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LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

RPC REGIONAL PLANNING COMMISSION FOR THE PARISHES OF LOUISIANA

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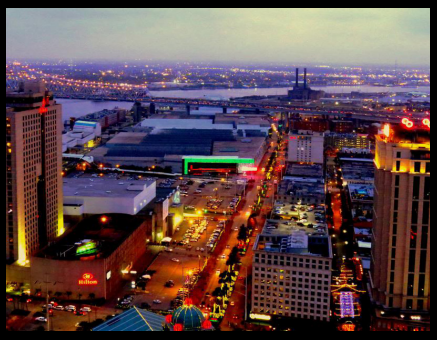

New Orleans Regional ITS Architecture

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NEW ORLEANS REGIONAL ITS ARCHITECTURE

Presented to:

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1 Introduction

This document describes the Intelligent Transportation System (ITS) Architecture for the New Orleans region. A Regional ITS Architecture is "a regional framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects". Paragraph 940.9 (a) states that:

> "A regional ITS architecture shall be developed to guide the development of ITS projects and programs and be consistent with ITS strategies and projects contained in applicable transportation plans. The National ITS Architecture shall be used as a resource in the development of the regional ITS architecture. The regional ITS architecture shall be on a scale commensurate with the scope of ITS investment in the region. Provision should be made to include participation from the following agencies, as appropriate, in the development of the regional ITS architecture: Highway agencies; public safety agencies (e.g., police, fire, emergency/medical); transit operators; Federal lands agencies; State motor carrier agencies; and other operating agencies necessary to fully address regional ITS integration."

This Architecture conforms to Federal Highway Administration (FHWA) Final rule 940 part 11 which mandates that projects planning to use federal funds in their ITS deployments must have established an ITS Architecture for the region. Regional ITS Architectures have been promoted by the United States Department of Transportation (USDOT) as a tool for describing, through use of a standard vocabulary and set of concepts, regional deployments to aid in the integration of User Services and Service Packages to address regional transportation problems. Regional ITS Architectures are also used to constrain projects funded by the FHWA using high technology products to highway or transit applications.

1.1 Background

What are Intelligent Transportation Systems or ITS? Simply put, they are the application of technology to highway or transit applications. The formal description is as follows:

> "ITS improves transportation safety and mobility and enhances productivity through the use of advanced information and communications technologies. Intelligent transportation systems (ITS) encompass a broad range of wireless and wire line communications-based information and electronics technologies. When integrated into the transportation system's infrastructure, and in vehicles themselves, these technologies relieve congestion, improve safety, and enhance American productivity."

To effectively apply ITS to highway and transit projects, the National ITS Architecture, initiated in 1991 and sponsored by USDOT, is used to describe a wide range of likely ITS applications, using high technology products for highway and transit projects. In 2001, the FHWA and Federal Transit Administration (FTA) established 23 Code of Federal Regulations (CFR) 940 part 11 which required agencies using federal funds to establish ITS Architectures for their regions. The Architecture must contain the following:

1) Description of the region – **Section 3**
2) Identification of the participating agencies and other stakeholders – **Section 5**
3) Roles and responsibilities of the participating agencies and other stakeholders – **Section 9**
4) Agreements needed for operation – **Section 13**
5) System functional requirements – **Section 11** (*also see* the New Orleans Regional ITS Architecture Turbo Architecture source file)

6) Interface requirements and information exchanges with planned and existing systems – **Appendix B** (*also see* the New Orleans Regional ITS Architecture Turbo Architecture source file)
7) Identification of applicable standards (ITS Standards) – **Section 12**
8) Sequence of projects necessary for implementation traceable to a portion of the regional architecture – **Section 9**

Products derived from the architecture development process provide a number of benefits to the transportation planners and engineers. The following are examples of these benefits:

1) Establishes a common terminology for the various ITS elements needed to implement and operate ITS applications.
2) Defines those elements and the functions they perform, and identifies, in theory, all of the possible interrelationships among the ITS elements.

3) The National ITS Architecture does not dictate a specific approach to implementing or operating any ITS application. Rather, it provides a common set of terms and concepts that local ITS implementers are encouraged to utilize in describing their specific ITS activities.
4) Provides a "living" planning document that promotes modularity, integration, and minimizes impacts when needs to regional issues change.
5) Promotes a thorough, coordinated, and multi-jurisdictional "systems" approach to ITS and the use of a Systems Engineering process to its deployment.
6) Fosters the utilization of the "standards" that are being developed through the USDOT National ITS Architecture program.

2 Acronyms and Abbreviations

ASC – Actuated Traffic Signal Controller
ATIS – Advanced Traveler Information System
ATMS – Advanced Transportation Management System
AVL – Automated Vehicle Location System
CAD – Computer Aided Dispatch
CCCD – Crescent City Connection Division
CCTV – Closed Circuit Television
CEA – Cooperative Endeavor Agreement
CFR – Code of Federal Regulations
CMU – Conflict Monitor Units
CORBA – Common Object Request Broker Architecture
DCM – Data Collection and Monitoring
DMS – Dynamic Message Signs
DOTD – Department of Transportation and Development
DTOE – District Traffic Operations Engineer
ELMS – Electrical and Lighting Management Systems
EMS – Emergency Medical Service
ESS – Environmental Sensor Stations
FHWA – Federal Highway Administration
FMS – Field Management Stations
FTA – Federal Transit Administration
GNOEC – Greater New Orleans Expressway Commission
HAR – Highway Advisory Radio
HAZMAT – Hazardous Materials
HOV – High Occupancy Vehicle
ITS – Intelligent Transportation Systems
JeT – Jefferson Transit
JPSO – Jefferson Parish Sheriff's Office
LADOTD – Louisiana Department of Transportation and Development
LSP – Louisiana State Police
MAP – Motorist Assistance Patrol
MCCNO - New Orleans Ernest N. Morial Convention Center
MPO – Metropolitan Planning Organization
MS/ETMCC – Message Sets for External Traffic Management Center Communications
MTP – Metropolitan Transportation Plan
NTCIP – National Transportation Communications for Intelligent Transportation System Protocol
NOHSEP – New Orleans Office of Homeland Security and Emergency Preparedness
NOPB – New Orleans Public Belt
NOPD – New Orleans Police Department
NORPC – New Orleans Regional Planning Commission
NORTA – New Orleans Regional Transportation Authority
NOUPT – New Orleans Union Passenger Terminal
NTCIP – National Transportation Communications for Intelligent Transportation System Protocol
O & M – Operations and Maintenance
OPCD – Orleans Parish Communication District
PCMS – Portable Changeable Message Signs

PDA – Personal Digital Assistant
RTA – Regional Transit Authority
RTMC – Regional Traffic Management Center
RWIS – Road Weather Information System
SBURT–St. Bernard Urban Rapid Transit
SCP – Signal Control and Prioritization
SDO – Standards Development Organizations
SSM – Signal System Master
SSL – Signal System Local
TDM – Travel Demand Management
TIM – Traffic Incident Management
TIP – Transportation Improvement Program
TMA – Transportation Management Area
TMC – Traffic Management Center
TMDD – Traffic Management Data Dictionary
TSS – Transportation Sensor Systems
USDOT – United States Department of Transportation
XML – Extensive Markup Language

3 Architecture Scope

The New Orleans Regional ITS Architecture is a roadmap for transportation systems integration. The Architecture was developed through a cooperative effort by the region's transportation agencies, covering all modes in the region. It represents a shared vision of how each agency's systems will work together in the future, sharing information and resources to provide a safer, more efficient, and more effective transportation system for travelers in the region.

The Architecture provides an overarching framework that spans all of the region's transportation organizations and individual transportation projects. Using the Architecture, each transportation project can be viewed as an element of the overall transportation system, providing visibility into the relationship between individual transportation projects and ways to cost-effectively build an integrated transportation system over time. This chapter establishes the scope of the Architecture in terms of its geographic breadth, the scope of services that are covered, and the timeframe that is addressed.

3.1 Timeframe

The time frame for this Architecture is five years.

3.2 Geographic Scope

The boundary of the Architecture study is the Metropolitan Planning Organization (MPO) boundary south of Lake Pontchartrain (See **Figure 1**). It is composed of the seven parishes listed below.

1. Jefferson
2. Orleans
3. St. Bernard
4. Plaquemines
5. St. John the Baptist (partial)
6. St. Charles

A map of all parishes in the state is shown in **Figure 2**.

3.3 Service Scope

This Regional ITS Architecture covers a range of ITS services intended to address transportation needs identified within the defined geographic scope. These transportation deficiencies in the New Orleans region may be existing or emerging transportation issues. The national ITS architecture provides a common framework to address transportation issues using intelligent transportation systems. Service packages consist of several different subsystems that provide desired services. The transportation issues in the New Orleans area will therefore be addressed with the aid of specific service packages which can be deployed incrementally in various phases of projects. **Section 7** of this document shows a range of existing and planned ITS services.

3.4 Maintainer

The Louisiana Department of Transportation and Development (LADOTD), with the assistance of New Orleans Regional Planning Commission (NORPC), will maintain the New Orleans Regional ITS Architecture.

Figure 1: New Orleans Regional Architecture Boundary

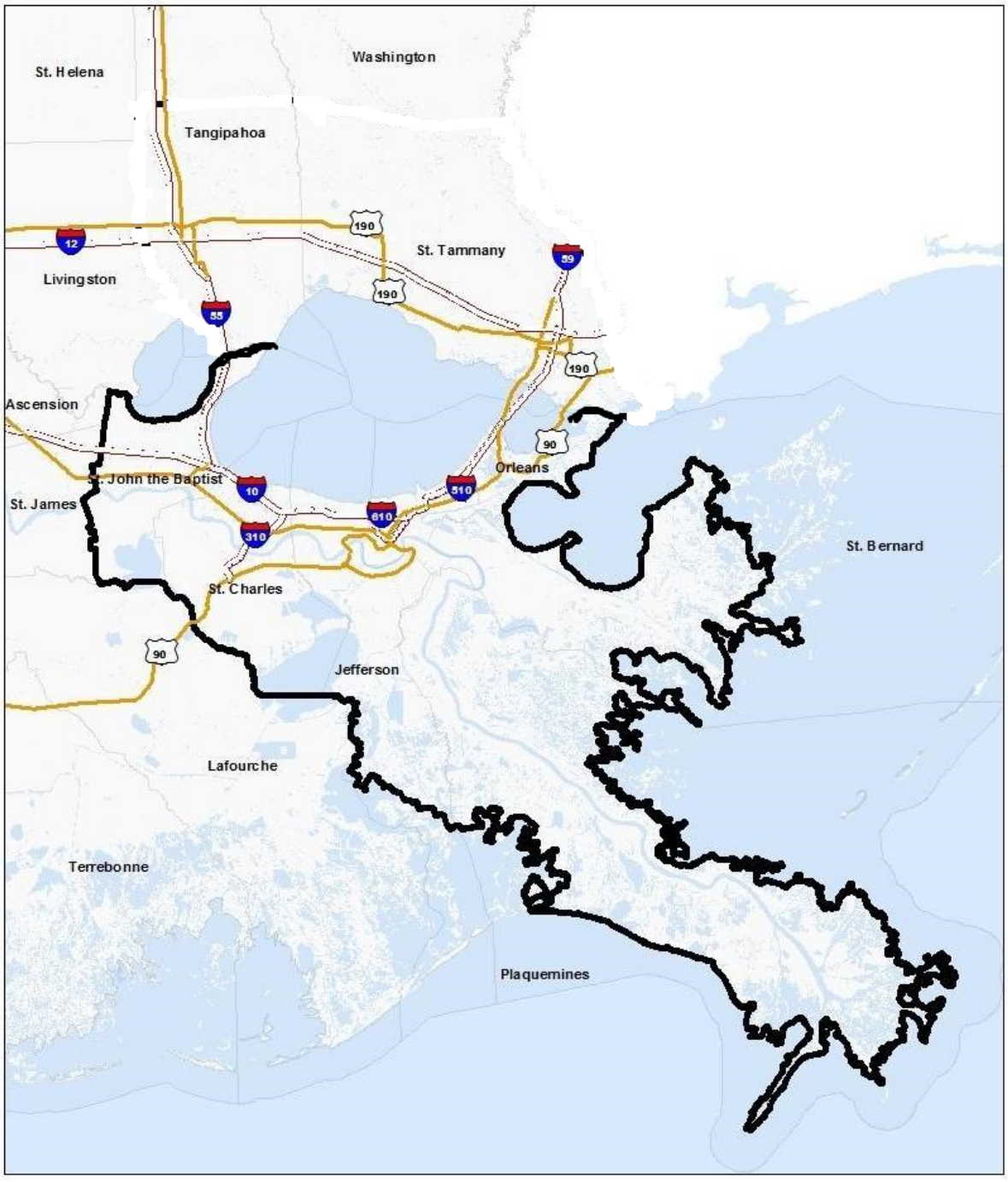

Figure 2: Louisiana Parish Map

4 Relationship to Planning

The New Orleans 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 is also used to define the data needs associated with performance monitoring that supports an informed planning process. This section identifies the planning objectives, strategies, and associated performance measures from the regional plan. These planning elements are connected with ITS services in the Turbo Architecture database.

Table 1: Relationship to Planning

Name	Description	Source	PM Category	Performance Measure
Enhance Safety	Continually improve the safety of the regional transportation system for all users. Safety is the first priority of any transportation planning, construction, or improvement process. It is the RPC's responsibility to the public to ensure that the transportation system is as safe as possible.	Metropolitan Transportation Plan New Orleans Urbanized Area	Crash rates	Crashes per year
			Crimes committed on transit	Number of crimes committed on transit vehicles or at transit stops
			Fatalities	Fatalities caused by motor vehicle crashes
			Transit crash rate	Number of transit vehicle crashes
Livable Communities	Coordinated transportation investments with other community needs to strategically foster more livable neighborhoods and an overall higher quality of life for the region. The transportation system is inextricably linked to community livability. It is the physical link through which people connect with each other or access work, recreation, and basic necessities. A seamless, easy-to-use transportation system improves community livability by making everyday tasks easier to accomplish.	Metropolitan Transportation Plan New Orleans Urbanized Area	Congestion	RPC's Congestion management index
			Delay	Hours of delay
			Headway	Average headway
			Performance	On-time performance
			Reliability	Travel time reliability
			Transit Ridership	Ridership & Mode Share
			Transit stops	Percentage of population within walking distance of transit
State of Good Repair	Protect and maximize previous investments through comprehensive and timely infrastructure maintenance and modernization. The transportation system in the New Orleans region was developed over centuries and continues to evolve. It represents a massive public investment that provides the transportation backbone for nearly all the activities that take place in the region. Given the significance of the system, its maintenance is one of the RPC's most important tasks.	Metropolitan Transportation Plan New Orleans Urbanized Area	Pavement Bridges	Pavement Condition Index
				Bridge Condition Rating
				Remaining Service Life

Name	Description	Source	PM Category	Performance Measure
Economic Competitiveness	Utilize the strong link between infrastructure and the economy to encourage economic development, growth, and resilience.	Metropolitan Transportation Plan New Orleans Urbanized Area	Economic/Social	Benefit-Cost Ration
Environmental Sustainability	Develop a transportation system that encourages travel behavior, energy consumption, and land use decisions that contribute to environmental sustainability.	Metropolitan Transportation Plan New Orleans Urbanized Area	Emissions	Reduction of vehicle emissions

5 ITS Stakeholders

Effective ITS operations involve the integration of multiple stakeholders and their transportation systems. This section describes the stakeholders who either participated in the creation of the New Orleans Regional ITS Architecture or whom the participating stakeholders felt were necessary to include in the Architecture. Some stakeholders have been grouped in order to better reflect mutual participation or involvement in transportation services and elements. Stakeholders in this section may be related to one or more of the transportation inventory elements described in **Section 6**, either as an individual stakeholder or as a member of a stakeholder group.

