routes are one visible example of ITS technologies.

ITS Architecture

An ITS Architecture is the framework within which a system of ITS projects can be built. It defines the components of the system and the interconnections and information flow between the components. The primary components of an ITS Architecture, are Subsystems and Information Flows.

Subsystems: Subsystems are individual pieces of the overall ITS that perform particular functions such as managing traffic, providing traveler information, or responding to emergencies. Subsystems can be associated with particular organizations such as public safety agencies, transportation services, emergency management agencies, or transit providers. They are the sources and/or users of information provided by other subsystems within the boundary of ITS architecture. Subsystems include center systems, roadside equipment, vehicle equipment and traveler devices that participate in ITS.

Information Flows: Information Flows define the information that is exchanged between subsystems such as traffic information, or surveillance and sensor control data. They depict ITS integration by illustrating the information links between subsystems. In ITS, this integration is not only technical but also institutional. The system interfaces that are defined require cooperation and shared responsibilities on the part of owners and operators of each participating system.

Evansville MPO Regional ITS Architecture

On January 8, 2001, the US Department of Transportation published the FHWA Final Rule and FTA Policy, which implement Section 5206(e) of the Transportation Equity Act of 21st Century (TEA-21). The Final Rule/Policy, effective April 8, 2001, explains and defines how Section 5206(e) is to be implemented. TEA-21 required ITS projects funded through the highway trust fund to conform to the National ITS Architecture and applicable standards. The intention of the Rule/Policy is to foster the deployment of integrated regional ITS systems. The Rule/Policy also requires that the National Architecture be used to develop a local implementation plan or “Regional ITS Architecture” that would be tailored to address the local situation and ITS investment needs. MAP-21 and FAST Act continue these requirements.

As the established regional transportation planning agency, the Evansville MPO has developed the “Evansville MPO Regional ITS Architecture”. This ITS Architecture is a specific regional framework for

ensuring institutional agreement and technical integration for the implementation of ITS projects in the Evansville MPO region. The Evansville Regional ITS Architecture is being updated to include the Signal pre-emption project for the signal system in the City of Evansville fire department service area.

Architecture Outline

Introduction, Architecture Scope and Regional Description: The Evansville MPO ITS Architecture includes Vanderburgh County and Henderson County in the Evansville MPO planning area. The MPO has considered a 10 year planning horizon in developing the Architecture.

Stakeholders: All the organizations related to the ITS elements of the transportation system have been identified as stakeholders and a brief description of each organization has been documented.

System Inventory: A list of ITS elements currently existing and planned has been documented along with a brief description of the system.

Needs and Services: The regional transportation needs include: safe, secure and efficient transportation on freeways and arterials; commercial vehicle operations, public transit, emergency management and incident response. Various Service Packages that provide the services to address the above mentioned needs have been identified and listed.

Operational Concepts: The roles and responsibilities of all the stakeholders associated with the Evansville MPO Regional ITS Architecture have been documented.

Functional Requirements: Activities are performed by each system included in the ITS Architecture are defined in detail and documented in the functional requirements.

Standards: The standards address the flow of information between various systems included in the ITS Architecture.

ITS Projects: The Evansville regional ITS architecture currently includes one new project within the City of Evansville. The current projects summary is as follows:

Stakeholder: Evansville Vanderburgh Traffic Signal Control, Evansville Fire Department

Project: Signal pre-emption project for the signal system in the City of Evansville fire department service area

Description: Installation of traffic light pre-emption for emergency response vehicle, to provide a safe corridor for emergency response vehicles to respond to emergencies and subsequently making it safer for the public. This project will include City, County and INDOT traffic light controlled intersections in Evansville. This field-to-vehicle application area covers the interface between a traffic signal controller and an emergency vehicle desiring signal pre-emption. The granting of pre-emption to the vehicle may be based upon passive detection of the vehicle type, or upon a request from an active device

on the vehicle. Signal pre-emption typically implies that the controller switches the light to green in the direction of the preemption request, overriding the current timing. (However, there are other possible scenarios, such as setting all directions to flashing red.)

Agreements: Interagency coordination and cooperation is one of the key issues related to the efficient implementation of ITS services in the area. This section documents existing interagency agreements related to ITS. The development of additional agreements will be an item to address moving forward.

Future ITS issues – Architecture Utilization, Implementation and Maintenance: The regional ITS architecture will guide future ITS efforts in the region and support the long-range planning process. The MPO will maintain the current architecture and develop future iterations of it in support of ITS projects as they emerge. It is anticipated that the framework established by this first architecture will facilitate the efficient development of future projects by identifying key components required for their implementation and opportunities for institutional cooperation.

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EVANSVILLE MPO POLICY COMMITTEE MEMBERS

Mr. Jack Corn, Jr.	Chairperson, Evansville City Council Appointment
Mr. Rusty Fowler	Vice-Chairperson, Indiana Department of Transportation
Mr. Lloyd Winnecke	Mayor, City of Evansville
Mr. William “Buzzy” Newman	Henderson City Manager, City of Henderson Appointment
Mr. Ron Beane	Councilman, Evansville City Council
Mr. Jeff Hatfield	Commissioner, Vanderburgh County Commission
Ms. Angela Koehler Lindsey	Councilwoman, Vanderburgh County Council
Mr. Dan Saylor	Commissioner, Warrick County Commission
Mr. William Hubiak	County Engineer, Henderson County Appointment
Mr. Gene Pfeiffer	Vanderburgh County Commission Appointment
Mr. Todd M. Robertson	Transportation and Services Director, City of Evansville Mayoral Appointment
Ms. Christy Powell	Town Manager, Town of Newburgh Appointment
Ms. Deneatra Henderson	Kentucky Transportation Cabinet
Mr. Joe McGuinness	Indiana Department of Transportation (NV)
Ms. Mayela Sosa	Indiana Federal Highway Administration (NV)
Ms. Erica Tait	Indiana Federal Highway Administration (NV)
Mr. Shawn Seals	Indiana Department of Environmental Management (NV)
Ms. Marisol Simon	Federal Transit Administration Region V (NV)
Ms. Cecilia Godfrey	Federal Transit Administration Region V (NV)
Mr. Todd Jeter	Kentucky Federal Highway Administration (NV)
Ms. Bernadette Dupont	Kentucky Federal Highway Administration (NV)
Mr. Greg Thomas	Kentucky Transportation Cabinet (NV)
Mr. Mikael Pelfrey	Kentucky Transportation Cabinet (NV)
Ms. Leslie Poff	Kentucky Division of Air Quality (NV)

(NV) = Non-voting

EVANSVILLE MPO TECHNICAL COMMITTEE MEMBERS

Mr. Greg Wathen	Chairperson, Economic Development Coalition of Southwest Indiana
Mr. John Stoll	Vice-Chairperson, Vanderburgh County Engineer

The following organizations are represented on the Technical Committee:

American Medical Response
ARC of Evansville
Carver Community Organization
CSX Transportation
David Matthews Associates
Easterseals Rehabilitation Center

Eastland Mall
Economic Development Coalition of Southwest Indiana
EnviroKinetics, Inc.
Evansville Bicycle Club
Evansville Board of Public Safety
Evansville Chamber of Commerce
Evansville City Engineer
Evansville Department of Metropolitan Development
Evansville Department of Transportation and Services
Evansville Department of Urban Forestry
Evansville Environmental Protection Agency
Evansville Parks and Recreation Department
Evansville Police Department
Evansville Regional Airport
Evansville-Vanderburgh Area Plan Commission
Evansville Water and Sewer Department
Federal Highway Administration (Indiana)
Federal Highway Administration (Kentucky)
Federal Transit Administration (Region V)
Green River Area Development District
Henderson Area Rapid Transit
Henderson City Engineer
Assistant Henderson City Manager
Henderson County Engineer
Henderson County Riverport
Henderson-Henderson County Chamber of Commerce
Henderson-Henderson County Plan Commission
Henderson Judge Executive
Indiana Department of Environmental Management (Indianapolis)
Indiana Department of Transportation (Indianapolis)
Indiana Department of Transportation (Vincennes)
Indiana Southern Railroad
Kentucky Transportation Cabinet (Frankfort)
Kentucky Transportation Cabinet (Madisonville)
Lochmueller Group
Metropolitan Evansville Transit System
Port of Indiana-Mount Vernon
Posey County Chamber
Qk4 Inc.
River City Taxi
St. Vincent's Trauma Hospital
Shrewsberry & Associates, LLC
SIRS Inc.
University of Evansville
Vanderburgh County Emergency Management Agency

Vanderburgh County Engineer
Warrick County Economic Development
Warrick County Plan Commission
Warrick County School Corporation
Westside Improvement Association

EVANSVILLE MPO CITIZEN'S ADVISORY COMMITTEE (MTP 2045)

Ms. Shari Sherman	Warrick County Chamber of Commerce
Mr. Tony Iriti	Kyndle (Henderson Chamber of Commerce)
Ms. Donna Crooks	Kyndle (Henderson Chamber of Commerce)
Mr. Larry Taylor	Success Warrick County
Mr. Justin Groenert	Southwest Indiana Chamber of Commerce
Mr. Wil Marquez	Diverse Business Alliance
Mr. Josh Armstrong	Downtown Alliance Director
Ms. Ellen Horan	GAGE (Growth Alliance for Greater Evansville)
Ms. Abby Dixon	Henderson County Tourist Commission
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Mr. Shawn Hayden	Eastland Mall
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Mr. Phil Wilzbacher	Ports of Indiana
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Mr. Mike O'Daniel	D-Patrick Automotive
Mr. John Petkovsek	David Matthews Associates
Mr. Jonathan Weinzapfel	Ivy Tech Community College
Mr. Ben Payne	Henderson County Schools
Mr. Rick Cameron	Evansville-Vanderburgh School Corporation
Ms. Kris Williams	Henderson Community College
Ms. Donna Teague	University of Evansville
Mr. Jim Wilsbacher	CAJE (Congregations Acting for Justice and Empowerment)
Ms. Angie Higgins	Easterseals Rehabilitation Center
Mr. Andy Imlay	Evansville Advisory Board on Disability Services
Ms. Vanessa Rodriguez	HOLA Evansville
Mr. Silas Matchem	Promise Zone
Ms. Diane Clements-Boyd	Evansville Human Relations Commission
Mr. Ted Miller	Citizen
Mr. Nibby Priest	Henderson Bikeway Advisory Committee
Ms. Lorie Van Hook	Evansville Trails Coalition
Mr. Steve Roelle	Warrick Trails
Ms. Mary Raley	St. Vincent Evansville
Mr. Jim Renne	Deaconess Hospital
Ms. Andrea Hays	Welborn Baptist Foundation

Mr. Noah Robinson	Vanderburgh County Sheriff's Department
Mr. Brent Jackson	United Neighborhoods of Evansville
Mr. Leonard Collins	Goosetown Neighborhood Association
Ms. DeAnna Outlaw	Westside Improvement Association
Mr. Randy Garratt	Culver Neighborhood Association
Ms. Janelle Lemon	INDOT

EVANSVILLE MPO STAFF

Mr. Seyed Shokouhzadeh	Executive Director
Ms. Pamela Drach	Deputy Director
Ms. Erin Schriefer	Senior Transportation Planner
Mr. Matt Schriefer, AICP	Senior Transportation Planner
Mr. Amir Varshochi	Transportation Planner
Ms. Laura Lamb	Chief Transportation Engineer
Mr. Xinbo Mi	Transportation Engineer
Ms. Kari Akin	Finance Officer
Mr. Lorenzo Marsh	Transportation Technician

Regional Description and Architecture Scope

Transportation systems and services increasingly rely on technology to operate safely and efficiently. In order to leverage this technology to its full potential, coordination between various organizations that operate pieces of the overall transportation system is required. To encourage this coordination, the USDOT developed the National Intelligent Transportation Systems (ITS) Architecture to help identify and exploit opportunities for cost-effective cooperation.

In 1997, Congress passed the Transportation Equity Act for the 21st Century (TEA-21) to address the need to begin to work toward regionally integrated transportation systems. In January 2001, The Federal Highway Administration (FHWA) published a rule (ITS Architecture and Standards) and the Federal Transit Administration (FTA) published a companion policy to implement section 5206(e) of TEA-21. This Rule/Policy seeks to foster regional integration by requiring that all ITS projects funded from the Highway Trust Fund be in conformance with the National ITS Architecture and appropriate standards. “Conformance with the National ITS Architecture” is defined in the final Rule/Policy as using the National ITS Architecture to develop a “regional ITS architecture” that would be tailored to address the local situation and ITS investment needs, and the subsequent adherence of ITS projects to the regional ITS architecture.

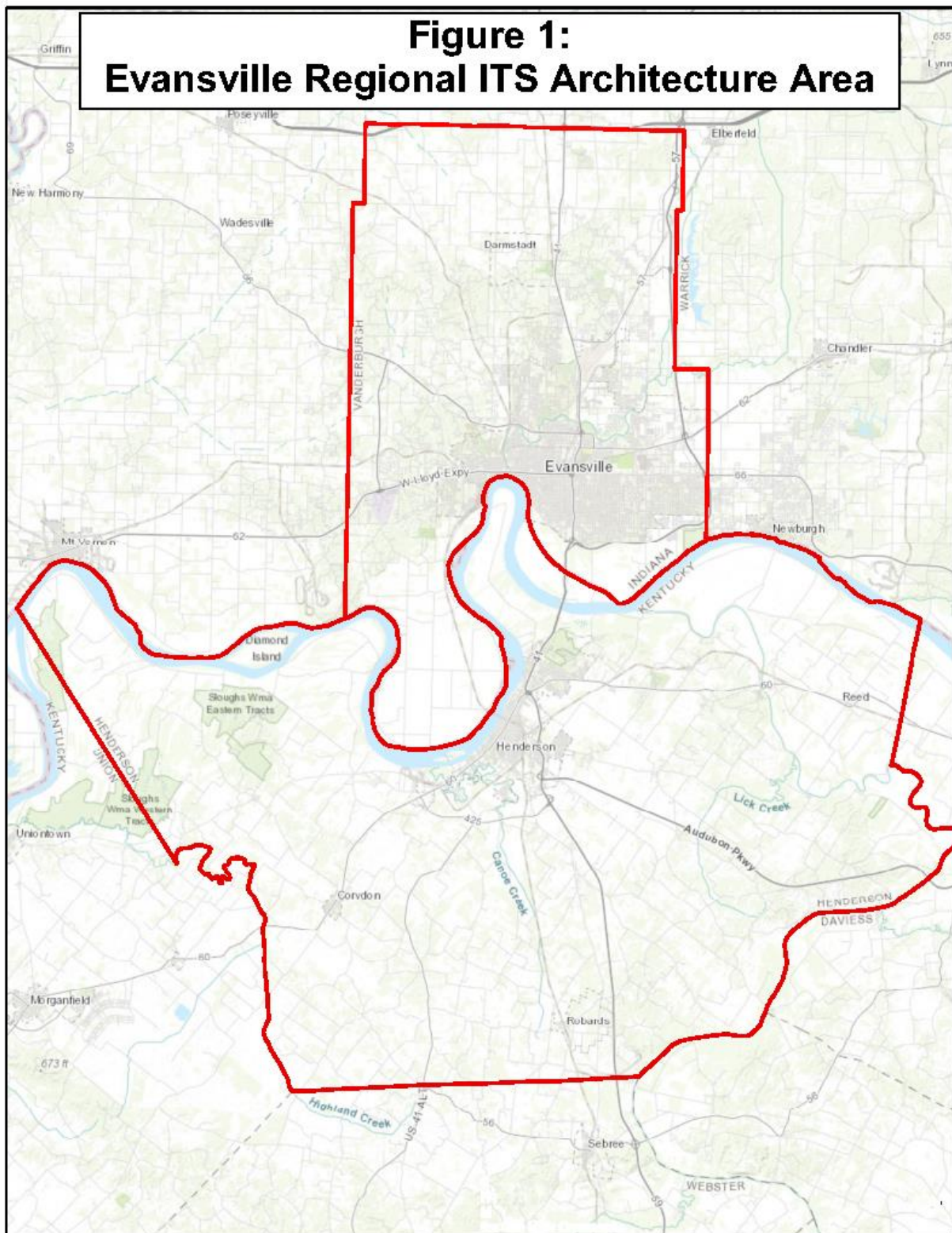
In accordance with FHWA and FTA policies, the Evansville MPO Regional ITS Architecture Plan serves as a guide for deployment and maintenance of intelligent technologies for providing a safe, secure and efficient transportation system in the Evansville MPO region. The geographic area of the Evansville MPO Regional ITS Architecture includes the City of Evansville, and Vanderburgh County in Indiana; and the City of Henderson, and Henderson County in Kentucky.