Table 2: ITS Stakeholders

Stakeholder Name	Stakeholder Description
City of Kenner	The City of Kenner is an incorporated city providing municipal government services, including police and fire protection, to its residents and businesses. Land use plans and ordinances guide city administration, elected officials, and private citizens and developers.
City of New Orleans	The City of New Orleans and Orleans Parish operate as a merged city-parish government. New Orleans' government is centralized in the City Council and Mayor's Office. The New Orleans government operates police and fire departments and the emergency medical services. One of its missions is to construct, maintain, and administer transportation elements affecting vehicular, pedestrian, and rail movement within the public right-of-way. The population of New Orleans is 343,839 (2010 census).
Freight / Commercial Vehicles	New Orleans, due to its location along the Mississippi River and the Gulf of Mexico, serves as a focal point for the transfer of goods through various transportation modes: commercial vehicles, trains, barges/ships, etc.
GNOEC	The five-member Greater New Orleans Expressway Commission (GNOEC) is the controlling body of the Causeway which includes the bridge system and the Causeway approach road system on the North Shore of Lake Pontchartrain. Called The Causeway Commission, it is an entity responsible for the maintenance, construction, and enforcement of safety laws on the Lake Pontchartrain Causeway. It is headquartered in the New Orleans suburb of Metairie. Also, the GNOEC polices the US 90, Huey P. Long Bridge.
Jefferson Parish	Jefferson Parish has a population of 432,552 (2010 census). The seat of parish government is Gretna. The Parish originally extended from present day Felicity Street in New Orleans, Louisiana, to the St. Charles Parish line. As Orleans Parish grew, it annexed from Jefferson Parish such established areas as the Garden District, Lafayette, Jefferson, and Carrollton. The present boundary was set in 1874, and in 1884 the seat of parish government was transferred to the West Bank, Gretna, where it has remained.
Jefferson Parish Sheriff Office	The Jefferson Parish Sheriff's Office (JPSO) is a stand-alone governmental entity, separate and apart from the Parish Council. The Sheriff's position is reaffirmed by Article V, Section 27 of the Louisiana Constitution of 1974. The Sheriff is a separately elected official elected by the citizens of the parish in a general popular election every four years.
LADOTD	Louisiana Department of Transportation and Development (LADOTD) is an arm of the Louisiana government responsible for state-wide transportation. The LADOTD responsibilities include statewide transportation system operations. This stakeholder group includes all Department of Transportation and Development (DOTD) units (ITS, Office of Planning Programming, Highway Safety, Weights and Standards, Traffic Services, and Traffic Engineering) involved in transportation planning, operations, and maintenance. Some of the typical responsibilities include incident detection and response, evacuation planning and management, transportation data collection, management, and distribution for the local region as well as for the entire state.
Local Emergency Medical	This includes local hospitals and emergency medical service providers (i.e., ambulance, air-evacuation, etc) that are components of emergency management.
Local Levee Districts	The New Orleans area is composed of five levee districts under two of the levee authorities (Southeast Louisiana Flood Protection Authority - East and Southeast Louisiana Flood Protection Authority - West). Each levee district is responsible for building, operating, and maintaining flood control systems. Also the levee districts provide safe and secure facilities for aviation, marine and recreational activities
Local/Regional Public Safety Agencies	Responsible for operating local police, sheriff, fire, and EMS offices and vehicles throughout region. This stakeholder group includes all the local/regional agencies that are involved in emergency, fire, sheriff, police, and other public safety/emergency response activities.
Louisiana State Police	Louisiana State Police agency is responsible for operating Louisiana State Police Centers. This includes Computer Aided Dispatch database, which collects incident/emergency detection, dispatch, response, and status information related to the Louisiana State Police officers/equipment. They are also responsible for Louisiana State Police vehicles.

Stakeholder Name	Stakeholder Description
Media	This stakeholder group includes local TV/Radio Channels and print media that are responsible for receiving and distributing transportation information like traffic conditions, incidents, and road weather conditions.
New Orleans International Airport	New Orleans International Airport is a Class B public use international airport in Jefferson Parish, Louisiana, and in the United States. It is owned by the City of New Orleans and is located 10 nautical miles (19 km) west of its central business district. The airport's address is 900 Airline Drive in Kenner, Louisiana. A small portion of Runway 10/28 is located in unincorporated St. Charles Parish. This airport is the primary commercial airport for the New Orleans metropolitan area and southeast Louisiana.
NORPC	The New Orleans Regional Planning Commission (NORPC) serves as the designated Economic Development District for Jefferson, Orleans, Plaquemines, St. Bernard and St. Tammany Parishes as well as the Metropolitan Planning Organization (MPO) for all of the named parishes in addition to St. Charles and St. John parishes. This regional body is comprised of a 26 voting member board with representation from each of the five core parishes and supported by a staff of planning professionals. This board, which consists of elected officials and citizen members, meets on a monthly basis to discuss issues that are regional in nature.
Plaquemines Parish	This is the parish with the most combined land and water area in the U.S. state of Louisiana. The parish seat is Pointe à la Hache. As of 2010, the parish's population was 23,042. Plaquemines Parish is part of the New Orleans-Metairie-Kenner Metropolitan Statistical Area as well as the New Orleans-Metairie-Bogalusa Combined Statistical Area.
Public	Members of the general public own and operate various devices/systems to access ITS information including personal digital assistants (PDAs), cell phones, and personal computers.
St. Bernard Parish	A parish located southeast of New Orleans in the U.S. state of Louisiana. The parish seat is Chalmette, the largest community in the parish. As of 2010, its population was 35,897. It has been ranked the fastest-growing county (parish) in the United States from 2007 to 2008 by the U.S. Census Bureau, but it is only half as populated as it was in 2005. St. Bernard Parish is part of the New Orleans-Metairie-Kenner Metropolitan Statistical Area as well as the New Orleans-Metairie-Bogalusa Combined Statistical Area.
St. Charles Parish	The parish seat is Hahnville. In 2010, its population was 52,760. St. Charles Parish operates under a Home Rule Charter, which provides for separate legislative and executive branches independent of each other. Legislative matters are handled by an elected nine-member Council, while the elected Parish President serves as administrator. Prior to this, the Parish operated under the Police Jury System. Under this system, jurors were elected from Wards or Districts. They operated as both Legislators and Administrators, handling day-to-day operations of the Parish.
St. John the Baptist Parish	The parish seat is Edgard, an unincorporated area. In 2010, its population was 45,924. St. John the Baptist Parish is part of the New Orleans-Metairie-Kenner Metropolitan Statistical Area as well as the New Orleans-Metairie-Bogalusa Combined Statistical Area.
Tourism and Traveler Information Service Providers	This includes various tourism agencies, chambers of commerce, hotel associations, motorist services, and map search.

6 ITS Inventory

An inventory of existing and planned transportation systems is the basis for the New Orleans Regional ITS Architecture. The transportation system inventory was developed based on input from stakeholders throughout the region. The inventory includes a list of ITS elements and the associated stakeholder responsible for system operation.

Table 3 describes surface transportation inventory elements for the region. A transportation element can be a center, vehicle, traveler, or field equipment. Each transportation element listed below has one or more stakeholders associated with it from **Section 5**. In order to reduce the complexity of the Architecture, some transportation elements with like functionality have been grouped together. Each transportation inventory element is mapped to at least one National ITS Architecture entity.

Table 3: ITS Inventory

Element Name	Element Description	Stakeholder	Element Status
Airport ITS Field Equipment	This element represents an airport's ITS field equipment, which includes but is not limited to CCTV cameras, highway advisory radio (HAR), and road weather information systems (RWIS)	New Orleans International Airport	Existing
Airport Landside Operations	This element represents the operations of the landside component (i.e., facility and grounds) for the Louis Armstrong New Orleans International Airport.	New Orleans International Airport	Existing
Airport Parking	Ticketless parking is available at either garage at the New Orleans International Airport. Visitors can insert a credit card into the machine as they enter either garage. The computer will record the license plate of the vehicle and return the credit card. When exiting the garage, the driver pulls up to any of the XPress Pay lanes and inserts the same credit card used to access the garage. The total cost is calculated and a receipt issued. This automated approach is fast and easy, removing the need to wait in line for a cashier.	New Orleans International Airport	Existing
Causeway Bascule Drawbridge	The bascule drawbridge is operated and managed by the GNOEC (Greater New Orleans Expressway Commission) and is located at the 16.0 mile marker on the Causeway Bridge with personnel on duty 24/7.	GNOEC	Existing
Causeway Information Archive	The information archive is maintained by the GNOEC.	GNOEC	Existing
Causeway ITS Field Elements	The field elements include call boxes, cameras, dynamic message signs, portable changeable message signs, traffic signals, vessel radar monitoring system, road weather information system, highway advisory radio, and communications.	GNOEC	Existing
Causeway MAP	This element represents the Causeway Bridge Motorist Assistance Patrol (MAP). Daily patrol vehicles, tow vehicles, incident management, and operations are included within this element.	GNOEC	Existing
Causeway Police	The Causeway Police provide law enforcement and motorist assistance on the Causeway and Huey P. Long bridges. The officers assigned to this division are charged with enforcing state and local laws.	GNOEC	Existing
Causeway Toll Collection Equipment	The toll collection equipment is operated and maintained by the GNOEC.	GNOEC	Existing
Causeway Toll Tag Office	GNOEC operates toll tag offices on both the Northshore and Southshore that provide sales of electronic tags as well as toll related customer service.	GNOEC	Existing
Causeway Traffic Operations	This element represents the traffic operations component of the GNOEC.	GNOEC	Existing
Causeway Traveler Information System	The motorist information system includes the website that contains toll information, radio station, cell phone information system, construction, and video images of traffic conditions. The website is operated and maintained by GNOEC.	GNOEC	Existing

Element Name	Element Description	Stakeholder	Element Status
CCCD Commuter Ferries	Passenger and vehicular ferries are operated and maintained by the Crescent City Connection Divisions (CCCD). The CCCD police ensure the safety and security of the Commuter Ferries.	LADOTD	Existing
CCCD Data Archive	This is the operations data collected and archived by the CCCD.	LADOTD	Existing
CCCD Electronic Toll Collection Center	The CCCD has automatic toll collection systems which are operated and maintained by the CCCD.	LADOTD	Existing
CCCD ITS Field Elements	These are CCTV cameras, HAR, and reversible High Occupancy Vehicle (HOV) lanes. Also included in the elements are dynamic message signs used for travel times, lane control, and vehicle detection.	LADOTD	Existing
CCCD Police	"Bridge Police" provide traffic control vehicles and dispatch. Since the bridge crosses multiple jurisdictional boundaries (the City of New Orleans, Jefferson Parish and the City of Gretna), it is a separate police agency.	LADOTD	Existing
CCCD Tolling Field Equipment	The CCCD has automatic toll collection systems which are operated and maintained by the CCCD.	LADOTD	Existing
Commercial Vehicles Operations	Commercial vehicles are operated to serve various local and out-of-area industries. This element represents local distribution of goods, as well as regional and national distribution.	Freight / Commercial Vehicles	Existing
Convention Center	The New Orleans Ernest N. Morial Convention Center (MCCNO) is the nation's sixth largest convention center. It is managed by New Orleans Public Facility Management Inc., a not-for-profit organization operating under the auspices of the Ernest N. Morial New Orleans Exhibition Hall Authority (Authority), a political subdivision of the state of Louisiana.	Tourism and Traveler Information Service Providers	Existing
DOTD Adjacent District Office	Louisiana Department of Transportation and Development includes 7 other districts that are responsible for coordination with statewide ITS systems. These also include 2 adjacent districts which are involved in direct corridor level co-ordination with the New Orleans region, i.e. Corridor level co-ordination with Baton Rouge district (District 61) for traffic management operations and evacuation planning along I-10, I-12, and US 61 as well as with Lafayette district (District 03) for evacuation planning along US 61 and US 90.	LADOTD	Existing
DOTD District 02 Traffic Operation	This element represents traffic operations or traffic engineering within the district office that is responsible for traffic management activities within its jurisdiction. The typical activities include traffic monitoring, traffic data collection, traffic signal operations, and other traffic management related activities. This also includes communicating with Traffic Management Center (TMCs) and other departments like maintenance for roadway maintenance activities. District 02 traffic operations are housed within the DOTD Regional Transportation Management Center (RTMC) facility.	LADOTD	Existing
DOTD District 02 Traffic Operations Archive	Archives transportation data as part of District 02 traffic operations.	LADOTD	Existing
DOTD District 02 Traffic Signal System	Field communications, field controllers, field masters, and vehicle detection on state highways (non-freeway) that are operated and maintained by the LADOTD.	LADOTD	Existing
DOTD Flood Warning System	The flood warning system consists of water level monitoring equipment on roads at locations that are susceptible to flooding including underpasses, tunnels and low lying roadways.	LADOTD	Existing
DOTD ITS Field Equipment	This element includes the equipment distributed on and along the roadway that monitors and controls traffic and monitors and manages the roadway itself. Equipment includes traffic signals, traffic detectors, environmental sensors, highway advisory radios, dynamic message signs, closed circuit television (CCTV) cameras and video image processing systems, weigh-in-motion, water level monitoring, and grade crossing warning systems.	LADOTD	Existing
DOTD ITS Section	This element represents ITS Section (Section 56) under the LADOTD. The ITS section is responsible for the state-wide operations center located in DOTD headquarters. Also, the ITS section is responsible for the management of information systems for transportation, state-wide ITS elements operations, and maintenance. The ITS section is also responsible for maintenance of all ITS equipment in the state.	LADOTD	Existing

Element Name	Element Description	Stakeholder	Element Status
DOTD MAP	This element represents the DOTD Motorist Assistance Patrol (MAP). Daily patrol vehicles, tow vehicles, incident management, and operations are included within this element.	LADOTD	Existing
DOTD Social Media	This includes Facebook and Twitter.	LADOTD	Existing
DOTD Statewide TMC	This element represents the traffic operations center that is responsible for traffic management activities throughout the state. The typical activities include traffic monitoring, traffic data collection, operation of ITS elements (CCTV, DMS, etc.), detection and verification of incidents, traffic signal monitoring, and other traffic management related activities. This also includes communicating with other agencies, districts, TMCs, and DOTD departments such as maintenance for roadway maintenance activities.	LADOTD	Existing
East Jefferson General Hospital EMS	This element represents the East Jefferson General Hospital Emergency Medical Service (EMS) including dispatch, ambulances, communications and computer aided dispatch (CAD) system.	Jefferson Parish	Existing
Event Promoter	Event promoters plan and manage various venues within the New Orleans Convention Center and Superdome to promote tourism within the New Orleans region.	Tourism and Traveler Information Service Providers	Existing
HAZMAT Mobil Response	HAZMAT Mobil response includes dispatch and vehicles operated and maintained by Mobil Oil, which responds to HAZMAT occurrences near the Mobil Oil Refinery in Chalmette.	Local /Regional Public Safety Agencies	Existing
Jefferson Parish 911	This element represents the parish emergency response operations including City fire, police, 911, and any other emergency response operators. This element is responsible for the emergency response operations and management within the parish jurisdiction	Jefferson Parish	Existing
Jefferson Parish Dept. of Emergency Management	The mission of the Jefferson Parish Emergency Management Department is to provide emergency management planning for Jefferson Parish Departments and agencies and overall emergency management coordination and guidance during major emergencies within the Parish and providing for the continued safety of the citizens and visitors to Jefferson Parish. This office serves as the Parish's office of homeland security and emergency preparedness.	Jefferson Parish	Existing
Jefferson Parish Fire Department	This element represents the fire department including the fire dispatch center (part of the 911 center), the fire trucks, communications and CAD system.	Jefferson Parish	Existing
Jefferson Parish ITS Field Equipment	The field equipment includes field controllers, communications, signals, and vehicle detection. This equipment is operated and maintained by Jefferson Parish.	Jefferson Parish	Existing
Jefferson Parish Traffic Operations	This element represents traffic operations or traffic engineering for the parish and is responsible for traffic management activities. The typical activities include traffic monitoring, traffic data collection, traffic signal operations, and other traffic management related activities. This also includes communicating with TMCs and other departments, such as maintenance, for roadway maintenance activities.	Jefferson Parish	Existing
Jefferson Parish Traffic Signal System	This element represents traffic signals operated and maintained by Jefferson Parish.	Jefferson Parish	Existing
Jefferson Transit (JeT)	This element is responsible for the operations and maintenance of buses on fixed scheduled routes and on-demand paratransit services throughout Jefferson Parish. JeT park and ride facilities, kiosk, and payment processing are also undertaken by JeT.	Jefferson Parish	Existing
JeT Information Center	This element represents the JeT Information Center, local kiosk, and web site.	Jefferson Parish	Existing
JeT Transit Data Archive	This is the transit operations data collected by JeT	Jefferson Parish	Existing
JPSO	This element represents the Jefferson Parish Sheriff's Office (JPSO) including its dispatch center (part of the 911 center), the police vehicles, communications, automated vehicle location system, and CAD system.	Jefferson Parish Sheriff Office	Existing