The region is served by Interstates 69, 64, State Routes 57, 62, 65, 66, and US Highway 41 in Vanderburgh County; and US Highways 60, 41, 41A, the Audubon and Breathitt Parkways, and Kentucky Highways 136, 351, and 425 in Henderson County.

Public transportation in Vanderburgh County is provided by the Metropolitan Evansville Transit System (METS). Henderson Area Rapid Transit (HART) provides public transportation in Henderson County. Both the public transportation providers run fixed route bus services and demand responsive paratransit service in the region.

A 10-year horizon has been set for the Evansville MPO ITS Architecture based on the planned and future projects and needs of the region. For the 10 year planning period, the ITS Architecture will address the intelligent technology needs of the region in regards to freeway management, safety and security of the commercial vehicle operations, maintenance and construction activities, traffic management, emergency management and public transportation.

Figure 1: ITS Architecture Area MAP



Identification of stakeholders is an important step in the development of ITS architecture. A primary benefit of an ITS architecture plan is that it identifies existing, and encourages new, connectivity and coordination opportunities between various regional transportation stakeholders. When capitalized upon, these opportunities result in improved service to the region in the provision of efficient personal and commodity mobility, emergency management activities, and incident response. Thirteen stakeholder groups that represent various transportation agencies, public transportation providers and public safety agencies have been identified in the Evansville MPO Regional ITS architecture.

During the process of the development of this document the stakeholders were actively involved in the form of telephone interviews and meetings with the MPO staff. Stakeholder awareness of ITS activities dates to at least the year 2000 when there were group meetings to discuss ITS and incident management issues. Discussion then, and follow-up consultation, resulted in stakeholder input regarding their organization's day to day activities related to ITS. Activities described include those they are currently performing, and those they anticipate performing in the future. Table 1 lists the stakeholders and a brief description of their roles with respect to the regional transportation system.

Table 1: Stakeholders

Stakeholder Name	Stakeholder Description
City of Evansville Transportation Services	Operates and maintains streets in the City of Evansville
City of Henderson Public Works	Operates and maintains streets in the City of Henderson
Commercial Vehicle Operators	Operates commercial vehicles passing through the region.
Computer Services, City of Evansville/Vanderburgh County	Provides computing services and personnel to the Evansville Vanderburgh Traffic Signal Control
Department of Homeland Security	A cabinet department of the U.S. federal government with responsibilities in public security, roughly comparable to the interior or home ministries of other countries. Its stated missions involve anti-terrorism, border security, immigration and customs, cyber security, and disaster prevention and management.
Evansville Fire Department	A professional organization striving to protect our community minimizing loss of life and property resulting from fires, medical emergencies, and other hazards.
Evansville Vanderburgh Traffic Signal Control	Operates traffic signals in Vanderburgh County. Will operate Wabash Avenue rail crossing system when it becomes operational.
Henderson Area Rapid Transit (HART)	Public Transit provider in Henderson. It operates fixed route and demand responsive bus service within the City of Henderson.
IN Public Safety Agencies	This stakeholder includes Emergency Management, police, fire, EMS and dispatch for emergency vehicles in the Indiana portion of the architecture area. Relays information to Indianapolis TMC to request operation of Dynamic Message Signs.

Stakeholder Name	Stakeholder Description
INDOT	Operate Local Dynamic Message Signs in collaboration with Evv/Van County Central Dispatch from the Indianapolis Traffic Management Center (TMC)
KY Public Safety Agencies	This stakeholder includes Emergency Management, police, fire, EMS and dispatch for emergency vehicles in the Kentucky portion of the architecture area.
KYTC	Kentucky Transportation Cabinet (KYTC) oversees state and US roadway facilities in Henderson County.
Metropolitan Evansville Transit System (METS)	Public transit provider in Vanderburgh County
National Weather Service	Provides weather watch and warnings
Railroad Companies	Operates and maintaince the gradecrossing

The Evansville MPO Regional ITS Architecture is an integral part of planning for the operations and maintenance strategies that are addressed by the regional transportation planning process. The architecture provides a framework that connects operations and maintenance objectives and strategies with the integrated transportation system improvements that are implemented as a progressive series of ITS projects. The architecture also is used to define the data needs associated with performance monitoring that supports an informed planning process. This chapter identifies the planning objectives, strategies, and associated performance measures from the regional plan. These planning elements are connected with ITS services in the RAD-IT database.

Table 2: Relationship to Planning

Number	Type	Name	Description	Source	Performance Measure
1	Objective	Modernize and improve the synchronization of traffic signals within the network to aid in more efficient travel times.	Improve traffic flows and reduce the travel times within the urbanized area.	MTP 2045	Level of Service
1	Objective	Modernize and improve the synchronization of traffic signals within the network to aid in more efficient travel times.	Improve traffic flows and reduce the travel times within the urbanized area.	MTP 2045	Travel Time Index
2	Objective	Improve the roadway network and traffic flow by repairing grid connectivity.	Improve transportation system security by providing alternative thorough fares through the urbanized area.	MTP 2045	Level of Service
2	Objective	Improve the roadway network and traffic flow by repairing grid connectivity.	Improve transportation system security by providing alternative thorough fares through the urbanized area.	MTP 2045	Travel Time Index
3	Objective	Advance roadway projects that provide safe and secure travel.	Improve transportation system security by providing alternative thorough fares through the urbanized area.	MTP 2045	Level of Service
3	Objective	Advance roadway projects that provide safe and secure travel.	Improve transportation system security by providing alternative thorough fares through the urbanized area.	MTP 2045	Travel Time Index

Number	Type	Name	Description	Source	Performance Measure
4	Objective	Increase transit efficiency on a regional level.	Increase transit ridership	MTP 2045	Transit Ridership
5	Objective	Improve travel efficiency on US 41 between City of Evansville and City of Henderson by installing traffic management camera systems.	This project when complete will increase the efficiency of travel by reducing the response times for traffic incident management. It will also provide assistance in work zone management and work zone safety monitoring.	2016 - 2019 TIP	Level of Service
5	Objective	Improve travel efficiency on US 41 between City of Evansville and City of Henderson by installing traffic management camera systems.	This project when complete will increase the efficiency of travel by reducing the response times for traffic incident management. It will also provide assistance in work zone management and work zone safety monitoring.	2016 - 2019 TIP	Travel Time Index
6	Objective	Traffic Signal Pre-emption with Emergency Fire Truck	This project when complete will decrease the travel time of a fire truck to response an emergency.	MTP 2045	Average delay of a fire truck at an intersection

The ITS Architecture inventory is the list of all the existing and planned ITS related elements in the region. The Evansville MPO ITS Architecture contains 32 elements, including systems and sub systems. The inventory is presented sorted by element name in Table 3, listing the elements related to each stakeholder, a brief description of the element and its status.

Table 3: Inventory

Element Name	Element Description	Stakeholder	Element Status
Commercial Vehicles	Commercial vehicles include ITS equipment that supports safe and efficient commercial vehicle operations. This equipment monitors vehicle operation, provides the driver and motor carrier real-time information, and supports mainline electronic screening.	Commercial Vehicle Operators	Future
Computer Services, City of Evansville/Vanderburgh County	Provides computing services and personnel to the Evansville Vanderburgh Traffic Signal Control	Computer Services, City of Evansville/Vanderburgh County	Planned
CVO Inspector	The CVO Inspector performs regulatory inspection of Commercial Vehicles by supporting the roadside inspection, weighing, and checking of	Commercial Vehicle Operators	Future
Emergency Vehicles	Emergency vehicles include ITS equipment that provides the sensory, processing, storage, and communications functions necessary to support safe and efficient emergency response. IN and KY Public Safety Agencies both serve this role	IN Public Safety Agencies	Existing
Evansville Vanderburgh County Central Dispatch	Dispatch center for emergency vehicles in all of Vanderburgh County	IN Public Safety Agencies	Existing
Evansville Vanderburgh County Central Dispatch_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	IN Public Safety Agencies	Existing
Evansville Vanderburgh County EMA		IN Public Safety Agencies	Existing

Element Name	Element Description	Stakeholder	Element Status
Evansville Vanderburgh County EMA_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	IN Public Safety Agencies	Existing
Evansville Vanderburgh Traffic Signal Control		Evansville Vanderburgh Traffic Signal Control	Planned
Evansville Vanderburgh Traffic Signal Control_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	Evansville Vanderburgh Traffic Signal Control	Planned
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	Roadside Equipment includes any and all equipment distributed on and along the roadway which monitors and controls traffic. This can include equipment for tolling.	Evansville Vanderburgh Traffic Signal Control	Planned
Henderson Area Rapid Transit	Public transit provider in Henderson County	Henderson Area Rapid Transit (HART)	Existing
Henderson Area Rapid Transit_Kiosks	Kiosks are public informational displays supporting various levels of interaction and information access and systems which provide security in public areas.	Henderson Area Rapid Transit (HART)	Future
Henderson Area Rapid Transit_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	Henderson Area Rapid Transit (HART)	Future
Henderson County EMA		KY Public Safety Agencies	Existing

Element Name	Element Description	Stakeholder	Element Status
Henderson CountyEMA_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	KY Public Safety Agencies	Existing
Henderson E 911 Center	Dispatch center for emergency vehicles in all of Henderson County	KY Public Safety Agencies	Existing
Henderson E 911 Center_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	KY Public Safety Agencies	Existing
INDOT Field Equipment	This includes Dynamic Message Signs (DMS) and Highway Advisory Radio (HAR) - AM 530 activated through the INDOT Indianapolis TMC to provide traffic information to travelers.	INDOT	Existing
INDOT Indianapolis Traffic Management Center		INDOT	Existing
Kentucky Vehicle Enforcement Post 8	Commercial vehicle weigh station at north US 41 bridge to Henderson.	KY Public Safety Agencies	Existing
Kentucky Vehicle Enforcement Post 8_Inspection Facility	The inspection facility includes any or all equipment which performs commercial vehicle screening and/or safety inspections.	KY Public Safety Agencies	Existing
KYTC Division of Operations - Systems Operation Branch		KYTC	Existing
KYTC Division of Operations - Systems Operation Branch_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	KYTC	Existing

Element Name	Element Description	Stakeholder	Element Status
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Roadside Equipment includes any and all equipment distributed on and along the roadway which monitors and controls traffic. This can include equipment for tolling.	KYTC	Existing
Metropolitan Evansville Transit System	Public transit provider in Vanderburgh County	Metropolitan Evansville Transit System (METS)	Existing
Metropolitan Evansville Transit System_Kiosks	Kiosks are public informational displays supporting various levels of interaction and information access and systems which provide security in public areas.	Metropolitan Evansville Transit System (METS)	Future
Metropolitan Evansville Transit System_Personnel	Personnel represent the people who directly interface with an element of the ITS infrastructure. They provide operator data and command inputs to direct systems operations to varying degrees, depending on the type of system and the deployment scenario.	Metropolitan Evansville Transit System (METS)	Existing
Multimodal crossing	Operates the gradecrossing in the region	Railroad Companies	Existing
National weather service	Provides weather watch and warnings	National Weather Service	Existing
Transit Vehicles	Transit vehicles include ITS devices that support the safe and efficient movement of passengers. These systems collect, manage, and disseminate transit-related information to the driver, operations and maintenance personnel, and transit system patrons. HART and METS are the two transit operators in the area.	Metropolitan Evansville Transit System (METS)	Existing
User Personal Computing Devices	User Personal Computing Devices refers to equipment an individual owns and can personalize with their choices for information about transportation networks. An Internet-connected PC is an example.		Existing

ITS systems hold the promise of addressing a variety of transportation needs in the region. Needs are served by market packages defined in the National Architecture as pieces of the architecture needed to provide a particular transportation service. Regional transportation needs include: the need for safe, secure and efficient transportation on freeways and arterials; the need for safe, secure and efficient construction and maintenance activities; commercial vehicle operations, public transit, emergency management and incident response. Along with the above mentioned needs, greater communication and coordination between the various agencies and stakeholders is desired to leverage existing resources to provide a safer, more secure and efficient transportation system in the region. The services provided by the market packages to address the above mentioned needs have been listed in Table 4 along with their status in the region.

Table 4: Service Packages

Service Package	Service Package Name	Service Package Status	Included Elements
CVO03	Electronic Clearance	Planned	Commercial Vehicles
CVO03	Electronic Clearance	Planned	CVO Inspector
CVO03	Electronic Clearance	Planned	Kentucky Vehicle Enforcement Post 8
CVO03	Electronic Clearance	Planned	Kentucky Vehicle Enforcement Post 8_Inspection Facility
CVO04	CV Administrative Processes	Existing	Commercial Vehicles
CVO04	CV Administrative Processes	Existing	CVO Inspector
CVO04	CV Administrative Processes	Planned	Commercial Vehicles
CVO04	CV Administrative Processes	Planned	CVO Inspector
CVO07	Roadside CVO Safety	Existing	Commercial Vehicles
CVO07	Roadside CVO Safety	Existing	CVO Inspector
CVO12	HAZMAT Management	Existing	Emergency Vehicles
CVO12	HAZMAT Management	Existing	Evansville Vanderburgh County EMA
MC06	Work Zone Management	Planned	INDOT Field Equipment
MC06	Work Zone Management	Planned	INDOT Indianapolis Traffic Management Center
MC07	Work Zone Safety Monitoring	Planned	INDOT Field Equipment
PS01	Emergency Call-Taking and Dispatch	Existing	Evansville Vanderburgh County Central Dispatch
PS01	Emergency Call-Taking and Dispatch	Existing	Evansville Vanderburgh County Central Dispatch_Personnel
PS01	Emergency Call-Taking and Dispatch	Existing	Evansville Vanderburgh County EMA_Personnel

Service Package	Service Package Name	Service Package Status	Included Elements
PS02	Routing Support for Emergency Responders	Existing	Computer Services, City of Evansville/Vanderburgh County
PS02	Routing Support for Emergency Responders	Existing	Evansville Vanderburgh Traffic Signal Control
PS02	Routing Support for Emergency Responders	Existing	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
PS02	Routing Support for Emergency Responders	Planned	Computer Services, City of Evansville/Vanderburgh County
PS02	Routing Support for Emergency Responders	Planned	Evansville Vanderburgh Traffic Signal Control
PS02	Routing Support for Emergency Responders	Planned	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
PS03	Emergency Vehicle Preemption	Planned	Computer Services, City of Evansville/Vanderburgh County
PS03	Emergency Vehicle Preemption	Planned	Emergency Vehicles
PS03	Emergency Vehicle Preemption	Planned	Evansville Vanderburgh County EMA
PS03	Emergency Vehicle Preemption	Planned	Evansville Vanderburgh County EMA_Personnel
PS03	Emergency Vehicle Preemption	Planned	Evansville Vanderburgh Traffic Signal Control
PS03	Emergency Vehicle Preemption	Planned	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
PT01	Transit Vehicle Tracking	Existing	Metropolitan Evansville Transit System
PT01	Transit Vehicle Tracking	Existing	Transit Vehicles
PT02	Transit Fixed-Route Operations	Existing	Henderson Area Rapid Transit
PT02	Transit Fixed-Route Operations	Existing	Henderson Area Rapid Transit_Personnel
PT02	Transit Fixed-Route Operations	Existing	Metropolitan Evansville Transit System
PT02	Transit Fixed-Route Operations	Existing	Metropolitan Evansville Transit System_Personnel
PT02	Transit Fixed-Route Operations	Existing	Transit Vehicles
PT03	Dynamic Transit Operations	Existing	Henderson Area Rapid Transit_Personnel
PT03	Dynamic Transit Operations	Existing	Metropolitan Evansville Transit System
PT03	Dynamic Transit Operations	Existing	Metropolitan Evansville Transit System_Personnel