Element Name	Element Description	Stakeholder	Element Status
Kenner Engineering	This element represents the engineering office.	City of Kenner	Existing
Kenner Police	This element represents the Kenner Police Department including its dispatch, the police vehicles, communications, automated vehicle location system, and CAD system.	City of Kenner	Existing
Levee Flood Monitoring System	This element represents the flood monitoring system as part of the levee system.	Local Levee Districts	Existing
Levee Police Patrol	This element represents the policing authority of the levee district as part of the levee system. It includes its police dispatch, the police vehicles, and communications.	Local Levee Districts	Existing
Local Emergency Medical Service	This element represents local ambulance vehicles, dispatch, and other EMS equipment which are operated and maintained by public and private local medical providers.	Local Emergency Medical	Existing
Local Emergency Operations Centers	This element represents emergency dispatch centers operated by local agencies including 911, emergency operation center, office of homeland security and emergency preparedness, and fire response dispatch center.	Local/Regional Public Safety Agencies	Existing
Local Print and Broadcast Channels	This includes local newspapers as well as radio and television broadcast stations providing transportation information.	Media	Existing
Louisiana 511/ Website	This element provides traveler information service provided by the LADOTD in conjunction with private partner.	LADOTD	Existing
LSP Troop B	This element represents the Louisiana State Police department; the New Orleans (Southshore) area is covered by Troop B. Also, this element represents the troop's dispatch, vehicles, communications systems, computer aided dispatch and automatic vehicle location system (AVL).	Louisiana State Police	Existing
Mercedes-Benz Superdome	The Mercedes-Benz Superdome, previously known as the Louisiana Superdome and colloquially known as the Superdome, is a sports and exhibition arena located in the Central Business District of New Orleans, Louisiana.	Tourism and Traveler Information Service Providers	Existing
New Orleans EMS	This element represents the New Orleans Emergency Medical Service (EMS) including the dispatch center (part of the 911 center), ambulances, communications, and computer aided dispatch (CAD) system.	City of New Orleans	Existing
New Orleans Fire Department	This element represents the fire department including the fire dispatch center (part of the 911 center), the fire trucks, communications and CAD system.	City of New Orleans	Existing
New Orleans ITS Field Equipment	Field equipment including controllers, communications, traffic signals, and field masters are operated and maintained by the City and Parish of New Orleans.	City of New Orleans	Existing
New Orleans Police Department	This element represents the New Orleans Police Department (NOPD) including its dispatch center (part of the 911 center), the police vehicles, communications, automated vehicle location system, and CAD system.	City of New Orleans	Existing
New Orleans Traffic Operations	This element represents traffic operations or traffic engineering for the city that is responsible for traffic management activities. The typical activities include traffic monitoring, traffic data collection, traffic signal operations, and other traffic management related activities. This also includes communicating with Traffic Management Centers (TMCs) and other departments like maintenance for roadway maintenance activities.	City of New Orleans	Existing
New Orleans Traffic Signal System	This element represents traffic signals operated and maintained by the City of New Orleans.	City of New Orleans	Existing
NOHSEP	The New Orleans Office of Homeland Security and Emergency Preparedness (NOHSEP) is the city organization that is responsible for coordinating the activities needed to protect the lives and property of its citizens from natural or man-made disasters through "All Hazards" emergency planning.	City of New Orleans	Existing
NOLAReady	NOLAReady is an alert system that allows City Officials to contact residents during an emergency by sending text messages to email accounts (work, home, school, etc.), mobile phones, pagers, smart phones or hand held devices.	City of New Orleans	Existing

Element Name	Element Description	Stakeholder	Element Status
NOPB Rail / Port of New Orleans Integration	The New Orleans Public Belt (NOPB) Railroad is unique among the railroads of the United States in that it is a publicly owned and operated terminal switching railroad. It is not owned or operated by the railroads with whom it connects, but rather by the community it serves; it is owned by the citizens of the City of New Orleans and operated through the Public Belt Railroad Commission. It is an autonomous (or self-governing) jurisdictional entity. The NOPB directly operates with the Port of New Orleans as the sole rail connection from the river to the class 1 railroad company yards.	Freight / Commercial Vehicles	Existing
NORPC	New Orleans Regional Planning Commission (NORPC) is the metropolitan planning organization for the New Orleans metropolitan area.	NORPC	Existing
NORPC Data Archives	NORPC provides a repository of transportation data for the New Orleans region.	NORPC	Existing
NOUPT	New Orleans Union Passenger Terminal (NOUPT) is the main train station in New Orleans, Louisiana. It is served by Amtrak, Crescent, and the City of New Orleans passenger trains, and played a role in the recovery efforts from Hurricane Katrina in 2005.	City of New Orleans	Existing
Orleans Parish Communications District (911)	Orleans Parish Communications District (OPCD) is the administrative office of 911 for the city of New Orleans. This office was created by State Legislature in 1982. Primary responsibilities include purchasing and the maintenance of equipment, providing training for new and experienced police, fire and emergency medical personnel. The OPCD includes fire, police, and EMS.	City of New Orleans	Existing
Other Fire Department	This element represents fire departments, dispatch, trucks and other firefighting equipment which are operated and maintained by parish and local municipalities.	Local /Regional Public Safety Agencies	Existing
Parish Sheriff's Office	This element represents the parish sheriff's office including its dispatch, patrol vehicles, communications, and the CAD system. This element includes the parishes of: Orleans, Plaquemines, St. Charles, St. John the Baptist, and St. Bernard	Local/Regional Public Safety Agencies	Existing
Personal Devices	Primarily PDA, pagers, etc.	Public	Existing
Private Traveler Information Service Providers	This element provides traveler information to the public through private corporations. Private traveler information providers include MetroScan, Navteq, and TrafficLand.	Media	Existing
Regional Transportation Management Center	The Regional Transportation Management Center (RTMC) is a facility that houses both the DOTD D02 Traffic ITS/TMC Operations and the NORPC, which allows the co-located agencies to fully plan and operate the ITS. This element represents the traffic/transportation operations center that is responsible for traffic management activities throughout New Orleans area. The typical activities include traffic monitoring, traffic data collection, operation of ITS elements (CCTV, DMS, etc.), detection and verification of incidents, traffic signal monitoring, and other traffic management related activities. This also includes communicating with other agencies, districts, TMCs, and DOTD departments such as maintenance for roadway maintenance activities.	LADOTD	Existing
RR at Grade Crossing Controller	Railroad at grade crossing controllers identify if a train is currently present at the intersection. This status allows for systems to be utilized for active traffic management.	Freight / Commercial Vehicles	Planned
RTA Information Center	This element represents the Regional Transit Authority (RTA) Information Center, local kiosk, and web site.	City of New Orleans	Existing
RTA Transit	The RTA provides fixed route transit through the use of buses, streetcars, and paratransit. This element represents the vehicles and dispatch as well as park and ride facilities, and payment processing.	City of New Orleans	Existing
RTA Transit Data Archive	This is the transit operations data collected by RTA	City of New Orleans	Planned
St. Bernard Urban Rapid Transit (SBURT)	This element is responsible for operations and maintenance of buses on fixed scheduled routes and on-demand paratransit services throughout St. Bernard Parish. SBURT also provides parish assisted evacuations during emergencies.	St. Bernard Parish	Existing

Element Name	Element Description	Stakeholder	Element Status
Tourism and Travel Service Information Sources	Private Tourism and Traveler Information Websites, local hotel associations, visitor centers, etc.	Tourism and Traveler Information Service Providers	Existing
West Jefferson Medical Center EMS	Dispatches the Westbank EMS vehicles only which are operated and maintained by West Jefferson Medical Center.	Jefferson Parish	Existing

6.1 Existing Regional ITS and Operations

Currently, New Orleans has a number of ITS elements that impact the area. These existing elements have been compiled in **Table 4**. The table serves as a systems level summary of existing elements and complements the ITS Inventory (**Table 3**), which uses a broader organizational level approach. The following sections further describe the existing equipment.

Table 4: Existing ITS Elements

ITS Elements	DOTD ITS	DOTD D02	JP	NOLA	GNOEC	RTA	Totals
CCTV Cameras	123		330 (JeT)		79	1120	1652
DMS	28				14		42
Portable Changeable Message Signs		15	10		9		34
Vehicle Detectors	193						193
Highway Advisory Radios					1		1
Fiber Optic Cable (Miles)	94.2	13.5	0.1 (JeT)	7.3	24		139.1
Traffic Signals		396	146	293	5		840
Closed Loop Signal Systems		20	14	10			44
Traffic Signal Priority/Emergency Preemption		38	146				184
MAP vehicles	5				7		12
Automatic Toll Facility	1				1		2
Automatic Passenger Counters			19 (JeT)			4	23
Traveler Info Systems (e.g., 511, kiosk, etc.)	1				1		2
Automatic Vehicle Locators			53 (JeT)			185	238
Automatic Vehicle Diagnostic System			53 (JeT)			119	172
Flood Warning System	5						5

6.1.1 Video Surveillance

The DOTD closed circuit television (CCTV) cameras are controlled and primarily monitored by Traffic Management Center (TMC) operations staff at the New Orleans Regional Transportation Management Center (RTMC). Secondary monitoring of these cameras is provided by the Statewide TMC. The District 02 District Traffic Operations Engineer (DTOE) has access to the cameras as he is collocated in the RTMC.

JeT, RTA and SBURT all use CCTV cameras on their street cars and buses which are monitored offline by their operations staff. Video is typically downloaded from the vehicles overnight.

6.1.2 Message Signs

DOTD currently has permanent dynamic message signs (DMS) and portable changeable messages signs (PCMS) throughout the area that are used daily by the RTMC operations staff for incident management, travel times, special events, and evacuation purposes. GNOEC also utilizes both DMS and PCMS. Jefferson Parish also utilizes PCMS for these same reasons. PCMS have remote control capabilities which are controlled by the traffic engineering and/or TMC operations staff for each agency.

6.1.3 Motorist Assistance Patrol

DOTD operates a Motorist Assistance Patrol (MAP) for the region which consists of daily patrol and tow services. The general services currently provided by the DOTD MAP program are listed below. The limits of MAP have been illustrated in **Figure 3**. Tow service is provided on the I-10 Highrise Bridge. GNOEC provides a MAP program on the Causeway Bridge and the services provided are similar to the DOTD MAP:

- Chilled drinking water
- Change tires
- Inflate tires
- Fuel
- Jump start vehicles
- Phone service
- Transport stranded motorists
- First aid including cardiopulmonary resuscitation (CPR)
- Move disabled vehicle to the shoulder of the highway
- Perform traffic control
- Dispatch and data collection

Figure 3: DOTD MAP Limits of Patrol

6.1.4 Traveler Information System

Louisiana 511 is a traveler information system which allows drivers to actively engage in smart travel by choosing less congested routes and avoiding incident areas. 511 can be reached by most cell phones and landlines or accessed on the internet at www.511LA.org. The information broadcasted/displayed for New Orleans is limited to construction information, lane closures, speed information, and reported incidents on state routes. All construction information available on 511 is provided by the Statewide TMC. Incident information is entered by the RTMC operations staff. Lane closure and construction information is provided by DOTD District 02 via email. Incidents that occur on state routes are reported by State Police Troop B. Speed information for the New Orleans area is extracted from Google speed information.

6.1.5 Closed Loop Signal System

There are over one thousand traffic signals within the architecture boundary which include 45 closed loop signal systems. The majority of the closed loop signal systems are interconnected by either hardwire or radio communications.

6.1.6 Toll Facilities

Prior to opening the LA 1 Leeville Bridge in 2009, the only toll facilities operating in Louisiana were limited to the New Orleans area. The Causeway Bridge has been a toll facility since its opening in 1956 and the Crescent City Connection since 1958. Both toll facilities include automated toll collection using prepaid tags as well as cash collection booth. Tolls for the DOTD ferries (Canal Street, Chalmette, and Gretna) are cash and scrip collected.

6.1.7 RTMC Facility

In December of 2009, DOTD opened the Regional Transportation Management Center (RTMC). The RTMC is a direct result of the *New Orleans Regional ITS Preliminary Implementation Plan*, 2002, and over a decade of planning and design. The RTMC houses the DOTD District 02 traffic engineering section, the New Orleans Regional Planning Commission (NORPC), and TMC operations staff (commonly referred to as RTMC operations). The RTMC has provided a direct connection between planning and operations for the New Orleans area. A Cooperative Endeavor Agreement (CEA) between DOTD and NORPC outlines the arrangement and responsibilities of both parties within the RTMC with regard to the ITS. Some of the key items from the CEA are as follows:

- DOTD is the owner of the facility and pays all operating expenses
- RPC is the occupant of the second floor
- DOTD provides telecommunications/internet and ITS equipment
- RPC provides general maintenance on the building and grounds
- RPC provides annual funds for ITS related deployments
- Term of the agreement is 25 years

Figure 5: New Orleans Regional Transportation Management Center

Work areas within the RTMC are divided among the occupants as follows:

- DOTD – 15,587 sq. ft.
- RPC – 11,873 sq. ft.
- Common – 1,660 sq. ft.

6.2 Transportation Issues

Post-Katrina rebuilding efforts, suburban commuting, freight/port operations, and tourism are all factors that influence congestion in the New Orleans area. Efforts to increase capacity have been realized through interstate widening and interchange improvement projects. However, as the price of materials rise and government debt grows, increasing capacity by building additional lanes may not be a sustainable solution. ITS is an alternative solution that can be leveraged to improve the existing transportation issues some of which have been listed below:

- I-10 peak hours congestion from the 12-Mile bridge to I-610 split
- Veterans Memorial Blvd congestion
- US 90 Business, Westbank, west bound PM peak hour congestion and incidents at Manhattan Blvd.
- High incident rate on I-10 Highrise Bridge
- Single truck access point to the Port of New Orleans
    - High growth expected for container shipping
- Drawbridge status (closed to traffic)
- Evacuations
- Special event management:
    - Mardi Gras
    - New Year
    - Sporting Events
    - Festivals
- At grade crossing warning/advisory
- Coordination between agencies
- Work zone congestion
- Traffic signal synchronization
- Public transit reliability
- Data collection and analysis
- Incident response and clearance
- Automated advisory system for event/emergency management

7 ITS Services

ITS services describe what can be done to improve the efficiency, safety, and convenience of the regional transportation system through better information, advanced systems, and new technologies. Some services are specific to one primary stakeholder while others require broad stakeholder participation. This section describes the ITS services that meet the transportation needs in the region. For the full description of the Service Packages, please see the National ITS Architecture.

Table 5: ITS Services

Service package	Service package Name	Service package Description	Service package Status	Included Elements
AD1	ITS Data Mart	This service package provides a focused archive that houses data collected and owned by a single agency, district, private sector provider, research institution, or other organization.	Existing	Causeway Information Archive
				CCCD Data Archive
				DOTD District 02 Traffic Operations Archive
				JeT Transit Data Archive
				RTA Transit Data Archive
AD2	ITS Data Warehouse	This service package includes all the data collection and management capabilities provided by the ITS Data Mart, and adds the functionality and interface definitions that allow collection of data from multiple agencies and data sources spanning across modal and jurisdictional boundaries. It performs the additional transformations and provides the additional meta data management features that are necessary so that all this data can be managed in a single repository with consistent formats.	Existing	Airport Parking
				Causeway Traffic Operations
				Causeway Traveler Information System
				DOTD District 02 Traffic Operation
				DOTD Statewide TMC
				Jefferson Parish 911
				Jefferson Parish Traffic Operations
				Local Emergency Operations Centers
				LSP Troop B
				New Orleans Traffic Operations
				NORPC Data Archives
				Orleans Parish Communications District (911)
				Regional Transportation Management Center
				RTA Transit
APTS01	Transit Vehicle Tracking	This service package monitors current transit vehicle location using an Automated Vehicle Location System. The location data may be used to determine real time schedule adherence and update the transit system's schedule in real-time.	Existing	Jefferson Transit (JeT)
				RTA Transit
				SBURT
APTS02	Transit Fixed-Route Operations	This service package performs automated dispatch and system monitoring for fixed-route	Existing	Jefferson Transit (JeT)
				SBURT

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		and flexible-route transit services. This service performs scheduling activities including the creation of schedules, blocks and runs, as well as operator assignment. This service determines the transit vehicle trip performance against the schedule using AVL data and provides information displays at the Transit Management Subsystem.		RTA Transit
APTS03	Demand Response Transit Operations	This service package performs automated dispatch and system monitoring for demand responsive transit services. This service performs scheduling activities as well as operator assignment. In addition, this service package performs similar functions to support dynamic features of flexible-route transit services. This package monitors the current status of the transit fleet and supports allocation of these fleet resources to service incoming requests for transit service while also considering traffic conditions.	Planned	Jefferson Transit (JeT) JeT Information Center RTA Information Center RTA Transit SBURT
APTS04	Transit Fare Collection Management	This service package manages transit fare collection on-board transit vehicles and at transit stops using electronic means. It allows transit users to use a traveler card or other electronic payment device.	Existing	Jefferson Transit (JeT) RTA Transit
APTS05	Transit Security	This service package provides for the physical security of transit passengers and transit vehicle operators. On-board equipment is deployed to perform surveillance and sensor monitoring in order to warn of potentially hazardous situations. Additionally, the service package supports remote transit vehicle disabling by the Transit Management Subsystem and transit vehicle operator authentication.	Existing	Jefferson Transit (JeT) SBURT RTA Transit
APTS06	Transit Fleet Management	This service package supports automatic transit maintenance scheduling and monitoring. The service package also supports the day to day management of the transit fleet inventory, including the assignment of specific transit vehicles to blocks.	Planned	Jefferson Transit (JeT) SBURT RTA Transit
APTS07	Multi-modal Coordination	This service package establishes two-way communications between multiple transit and traffic agencies to improve service coordination. Multimodal coordination between transit agencies can increase traveler convenience at transit transfer points and clusters and can also improve operating efficiency.	Planned	Airport Parking DOTD District 02 Traffic Operation Jefferson Parish Traffic Operations Jefferson Transit (JeT) New Orleans Traffic Operations Regional Transportation Management Center RTA Transit
APTS08	Transit Traveler Information	This service package provides transit users at transit stops and on-board transit vehicles with ready access to transit information. The information services include transit stop annunciation, imminent arrival signs, and real-	Planned	Jefferson Transit (JeT) JeT Information Center Personal Devices RTA Information Center

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		time transit schedule displays that are of general interest to transit users. Systems that provide custom transit trip itineraries and other tailored transit information services are also represented by this service package.		RTA Transit
APTS09	Transit Signal Priority	This service package determines the need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations. Coordination between traffic and transit management is intended to improve on-time performance of the transit system to the extent that this can be accommodated without degrading overall performance of the traffic network.	Planned	DOTD District 02 Traffic Signal System RTA Transit
APTS10	Transit Passenger Counting	This service package counts the number of passengers entering and exiting a transit vehicle using sensors mounted on the vehicle and communicates the collected passenger data back to the management center. The collected data can be used to calculate reliable ridership figures and measure passenger load information at particular stops.	Existing	Jefferson Transit (JeT) RTA Transit
ATIS01	Broadcast Traveler Information	This service package collects traffic conditions; advisories; general public transportation; toll and parking information; incident information; roadway maintenance and construction information; air quality and weather information, and broadcasts the information to travelers using technologies such as FM subcarrier, satellite radio, cellular data broadcasts, and Internet web casts. The information may be provided directly to travelers or provided to merchants and other traveler service providers so that they can better inform their customers of travel conditions.	Planned	Airport Landside Operations Causeway Traffic Operations JeT Information Center Local Print and Broadcast Channels LSP Troop B New Orleans Police Department New Orleans Traffic Operations Personal Devices Private Traveler Information Service Providers Regional Transportation Management Center RTA Information Center Tourism and Travel Service Information Sources
ATIS02	Interactive Traveler Information	This service package provides tailored information in response to a traveler request. Both real-time interactive request/response systems and information systems that "push" a tailored stream of information to the traveler based on a submitted profile are supported. The traveler can obtain current information regarding traffic conditions, roadway maintenance and construction, transit services, ride share/ride match, parking management, detours and pricing information.	Planned	Personal Devices Private Traveler Information Service Providers
ATMS01	Network Surveillance	This service package includes traffic detectors, other surveillance equipment, the supporting field	Existing	Causeway ITS Field Elements Causeway Traffic Operations

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		equipment, and fixed-point to fixed-point communications to transmit the collected data back to the Traffic Management Subsystem. The derived data can be used locally such as when traffic detectors are connected directly to a signal control system or remotely (e.g., when a CCTV system sends data back to the Traffic Management Subsystem). The data generated by this service package enables traffic managers to monitor traffic and road conditions, identify and verify incidents, detect faults in indicator operations, and collect census data for traffic strategy development and long range planning. The collected data can also be analyzed and made available to users and the Information Service Provider Subsystem.		CCCD ITS Field Elements DOTD District 02 Traffic Operation DOTD ITS Field Equipment DOTD Statewide TMC Jefferson Parish ITS Field Equipment Jefferson Parish Traffic Operations New Orleans ITS Field Equipment New Orleans Traffic Operations Regional Transportation Management Center
ATMS02	Traffic Probe Surveillance	This service package provides an alternative approach for surveillance of the roadway network. Two general implementation paths are supported by this service package: 1) wide-area wireless communications between the vehicle and center is used to communicate vehicle operational information and status directly to the center, and 2) dedicated short range communications between passing vehicles and the roadside is used to provide equivalent information to the center. The service package enables transportation operators and traveler information providers to monitor road conditions, identify incidents, analyze and reduce the collected data, and make it available to users and private information providers.	Planned	Causeway Toll Tag Office Causeway Traffic Operations CCCD Electronic Toll Collection Center DOTD Statewide TMC Regional Transportation Management Center
ATMS03	Surface Street Control	This service package provides the central control and monitoring equipment, communication links, and the signal control equipment that support local surface street control and/or arterial traffic management. A range of traffic signal control systems are represented by this service package spanning from fixed-schedule control systems to fully traffic responsive systems that dynamically adjust control plans and strategies based on current traffic conditions and priority requests. This service package is generally an intra-jurisdictional package that does not rely on real-time communications between separate control systems and is consistent with typical urban traffic signal control systems.	Existing	DOTD District 02 Traffic Operation DOTD District 02 Traffic Signal System Jefferson Parish Traffic Operations Jefferson Parish Traffic Signal System New Orleans Traffic Operations New Orleans Traffic Signal System Regional Transportation Management Center
ATMS04	Freeway Control	This service package provides central monitoring and control, communications, and field equipment that support freeway management. It supports a range of freeway management control strategies including ramp metering, interchange metering, mainline lane controls, mainline	Planned	Causeway ITS Field Elements Causeway Traffic Operations CCCD ITS Field Elements DOTD ITS Field Equipment DOTD Statewide TMC

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		metering, and other strategies including variable speed controls. This package incorporates the instrumentation included in the Network Surveillance Service Packages to support freeway monitoring and adaptive strategies as an option. This service package also includes the capability to utilize surveillance information for detection of incidents in addition to allowing general advisory and traffic control information to be provided to the driver while en route.		Regional Transportation Management Center
ATMS05	HOV Lane Management	This service package manages HOV lanes by coordinating freeway ramp meters and connector signals with HOV lane usage signals. Preferential treatment is given to HOV lanes using special bypasses, reserved lanes, and exclusive rights-of-way that may vary by time of day. Vehicle occupancy detectors may be installed to verify HOV compliance and to notify enforcement agencies of violations.	Existing	CCCD ITS Field Elements Regional Transportation Management Center
ATMS06	Traffic Information Dissemination	This service package provides driver information using roadway equipment such as dynamic message signs or highway advisory radio. A wide range of information can be disseminated including traffic and road conditions, closure and detour information, incident information, and emergency alerts and driver advisories. This package provides information to drivers at specific equipped locations on the road network. It also covers the equipment and interfaces that provide traffic information from a traffic management center to the media, Transit Management, Emergency Management, and Information Service Providers.	Existing	Causeway ITS Field Elements Causeway Traffic Operations Causeway Traveler Information System CCCD ITS Field Elements DOTD ITS Field Equipment DOTD Statewide TMC Regional Transportation Management Center
ATMS07	Regional Traffic Management	This service package provides for the sharing of traffic information and control among traffic management centers to support regional traffic management strategies. This service package advances the Surface Street Control and Freeway Control Service Packages by adding the communications links and integrated control strategies that enable integrated inter-jurisdictional traffic management. This package relies principally on roadside instrumentation supported by the Surface Street Control and Freeway Control Service Packages and adds hardware, software, and fixed-point to fixed-point communications capabilities to implement traffic management strategies that are coordinated between allied traffic management centers.	Existing	Causeway Traffic Operations DOTD District 02 Traffic Operation DOTD Statewide TMC Jefferson Parish Traffic Operations New Orleans Traffic Operations Regional Transportation Management Center
ATMS08	Traffic Incident Management System	This service package manages both unexpected incidents and planned events so that the impact to the transportation network and traveler safety is minimized. The service package includes incident detection capabilities through roadside surveillance devices (e.g. CCTV) and through regional coordination with other traffic	Existing	Causeway ITS Field Elements Causeway MAP Causeway Police Causeway Traffic Operations CCCD ITS Field Elements Convention Center

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		management, maintenance and construction management and emergency management centers as well as rail operations and event promoters. This service package supports traffic operations personnel in developing an appropriate response in coordination with emergency management, maintenance and construction management, and other incident response personnel to confirmed incidents.		DOTD ITS Field Equipment
				DOTD MAP
				DOTD Statewide TMC
				Jefferson Parish 911
				Jefferson Parish ITS Field Equipment
				Jefferson Parish Traffic Operations
				JPSO
				Local Emergency Operations Centers
				Louisiana 511/ Website
				LSP Troop B
				New Orleans ITS Field Equipment
				New Orleans Police Department
				New Orleans Traffic Operations
				Orleans Parish Communications District (911)
				Parish Sheriff's Office
				Private Traveler Information Service Providers
				Regional Transportation Management Center
ATMS09	Traffic Decision Support and Demand Management	This service package recommends courses of action to traffic operations personnel based on an assessment of current and forecast road network performance. Where applicable, this service package also recommends transit, parking, and toll strategies to influence traveler route and mode choices to support travel demand management (TDM) programs and policies managing both traffic and the environment. All recommendations are based on historical evaluation, real-time assessment, and forecast of the roadway network performance based on predicted travel demand patterns. This service package also collects air quality, parking availability, transit usage, and vehicle occupancy data to support TDM, where applicable.	Planned	Causeway Traffic Operations
				DOTD Statewide TMC
				Jefferson Parish Traffic Operations
				New Orleans Traffic Operations
				Regional Transportation Management Center
ATMS10	Electronic Toll Collection	This service package provides toll operators with the ability to collect tolls electronically and detect and process violations. The fees that are collected may be adjusted to implement demand management strategies. The vehicle equipment and roadside readers that these systems utilize can also be used to collect road use statistics for highway authorities.	Existing	Causeway Toll Collection Equipment
				Causeway Toll Tag Office
				CCCD Electronic Toll Collection Center
				CCCD Tolling Field Equipment
ATMS13	Standard Railroad Grade Crossing	This service package manages highway traffic at highway-rail intersections (HRIs) where operational requirements do not dictate more advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Both	Existing	DOTD District 02 Traffic Operation
				DOTD District 02 Traffic Signal System
				DOTD ITS Field Equipment

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		passive (e.g., the crossbuck sign) and active warning systems (e.g., flashing lights and gates) are supported. The equipment at the HRI may also be interconnected with adjacent signalized intersections so that local control can be adapted to highway-rail intersection activities.		Jefferson Parish ITS Field Equipment Jefferson Parish Traffic Operations Jefferson Parish Traffic Signal System New Orleans ITS Field Equipment New Orleans Traffic Operations New Orleans Traffic Signal System RR at Grade Crossing Controller
ATMS15	Railroad Operations Coordination	This service package provides an additional level of strategic coordination between freight rail operations and traffic management centers. Rail operations provide train schedules, maintenance schedules, and any other forecast events that will result in highway-rail intersection (HRI) closures. This information is used to develop forecast HRI closure times and durations that may be used in advanced traffic control strategies or to enhance the quality of traveler information.	Planned	DOTD District 02 Traffic Operation Jefferson Parish Traffic Operations New Orleans Traffic Operations
ATMS16	Parking Facility Management	This service package provides enhanced monitoring and management of parking facilities. It assists in the management of parking operations, coordinates with transportation authorities, and supports electronic collection of parking fees. This service package collects current parking status, shares this data with Information Service Providers and Traffic Management, and collects parking fees using the same in-vehicle equipment utilized for electronic toll collection or contact or proximity traveler cards used for electronic payment.	Planned	Airport Parking
ATMS18	Reversible Lane Management	This service package provides for the management of reversible lane facilities. In addition to standard surveillance capabilities, this service package includes sensory functions that detect wrong-way vehicles and other special surveillance capabilities that mitigate safety hazards associated with reversible lanes. The package includes the field equipment, physical lane access controls, and associated control electronics that manage and control these special lanes. This service package also includes the equipment used to electronically reconfigure intersections and manage right-of-way to address dynamic demand changes and special events.	Existing	CCCD ITS Field Elements DOTD ITS Field Equipment DOTD Statewide TMC Regional Transportation Management Center
ATMS19	Speed Monitoring	This service package monitors the speeds of vehicles traveling through a roadway system. If the speed is determine to be excessive, roadside equipment can suggest a safe driving speed. Environmental conditions may be monitored and factored into the safe speed advisories that are provided to the motorist. This service can also support notifications to an enforcement agency to enforce the speed limit on a roadway system.	Planned	DOTD ITS Field Equipment DOTD Statewide TMC Regional Transportation Management Center