Service Package	Service Package Name	Service Package Status	Included Elements
PT03	Dynamic Transit Operations	Existing	Transit Vehicles
PT04	Transit Fare Collection Management	Existing	Henderson Area Rapid Transit
PT04	Transit Fare Collection Management	Existing	Metropolitan Evansville Transit System
PT04	Transit Fare Collection Management	Existing	Transit Vehicles
PT04	Transit Passenger and Fare Management (Instance 1)	Existing	Metropolitan Evansville Transit System_Kiosks
PT04	Transit Passenger and Fare Management (Instance 1)	Existing	Transit Vehicles
PT04	Transit Passenger and Fare Management (Instance 1)	Future	Metropolitan Evansville Transit System_Kiosks
PT04	Transit Passenger and Fare Management (Instance 1)	Future	Transit Vehicles
PT04	Transit Passenger and Fare Management (Instance 1)	Planned	Metropolitan Evansville Transit System_Kiosks
PT04	Transit Passenger and Fare Management (Instance 1)	Planned	Transit Vehicles
PT05	Transit Security	Future	Henderson Area Rapid Transit_Kiosks
PT05	Transit Security	Future	Henderson Area Rapid Transit_Personnel
PT05	Transit Security	Future	Metropolitan Evansville Transit System
PT05	Transit Security	Future	Metropolitan Evansville Transit System_Personnel
PT05	Transit Security	Future	Transit Vehicles
PT05	Transit Security (Instance 1)	Existing	Henderson Area Rapid Transit_Kiosks
PT05	Transit Security (Instance 1)	Existing	Henderson Area Rapid Transit_Personnel
PT05	Transit Security (Instance 1)	Existing	Metropolitan Evansville Transit System_Kiosks
PT05	Transit Security (Instance 1)	Future	Henderson Area Rapid Transit_Kiosks
PT05	Transit Security (Instance 1)	Future	Henderson Area Rapid Transit_Personnel
PT05	Transit Security (Instance 1)	Future	Metropolitan Evansville Transit System_Kiosks
PT06	Transit Fleet Management	Planned	Henderson Area Rapid Transit_Personnel
PT07	Transit Passenger Counting	Planned	Metropolitan Evansville Transit System

Service Package	Service Package Name	Service Package Status	Included Elements
PT07	Transit Passenger Counting	Planned	Metropolitan Evansville Transit System_Personnel
PT08	Transit Traveler Information	Existing	Transit Vehicles
PT08	Transit Traveler Information (Instance 1)	Existing	Metropolitan Evansville Transit System_Kiosks
PT08	Transit Traveler Information (Instance 1)	Future	Metropolitan Evansville Transit System_Kiosks
PT09	Transit Signal Priority	Planned	Evansville Vanderburgh Traffic Signal Control
PT09	Transit Signal Priority	Planned	Metropolitan Evansville Transit System
PT09	Transit Signal Priority	Planned	Metropolitan Evansville Transit System_Personnel
PT14	Multi-modal Coordination	Existing	Evansville Vanderburgh Traffic Signal Control
PT14	Multi-modal Coordination	Existing	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
PT17	Transit Connection Protection	Planned	<None>
TI01	Broadcast Traveler Information	Planned	<None>
TM01	Infrastructure-Based Traffic Surveillance	Planned	Computer Services, City of Evansville/Vanderburgh County
TM01	Infrastructure-Based Traffic Surveillance	Planned	Evansville Vanderburgh Traffic Signal Control
TM01	Infrastructure-Based Traffic Surveillance	Planned	Evansville Vanderburgh Traffic Signal Control_Personnel
TM01	Infrastructure-Based Traffic Surveillance	Planned	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
TM01	Infrastructure-Based Traffic Surveillance	Planned	INDOT Field Equipment
TM01	Infrastructure-Based Traffic Surveillance	Planned	INDOT Indianapolis Traffic Management Center
TM03	Traffic Signal Control	Existing	Computer Services, City of Evansville/Vanderburgh County
TM03	Traffic Signal Control	Existing	Evansville Vanderburgh Traffic Signal Control
TM03	Traffic Signal Control	Existing	Evansville Vanderburgh Traffic Signal Control_Personnel
TM03	Traffic Signal Control	Existing	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment

Service Package	Service Package Name	Service Package Status	Included Elements
TM03	Traffic Signal Control	Existing	INDOT Field Equipment
TM03	Traffic Signal Control	Existing	INDOT Indianapolis Traffic Management Center
TM05	Traffic Metering	Future	<None>
TM06	Traffic Information Dissemination	Planned	Computer Services, City of Evansville/Vanderburgh County
TM06	Traffic Information Dissemination	Planned	Evansville Vanderburgh Traffic Signal Control
TM06	Traffic Information Dissemination	Planned	Evansville Vanderburgh Traffic Signal Control_Personnel
TM06	Traffic Information Dissemination	Planned	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
TM06	Traffic Information Dissemination (Instance 1)	Existing	<None>
TM06	Traffic Information Dissemination (Instance 2)	Existing	Emergency Vehicles
TM06	Traffic Information Dissemination (Instance 2)	Existing	Evansville Vanderburgh County EMA
TM06	Traffic Information Dissemination (Instance 2)	Future	Emergency Vehicles
TM06	Traffic Information Dissemination (Instance 2)	Future	Evansville Vanderburgh County EMA
TM06	Traffic Information Dissemination (Instance 1)	Planned	Computer Services, City of Evansville/Vanderburgh County
TM06	Traffic Information Dissemination (Instance 1)	Planned	Evansville Vanderburgh Traffic Signal Control
TM06	Traffic Information Dissemination (Instance 1)	Planned	Evansville Vanderburgh Traffic Signal Control_Personnel
TM06	Traffic Information Dissemination (Instance 1)	Planned	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
TM06	Traffic Information Dissemination (Instance 1)	Planned	Henderson County EMA
TM06	Traffic Information Dissemination (Instance 1)	Planned	Henderson CountyEMA_Personnel
TM06	Traffic Information Dissemination (Instance 1)	Planned	Henderson E 911 Center
TM06	Traffic Information Dissemination (Instance 1)	Planned	Henderson E 911 Center_Personnel
TM06	Traffic Information Dissemination (Instance 1)	Planned	INDOT Field Equipment

Service Package	Service Package Name	Service Package Status	Included Elements
TM06	Traffic Information Dissemination (Instance 1)	Planned	INDOT Indianapolis Traffic Management Center
TM06	Traffic Information Dissemination (Instance 1)	Planned	KYTC Division of Operations - Systems Operation Branch
TM06	Traffic Information Dissemination (Instance 1)	Planned	KYTC Division of Operations - Systems Operation Branch_Personnel
TM06	Traffic Information Dissemination (Instance 1)	Planned	KYTC Division of Operations - Systems Operation Branch_Roadside Equipment
TM08	Traffic Incident Management System	Planned	Emergency Vehicles
TM08	Traffic Incident Management System	Planned	Evansville Vanderburgh County Central Dispatch
TM08	Traffic Incident Management System	Planned	INDOT Field Equipment
TM08	Traffic Incident Management System	Planned	INDOT Indianapolis Traffic Management Center
TM13	Standard Railroad Grade Crossing	Planned	Computer Services, City of Evansville/Vanderburgh County
TM13	Standard Railroad Grade Crossing	Planned	Evansville Vanderburgh Traffic Signal Control
TM13	Standard Railroad Grade Crossing	Planned	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
TM14	Advanced Railroad Grade Crossing	Existing	Computer Services, City of Evansville/Vanderburgh County
TM14	Advanced Railroad Grade Crossing	Existing	Evansville Vanderburgh Traffic Signal Control
TM14	Advanced Railroad Grade Crossing	Existing	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
TM14	Advanced Railroad Grade Crossing	Planned	Computer Services, City of Evansville/Vanderburgh County
TM14	Advanced Railroad Grade Crossing	Planned	Evansville Vanderburgh Traffic Signal Control
TM14	Advanced Railroad Grade Crossing	Planned	Evansville Vanderburgh Traffic Signal Control_Roadside Equipment
WX02	Weather Information Processing and Distribution	Existing	INDOT Indianapolis Traffic Management Center
WX02	Weather Information Processing and Distribution	Existing	National weather service

The Operational Concept identifies the roles and responsibilities of all the stakeholders associated with each of the transportation services provided by the Regional ITS Architecture. Description of various ITS services that are provided in the region are listed below. Table 5 provides the roles and responsibilities of all the stakeholders associated with various ITS services.

ITS Services:

Commercial Vehicle Operations: Development of systems to provide safe and secure commercial vehicle operation in the region.

Emergency Management: Development of systems to provide emergency call taking, public safety dispatch, and emergency operations center operations.

Freeway Management: Development of systems to monitor freeway traffic flow and road conditions and provide information to travelers on the roadway.

Maintenance and Construction: Development of a system to manage construction and maintenance of roadways in the region including winter snow and ice clearance.

Traffic Signal Control: Development and expansion of existing integrated signal systems to include upgraded capability to react to changing traffic conditions and cooperation with multiple jurisdictions where appropriate.

Transit Services: Development of systems to efficiently manage transit service within the region, including extended timings and better area coverage.

Traveler Information: Development of systems to provide static and real time transportation information to the travelers.

Table: 5 Operational Concepts

RR Area Name	Stakeholder	RR Description	RR Status
Commercial Vehicle Operations for Evansville MPO Regional ITS Architecture	Commercial Vehicle Operators	Operates commercial vehicles passing through the region	Existing
Commercial Vehicle Operations for Evansville MPO Regional ITS Architecture	IN Public Safety Agencies	Motor carrier inspection and enforcement	Existing
Commercial Vehicle Operations for Evansville MPO Regional ITS Architecture	KY Public Safety Agencies	Motor carrier inspection and enforcement	Existing

RR Area Name	Stakeholder	RR Description	RR Status
Emergency Management for Evansville MPO Regional ITS Architecture	City of Evansville Transportation Services	Provides road equipment and barricades for road closure.	Existing
Emergency Management for Evansville MPO Regional ITS Architecture	City of Henderson Public Works	Provides road equipment and barricades for road closure.	Existing
Emergency Management for Evansville MPO Regional ITS Architecture	IN Public Safety Agencies	Dispatch appropriate agency or agencies to the incident location.	Existing
Emergency Management for Evansville MPO Regional ITS Architecture	IN Public Safety Agencies	Provide emergency call taking (9-1-1) in Vanderburgh County IN.	Existing
Emergency Management for Evansville MPO Regional ITS Architecture	IN Public Safety Agencies	Coordinate with various systems and agencies during the emergencies	Existing
Emergency Management for Evansville MPO Regional ITS Architecture	KY Public Safety Agencies	Coordinate with various systems and agencies during the emergencies.	Existing
Emergency Management for Evansville MPO Regional ITS Architecture	KY Public Safety Agencies	Dispatch appropriate agency or agencies to the incident location.	Existing
Emergency Management for Evansville MPO Regional ITS Architecture	KY Public Safety Agencies	Provide emergency calltaking (9-1-1) in Henderson County KY.	Existing
Emergency Vehicle Traffic Signal Pre-emption	Evansville Fire Department	Provide Fire trucks' real-time location.	Planned
Emergency Vehicle Traffic Signal Pre-emption	Evansville Fire Department	Provide Fire trucks' origin and destination prior to departure, and the route it will take.	Planned
Emergency Vehicle Traffic Signal Pre-emption	Evansville Vanderburgh Traffic Signal Control	Based on the information provided by Fire Department, give green signals for the Fire Truck at each intersection on its route at the appropriate time.	Planned

RR Area Name	Stakeholder	RR Description	RR Status
Freeway Management for Evansville MPO Regional ITS Architecture	INDOT	Monitor traffic conditions on Interstate 64	Existing
Freeway Management for Evansville MPO Regional ITS Architecture	INDOT	Operate traffic information devices such as Dynamic Message Signs (DMS) and Highway Advisory Radio (HAR) on Interstate 64.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	City of Evansville Transportation Services	Provide maintenance of street in City of Evansville.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	City of Henderson Public Works	Provide maintenance of street in City of Henderson.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	Evansville Vanderburgh Traffic Signal Control	Operate and maintain traffic signal in City of Evansville.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	Henderson Area Rapid Transit (HART)	Provide fixed route bus service within the City of Henderson.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	Henderson Area Rapid Transit (HART)	Provide demand responsive paratransit service within the city of Henderson.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	IN Public Safety Agencies	Coordinate with various systems and agencies during the emergencies	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	IN Public Safety Agencies	Dispatch appropriate agency or agencies to the incident location.	Existing

RR Area Name	Stakeholder	RR Description	RR Status
Maintenance and Construction for Evansville MPO Regional ITS Architecture	IN Public Safety Agencies	Provide emergency call taking (9-1-1) in Vanderburgh County IN.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	INDOT	Coordinate with other agencies that provide maintenance and construction within Vanderburgh County.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	INDOT	Provide maintenance of state roads, US routes, and Interstate Routes within Vanderburgh County including snow and ice control and pavement maintenance.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	KY Public Safety Agencies	Coordinate with various systems and agencies during the emergencies	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	KY Public Safety Agencies	Dispatch appropriate agency or agencies to the incident location.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	KY Public Safety Agencies	Provide emergency call taking (9-1-1) in Henderson County IN.	Planned
Maintenance and Construction for Evansville MPO Regional ITS Architecture	KYTC	Coordinate with other agencies that provide maintenance and construction within Henderson County.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	KYTC	Provide maintenance of state roads, US routes, and Interstate Routes within Henderson County including snow and ice control and pavement maintenance.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	Metropolitan Evansville Transit System (METS)	Provide paratransit service in the corporate limits of the City of Evansville , and a 3/4 mile wide corridor along either side of regular bus routes that extend beyond the City limits.	Existing

RR Area Name	Stakeholder	RR Description	RR Status
Maintenance and Construction for Evansville MPO Regional ITS Architecture	Metropolitan Evansville Transit System (METS)	Provide fixed route bus service with in the City of Evansville.	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	National Weather Service	Provide weather watch and warnings	Existing
Maintenance and Construction for Evansville MPO Regional ITS Architecture	Railroad Companies	Operates and maintains the grade crossing.	Existing
Surface Street Management for Evansville MPO Regional ITS Architecture	City of Henderson Public Works	Operate and maintain traffic signal in City of Henderson.	Existing
Surface Street Management for Evansville MPO Regional ITS Architecture	Evansville Vanderburgh Traffic Signal Control	Operate and maintain traffic signal in Vanderburgh County.	Existing
Surface Street Management for Evansville MPO Regional ITS Architecture	Railroad Companies	Operates and maintains the grade crossing.	Planned
Transit Services for Evansville MPO Regional ITS Architecture	Henderson Area Rapid Transit (HART)	Provide demand responsive paratransit service within the city of Henderson.	Existing
Transit Services for Evansville MPO Regional ITS Architecture	Henderson Area Rapid Transit (HART)	Provide fixed route bus service within the City of Henderson.	Existing
Transit Services for Evansville MPO Regional ITS Architecture	Metropolitan Evansville Transit System (METS)	Provide fixed route bus service with in the City of Evansville.	Existing

RR Area Name	Stakeholder	RR Description	RR Status
Transit Services for Evansville MPO Regional ITS Architecture	Metropolitan Evansville Transit System (METS)	Provide paratransit service in the corporate limits of the City of Evansville , and a 3/4 mile wide corridor along either side of regular bus routes that extend beyond the City limits.	Existing
Traveler Information for Evansville MPO Regional ITS Architecture	INDOT	Provide traffic incident and emergency information to drivers via DMS and HAR with in Vanderburgh County.	Existing
Traveler Information for Evansville MPO Regional ITS Architecture	KYTC	Provide traffic incident and emergency information to drivers via HAR with in Henderson County.	Existing

Functional objects define the tasks or activities that are performed by each system in the region, documenting the role of each system in providing services. The list below gives the primary functional objects of all the elements in Evansville MPO Regional ITS architecture. Table 6 provides the functional objects of all the elements.

Table 6: Functional Objects

Element Name	Physical Object	Functional Object	FO User Defined
Commercial Vehicles	Commercial Vehicle Administration Center	CVAC Information Exchange	No
Computer Services, City of Evansville/Vanderburgh County	Traffic Management Center	TMC Basic Surveillance	No
Computer Services, City of Evansville/Vanderburgh County	Traffic Management Center	TMC Incident Dispatch Coordination	No
Computer Services, City of Evansville/Vanderburgh County	Traffic Management Center	TMC Roadway Equipment Monitoring	No
Computer Services, City of Evansville/Vanderburgh County	Traffic Management Center	TMC Signal Control	No
Computer Services, City of Evansville/Vanderburgh County	Traffic Management Center	TMC Standard Rail Crossing Management	No
Computer Services, City of Evansville/Vanderburgh County	Traffic Management Center	TMC Traffic Information Dissemination	No
CVO Inspector	Commercial Vehicle Check Equipment	CVCE Electronic Screening	No
Emergency Vehicles	Emergency Management Center	Emergency Commercial Vehicle Response	No
Emergency Vehicles	Emergency Management Center	Emergency Response Management	No
Emergency Vehicles	Emergency Vehicle OBE	EV On-Board Incident Management Communication	No
Evansville Vanderburgh County Central Dispatch	Emergency Management Center	Emergency Call-Taking	No
Evansville Vanderburgh County Central Dispatch	Emergency Management Center	Emergency Dispatch	No
Evansville Vanderburgh County Central Dispatch	Emergency Management Center	Emergency Incident Command	No
Evansville Vanderburgh County Central Dispatch	Emergency Management Center	Emergency Response Management	No
Evansville Vanderburgh County Central Dispatch	Traffic Management Center	TMC Incident Detection	No
Evansville Vanderburgh County Central Dispatch	Traffic Management Center	TMC Incident Dispatch Coordination	No

Element Name	Physical Object	Functional Object	FO User Defined
Evansville Vanderburgh County Central Dispatch_Personnel	Emergency Management Center	Emergency Call-Taking	No
Evansville Vanderburgh County Central Dispatch_Personnel	Emergency Management Center	Emergency Dispatch	No
Evansville Vanderburgh County EMA	Emergency Management Center	Emergency Commercial Vehicle Response	No
Evansville Vanderburgh County EMA	Emergency Management Center	Emergency Early Warning System	No
Evansville Vanderburgh County EMA	Emergency Management Center	Emergency Evacuation Support	No
Evansville Vanderburgh County EMA	Emergency Management Center	Emergency Incident Command	No
Evansville Vanderburgh County EMA	Emergency Management Center	Emergency Notification Support	No
Evansville Vanderburgh County EMA	Emergency Management Center	Emergency Response Management	No
Evansville Vanderburgh County EMA	Emergency Management Center	Emergency Routing	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Call-Taking	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Commercial Vehicle Response	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Data Collection	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Dispatch	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Early Warning System	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Environmental Monitoring	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Evacuation Support	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Response Management	No
Evansville Vanderburgh County EMA_Personnel	Emergency Management Center	Emergency Routing	No
Evansville Vanderburgh County EMA_Personnel	Emergency Vehicle OBE	EV On-Board En Route Support	No
Evansville Vanderburgh County EMA_Personnel	Emergency Vehicle OBE	EV Service Patrol Vehicle Operations	No

Element Name	Physical Object	Functional Object	FO User Defined
Evansville Vanderburgh Traffic Signal Control			No
Evansville Vanderburgh Traffic Signal Control	Emergency Vehicle OBE	EV On-Board En Route Support	No
Evansville Vanderburgh Traffic Signal Control	Emergency Vehicle OBE	EV Service Patrol Vehicle Operations	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Advanced Rail Crossing	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Basic Surveillance	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Field Device Support	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Field Management Station Operation	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Signal Control	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Signal Preemption	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Standard Rail Crossing	No
Evansville Vanderburgh Traffic Signal Control	ITS Roadway Equipment	Roadway Traffic Information Dissemination	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Basic Surveillance	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Incident Dispatch Coordination	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Multi-Modal Coordination	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Regional Traffic Management	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Roadway Equipment Monitoring	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Signal Control	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Standard Rail Crossing Management	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Traffic Information Dissemination	No
Evansville Vanderburgh Traffic Signal Control	Traffic Management Center	TMC Traffic Metering	No

Element Name	Physical Object	Functional Object	FO User Defined
Evansville Vanderburgh Traffic Signal Control_Personnel			No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment			No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	ITS Roadway Equipment	Roadway Advanced Rail Crossing	No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	ITS Roadway Equipment	Roadway Basic Surveillance	No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	ITS Roadway Equipment	Roadway Field Device Support	No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	ITS Roadway Equipment	Roadway Field Management Station Operation	No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	ITS Roadway Equipment	Roadway Signal Control	No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	ITS Roadway Equipment	Roadway Signal Preemption	No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	ITS Roadway Equipment	Roadway Standard Rail Crossing	No
Evansville Vanderburgh Traffic Signal Control_Roadside Equipment	Traffic Management Center	TMC Basic Surveillance	No
Henderson Area Rapid Transit			No
Henderson Area Rapid Transit	Emergency Management Center	Emergency Evacuation Support	No
Henderson Area Rapid Transit	Emergency Management Center	Emergency Response Management	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Data Collection	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Emissions Monitoring	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Environmental Monitoring	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Fare Management	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Fixed-Route Operations	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Information Services	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Multi-Modal Coordination	No

Element Name	Physical Object	Functional Object	FO User Defined
Henderson Area Rapid Transit	Transit Management Center	Transit Center Paratransit Operations	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Security	No
Henderson Area Rapid Transit	Transit Management Center	Transit Center Vehicle Tracking	No
Henderson Area Rapid Transit	Transit Management Center	Transit Evacuation Support	No
Henderson Area Rapid Transit	Transit Management Center	Transit Garage Maintenance	No
Henderson Area Rapid Transit_Kiosks	Traveler Support Equipment	Transit Stop Information Services	No
Henderson Area Rapid Transit_Kiosks	Traveler Support Equipment	Traveler Information Reception	No
Henderson Area Rapid Transit_Kiosks	Traveler Support Equipment	Traveler Interactive Information	No
Henderson Area Rapid Transit_Kiosks	Traveler Support Equipment	Traveler Security	No
Henderson Area Rapid Transit_Personnel			No
Henderson County EMA	Emergency Management Center	Emergency Early Warning System	No
Henderson County EMA	Emergency Management Center	Emergency Evacuation Support	No
Henderson County EMA	Emergency Management Center	Emergency Incident Command	No
Henderson County EMA	Emergency Management Center	Emergency Response Management	No
Henderson CountyEMA_Personnel			No
Henderson E 911 Center	Emergency Management Center	Emergency Call-Taking	No
Henderson E 911 Center	Emergency Management Center	Emergency Dispatch	No
Henderson E 911 Center_Personnel	Emergency Management Center	Emergency Call-Taking	No
Henderson E 911 Center_Personnel	Emergency Management Center	Emergency Dispatch	No
INDOT Field Equipment	Center	Center Data Collection	No
INDOT Field Equipment	ITS Roadway Equipment	Roadway Basic Surveillance	No

Element Name	Physical Object	Functional Object	FO User Defined
INDOT Field Equipment	ITS Roadway Equipment	Roadway Data Collection	No
INDOT Field Equipment	ITS Roadway Equipment	Roadway Incident Detection	No
INDOT Field Equipment	ITS Roadway Equipment	Roadway Signal Control	No
INDOT Field Equipment	ITS Roadway Equipment	Roadway Signal Preemption	No
INDOT Field Equipment	ITS Roadway Equipment	Roadway Traffic Information Dissemination	No
INDOT Field Equipment	ITS Roadway Equipment	Roadway Work Zone Safety	No
INDOT Field Equipment	ITS Roadway Equipment	Roadway Work Zone Traffic Control	No
INDOT Field Equipment	Traffic Management Center	TMC Basic Surveillance	No
INDOT Field Equipment	Traffic Management Center	TMC Data Collection	No
INDOT Field Equipment	Traffic Management Center	TMC Evacuation Support	No
INDOT Field Equipment	Traffic Management Center	TMC Incident Detection	No
INDOT Field Equipment	Traffic Management Center	TMC Incident Dispatch Coordination	No
INDOT Field Equipment	Traffic Management Center	TMC Roadway Equipment Monitoring	No
INDOT Field Equipment	Traffic Management Center	TMC Signal Control	No
INDOT Field Equipment	Traffic Management Center	TMC Traffic Information Dissemination	No
INDOT Field Equipment	Traffic Management Center	TMC Work Zone Traffic Management	No
INDOT Indianapolis Traffic Management Center	Center	Center Data Collection	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Basic Surveillance	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Data Collection	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Evacuation Support	No

Element Name	Physical Object	Functional Object	FO User Defined
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Incident Detection	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Incident Dispatch Coordination	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Regional Traffic Management	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Roadway Equipment Monitoring	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Signal Control	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Traffic Information Dissemination	No
INDOT Indianapolis Traffic Management Center	Traffic Management Center	TMC Work Zone Traffic Management	No
Kentucky Vehicle Enforcement Post 8	Commercial Vehicle Administration Center	CVAC Data Collection	No
Kentucky Vehicle Enforcement Post 8	Commercial Vehicle Administration Center	CVAC Information Exchange	No
Kentucky Vehicle Enforcement Post 8	Commercial Vehicle Administration Center	CVAC Safety and Security Administration	No
Kentucky Vehicle Enforcement Post 8_Inspection Facility	Commercial Vehicle Check Equipment	CVCE Citation and Accident Electronic Recording	No
Kentucky Vehicle Enforcement Post 8_Inspection Facility	Commercial Vehicle Check Equipment	CVCE Electronic Screening	No
Kentucky Vehicle Enforcement Post 8_Inspection Facility	Commercial Vehicle Check Equipment	CVCE HAZMAT Detection	No
Kentucky Vehicle Enforcement Post 8_Inspection Facility	Commercial Vehicle Check Equipment	CVCE Safety and Security Inspection	No
Kentucky Vehicle Enforcement Post 8_Inspection Facility	Commercial Vehicle Check Equipment	CVCE Weigh-In-Motion	No
KYTC Division of Operations - Systems Operation Branch	ITS Roadway Equipment	Roadway Signal Preemption	No
KYTC Division of Operations - Systems Operation Branch	ITS Roadway Equipment	Roadway Traffic Information Dissemination	No
KYTC Division of Operations - Systems Operation Branch	Traffic Management Center	TMC Data Collection	No
KYTC Division of Operations - Systems Operation Branch	Traffic Management Center	TMC Evacuation Support	No
KYTC Division of Operations - Systems Operation Branch	Traffic Management Center	TMC Incident Dispatch Coordination	No

Element Name	Physical Object	Functional Object	FO User Defined
KYTC Division of Operations - Systems Operation Branch	Traffic Management Center	TMC Roadway Equipment Monitoring	No
KYTC Division of Operations - Systems Operation Branch	Traffic Management Center	TMC Signal Control	No
KYTC Division of Operations - Systems Operation Branch	Traffic Management Center	TMC Traffic Information Dissemination	No
KYTC Division of Operations - Systems Operation Branch_Personnel			No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	ITS Roadway Equipment	Roadway Data Collection	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	ITS Roadway Equipment	Roadway Signal Preemption	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	ITS Roadway Equipment	Roadway Traffic Information Dissemination	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	ITS Roadway Equipment	Roadway Work Zone Traffic Control	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Data Collection	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Evacuation Support	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Incident Dispatch Coordination	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Regional Traffic Management	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Roadway Equipment Monitoring	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Signal Control	No
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Traffic Information Dissemination	No

Element Name	Physical Object	Functional Object	FO User Defined
KYTC Division of Operations - Systems Operation Branch_Roadside Equipment	Traffic Management Center	TMC Work Zone Traffic Management	No
Metropolitan Evansville Transit System			No
Metropolitan Evansville Transit System	Center	Center Data Collection	No
Metropolitan Evansville Transit System	Center	Center Data Subscription Management	No
Metropolitan Evansville Transit System	Emergency Management Center	Emergency Evacuation Support	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Data Collection	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Fare Management	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Fixed-Route Operations	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Information Services	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Paratransit Operations	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Passenger Counting	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Priority Management	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Security	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Vehicle Assignment	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Center Vehicle Tracking	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Evacuation Support	No
Metropolitan Evansville Transit System	Transit Management Center	Transit Garage Maintenance	No
Metropolitan Evansville Transit System_Kiosks	Traveler Support Equipment	Traveler Fare Management	No
Metropolitan Evansville Transit System_Kiosks	Traveler Support Equipment	Traveler Information Reception	No
Metropolitan Evansville Transit System_Kiosks	Traveler Support Equipment	Traveler Interactive Information	No

Element Name	Physical Object	Functional Object	FO User Defined
Metropolitan Evansville Transit System_Kiosks	Traveler Support Equipment	Traveler Security	No
Metropolitan Evansville Transit System_Personnel			No
Multimodal crossing			No
National weather service			No
Transit Vehicles	Transit Vehicle OBE	Transit Vehicle On-Board Fare Management	No
Transit Vehicles	Transit Vehicle OBE	Transit Vehicle On-Board Information Services	No
Transit Vehicles	Transit Vehicle OBE	Transit Vehicle On-Board Maintenance	No
Transit Vehicles	Transit Vehicle OBE	Transit Vehicle On-Board Paratransit Operations	No
Transit Vehicles	Transit Vehicle OBE	Transit Vehicle On-Board Trip Monitoring	No
Transit Vehicles	Transit Vehicle OBE	Transit Vehicle Schedule Management	No
Transit Vehicles	Transit Vehicle OBE	Transit Vehicle Security	No
User Personal Computing Devices	Personal Information Device	Personal Emergency Notification	No
User Personal Computing Devices	Personal Information Device	Personal Interactive Traveler Information	No
User Personal Computing Devices	Personal Information Device	Personal Local Route Guidance	No
User Personal Computing Devices	Personal Information Device	Personal Location Determination	No
User Personal Computing Devices	Personal Information Device	Personal Traveler Information Reception	No
User Personal Computing Devices	Personal Information Device	Personal Trip Planning and Route Guidance	No

This section identifies the ITS standards for each information flow in Evansville Regional ITS Architecture. The ITS standards address information flow between various ITS system interfaces. These ITS standards were created by the Standards Development Organizations (SDOs). Table 8 lists the standards for the Evansville Regional ITS Architecture. The Table gives the standard name, lead SDO, source and destination of the information flow associated with the standard. The SDO's that are referred in Table 7 include:

- AASHTO: American Association of State Highway and Transportation Officials
- ANSI: American National Standards Institute
- ASTM: American Society for Testing and Materials
- EIA/CEA: Electronic Industries Alliance/Consumer Electronic Association
- IEEE: Institute of Electrical and Electronics Engineers
- ITE: Institute of Transportation Engineers
- NEMA: National Electrical Manufacturers Association
- SAE: Society of Automotive Engineers

Table 7 Regional Standards

SDO	Document ID	Standard Title	Standard Type	User Defined
American Public Transportation Association	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1204	Object Definitions for Environmental Sensor Stations (ESS)	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1206	Object Definitions for Data Collection and Monitoring (DCM) Devices	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1208	Object Definitions for Closed Circuit Television (CCTV) Switching	Message/Data	No

SDO	Document ID	Standard Title	Standard Type	User Defined
Consortium of AASHTO, ITE, and NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No
Consortium of AASHTO, ITE, and NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No
European Committee for Standardization	TS 15531	Service Interface for Real-Time Information (SIRI)	Message/Data	No
General Transit Feed Specification Discussion Group	GTFS	General Transit Feed Specification (GTFS) Static	Message/Data	No
General Transit Feed Specification Discussion Group	GTFS-Realtime	General Transit Feed Specification (GTFS) Realtime	Message/Data	No
Institute of Electrical and Electronic Engineers	IEEE 1512 -2006	Standard for Common Incident Management Message Sets for use by Emergency Management Centers	Message/Data	No
Institute of Electrical and Electronic Engineers	IEEE 1570-2002	Standard for the Interface Between the Rail Subsystem and the Highway Subsystem at a Highway Rail Intersection	Message/Data	No
Institute of Transportation Engineers	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No
Profile	NTCIP-DATEX	NTCIP using DATEX	Standard Profile	No
Profile	NTCIP-SMTP	NTCIP using SMTP	Standard Profile	No
Profile	NTCIP-SNMP	NTCIP using SNMP	Standard Profile	No
Profile	Position-Location-Interface	Position-Location Interface	Standard Profile	No
Profile	RSE-F2F	Roadside Equipment to ITS Roadway Equipment	Standard Profile	No
Profile	RSEGateway-VehicleDestination	Vehicle Communications via RSEs, Vehicle Destination	Standard Profile	No

SDO	Document ID	Standard Title	Standard Type	User Defined
Profile	RSEGateway-VehicleSource	Vehicle Communications via RSEs, Vehicle Source	Standard Profile	No
Profile	SRC-Legacy	Legacy Short Range Comm Using IEEE 1455	Standard Profile	No
Profile	WAW-ASN1	Wide Area Wireless using ASN.1 as encoding method	Standard Profile	No
Profile	WAW-WWWBrowser-JSON	Wide Area Wireless using JSON as encoding method	Standard Profile	No
Profile	WAW-XML	Wide Area Wireless using XML as encoding method	Standard Profile	No
Profile	XML	eXtensible Markup Language	Standard Profile	No
Society of Automotive Engineers	SAE J2354	Message Set for Advanced Traveler Information System (ATIS)	Message/Data	No
Society of Automotive Engineers	SAE J2735	Dedicated Short Range Communications (DSRC) Message Set Dictionary	Message/Data	No
Society of Automotive Engineers	SAE J3067	Candidate Improvements to Dedicated Short Range Communications (DSRC) Message Set Dictionary [SAE J2735] Using Systems Engineering Methods	Message/Data	No

The Evansville regional ITS architecture currently includes one new project within the City of Evansville. The current project summary is:

Stakeholder: Evansville Vanderburgh Traffic Signal Control,
Evansville Fire Department

Project: Signal pre-emption project for the signal system in the City of Evansville fire department service area

Description: Installation of traffic light pre-emption for emergency response vehicle, to provide a safe corridor for emergency response vehicles to respond to emergencies and subsequently making it safer for the public. This project will include City, County and INDOT traffic light controlled intersections in Evansville. This field-to-vehicle application area covers the interface between a traffic signal controller and an emergency vehicle desiring signal pre-emption. The granting of pre-emption to the vehicle may be based upon passive detection of the vehicle type, or upon a request from an active device on the vehicle. Signal pre-emption typically implies that the controller switches the light to green in the direction of the preemption request, overriding the current timing. (However, there are other possible scenarios, such as setting all directions to flashing red.) The project will apply to remotely controllable traffic lights within Evansville city boundary.