Service package	Service package Name	Service package Description	Service package Status	Included Elements
ATMS20	Drawbridge Management	This service package supports systems that manage drawbridges at rivers and canals and other multimodal crossings (other than railroad grade crossings which are specifically covered by other service packages). The equipment managed by this service package includes control devices (e.g., gates, warning lights, dynamic message signs) at the drawbridge as well as the information systems that are used to keep travelers apprised of current and forecasted drawbridge status.	Planned	Causeway Bascule Drawbridge Causeway Traffic Operations DOTD ITS Field Equipment DOTD Statewide TMC Louisiana 511/ Website Regional Transportation Management Center
ATMS21	Roadway Closure Management	This service package closes roadways to vehicular traffic when driving conditions are unsafe, maintenance must be performed, and other scenarios where access to the roadway must be prohibited. The service package includes automatic or remotely controlled gates or barriers that control access to roadway segments including ramps and traffic lanes. The equipment managed by this service package includes the control and monitoring systems, the field devices (e.g., gates, warning lights, DMS, CCTV cameras) at the closure location(s), and the information systems that notify other systems of a closure. This service package covers general road closure applications; specific closure systems that are used at railroad grade crossings, drawbridges, reversible lanes, etc. are covered by other ATMS service packages.	Planned	Levee Flood Monitoring System
CVO02	Freight Administration	This service package tracks the movement of cargo and monitors the cargo condition. Interconnections are provided to intermodal freight shippers and intermodal freight depots for tracking of cargo from source to destination. In addition to the usual cargo monitoring required to insure that cargo gets from origin to destination, the Fleet and Freight Management subsystem monitors shipments to make sure that no tampering or breach of security occurs to the cargo on commercial vehicles.	Planned	Commercial Vehicles Operations NOPB Rail / Port of New Orleans Integration
EM01	Emergency Call-Taking and Dispatch	This service package provides basic public safety call-taking and dispatch services. It includes emergency vehicle equipment, equipment used to receive and route emergency calls, and wireless communications that enable safe and rapid deployment of appropriate resources to an emergency.	Existing	Causeway MAP Causeway Police CCCD Police DOTD MAP DOTD Statewide TMC East Jefferson General Hospital EMS HAZMAT Mobil Response Jefferson Parish 911 Jefferson Parish Dept. of Emergency Management Jefferson Parish Fire Department JPSO Kenner Police Levee Police Patrol Local Emergency Medical Service

Service package	Service package Name	Service package Description	Service package Status	Included Elements
				Local Emergency Operations Centers
				LSP Troop B
				New Orleans EMS
				New Orleans Fire Department
				New Orleans Police Department
				Orleans Parish Communications District (911)
				Other Fire Department
				Parish Sheriff's Office
				Regional Transportation Management Center
				West Jefferson Medical Center EMS
EM02	Emergency Routing	This service package supports automated vehicle location and dynamic routing of emergency vehicles. Traffic information, road conditions, and suggested routing information are provided to enhance emergency vehicle routing. Special priority or other specific emergency traffic control strategies can be coordinated to improve the safety and time-efficiency of responding vehicle travel on the selected route(s). The service provides for information exchange between care facilities and both the Emergency Management Subsystem and emergency vehicles.	Planned	Causeway MAP
				Causeway Police
				CCCD Police
				DOTD MAP
				East Jefferson General Hospital EMS
				HAZMAT Mobil Response
				Jefferson Parish 911
				Jefferson Parish Fire Department
				JPSO
				Kenner Police
				Levee Police Patrol
				Local Emergency Medical Service
				LSP Troop B
				New Orleans EMS
				New Orleans Fire Department
				New Orleans Police Department
				Orleans Parish Communications District (911)
				Other Fire Department
				Parish Sheriff's Office
				Regional Transportation Management Center
				West Jefferson Medical Center EMS
EM04	Roadway Service Patrols	This service package supports roadway service patrol vehicles that monitor roads that aid motorists, offering rapid response to minor incidents (flat tire, accidents, out of gas) to minimize disruption to the traffic stream. If problems are detected, the roadway service	Existing	Causeway MAP
				Causeway Police
				Causeway Traffic Operations
				DOTD MAP
				DOTD Statewide TMC

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		patrol vehicles will provide assistance to the motorist (e.g., push a vehicle to the shoulder or median). The service package monitors service patrol vehicle locations and supports vehicle dispatch to identified incident locations. Incident information collected by the service patrol is shared with traffic, maintenance and construction, and traveler information systems.		Regional Transportation Management Center
EM05	Transportation Infrastructure Protection	This service package includes the monitoring of transportation infrastructure (e.g., bridges, tunnels and management centers) for potential threats using sensors and surveillance equipment and barrier and safeguard systems to control access, preclude an incident, and mitigate the impact of an incident if it occurs.	Existing	Causeway ITS Field Elements DOTD Flood Warning System DOTD ITS Field Equipment
EM06	Wide-Area Alert	This service package uses ITS driver and traveler information systems to alert the public in emergency situations such as child abductions, severe weather events, civil emergencies, and other situations that pose a threat to life and property. The alert includes information and instructions for transportation system operators and the traveling public, improving public safety and enlisting the public's help in some scenarios.	Planned	DOTD Statewide TMC Jefferson Parish 911 Jefferson Parish Dept. of Emergency Management Local Emergency Operations Centers LSP Troop B NOHSEP Orleans Parish Communications District (911) Regional Transportation Management Center
EM08	Disaster Response and Recovery	This service package enhances the ability of the surface transportation system to respond to and recover from disasters. It addresses the most severe incidents that require an extraordinary response from outside the local community, including both natural disasters and technological or man-made disasters. The service package supports coordination of emergency response plans, provides enhanced access to the scene for response personnel and resources, provides better information about the transportation system in the vicinity of the disaster, and maintains situation awareness regarding the disaster itself. In addition, this service package tracks and coordinates the transportation resources that constitute a portion of the disaster response.	Planned	DOTD Statewide TMC Jefferson Parish Dept. of Emergency Management Local Emergency Medical Service Local Emergency Operations Centers LSP Troop B NOHSEP Regional Transportation Management Center
EM09	Evacuation and Reentry Management	This service package supports evacuation of the general public from a disaster area and manages subsequent reentry to the disaster area. The service package addresses evacuations for all types of disasters, including disasters like hurricanes that are anticipated and occur slowly, allowing a well-planned orderly evacuation, as well as disasters like terrorist acts that occur rapidly, without warning, and allow little or no time for preparation or public warning.	Planned	DOTD District 02 Traffic Operation DOTD Statewide TMC Jefferson Parish Dept. of Emergency Management Local Emergency Operations Centers LSP Troop B NOHSEP

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		This service package supports coordination of evacuation plans among the federal, state, and local transportation, emergency, and law enforcement agencies that may be involved in a large-scale evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, and along the evacuation route are informed of the plan. Information is shared with traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.		Regional Transportation Management Center
EM10	Disaster Traveler Information	This service package uses ITS to provide disaster-related traveler information to the general public, including evacuation and reentry information and other information concerning the operation of the transportation system during a disaster. This service package collects information from multiple sources including traffic, transit, public safety, emergency management, shelter provider, and travel service provider organizations. The collected information is processed and the public is provided with real-time disaster and evacuation information using ITS traveler information systems. This service package keeps the public informed, using all available means to provide information about the disaster area including damage to the transportation system, detours and closures in effect, special traffic restrictions and allowances, special transit schedules, and real-time information on traffic conditions and transit system performance in and around the disaster. This service package also provides emergency information to assist the public with evacuations when necessary.	Planned	Jefferson Parish Dept. of Emergency Management Local Emergency Operations Centers Local Print and Broadcast Channels NOHSEP Private Traveler Information Service Providers Tourism and Travel Service Information Sources
MC07	Roadway Maintenance and Construction	This service package supports numerous services for scheduled and unscheduled maintenance and construction on a roadway system or right-of-way. Maintenance services would include landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, CCTV, etc.). Environmental conditions information is also received from various weather sources to aid in scheduling maintenance and construction activities.	Existing	DOTD Adjacent District Office DOTD District 02 Traffic Operation DOTD ITS Section DOTD Statewide TMC Regional Transportation Management Center
MC08	Work Zone Management	This service package manages work zones, controlling traffic in areas of the roadway where maintenance, construction, and utility work activities are underway. This service package	Planned	DOTD District 02 Traffic Operation DOTD ITS Field Equipment DOTD Statewide TMC

Service package	Service package Name	Service package Description	Service package Status	Included Elements
		provides control of field equipment in all maintenance and construction areas, including fixed, portable, and truck-mounted devices supporting both stationary and mobile work zones.		Regional Transportation Management Center
MC12	Infrastructure Monitoring	This service package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts) using both fixed and vehicle-based infrastructure monitoring sensors. Fixed sensors monitor vibration, stress, temperature, continuity, and other parameters and mobile sensors and data logging devices collect information on current infrastructure condition. This service package also monitors vehicle probes for vertical acceleration data and other probe data that may be used to determine current pavement condition.	Planned	Airport ITS Field Equipment Causeway ITS Field Elements CCCD ITS Field Elements DOTD ITS Field Equipment DOTD ITS Section

8 Interface between Systems

The interfaces of the transportation systems in this architecture are based on the National ITS Architecture and tailored to reflect the plan for this region. Architecture diagrams display the transportation systems in the New Orleans Regional ITS Architecture and, more importantly, how these systems are and will be connected with one another so that information can be exchanged and transportation services can be coordinated. Stakeholders may use these diagrams to identify integration opportunities. Each system in the region can be represented with two types of diagrams: an overall interconnect diagram and element specific architecture flow context diagram, both are described below.

The interconnect diagram shows the connections between systems (i.e., Elements). 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, shown as planned or existing. An architecture flow context diagram shows a particular system and all other systems with which it is interconnected, the information being shared (i.e. architecture flows), and the direction of the flow. Descriptions of the architecture flows are included in **Appendix A**. The architecture flow context diagrams are not included within this document due to the size of the images. However, an interconnect context diagram for each element has been included as part of **Appendix B**.

Information about the interfaces of the systems in the region is contained in the Turbo Architecture™ database. Turbo Architecture™ can be used to create tailored interconnect and architecture flow diagrams for any system in the database.

9 Operational Concept

The Operational Concept lists the roles and responsibilities (RR) of participating agencies to provide the ITS services included in the ITS Architecture. Changing needs may arise that will require an agreement to be formed between all affected parties that defines new or additional roles. Defining the roles and responsibilities of the participating stakeholders in the region and the willingness of agencies to accept their roles and responsibilities is an important step in realizing the common goal of an interoperable ITS system throughout the region.

Table 6: Operational Concept

RR Area Name	Stakeholder	RR Description	RR Status
Archived Data Systems for New Orleans Regional ITS Architecture	City of New Orleans	Archive traffic operations data	Existing
	GNOEC		
	Jefferson Parish		
	Jefferson Parish Sheriff Office	Archive traffic crash reports	Existing
	LADOTD	Archive traffic operations data	Existing
	Local /Regional Public Safety Agencies	Archive traffic crash reports	Existing
	Louisiana State Police		
	New Orleans Regional Transit	Archive transit operations data	Existing
	NORPC	Archive communications data	Existing
Commercial Vehicle Operations for New Orleans Regional ITS Architecture	Freight / Commercial Vehicles	Operate commercial vehicles	Planned
		Disseminate transportation information	
Electronic Toll Collection for New Orleans Regional ITS Architecture	GNOEC	Operate toll facility	Existing
		Traffic data collection	
		Archive traffic operations data	Planned
	LADOTD	Operate toll facility	Existing
		Traffic data collection	
		Archive traffic operations data	Planned
Emergency Management for New Orleans Regional ITS Architecture	City of New Orleans	Operate traffic signal systems	Existing
		Traffic control	Planned
	GNOEC	Emergency response	Existing
		Infrastructure monitoring	
		Motorists information systems	
		Traffic control	
	Jefferson Parish	Traffic control	Existing
	LADOTD	Infrastructure monitoring	
		Resources for emergency	
		Traffic control	
		Event monitoring	Planned
		Motorist information system	
	Local Emergency Medical	Medical response	Existing
	Local Levee Districts	Monitor infrastructure	
	Local /Regional Public Safety Agencies	Traffic control	

RR Area Name	Stakeholder	RR Description	RR Status
	Louisiana State Police	Traffic control	
	New Orleans International Airport	Resource Provider	
	New Orleans Regional Transit	Resource provider	
Freeway Management for New Orleans Regional ITS Architecture	City of Kenner	Incident management	Existing
		Incident response	
		Speed enforcement	
		Traffic control	
	City of New Orleans	Speed enforcement	Existing
		Traffic control	
		Incident response	
		Incident management	
	GNOEC	Operate toll facility	Existing
		Motorists information systems	
		Traffic control	
		Motorist assistance	
		Incident management	
		Incident response	
	Jefferson Parish Sheriff Office	Traffic control	Existing
		Speed enforcement	
		Incident response	
	LADOTD	Operate toll facility	Existing
		Event monitoring	
		Infrastructure monitoring	
		Motorist information system	
		Traffic control	
		Motorist assistance	
	Local /Regional Public Safety Agencies	Traffic control	Existing
		Speed enforcement	
		Incident response	
	Louisiana State Police	Traffic control	Existing
		Speed enforcement	
		Incident response	
		Incident management	
	Media	Motorist information	
	Tourism and Traveler Information Service Providers	Motorist information	
Incident Management for New Orleans Regional ITS Architecture	City of Kenner	Incident management	Existing
		Incident response	
		Traffic control	
	City of New Orleans	Traffic control	
		Incident response	
		Incident management	
	GNOEC	Infrastructure monitoring	
		Motorists information systems	
		Traffic control	
		Motorist assistance	

RR Area Name	Stakeholder	RR Description	RR Status
		Incident management	
		Incident response	
	Jefferson Parish Sheriff Office	Traffic control	
		Speed enforcement	
		Incident response	
		Incident management	
	LADOTD	Event monitoring	
		Infrastructure monitoring	
		Motorist information system	
		Resources for emergency	
		Traffic control	
		Motorist assistance	
	Local Emergency Medical	Medical response	
	Local/Regional Public Safety Agencies	Traffic control	
		Incident response	
	Louisiana State Police	Traffic control	
		Incident response	
		Incident management	
	Media	Motorist information	
	Tourism and Traveler Information Service Providers	Motorist information	
Maintenance and Construction for New Orleans Regional ITS Architecture	City of Kenner	Traffic data collection	Existing
		Surface street maintenance and construction provider	Planned
	City of New Orleans	Surface street maintenance and construction provider	Existing
		Traffic data collection	
		Traffic signal system maintenance and construction	
	GNOEC	Roadway maintenance and construction	Existing
		Traffic data collection	
		Infrastructure monitoring	Planned
		Traffic control	
	Jefferson Parish	Roadway maintenance and construction	Existing
		Traffic data collection	
		Traffic signal system maintenance and construction	
	LADOTD	Traffic data collection	Existing
		Traffic signal system maintenance and construction	
		Roadway maintenance and construction	
		Infrastructure monitoring	Planned
	Media	Motorist information	Existing
	Tourism and Traveler Information Service Providers	Motorist information	Planned

RR Area Name	Stakeholder	RR Description	RR Status
Parking Management for New Orleans Regional ITS Architecture	City of Kenner	Parking coordination	Planned
	Jefferson Parish		
	Local /Regional Public Safety Agencies		
	New Orleans International Airport		
Surface Street Management for New Orleans Regional ITS Architecture	City of Kenner	Traffic data collection	Existing
	City of New Orleans	Traffic data collection	
		Traffic signal operations	
	Jefferson Parish	Traffic data collection	
		Traffic signal operations	
	LADOTD	Traffic data collection	
		Traffic signal operations	
Transit Services for New Orleans Regional ITS Architecture	Jefferson Parish	Transit data collection	Existing
		Transit provider	Planned
	New Orleans Regional Transit	Transit data collection	Existing
		Transit provider	Planned
	NORPC	Transit coordination and planning	Existing
	Public	Transit user	
	Tourism and Traveler Information Service Providers	Motorist information	
Traveler Information for New Orleans Regional ITS Architecture	LADOTD	Motorist information system	Existing
	Media	Motorist information	
	Public	End user of traveler information	
	Tourism and Traveler Information Service Providers	Motorist information	

9.1 ITS Deployment Plan – Sequence of Planned Projects.

The New Orleans Regional ITS Architecture will be implemented as funding is made available. This section lists the projects that have been identified as part of the regional ITS architecture. Additional details for each of these ITS projects are included in the Turbo Architecture database.

Table 7: Project Sequence

Name	Description	Service Scope	Geographic Scope	Time-frame	Service packages	Design Cost	Capital Cost	O&M	Total Cost
CCCD Ramp Meters	Deployment of ramp meters and or Toll Plaza	Provide ramp meter equipment and communications for active ramp meter operations.	Terry Parkway - CCCB	1 year	ATMS04 ATMS08	$ 120,000.00 - $ 130,000.00	$ 450,000.00 - $ 650,000.00	$ 67,500.00 - $ 162,500.00	$ 637,500.00 - $ 942,500.00
DOTD - New Orleans ITS Core	The New Orleans ITS Core project is being implemented by the DOTD in cooperation with NORPC, Jefferson Parish, and the GNOEC.	The project is envisioned to include closed circuit television cameras, dynamic message signs, and communications, whether wireless or fiber optic. Key project goals: -Provide tools to improve traffic management -Facilitate Traffic Incident Management	The project limits cover the following routes: a) I-10: Loyola Dr. (Exit 221) to I-610 (Exit 238B) - 17 miles b) I-610: I-10 (West) to I-10 (East) - 4 miles c) US Hwy. 90 Business: I-10 (Exit 234A) to LA 23, Lafayette St. - 6 miles d) DOTD Regional Transportation Management Center (RTMC)	1 year	ATMS01 ATMS02 ATMS06 ATMS08	$ 500,000.00 - $ 880,000.00	$ 10,000,000.00 - $ 11,000,000.00	$ 1,500,000.00 - $ 2,750,000.00	$ 12,000,000.00 - $ 14,630,000.00
Heritage Plaza Fiber Optic	Upgrade communications	This project includes fiber optic cable installation and communications integration from RTMC to Heritage Plaza to improve communication	RTMC to Heritage Plaza	1year	ATMS03 ATMS07	$ 15,000.00 - $ 28,000.00	$ 300,000.00 - $ 350,000.00	$ 45,000.00 - $ 87,500.00	$ 360,000.00 - $ 465,500.00
DOTD - Crescent City Connection Division Traveler Message Signing	The DOTD ferries in the New Orleans area are operated and maintained by the CCCD. These ferries provide both vehicular and passenger transfer across the Mississippi River.	Traveler information will be provided by deploying dynamic message boards on both the ferry boats and at the terminals as well as detection and monitoring capabilities. This also includes integration of the system with the RTMC.	Canal Street, Chalmette, and Gretna Ferries and terminals	1-2 years	APTS08 ATMS06 ATMS08 EM06	$205,000.00	$ 500,000.00 - $ 600,000.00	$ 75,000.00 - $ 150,000.00	$ 780,000.00 - $ 750,000.00
DOTD Westbank Expy ITS	Deploy ITS equipment and communications.	The project is envisioned to include upgrades of existing CCTV cameras and communications, deployment of new cameras, DMS, vehicle detection (bluetooth detection for travel time) and communications (wireless and fiber)	US 90 (Westbank Expressway) from CCCD to Bridge City	2-3 years	ATMS01 ATMS03	$286,900.00 - $507,360.00	$ 5,738,000.00 - $ 6,342,000.00	$ 860,700.00 - $ 1,585,500.00	$ 6,885,600.00 - $ 8,434,860.00
DOTD - Clearview Traffic Signal System Communications	Upgrade communications.	Project to include fiber optic cable installation and communication integration with the traffic signals, DOTD District 02 office, and the ITS communications network.	LA 3152/US 90 (Clearview Parkway) from DOTD District 02 office to I-10	2-3 years	ATMS03 ATMS07	$ 99,000.00 - $ 177,600.00	$ 1,980,000.00 - $ 2,220,000.00	$ 297,000.00 - $ 555,000.00	$ 2,376,000.00 - $ 2,952,600.00

Name	Description	Service Scope	Geographic Scope	Time-frame	Service packages	Design Cost		Capital Cost		O&M		Total Cost
Parking Management	Advanced Parking Management	Advanced parking management in hospitality zone	Hospitality Zone	3-5 years	ATMS16	$ 150,000.00 - $ 400,000.00		$ 3,000,000.00 - $ 5,000,000.00		$ 450,000.00 - $ 1,250,000.00		$ 3,600,000.00 - $ 6,650,000.00
Veterans Memorial Blvd	Communications upgrade	communications sign upgrades and integration to RTMC	Veterans Memorial Blvd	3-5 years	ATMS01 ATMS03	$ 120,000.00 - $ 216,000.00		$ 2,400,000.00 - $ 2,700,000.00		$ 360,000.00 - $ 675,000.00		$ 2,880,000.00 - $ 3,591,000.00
New Orleans Hospitality Zone	Communication and Sign Upgrades, Video Surveillance	This project will include surveillance and detection and other control devices including truck out blank out signs on HOV	Detection, communications and signal upgrades along the Tchoupitoulas corridor from Port to US-90B HOV lane upgrades and lane control, cameras on HOV by Convention Center and French Quarter	3-5 years	ATMS01 ATMS03 ATMS05 ATMS23 ATMS24	$ 100,000.00 - $ 200,000.00		$ 2,000,000.00 - $ 2,500,000.00		$ 300,000.00 - $ 625,000.00		$ 2,400,000.00 - $ 3,325,000.00
DOTD - Automated Drawbridges	This project will automate drawbridges for remote access, control, and monitoring.	Equipment will consist of automated controls, CCTV cameras, message signs, detection, and communications to allow TMC operations to open/close the drawbridge, monitor water vessel traffic, and notify motorists of the drawbridges status.	New Orleans area	3-5 years	ATMS06 ATMS20	$ 7,500.00 - $ 14,000.00		$ 150,000.00 - $ 175,000.00		$ 22,500.00 - $ 43,750.00		$ 180,000.00 - $ 232,750.00
DOTD - US 90 Traffic Signal Upgrade St. Charles and Jefferson Parishes	Upgrade traffic signals.	This project includes the upgrade of traffic signal equipment as well as communications, head end management equipment and software.	US 90 from Avondale to St. Charles Parish	3-5 years	ATMS01 ATMS03	$ 49,500.00 - $ 88,800.00		$ 990,000.00 - $ 1,110,000.00		$ 148,500.00 - $ 277,500.00		$ 1,188,000.00 - $ 1,476,300.00
Port of NO - CVO Traveler Information and ITS Deployment	Provide traveler information to commercial vehicle operators/drivers.	Provide dynamic message signs and/or other roadside dissemination equipment for communicating with truck traffic entering and leaving the port.	Port access routes, interstate and other state/federal truck routes	3-5 years	CVO02	$ 25,000.00 - $ 60,000.00		$ 500,000.00 - $ 750,000.00		$ 75,000.00 - $ 187,500.00		$ 600,000.00 - $ 997,500.00
DOTD - New Orleans ITS Ramp Meter Deployment Phase 1	Deploy ramp meters.	Provide ramp meter equipment and communications for active ramp meter operations.	Interstate on-ramps through Jefferson Parish	3-5 years	ATMS04 ATMS08	$ 30,000.00 - $ 60,000.00		$ 600,000.00 - $ 750,000.00		$ 90,000.00 - $ 187,500.00		$ 720,000.00 - $ 997,500.00
DOTD - CCCD Communications Upgrade	Upgrade communications.	The project will include fiber optic cable across the Crescent City Connection Bridge and integration of existing devices to the RTMC	State and local routes specifically US 90B, I-10, N.O. CBD access ramps and service roads	4-5 years	ATMS07 EM08 EM09	$ 50,000.00 - $ 160,000.00		$ 1,000,000.00 - $ 2,000,000.00		$ 150,000.00 - $ 500,000.00		$ 1,200,000.00 - $ 2,660,000.00
DOTD - Dynamic Message Signs	This project will provide traveler information	Dynamic message signs will be placed adjacent to northbound lanes on each arterial just prior to I-10.	i. Loyola Drive northbound prior to I-10 ii. Williams Blvd northbound prior to I-10 iii. Williams Blvd southbound prior to I-10 iv. Power Blvd northbound prior to I-10	3-5 years	ATMS06 ATMS24	$40,000.00 - $80,000.00		$800,000.00 - $1,000,000.00		$120,000.00 - $250,000.00		$960,000.00 - $1,330,000.00

Name	Description	Service Scope	Geographic Scope	Time-frame	Service packages	Design Cost			Capital Cost			O&M			Total Cost		
NORPC - Communications/ Data Repository	Upgrade communications, develop a database and archive system.	Upgrade communications to facilitate and develop a common repository of traffic data between the local traffic engineering agencies and the NORPC.	New Orleans Area	4-5 years	AD1 AD2 APTS07 ATMS07 EM08 EM09	$ 25,000.00	-	$ 60,000.00	$ 500,000.00	-	$ 750,000.00	$ 75,000.00	-	$ 187,500.00	$ 600,000.00	-	$ 997,500.00
DOTD - Chef Menteur Highway Traffic Signal System Upgrade	Traffic Signal Upgrades.	This project includes the upgrade of traffic signal equipment as well as communications, head end management equipment, and software.	US 90 (Chef Menteur Highway) from I-10 to I-510	4-5 years	ATMS01 ATMS03	$ 82,500.00	-	$ 148,000.00	$ 1,650,000.00	-	$ 1,850,000.00	$ 247,500.00	-	$ 462,500.00	$ 1,980,000.00	-	$ 2,460,500.00
DOTD - New Orleans ITS Deployment Phase 3	Deploy ITS equipment and communications.	The project is envisioned to include closed circuit television cameras, dynamic message signs, and communications, whether wireless or fiber optic. Areas of focus include: -Twin Spans -Replacing Phase 1b cameras -DMS to supplement sites that were once double sided DMS	New Orleans East along I-10 from US 90B to Slidell	4-5 years	ATMS01 ATMS02 ATMS06 ATMS08 EM06	$ 375,000.00	-	$ 680,000.00	$ 7,500,000.00	-	$ 8,500,000.00	$ 1,125,000.00	-	$ 2,125,000.00	$ 9,000,000.00	-	$ 11,305,000.00
DOTD - Harvey Tunnel ITS Deployment	Deploy ITS equipment and communications.	The project is envisioned to include closed circuit television cameras and communications, whether wireless or fiber optic. Also included is integration with the RTMC.	Harvey Tunnel crosses the Harvey Canal in Jefferson Parish. It carries the at grade traffic for the West Bank Expressway. It primarily serves are a service road and alternate route with the elevated expressway is closed.	4-5 years	ATMS01	$ 26,000.00	-	$ 60,800.00	$ 520,000.00	-	$ 760,000.00	$ 78,000.00	-	$ 190,000.00	$ 624,000.00	-	$ 1,010,800.00
NORPC - Bus Rapid Transit	Deploy Bus Rapid Transit (BRT).	System to include vehicle to roadside communications, AVL/GPS, communications with TMC, and integration.	Including but not limited to: - General De Gaulle Drive - Broad Street	4-5+ years	APTS01 APTS02 APTS03 APTS04 APTS05 APTS06 APTS09	$101,000.00			$ 2,000,000.00	-	$ 3,000,000.00	$ 300,000.00	-	$ 750,000.00	$ 2,401,000.00	-	$ 3,750,000.00
DOTD - New Orleans ITS Deployment Phase 4	Deploy ITS equipment and communications.	The project is envisioned to include closed circuit television cameras and communications, whether wireless or fiber optic.	New Orleans state arterial highways including but not limited to: -US 61 (Airline Highway) -Veterans Memorial Highway (Jeff Parish) -Causeway Blvd. -Clearview Parkway	4-5+ years	ATMS01 ATMS02 ATMS08	$ 255,000.00	-	$ 440,000.00	$ 5,100,000.00	-	$ 5,500,000.00	$ 765,000.00	-	$ 1,375,000.00	$ 6,120,000.00	-	$ 7,315,000.00
DOTD - New Orleans ITS Deployment Phase 5	Deploy ITS equipment.	Provide integration and ITS equipment including but not limited to: -Lane control -Speed enforcement -Vehicle detection -Travel time	I-10 12-mile bridge over the Bonnet Carre Spillway	5+	ATMS08 ATMS19 ATMS21	$ 450,000.00	-	$ 800,000.00	$ 9,000,000.00	-	$ 10,000,000.00	$ 1,350,000.00	-	$ 2,500,000.00	$ 10,800,000.00	-	$ 13,300,000.00

Name	Description	Service Scope	Geographic Scope	Time-frame	Service packages	Design Cost		Capital Cost			O&M			Total Cost		
		-Crossover gate automation														
NOLA/Jeff. Parish/DOTD - At Grade Railroad Crossing System	Deploy ITS for at grade railroad crossings.	Provide ITS equipment and communications for at grade railroad crossings. The status of trains approaching the railroad/highway intersection will be provided to the TMC. Also, the system will integrate with the ATMS and allow status of the at-grade crossing to be shown in the 511 system for public view.	New Orleans area	5+ years	ATMS01 ATMS08 ATMS13 ATMS15	$ 4,000.00	-	$ 12,000.00	$ 80,000.00	-	$ 150,000.00	$ 21,600.00	-	$ 47,100.00	$ 105,600.00	-	$ 209,100.00
DOTD-Detection on Principal Arterials***	Radar based vehicle detection devices for select principal arterials	This project will include vehicle detection and communications, and system integration	radar detection devices on these principal arterials: Airline Hwy, Veterans Blvd, Williams Blvd, Clearview Pkwy, N. Causeway Blvd	5+years	ATMS01	$ 50,000.00	-	$ 96,000.00	$ 1,000,000.00		$ 1,200,000.00	$ 150,000.00	-	$ 300,000.00	$ 1,200,000.00	-	$ 1,596,000.00

***** Project is proposed to be part of a public private partnership and the cost shown above is for informational purpose only**

9.2 Operations and Maintenance of Regional ITS

Currently, LADOTD ITS Section (Section 56) is responsible for providing statewide ITS equipment and O&M support for equipment on state and federal routes. LADOTD O&M for DOTD Traffic Signals are maintained by the district office or by a municipality through an agreement. On other routes, the agency responsible for the ITS is the facility owner. Typically, ITS maintenance activities are performed on an as-needed basis with the exception of routine/preventive maintenance. The New Orleans region does not have a dedicated funding source/structure for periodic maintenance of the ITS system. As the transportation funding resources struggle to keep up with the demand, it is critical to understand the capital cost versus O&M cost balance over the life-cycle of any ITS. As the New Orleans region prepares to expand and enhance its existing ITS, it is critical to identify which agency will be responsible for a proposed ITS and how many resources will be required for O&M of the system. It should be understood as the number of deployments increase the funding typically shifts from deployment to O&M. With a fiscally constrained budget, priority between O&M and deployment must be thoroughly evaluated.

In this document, O&M resources and responsibilities have been covered under two different sections: one defining agency O&M responsibilities and the other specifying O&M funding requirements. In **Table 6**, maintenance responsibilities have been identified and assigned to a particular agency for each applicable service package. Although, such O&M arrangements may differ at a project level based on specific agencies involved, the operations and maintenance requirements section under each service package provides guidelines on which agency should assume the maintenance responsibilities for each ITS component.

There is currently no dedicated long term maintenance funding for any ITS in the region. LADOTD currently has a statewide maintenance budget of $2 million, which serves for both routine and emergency maintenance. **Table 7** above not only identifies capital cost requirements for ITS but also provides O&M funding requirements for all the planned ITS. For most systems, an estimated dollar figure is provided as the O&M cost; in the case where a dollar value is not provided, 10% of capital cost shall be assumed as the O&M cost per year.

9.3 ITS Funding

LADOTD ITS Section has budgeted $10 million[1] annually under its highway funding program, which is allocated statewide on a prioritized basis depending on immediate need. Ideally, each region receives portions of this money to apply toward ITS needs, however there is currently no dedicated funding source in the associated Transportation Improvement Program (TIP) for the New Orleans region. As part of the follow-up to this architecture effort, it is recommended that New Orleans Regional Planning Commission (NORPC), being the regional planning entity, work together with LADOTD and the New Orleans ITS stakeholders and pursue funding sources for future ITS deployment within the region.

[1] The $2 million for ITS statewide maintenance is included as part of the $10 million budget.

10 Architecture Maintenance Plan

This section discusses the proposed Maintenance Plan for the regional ITS Architecture. FHWA's Final Rule on ITS Architecture and Standards (23 CFR Part 940) requires development of an architecture maintenance plan. Paragraph 940.9 (f) states that:

> "The agencies and other stakeholders participating in the development of the regional ITS architecture shall develop and implement procedures and responsibilities for maintaining it, as needs evolve within the region."