Stakeholder input indicates that much coordination and cooperation between agencies in the area is agreed upon in an informal or verbal manner. As an example of these types of agreements, the Evansville transit provider (METS) has indicated an informal agreement to provide resources for emergency evacuation activities.

As additional ITS projects are developed, agreements between stakeholder agencies will need to be developed to establish the roles and responsibilities for a particular project. This is another area that will benefit from increased stakeholder outreach during any architecture update process.

Existing agreements related to ITS elements are:

1. The City of Evansville and Vanderburgh County contract to operate a joint City/County Traffic Engineering Department responsible for traffic signal operation and traffic engineering.
2. Procedures have been developed by INDOT and local stakeholders guiding the communication process to relay information of traffic restricting events via Dynamic Message Signs and Highway Advisory Radio.
3. INDOT and the City of Evansville have a Memorandum of Understanding regarding the posting of Ozone Alert information on the Dynamic Message Signs.
4. As part of the Fix for 41 project INDOT and KYTC are in agreement for INDOT to install, maintain and operate traffic surveillance cameras on US 41 at Wolf Hills Road and Nugent Drive intersections in Henderson, Ky. These cameras will continue to exist after the project completion and will be operated by INDOT's Traffic Management Center.
5. The City of Evansville has entered into an agreement with City of Evansville Computer Services for Information Technology services including hardware, software and other technical services as needed.

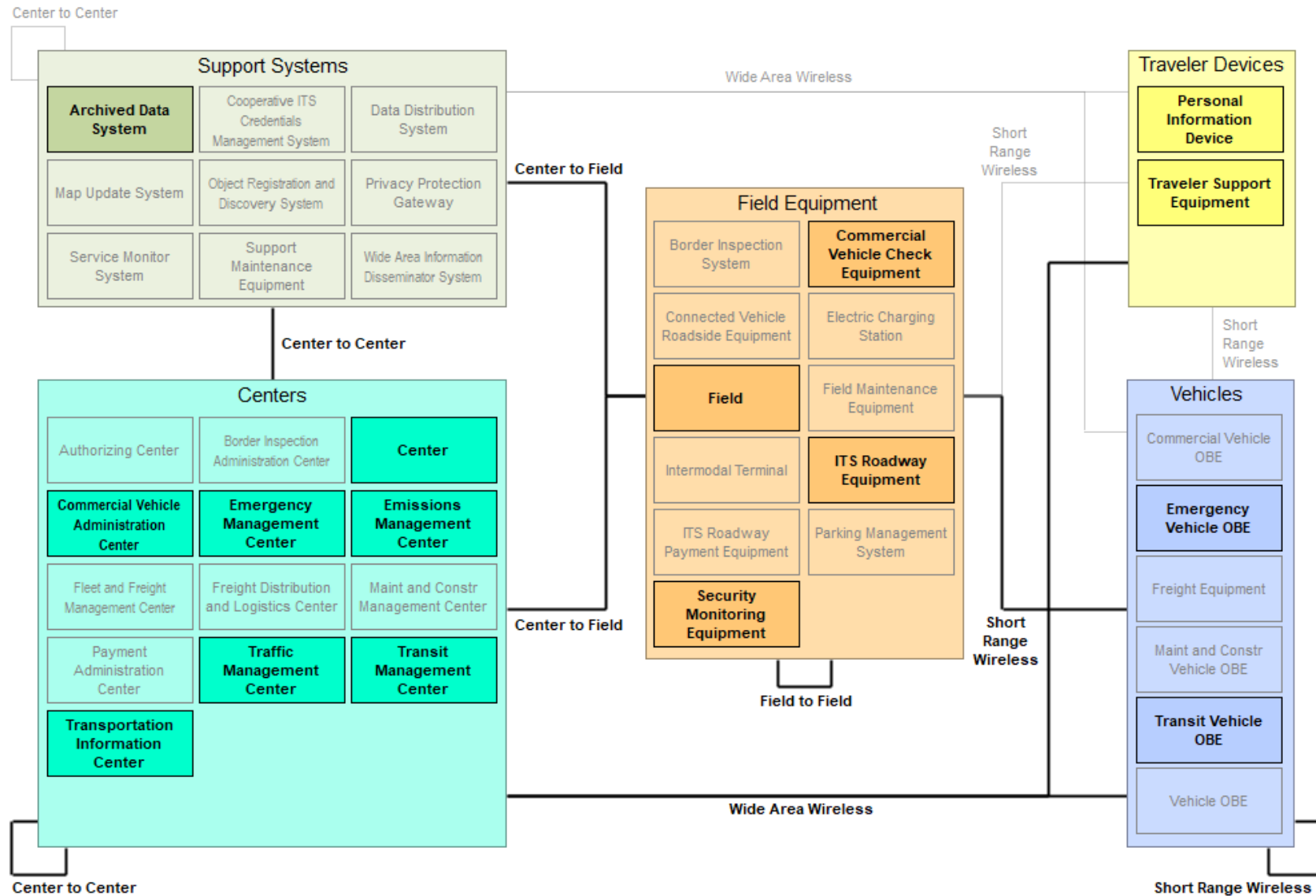
The regional ITS architecture served as a reference when updating the MPO Long Range Transportation Plan and Transportation Improvement Program. It is anticipated that future iterations of the architecture will contain additional projects as candidates for programming.

The architecture will support future project development and implementation by identifying the framework of systems, stakeholders, interconnects, information flows and cooperative opportunities related to providing targeted ITS services.

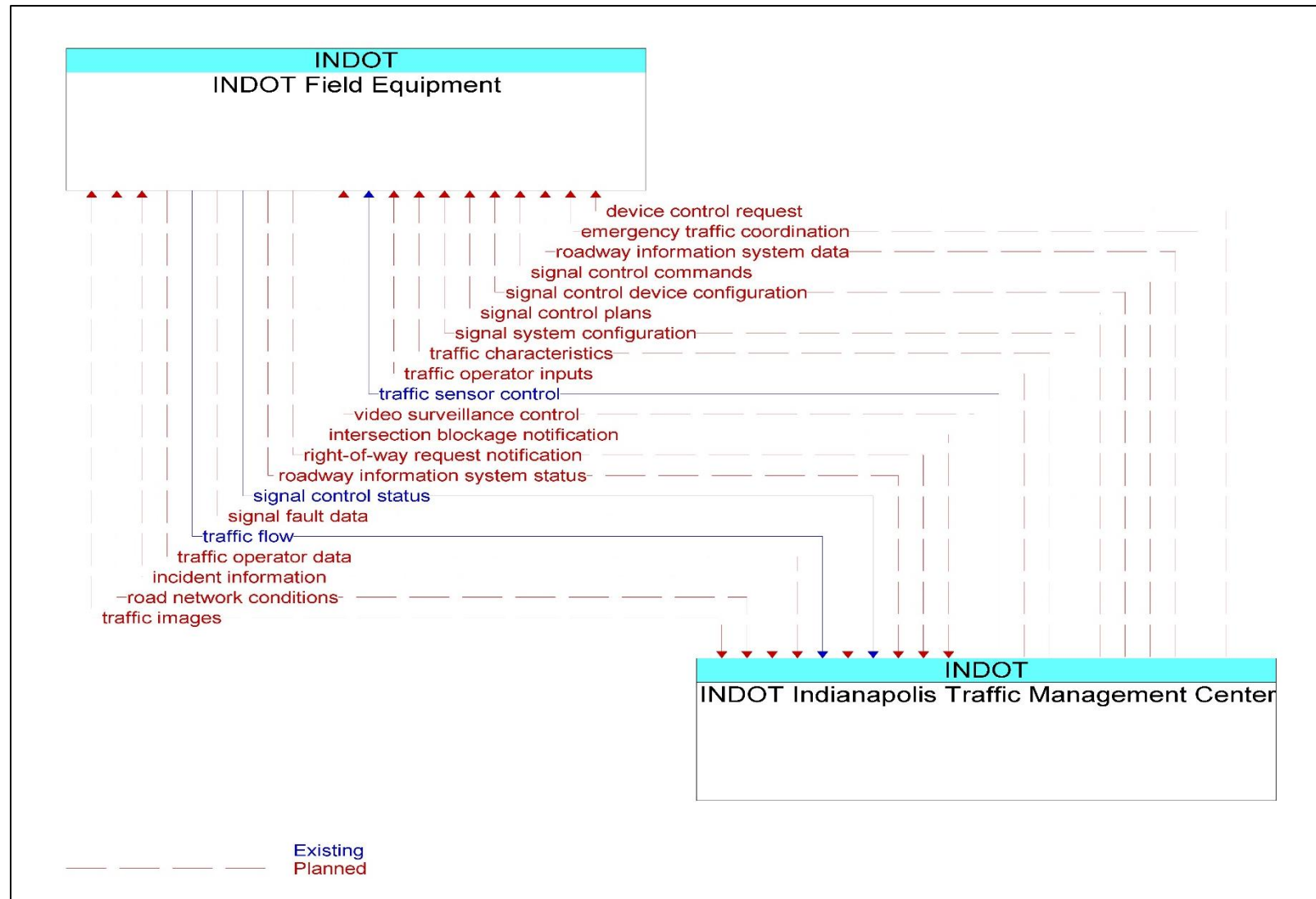
The Evansville MPO Regional Architecture will require updates as future ITS projects are planned for deployment. The Evansville MPO as the developer of the base architecture will also serve to maintain and update the architecture document and Turbo Architecture files. Updates will be coordinated with the update of the region's long range transportation plan. Current regulations require the long range plan to be updated at least every five years. Updates may also be required to incorporate ITS projects that emerge prior to an update cycle.

It is anticipated that the Technical Committee of the Evansville MPO will serve as a starting platform to initiate revisions to the architecture. Appropriate stakeholder engagement will be conducted in any revisions made.

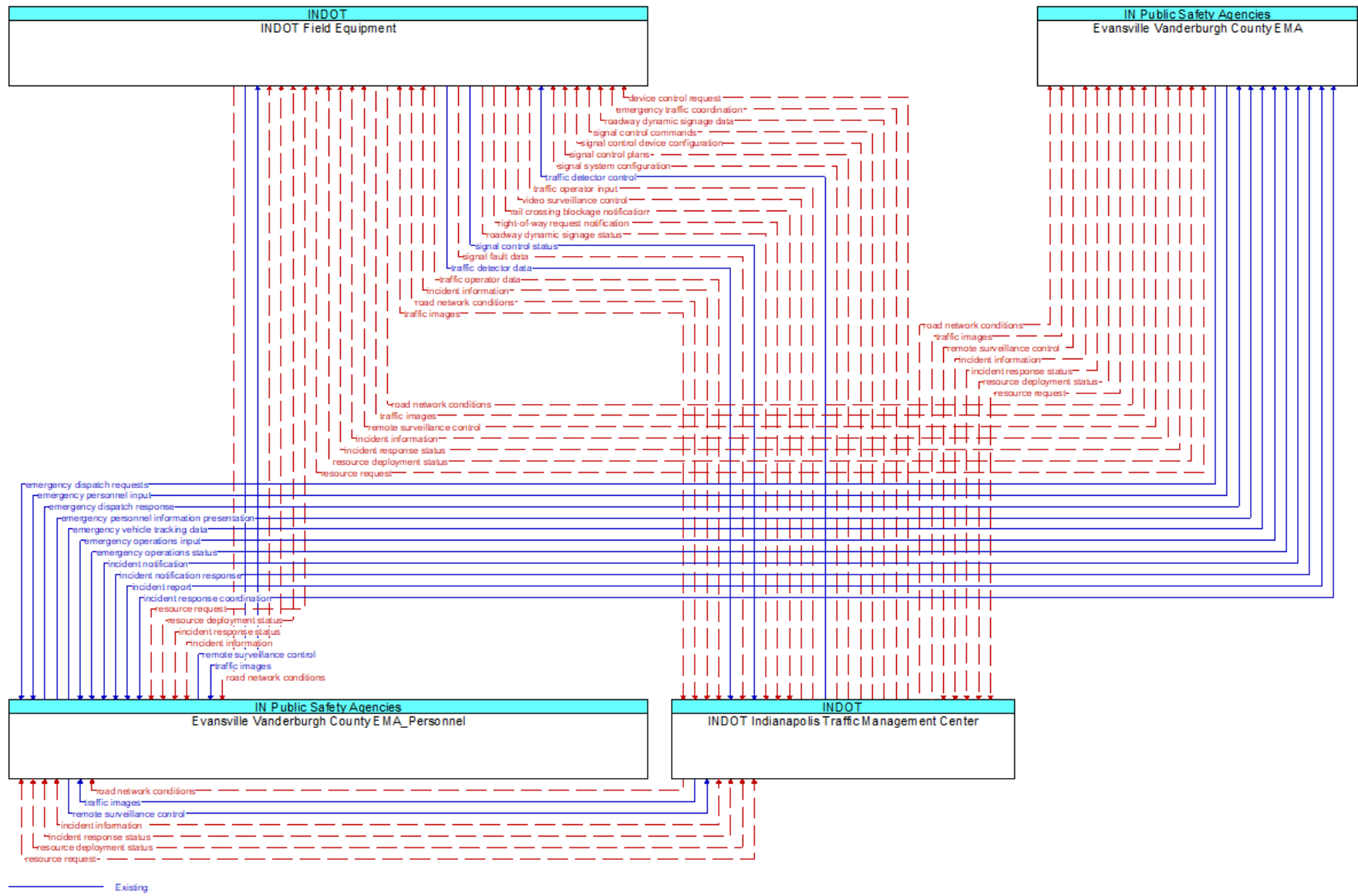
ITS Architecture Subsystem Interconnections



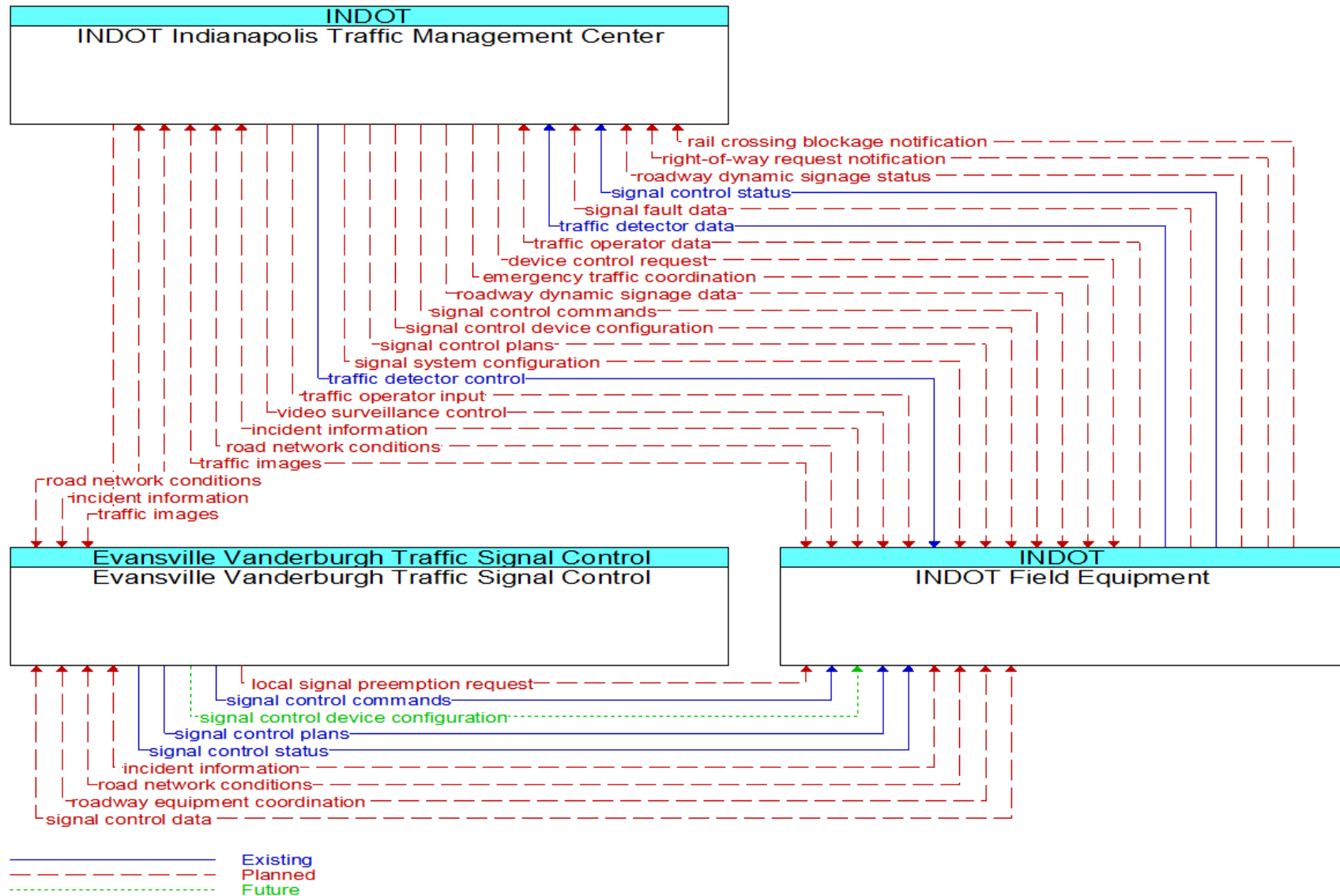
Information Flow Table: INDOT



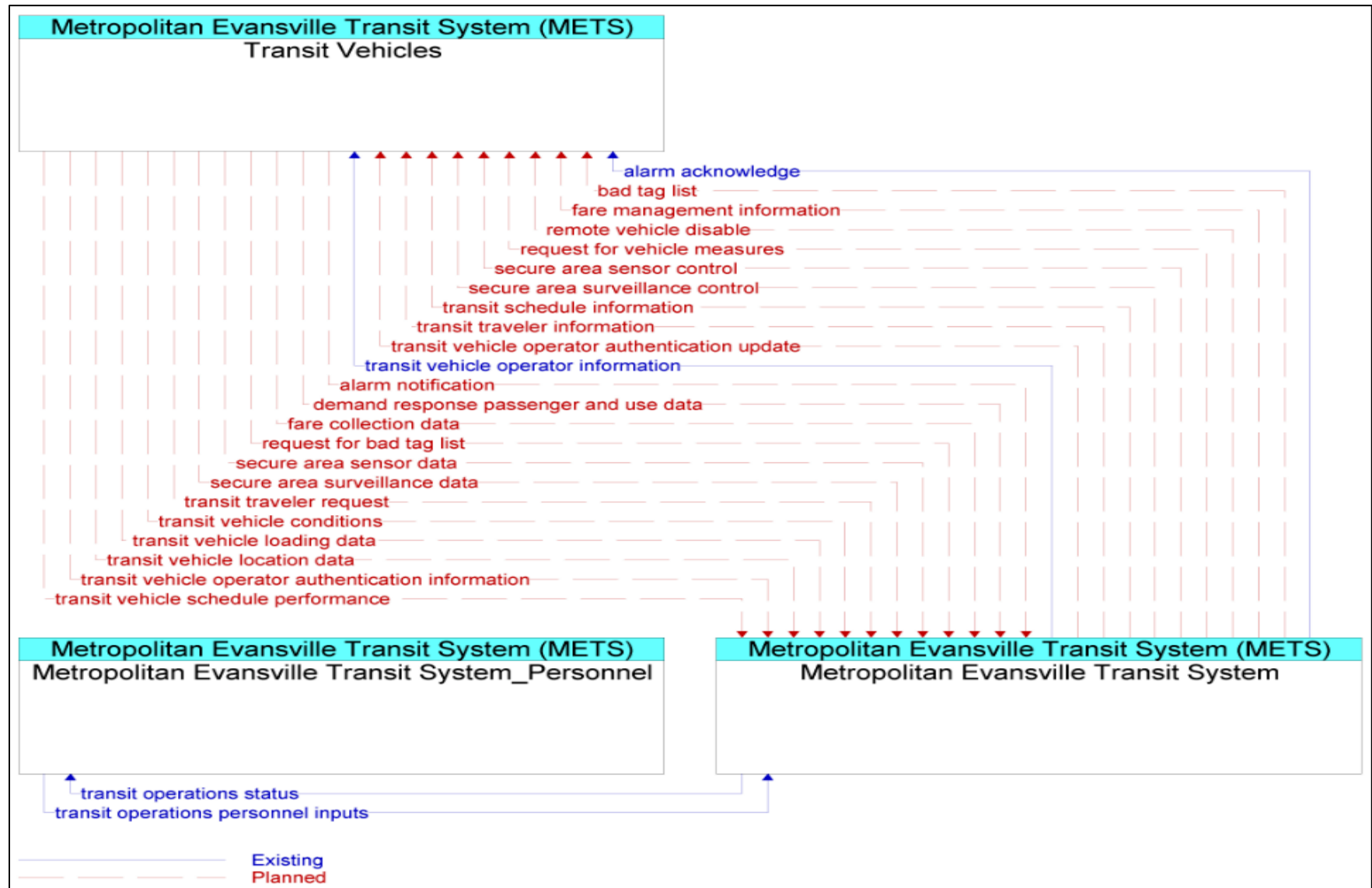
Information Flow: INDOT – Evansville Vanderburgh EMA



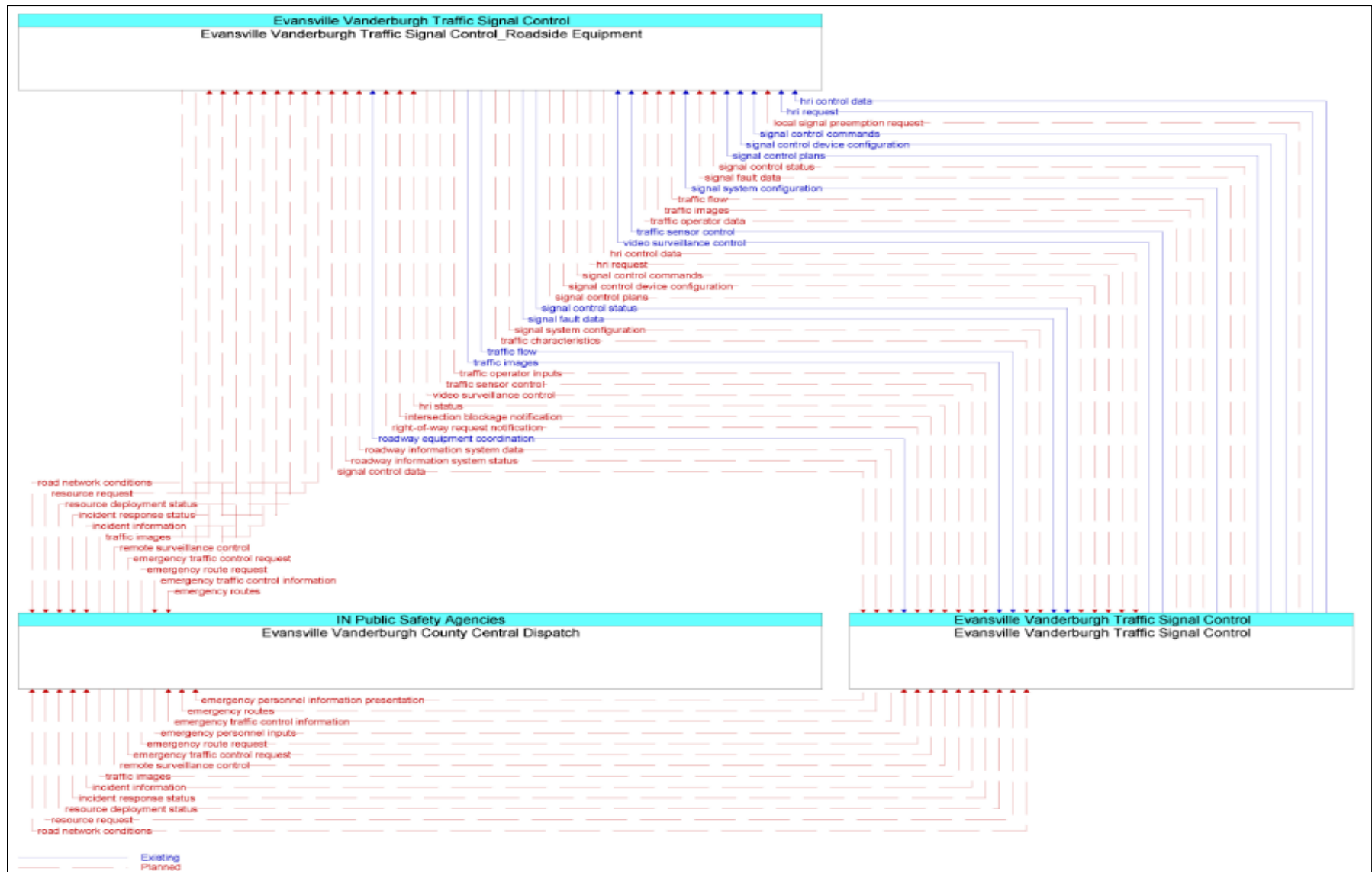
Information Flow: INDOT – Evansville Vanderburgh Traffic Signal Control



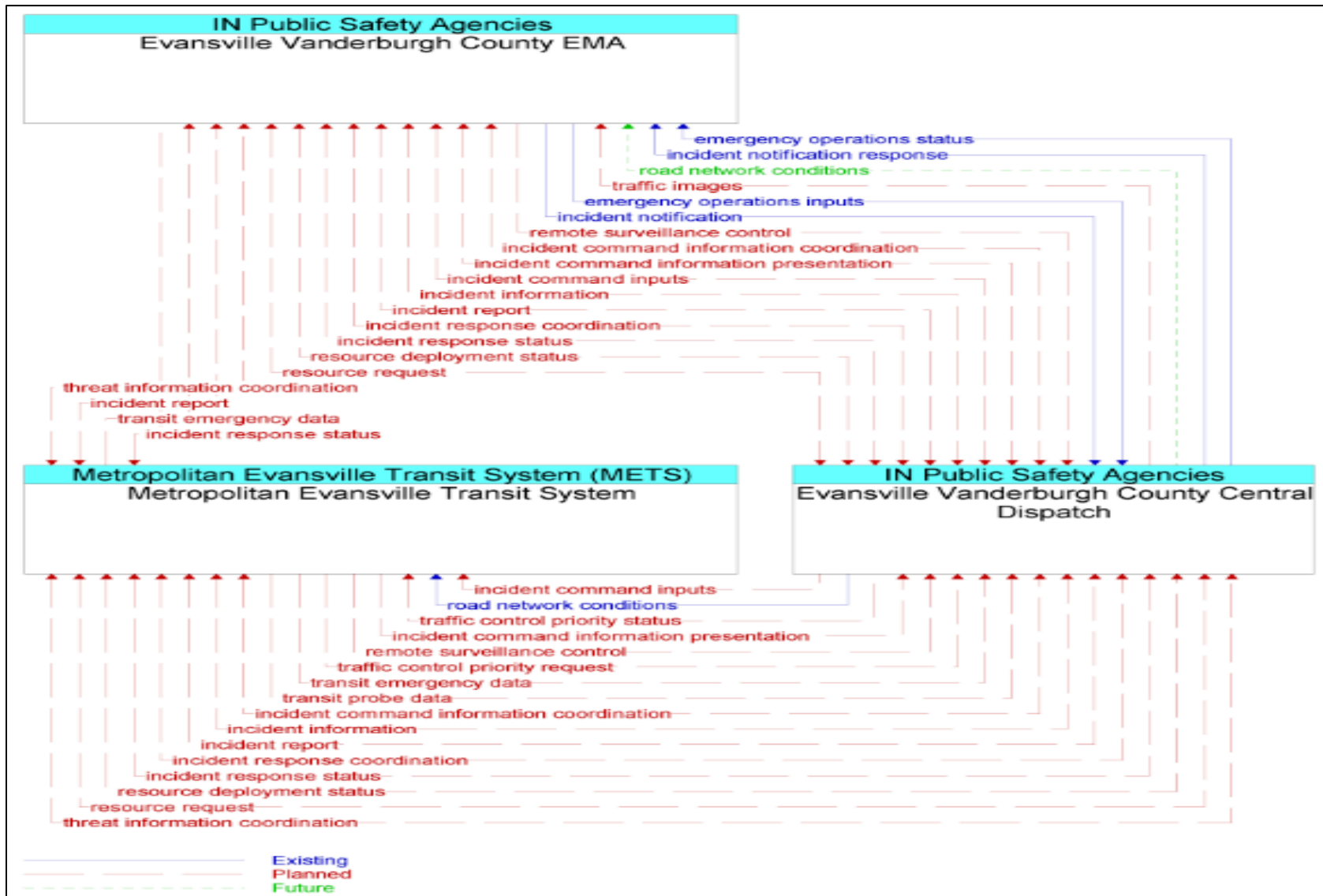
Information Flow: METS



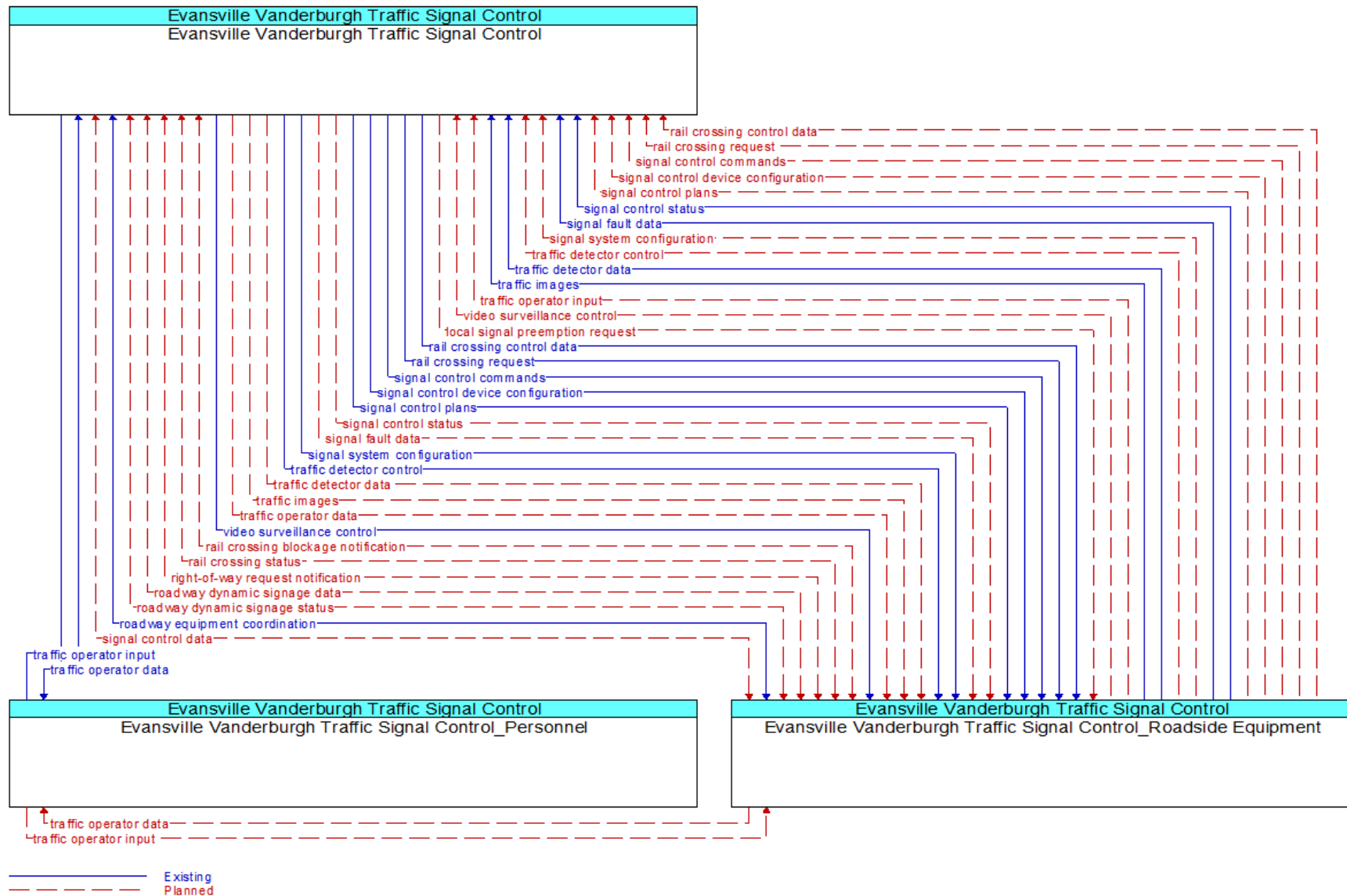
Information Flow: IN Public Agencies Evansville – Vanderburgh Traffic Signal Control