In January 2004, FHWA issued guidance[2] on what should be contained in an architecture maintenance plan in order to be compliant with FHWA requirements. The White Paper on this subject is available at http://ops.fhwa.dot.gov/its_arch_imp/guidance.htm. The Maintenance Plan for the New Orleans Regional ITS Architecture is based on the guidelines provided by FHWA's White Paper.

This report provides some background on the need for architecture maintenance and addresses key issues under the following headings:

- Why Maintain a Regional ITS Architecture?
- Who Will Maintain the Architecture?
- When will the Architecture be updated?
- What will be maintained?
- How will the Architecture be maintained?

10.1 Why Maintain a Regional ITS Architecture

As ITS projects are implemented, the Regional ITS Architecture will need to be updated to reflect new ITS priorities and strategies that emerge through the transportation planning process. It will also need to be updated to account for any expansion in ITS scope and to allow for the evolution and incorporation of new ideas. The goal of the maintenance plan is to guide controlled updates to the Regional ITS Architecture baseline so that it continues to accurately reflect the region's existing ITS capabilities and future plans.

10.2 Who Will Maintain the Architecture?

To maintain a consensus Regional ITS Architecture, ideally all stakeholders should participate in the process. In practice, typically, one or two agencies take the lead responsibility to maintain the Regional ITS Architecture. The mission of the ITS Architecture maintainer most closely resembles a regional planning body that, consistent with its mission, has the authority to initiate, update, and document changes in regional planning documents. For the New Orleans Regional ITS Architecture, the LADOTD will assume the role of the ITS Architecture keeper and maintainer as indicated in **Section 3.4**.

Like the regional transportation plans, architecture maintenance is recurring, and is a necessary long-term effort. To be effective in ITS Architecture maintenance, LADOTD will need to have staff that:

- Is knowledgeable of the existing regional ITS architecture. This implies a detailed technical understanding of the various parts of the architecture and how changes would affect each part.

[2] FHWA-HOP-04-004, Regional ITS Architecture Maintenance White Paper, prepared by the National ITS Architecture Team, January 31, 2004

- Has an understanding of transportation systems in the region. This understanding can reside jointly in the group of agencies/stakeholders who participate in the maintenance process.
- Has an understanding of the tools used to create (and to update) the architecture. This might include, for example, knowledge of the Turbo Architecture™ tool, if that is used to hold some of the architecture information.

As the agency responsible for maintaining the Architecture, the LADOTD needs to have the skills within its own organization and/or use a qualified consultant. In either case, the agency needs the necessary funding to support the maintenance effort. The following are the recommended minimum resources for ITS architecture maintenance management:

- One individual to be the ITS Architecture manager
- Two individuals trained in Turbo Architecture™ and ITS Planning (Considering this is a new functional/skill area, the training will need to be comprehensive and will require resources: three work days for Turbo™ training and four weeks to study regional and national architecture documents)
- Approximately sixteen man-hours per month for ITS architecture maintenance activities. This may be performed by the manager or designee
- Manage the update of the Regional ITS Architecture Turbo Architecture source file with project level ITS architectures
- Facilitate ITS Steering Committee meetings annually. The ITS Steering Committee is made up of representatives from each stakeholder in the region
- A qualified consultant to assist with the ITS architecture maintenance activities. (LADOTD has on a retainer contract a professional engineering consulting firm to provide ITS, TIM Program, TMC Operations Staffing and Systems Engineering Support)

Although LADOTD will lead the architecture maintenance activities, like all other regional planning activities, ITS architecture maintenance will take close coordination between several agencies. LADOTD will need to coordinate with other major stakeholders* in the region, including:

- Louisiana Department of Transportation and Development (LADOTD) Districts 02
- Louisiana Department of Transportation and Development (LADOTD) ITS Section
- Louisiana State Police (Troops B)
- New Orleans Regional Planning Commission (NORPC)
- Jefferson Parish
- City of New Orleans

*Note – Other stakeholders may be included as necessary based on ITS development and deployment activities.

As LADOTD takes responsibility for architecture maintenance, they will use agreements to create a management/oversight function (e.g. a “Regional ITS Architecture Maintenance Committee”) to oversee Regional ITS Architecture maintenance work, which would have representation from the key stakeholders to the agreement as listed above. At a minimum, such a committee will include two LADOTD representative, one NORPC representative, and one FHWA representative.

It is proposed that such a Regional ITS Architecture Maintenance Committee will be responsible for recommending/presenting the proposed changes to the MPO Technical Advisory Committee (this is the same committee that approves regional planning documents). The Regional ITS Architecture Maintenance Committee will meet annually to report/discuss any changes to ITS in the region. All

the regional stakeholders will be responsible for informing/updating the regional maintenance committee about new ITS deployments in their region. The Architecture Maintenance Committee will also be responsible for following up with all of the regional stakeholders to ensure that any and all ITS deployments are reported and documented in the regional plan.

Following this architecture adoption by the MPO, it is recommended that the Regional ITS Architecture Maintenance Committee meet at least once a year to:

- Review progress in ITS implementation projects
- Verify that the regional ITS architecture Turbo Architecture™ source file is kept up to date with the region's ITS projects
- Update plans for future deployments by each regional stakeholder
- Review changes in State and National ITS Architectures, regulations, and requirements, if any
- Determine any needs for an update to the New Orleans Regional ITS Architecture

10.3 When will the architecture be updated?

The regional ITS architecture is not static. It must change as plans change, as ITS projects are implemented, and as the ITS needs and services evolve in the region.

At a minimum, the Regional ITS Architecture will be reviewed annually by the Regional ITS Architecture Maintenance Committee. The Regional ITS Architecture Maintenance Committee may meet and perform architecture updates more frequently to keep with the pace of the region's ITS implementation. Annual or more frequent updates will include integrating completed projects into the regional ITS architecture Turbo Architecture™ source file. A one page summary of the change will be added as an appendix to the regional ITS architecture document.

Regardless of the frequency for periodic updates, it is recommended that the Committee recognize the potential need for "Exception Maintenance" to occur in the event of major project implementations, major revisions to the National ITS Architecture, or to meet the requirements of future regulations.

It is recommended that the Regional ITS Architecture be updated in coordination with the MTP. Upon recommendation of the Regional Architecture Maintenance Committee, the MPO Technical Advisory Committee will make a resolution to accept any revisions/changes/updates to the ITS architecture.

The following list includes many of the events that may cause change to a regional ITS architecture:

10.3.1 Changes in Regional Needs

Regional ITS Architectures are created to support transportation planning in addressing regional needs. Over time these needs can change and the corresponding aspects of the regional ITS architecture that addresses these needs may need to be updated. These changes in needs should be expressed in updates to planning documents such as the Regional Transportation Plan.

10.3.2 New Stakeholders

Regional ITS Architectures are created to support transportation planning in addressing regional needs. Over time these needs can change and the corresponding aspects of the Regional ITS Architecture that addresses these needs may have to be updated. These changes should be expressed in updates to planning documents such as the Regional Transportation Plan.

10.3.3 Changes in Scope of Service Considered

The range of services considered by the Regional ITS Architecture expands. This might happen because the National ITS Architecture has been expanded and updated to include new user services or to better define how existing elements satisfy the user services. The National ITS Architecture may have expanded to include a user service that has been discussed in a region, but not in the Regional ITS Architecture, or was included in only a very cursory manner. Changes in the National ITS Architecture are not of themselves a reason to update a Regional ITS Architecture, but a region may want to consider any new services in the context of their regional needs.

10.3.4 Changes in Stakeholder or Element Names

An agency's name or the name used to describe their element(s) undergoes change. Transportation agencies occasionally merge, split, or just rename themselves. In addition, element names may evolve as projects are defined. The Regional ITS Architecture should be updated to reflect these changes accordingly.

10.3.5 Changes in Other Architectures

A Regional ITS Architecture covers not only elements and interfaces within a region, but also interfaces to elements in adjoining regions. Changes in the Regional ITS Architecture in one region may necessitate changes in the architecture in an adjoining region to maintain consistency between the two. Architectures may also overlap (e.g. a Statewide ITS Architecture and a Regional ITS Architecture for a region within the state) and a change in one might necessitate a change in the other.

10.3.6 Changes due to Project Definitions or Implementation

There are several changes relating to project definition that will cause the need for updates to the Regional ITS Architecture. When actually defined or implemented, a project may add, subtract, or modify elements, interfaces, or information flows from the Regional ITS Architecture. Because the Regional ITS Architecture is meant to describe the current, as well as future, regional implementation of ITS, it must be updated to correctly reflect how the developed projects integrate into the region.

10.3.7 Changes due to Project Addition/Deletion

Occasionally a project will be added or deleted through the planning process, or through project delivery, and some aspects of the Regional ITS Architecture that are associated with the project may be expanded, changed, or removed.

10.3.8 Changes in Project Priority

Due to funding constraints, or other considerations, the planned project sequencing may change. Delaying a project may have a ripple effect on other projects that depend on it. Raising the priority for a project's implementation may impact other projects that are related to it.

10.4 What Will be Maintained

Those constituent parts of a Regional ITS Architecture that will be maintained are referred to as the "baseline". This section considers the different "parts" of the Regional ITS Architecture and whether they should be a part of the baseline. Baseline parts are annually updated within the Regional ITS Architecture Turbo file and every five years within the document. The parts discussed are:

- Description of Region
- List of Stakeholders
- Operational Concepts
- List of ITS Elements
- List of Agreements
- Interfaces between Elements
- System Functional Requirements
- Applicable ITS Standards
- Project Sequencing

One of the benefits of a Regional ITS Architecture is to enable the efficient exchange of information between ITS elements in a region and with elements outside the region. Efficiency refers to the economical deployment of ITS elements and their interfaces. The result of these ITS deployments should be contributions to the safe and efficient operation of the surface transportation network. Each of the components in the Regional ITS Architecture below have a role in this economy and an appropriate effort should be levied to maintain them.

10.4.1 Description of Region

This description includes the geographic scope, functional scope, and architecture timeframe, and helps frame each of the following parts of a Regional ITS Architecture. Geographic scope defines the ITS elements that are in the region, although additional ITS elements outside the region may need to be described if they communicate ITS information to elements inside the region. Functional scope defines which services are included in a Regional ITS Architecture. Architecture timeframe is the duration (in years) into the future that the Regional ITS Architecture will consider. The description of the region is usually contained in an architecture document, but may reside in a database containing aspects of the Regional ITS Architecture, and should certainly be a part of the baseline.

10.4.2 List of Stakeholders

Stakeholders are of great importance to the definition of the architecture. Within a region, they may consolidate or separate and such changes should be reflected in the architecture. Furthermore, stakeholders that have not been engaged in the past may be approached through outreach to be sure that the Regional ITS Architecture represents their ITS requirements as well. The stakeholders should be described in architecture documentation (and may also reside in a database representing aspects of the Regional ITS Architecture). Their listing and description should be part of the baseline.

10.4.3 Operational Concepts

It is crucial that the operational concepts represented as roles and responsibilities or as customized service packages in a Regional ITS Architecture accurately represent the consensus vision of how the stakeholders want their ITS to operate for the benefit of surface transportation users. These should be reviewed and, if necessary, changed to represent both what has been deployed (which may have been shown as “planned” in the earlier version of the Regional ITS Architecture) and the current consensus view of the stakeholders. Many of the remaining maintenance efforts will depend on the outcome of the changes made here. The operational concept will reside in the architecture documentation and possibly in a diagramming tool if a customized service package approach is used, and should be part of the baseline.

10.4.4 List of ITS Elements

The inventory of ITS elements is a key aspect of the Regional ITS Architecture. Changes in stakeholders as well as operational concepts may impact the inventory of ITS elements. Furthermore, recent implementation of ITS elements may change their individual status (e.g. from planned to existing). The list of elements is often contained in architecture documentation and is key information in any architecture database. It is a key aspect of the baseline.

10.4.5 List of Agreements

One of the greatest values of a Regional ITS Architecture is to identify where information will cross an agency boundary, which may indicate a need for an agency agreement. An update to the list of agreements can follow the update to the Operational Concept and/or interfaces between elements. The list of agreements will usually be found in the architecture documentation. This listing should be a part of the baseline.

10.4.6 Interfaces between Elements

Interfaces between elements define the "details" of the architecture. They are the detailed description of how the various ITS are or will be integrated throughout the timeframe of the architecture. These details are usually held in an architecture database. They are a key aspect of the architecture baseline and one that will likely see the greatest amount of change during the maintenance process.

10.4.7 System Functional Requirements

High-level functions are allocated to ITS elements as part of the Regional ITS Architecture. These can serve as a starting point for the functional definition of projects that map to portions of the regional ITS architecture. Usually this information is held in spreadsheets or databases, but may be included in the architecture document. They are a part of the baseline.

10.4.8 Applicable ITS Standards

The selection of standards depends on the information exchange requirements. But in addition, the maintenance process should consider how ITS standards may have evolved and matured since the last update and consider how any change in the "standards environment" may impact previous regional standards choices (especially where there are competing standards). For example, if Extensive Markup Language (XML) based Center-To-Center standards reach a high level of maturity, reliability, and cost-effectiveness, then a regional standards technology decision may be made to transition from investments in other standards technologies (e.g. Common Object Request Broker Architecture (CORBA) to XML). The description of the standards environment for the region, as well as the details of which standards apply to the architecture, should be part of the baseline.

10.4.9 Project Sequencing

While project sequencing is partly determined by functional dependencies (e.g. "surveillance" must be a precursor to "traffic management"), the reality is that most project sequences are local policy decisions. Project sequences should be reviewed to make sure that they are in line with current policy decisions. Furthermore, policy makers should be informed of the sequences and their input should be sought to make the project sequences coincide with their expectations. This is crucial to eliminate the possibility of the Regional ITS Architecture becoming irrelevant. The project sequencing should be included in the architecture documentation and may also be held in a spreadsheet or database. These should be part of the architecture baseline.

10.5 How will the Architecture be Maintained?

LADOTD ITS Section (Section 56) will oversee and ensure that the Architecture is maintained. LADOTD will utilize its contracted consulting services contract for ITS Traffic Incident Management (TIM) Program TMC Operations Staffing and Systems Engineering Support for this effort. The guidelines contained within FHWA's *Regional ITS Architecture Maintenance White Paper* will be helpful in guiding the maintenance effort. In addition to detailing the recommended maintenance process, the White Paper also contains examples of Maintenance Plans developed by a range of agencies and regions throughout the country.

11 Functional Requirements

Each ITS operated by the stakeholders must perform certain functions to effectively deliver the ITS services desired by the region. The primary functions that each system needs to perform are broadly defined in the New Orleans Regional ITS Architecture. The high-level requirements are grouped into functional areas that identify requirements associated with each selected ITS service.

Due to the detail of the functional requirements in **Table 8**, it has not been fully included within the written Regional ITS Architecture. However, the functional requirements are available by running a report from the Regional ITS Architecture Turbo Architecture source file which can be made available upon request to the LADOTD ITS Section. **Table 8** below shows a sample of the report output information that can be obtained from Turbo.

Table 8: Functional Requirements (Sample)

Element Name	Entity Name	Functional Area	Functional Area Description	Requirement ID	Requirement	Status
Airport ITS Field Equipment	Roadway Subsystem	Roadway Infrastructure Monitoring	Sensors that monitor the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts), under maintenance center and maintenance vehicle control.	1	The field element shall include infrastructure condition monitoring sensors that monitor the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts), under maintenance center control.	Existing
				3	The field element shall provide operational status for the infrastructure condition monitoring sensors to the maintenance center.	Existing
				5	The field element shall provide fault data for the infrastructure condition monitoring sensors to the maintenance center for repair.	Existing
For the entire table of functional requirements, see the regional ITS architecture Turbo Architecture source file.						