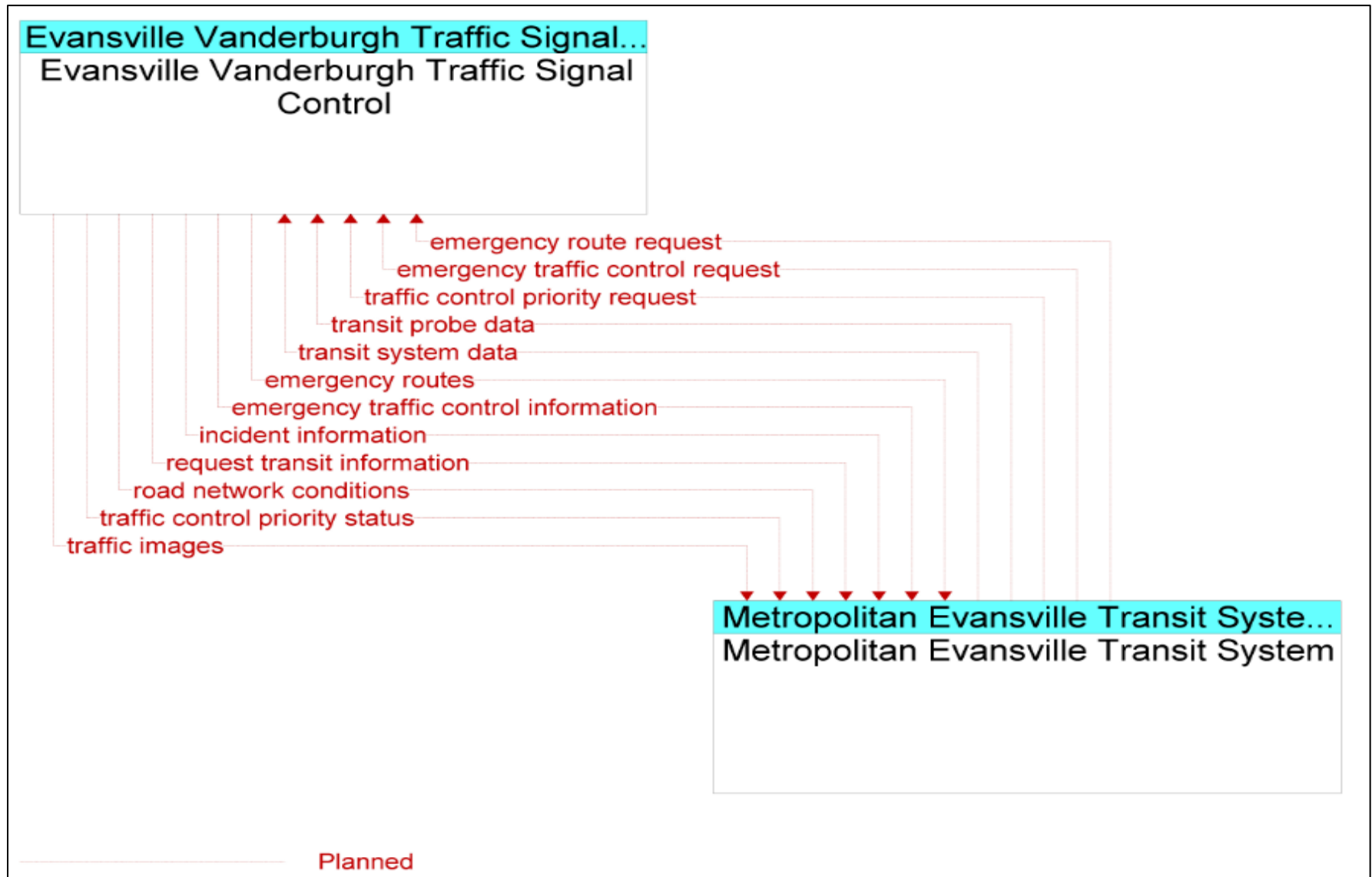


Information Flow: Indiana Public Safety Agencies – METS

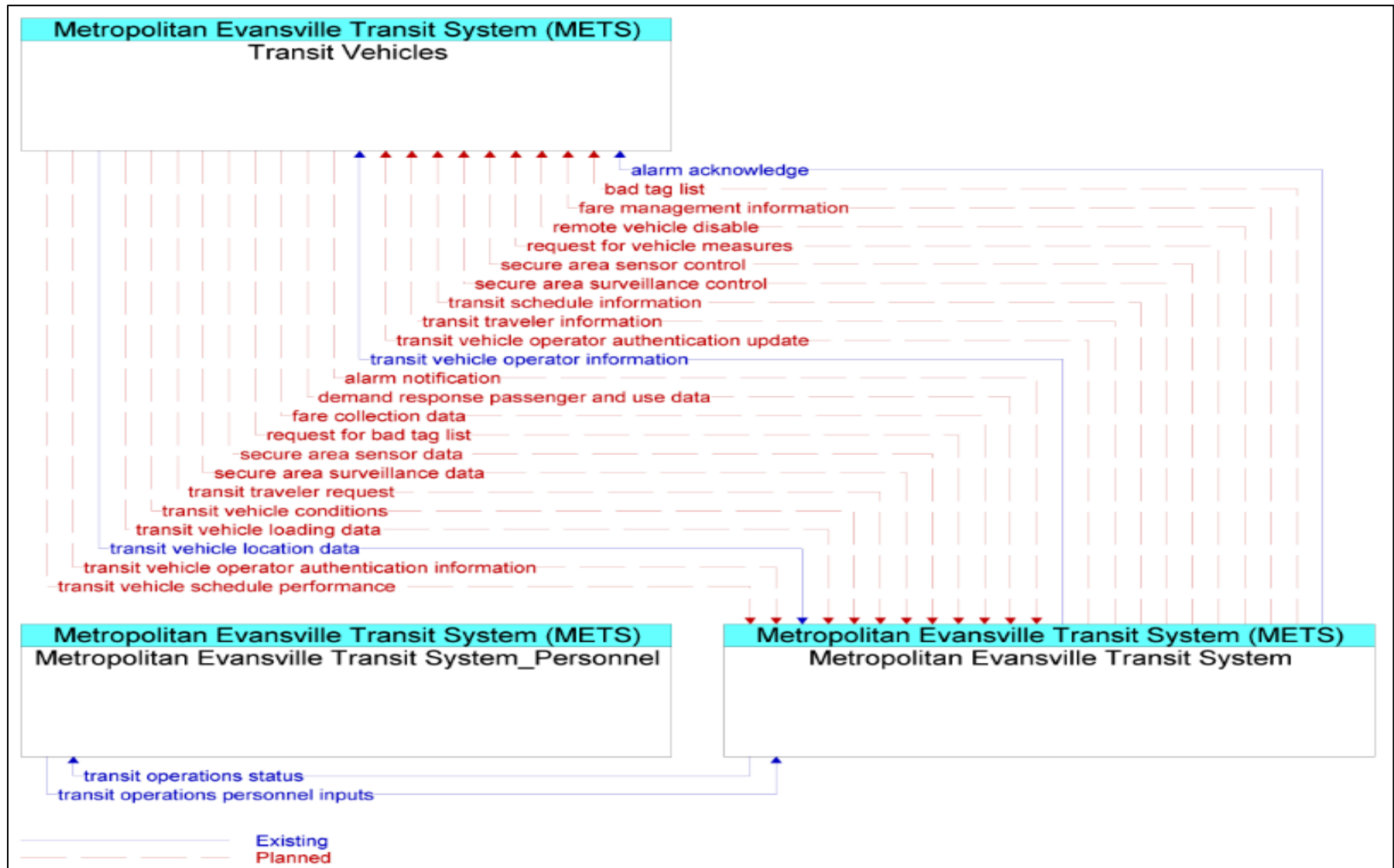


Information Flow: Evansville Vanderburgh Traffic Signal Control

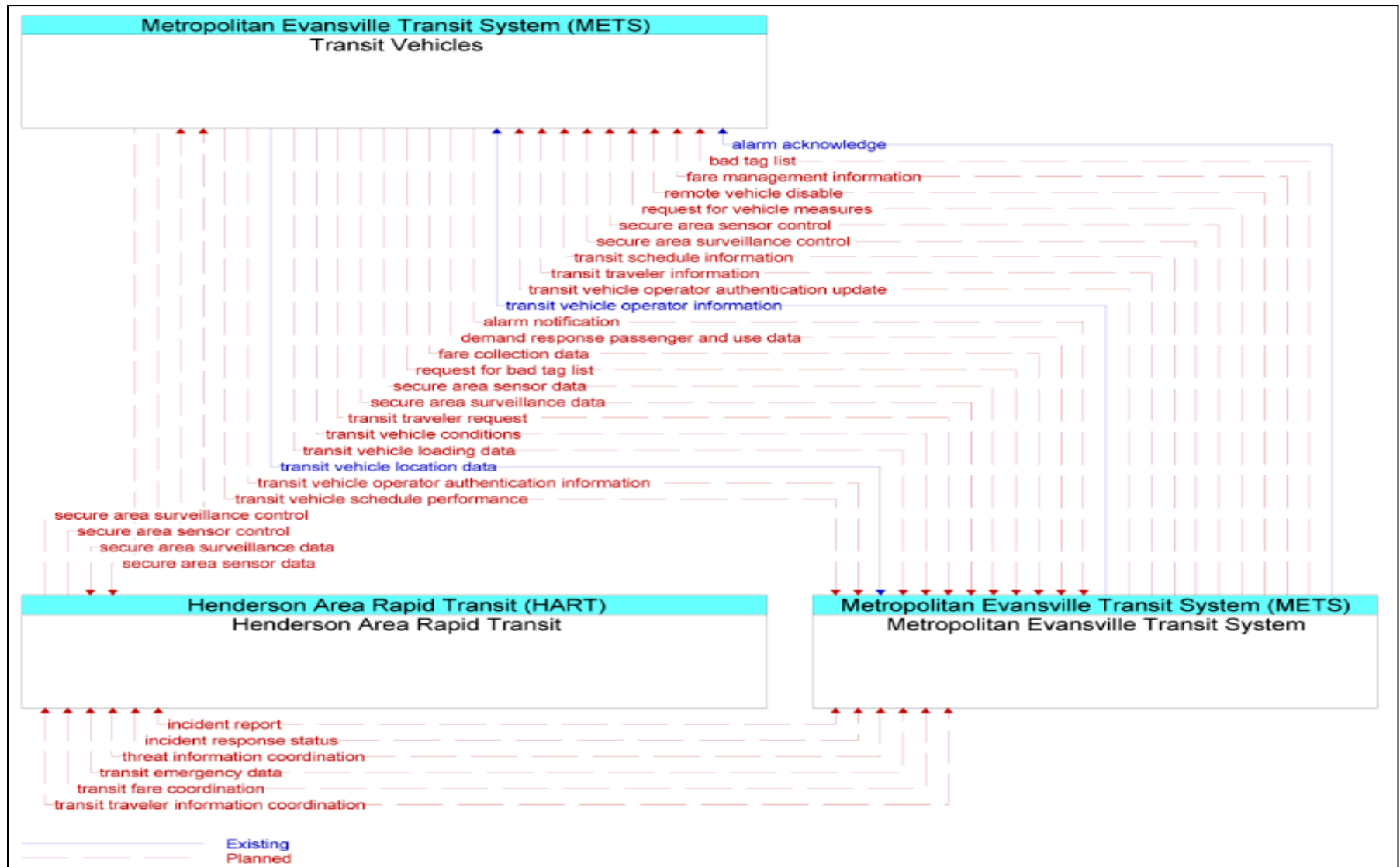


Information Flow: Evansville Vanderburgh Traffic Signal Control – METS

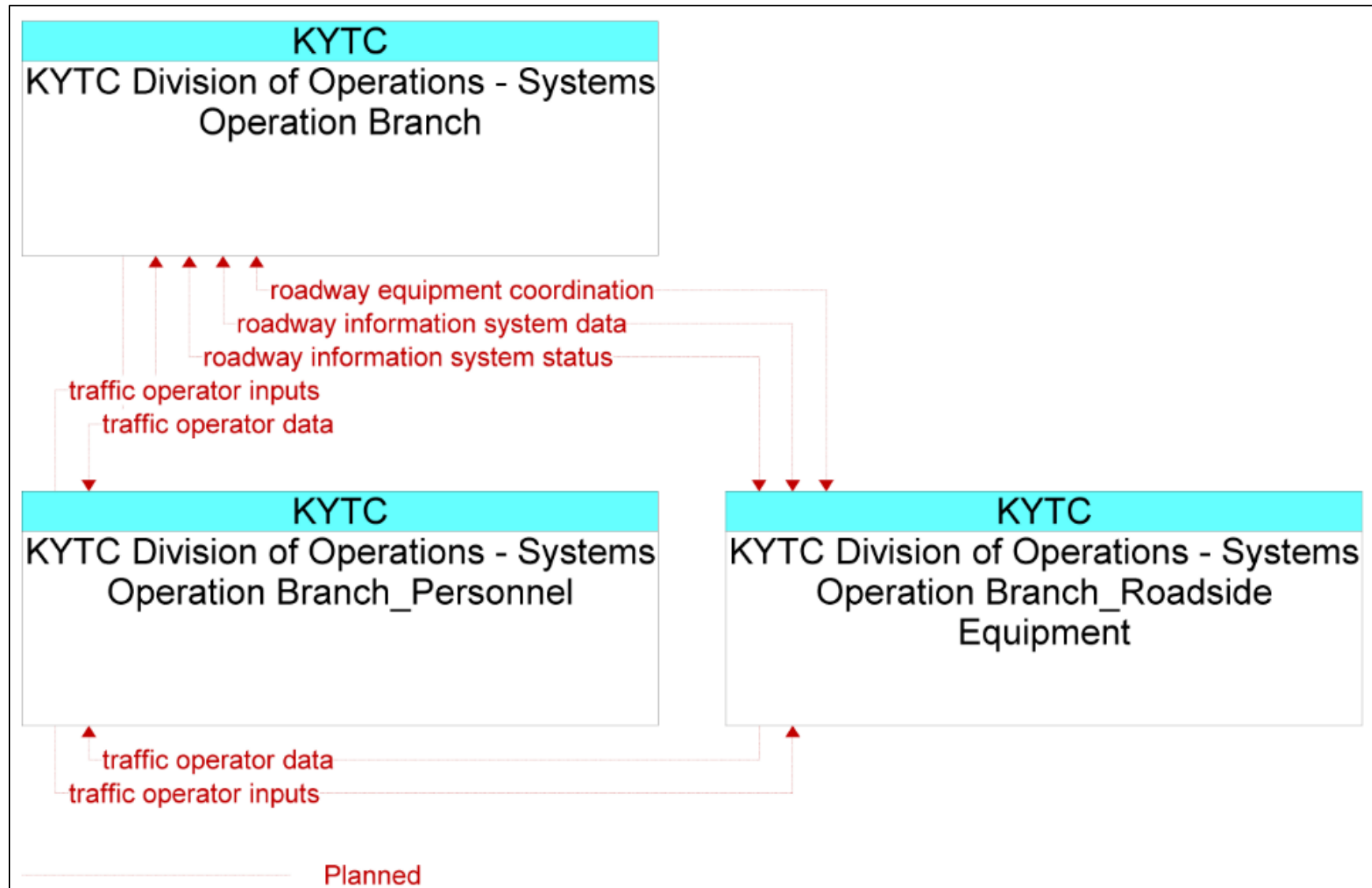
Information Flow: METS – Evansville EMA



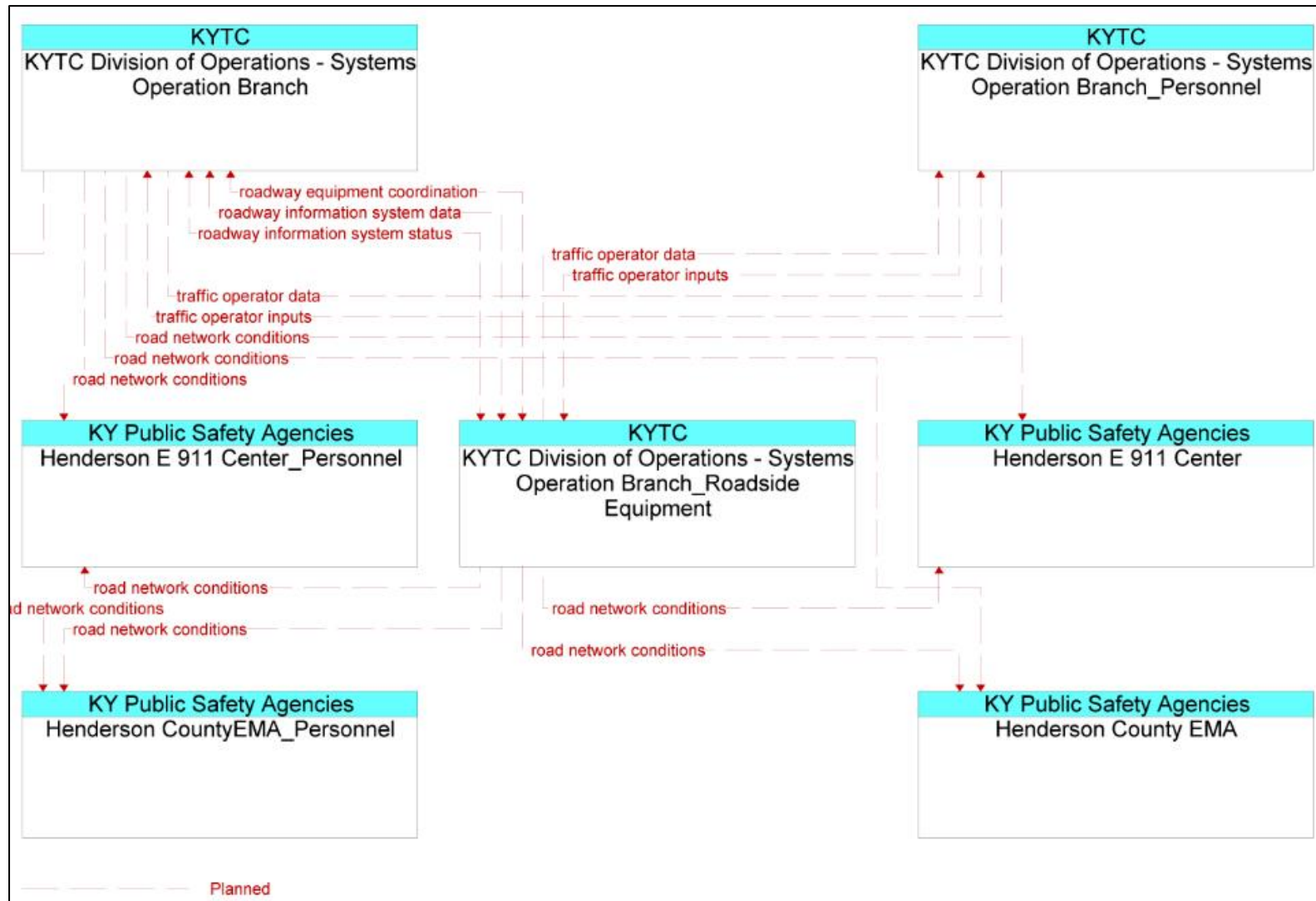
Information Flow: METS – HART



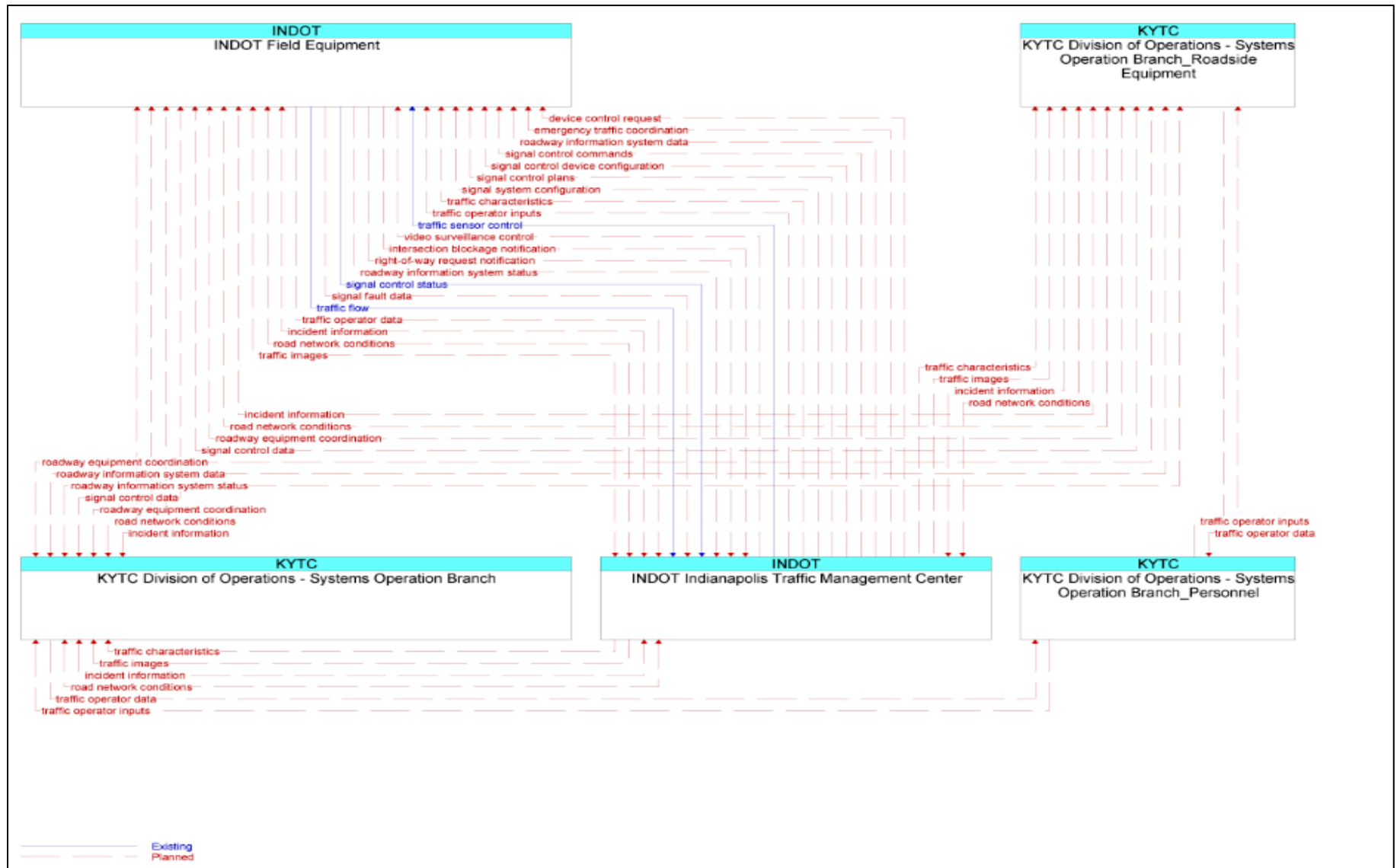
Information Flow: KYTC



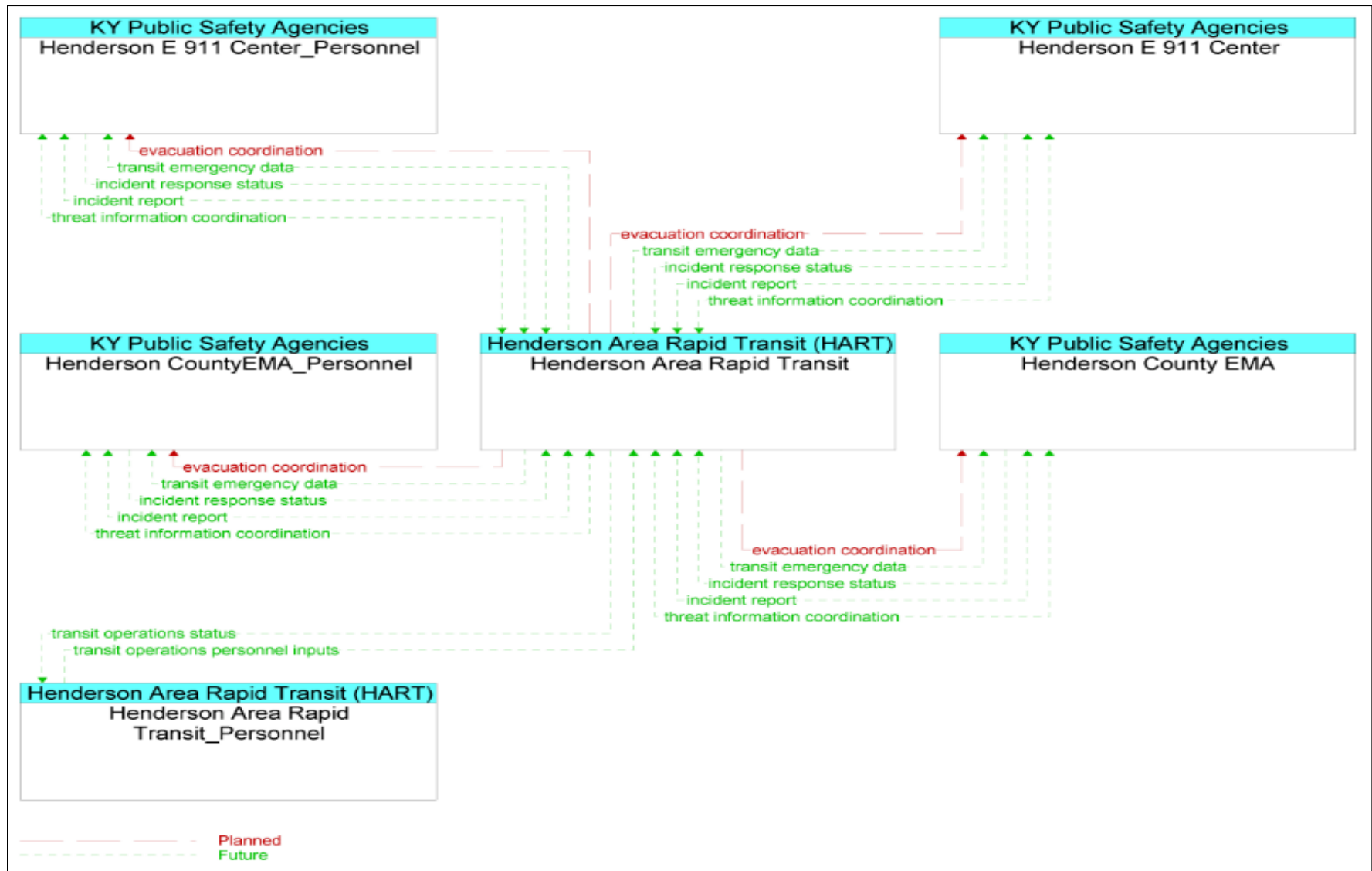
Information Flow: KYTC – Kentucky Public Safety Agencies



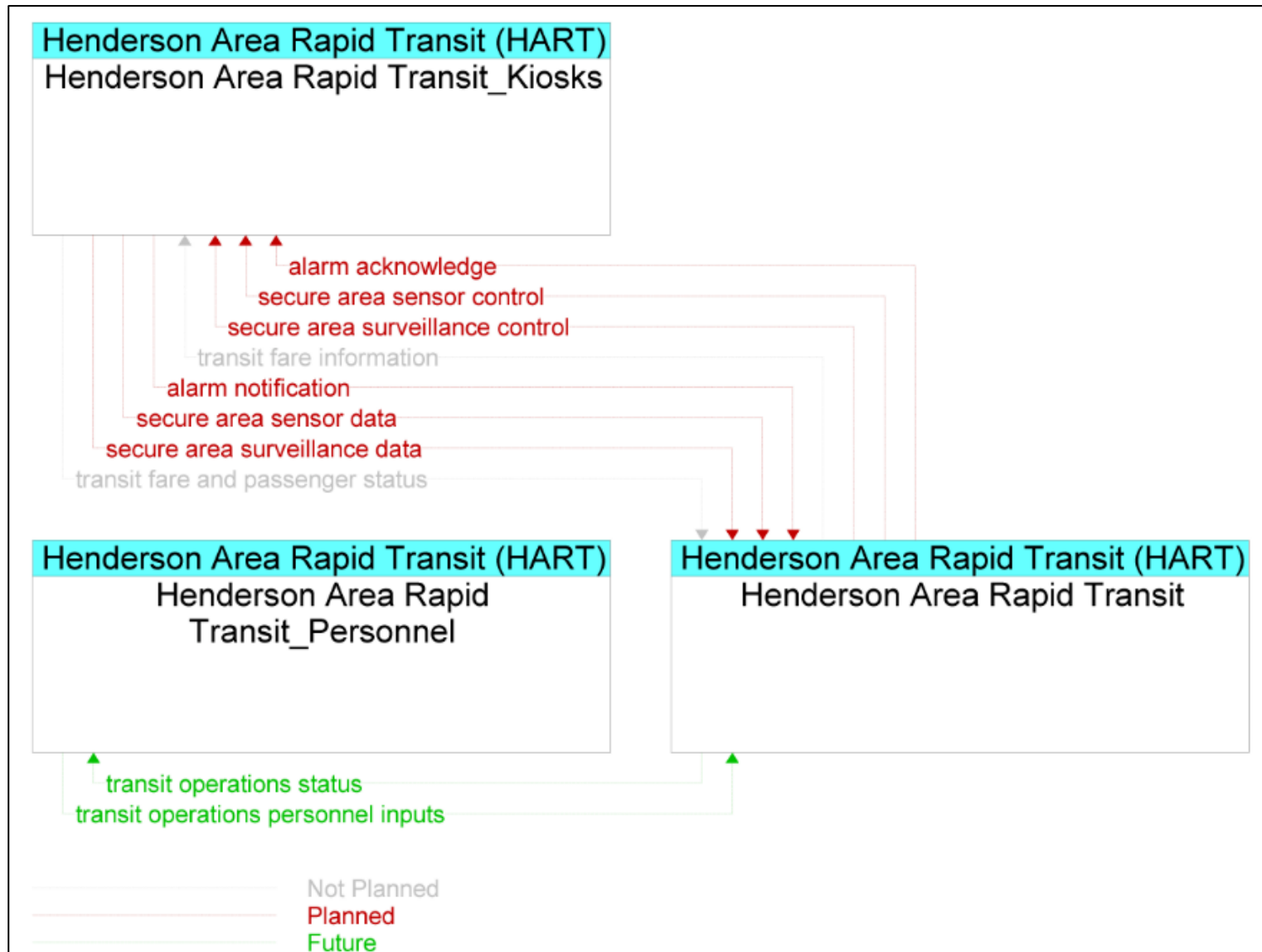
Information Flow: KYTC – INDOT



Information Flow: Kentucky Public Safety Agencies – HART



Information Flow: HART



Information Flow: Kentucky Vehicle Enforcement Post 8 – Commercial Vehicles