12 ITS Standards

Standardizing the flow of information between the systems is essential to cost-effectively integrating ITS throughout the region. ITS standards are fundamental to the establishment of an open ITS environment that achieves the goal of interoperability for ITS. Standards facilitate deployment of interoperable systems at local, regional, and national levels without impeding innovation as technology advances and new approaches evolve.

Establishing standards for exchanging information among ITS systems is important not only from an interoperability point of view; it also provides interchangeability and expandability thereby reducing risk and cost. Since an agency using standardized interfaces can select among multiple vendors for products and applications, competition is maintained and prices are lower in the long term.

Standards Development Organization (SDO) is developing ITS standards that support interoperability and interchangeability. Several of the communication standards overlap in applicability. This provides flexibility in the design of ITS systems allowing agencies to choose the most applicable standard for their needs. Before systems are designed, all stakeholders involved in the applicable ITS service(s) should decide upon the standards and their specifics that will be used. Once a decision is made, all future systems should use the agreed upon standards.

Table 9: ITS Standards

Group	SDO	Document ID	Standard Title	Standard Type	User Defined
No	AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1204	Object Definitions for Environmental Sensor Stations (ESS)	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1206	Object Definitions for Data Collection and Monitoring (DCM) Devices	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1207	Object Definitions for Ramp Meter Control (RMC) Units	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1208	Object Definitions for Closed Circuit Television (CCTV) Switching	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters (SSM)	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1213	Object Definitions for Electrical and Lighting Management Systems (ELMS)	Message/Data	No
No	AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No
No	APTA	APTA TCIP-S-001 3.0.3	Standard for Transit Communications Interface Profiles	Message/Data	No
No	ASTM	ASTM E2468-05	Standard Practice for Metadata to Support Archived Data Management Systems	Other	No
No	ASTM	ASTM E2665-08	Standard Specifications for Archiving ITS-Generated Traffic Monitoring Data	Message/Data	No
Yes	AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No
Yes	AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No
Yes	ASTM/IEEE/SAE	DSRC 5GHz	Dedicated Short Range Communication at 5.9 GHz Standards Group	Group	No
Yes	IEEE	IEEE IM	Incident Management Standards Group	Group	No
Yes	SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No
Yes	SAE	ATIS Low Bandwidth	Advanced Traveler Information Systems (ATIS) Bandwidth Limited Standards Group	Group	No
Yes	SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No

13 Agreements

This section identifies the list of existing and future agreements between each of the stakeholder organizations. With regard to future agreements, the following list identifies the agreements that should be established but does not necessarily fully define the agreements themselves.

Table 10: Agreements

Agreement Title	Agreement Status	Description	Lead Stakeholder	Associated Stakeholders
ITS Deployment and Operations - LADOTD/Jeff Parish	Planned	LADOTD has installed CCTV cameras along state and federal highways throughout the state. As ITS further develops in New Orleans, ITS field equipment will need to be deployed on local routes that serve as alternate routes for the state and federal routes. Since LADOTD has already staffed the TMC with operators to monitor its CCTV cameras, it is feasible that cameras on local alternate routes may be installed and monitored by the TMC operations staff.	LADOTD	Jefferson Parish
LADOTD Cooperative Endeavor Agreement Regional Traffic Management Center with RPC	Existing	Cooperative Endeavor Agreement (CEA) between LADOTD and NORPC for the operations, management and maintenance of the RTMC facility. The agreement was fully executed on May 16, 2007.	LADOTD	NORPC
Traffic Data Sharing - NORPC/DOTD/Jeff Parish	Planned	Due to the multi-jurisdictional layout of the New Orleans MPO area and the abundance of signalized intersections, the NORPC has taken an initiative to become the central repository for traffic data. As part of this initiative, an agreement for data sharing must be developed between NORPC and the entities performing traffic signal operations.	NORPC	City of New Orleans
Traffic Data Sharing - NORPC/DOTD/Jeff Parish	Planned	Due to the multi-jurisdictional layout of the New Orleans MPO area and the abundance of signalized intersections, the NORPC has taken an initiative to become the central repository for traffic data. As part of this initiative, an agreement for data sharing must be developed between NORPC and the entities performing traffic signal operations.	NORPC	Jefferson Parish
Traffic Data Sharing - NORPC/DOTD/Jeff Parish	Planned	Due to the multi-jurisdictional layout of the New Orleans MPO area and the abundance of signalized intersections, the NORPC has taken an initiative to become the central repository for traffic data. As part of this initiative, an agreement for data sharing must be developed between NORPC and the entities performing traffic signal operations.	NORPC	LADOTD
Traffic Detection and Data Dissemination - LADOTD/NAVTEQ	Existing	LADOTD has entered into an agreement with NAVTEQ for installation and operation of NAVTEQ field equipment on existing structures along state highways. In exchange for use of the structures, LADOTD is provided with traffic data and travel times from the field equipment.	LADOTD	NAVTEQ
Traffic Signal Maintenance - LADOTD/City of New Orleans	Existing	Agreement between LADOTD and City of New Orleans for providing maintenance and operations of traffic signals at state intersections within the city limits. Maintenance and operations include: payment for electricity, inspection, replacement of inoperative light bulbs and fuses, and straightening of signal heads and signs	LADOTD	City of New Orleans
Traffic Signal Maintenance - LADOTD/Jeff Parish	Planned	Agreement between LADOTD and Jefferson Parish for providing maintenance and operations of traffic signals at state intersections within the parish. Maintenance and operations include: payment for electricity, inspection, replacement of inoperative light bulbs and fuses, and straightening of signal heads and signs	LADOTD	Jefferson Parish

Agreement Title	Agreement Status	Description	Lead Stakeholder	Associated Stakeholders
Traffic Signal Operations - LADOTD/Jeff Parish/City of New Orleans	Planned	With the evolution of ITS, traffic signal operations are envisioned to be one day performed by TMC staff. Due to the growth in traveler demands and fiscally constrained budgets, the use of existing staff to operate and/or monitor traffic signal may be considered.	LADOTD	City of New Orleans
Traffic Signal Operations - LADOTD/Jeff Parish/City of New Orleans	Planned	With the evolution of ITS, traffic signal operations are envisioned to be one day performed by TMC staff. Due to the growth in traveler demands and fiscally constrained budgets, the use of existing staff to operate and/or monitor traffic signal may be considered.	LADOTD	Jefferson Parish

Appendix A - Architecture Flow Definitions

Flow Name	Flow Description
accident report	Report of commercial vehicle safety accident. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
alarm	Information about a Commercial Vehicle or Freight Equipment breach, non-permitted security sensitive hazmat detected at the roadside, route deviation, or Commercial Vehicle Driver / Commercial Vehicle / Freight Equipment assignment mismatches which includes the location of the Commercial Vehicle and appropriate identities.
alert notification	Notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The flow identifies the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This flow may also identify specific information that should not be released to the public.
alert notification coordination	Coordination of emergency alerts to be distributed to the public. This includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public and status of the public notification.
alert status	Information indicating the current status of the emergency alert including identification of the traveler and driver information systems that are being used to provide the alert.
archive coordination	Catalog data, meta data, published data, and other information exchanged between archives to support data synchronization and satisfy user data requests.
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.
archived data product requests	A user-specified request for archived data products (i.e. data, meta data, or data catalogs). The request also includes information that is used to identify and authenticate the user and support electronic payment requirements, if any.
archived data products	Raw or processed data, meta data, data catalogs and other data products provided to a user system upon request. The response may also include any associated transaction information.
audit data	Information to support a tax audit.
automated roadway control data	Control commands and operating parameters provided to field equipment that controls and monitors automated vehicle operations.
barrier system control	Information used to configure and control barrier systems that are represented by gates, barriers and other automated or remotely controlled systems used to manage entry to roadways.
barrier system status	Current operating status of barrier systems. Barrier systems represent gates, barriers and other automated or remotely controlled systems used to manage entry to roadways. Status of the systems includes operating condition and current operational state.
broadcast traveler information	General traveler information that contains traffic and road conditions, link travel times, incidents, advisories, restrictions, transit service information, weather information, parking information, and other related traveler information.
care facility status	Information regarding facility type and capabilities, facility status, and its ability to admit new patients.
care facility status request	Request for information regarding care facility availability and status.
compliance review report	Report containing results of carrier compliance review, including concomitant out-of-service notifications, carrier warnings/notifications. The information may be provided as a response to a real-time query of proactively by the source. The query flow is not explicitly shown.
credential application	Application for commercial vehicle credentials. Authorization for payment is included.
credentials information	Response containing full vehicle fuel tax and registration credentials information. "Response" may be provided in reaction to a real-time query or a standing request for updated information. The query flow is not explicitly shown.

Flow Name	Flow Description
credentials status information	Credentials information such as registration, licensing, insurance, check flags, and electronic screening enrollment data. A unique identifier is included. Corresponds to the credentials portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.
current asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.
cv driver record	Information typically maintained by a state driver licensing agency about a driver of a commercial vehicle including driver identification data, license data, permit data, and driving history details.
cv driver record request	A request for information about a commercial vehicle driver.
cv repair status	Information about the completion of a repair to a commercial vehicle.
data collection and monitoring control	Information used to configure and control data collection and monitoring systems.
demand responsive transit plan	Plan regarding overall demand responsive transit schedules and deployment.
demand responsive transit request	Request for Para-transit support.
disable commercial vehicle	A request that a specific commercial vehicle should be safely disabled.
emergency archive data	Logged emergency information including information that characterizes identified incidents (routine highway incidents through disasters), corresponding incident response information, evacuation information, surveillance data, threat data, and resource information. Content may include a catalog of available information, the actual information to be archived and associated meta data that describes the archived information.
emergency notification	An emergency request for assistance automatically initiated by a vehicle or originated by a traveler using an in-vehicle or personal device.
emergency plan coordination	Information that supports coordination of emergency management plans, continuity of operations plans, emergency response and recovery plans, evacuation plans, and other emergency plans between agencies. This includes general plans that are coordinated prior to an incident and shorter duration tactical plans that are prepared during an incident.
emergency route request	Request for access routes for emergency response vehicles and equipment. This may be a request for ingress or egress routes or other emergency routes.
emergency routes	Suggested ingress and egress routes for access to and between the scene and staging areas or other specialized emergency access routes.
emergency traffic control information	Status of a special traffic control strategy or system activation implemented in response to an emergency traffic control request, a request for emergency access routes, a request for evacuation, a request to activate closure systems, a request to employ driver information systems to support public safety objectives, or other special requests. Identifies the selected traffic control strategy and system control status.
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments, activate traffic control and closure systems such as gates and barriers, activate safeguard systems, or use driver information systems. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, request a specific evacuation traffic control plan, request activation of a road closure barrier system, or place a public safety or emergency-related message on a dynamic message sign.
emergency transit schedule information	Information on transit schedule and service changes that adapt the service to better meet needs of responders and the general public in an emergency situation, including special service schedules supporting evacuation.
emergency transit service request	Request to modify transit service and fare schedules to address emergencies, including requests for transit services to evacuate people from and/or deploy response agency personnel to an emergency scene. The request may poll for resource availability or request pre-staging, staging, or immediate dispatch of transit resources.
emergency transit service response	Response indicating changes to transit service, fares, and/or restrictions that will be made and status of transit resources to be deployed to support emergency response and/or evacuation.

Flow Name	Flow Description
emergency traveler information	Public notification of an emergency such as a natural or man-made disaster, civil emergency, or child abduction. This flow also includes evacuation information including evacuation instructions, evacuation zones, recommended evacuation times, tailored evacuation routes and destinations, traffic and road conditions along the evacuation routes, traveler services and shelter information, and reentry times and instructions.
emergency traveler information request	Request for alerts, evacuation information, and other emergency information provided to the traveling public.
environmental probe data	Data from vehicle safety and convenience systems that can be used to estimate environmental conditions, including measured air temperature, exterior light status, wiper status, sun sensor status, rain sensor status, traction control status, anti-lock brake status, and other collected vehicle system status and sensor information. The collected data is reported along with the location, heading, and time that the data was collected. Both current data and snapshots of recent events (e.g., traction control or anti-lock brake system activations) may be reported.
environmental sensor data	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by fixed and/or mobile environmental sensors. Operational status of the sensors is also included.
environmental sensors control	Data used to configure and control environmental sensors.
equipment maintenance status	Current status of field equipment maintenance actions.
evacuation coordination	Coordination of information regarding a pending or in-process evacuation. Includes evacuation zones, evacuation times, evacuation routes, forecast network conditions, and reentry times.
evacuation information	Evacuation instructions and information including evacuation zones, evacuation times, and reentry times.
event confirmation	Confirmation that special event details have been received and processed.
event information	Special event information for travelers. This would include a broader array of information than the similar "event plans" that conveys only information necessary to support traffic management for the event.
event information request	Request for special event information.
event plans	Plans for major events possibly impacting traffic.
fare and price information	Current transit, parking, and toll fee schedule information.
field device status	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.
field equipment status	Identification of field equipment requiring repair and known information about the associated faults.
Flood Gate Status	This architecture flow represents the status of the levee flood gate. The status is either open or closed.
Flood Gate Status Request	This is the request for the status of the levee flood gate.
freeway control data	Control commands and operating parameters for ramp meters, mainline metering/lane controls and other systems associated with freeway operations.
freeway control status	Current operational status and operating parameters for ramp meters, mainline metering/lane controls and other control equipment associated with freeway operations.
hazmat information	Information about a particular hazmat load including nature of the load and unloading instructions. May also include hazmat vehicle route and route update information.
hazmat information request	Request for information about a particular hazmat load.
HOV data	Current HOV lane information including both standard traffic flow measures and information regarding vehicle occupancy in HOV lanes, and operational status of the HOV monitoring equipment.
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.
HRI status	Status of the highway-rail intersection equipment including both the current state or mode of operation and the current equipment condition.
incident command information coordination	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response.

Flow Name	Flow Description
incident information	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.
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 and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow provides current situation information, including a summary of incident status and its impact on the transportation system and other infrastructure, and current and planned response activities. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.
incident response status	Status of the current incident response including a summary of incident status and its impact on the transportation system, traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides), and current and planned response activities.
interactive traveler information	Traveler information provided in response to a traveler request. The provided information includes traffic and road conditions, advisories, incidents, payment information, transit services, parking information, weather information, and other travel-related data updates and confirmations.
intersection blockage notification	Notification that a highway-rail intersection is obstructed and supporting information.
ISP coordination	Coordination and exchange of transportation information between centers. This flow allows a broad range of transportation information collected by one ISP to be redistributed to many other ISPs and their clients.
lighting system control data	Information used to configure and control roadside lighting systems.
lighting system status	Status of roadside lighting controls including operating condition and current operational state.
logged vehicle routes	Anticipated route information for guided vehicles, special vehicles (e.g., oversize vehicles) or groups of vehicles (e.g., governor's motorcade) that may require changes in traffic control strategy.
maintenance and construction archive data	Information describing road construction and maintenance activities identifying the type of activity, the work performed, and work zone information including work zone configuration and safety (e.g., a record of intrusions and vehicle speeds) information. For construction activities, this information also includes a description of the completed infrastructure, including as-built plans as applicable. Content may include a catalog of available information, the actual information to be archived, and associated meta data that describes the archived information.
maintenance and construction resource coordination	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response.
maintenance and construction resource request	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response. The request may poll for resource availability or request pre-staging, staging, or immediate dispatch of resources.
maintenance and construction resource response	Current status of maintenance and construction resources including availability and deployment status. General resource inventory information covering vehicles, equipment, materials, and people and specific resource deployment status may be included.
maintenance and construction work plans	Future construction and maintenance work schedules and activities including anticipated closures with anticipated impact to the roadway, alternate routes, anticipated delays, closure times, and durations.
parking demand management request	Request to change the demand for parking facility use through pricing or other mechanisms.
parking demand management response	Response to parking demand management change requests indicating level of compliance with request.
parking information	General parking information and status, including current parking availability.
parking lot data request	Request for parking lot occupancy, fares, and availability. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
parking lot inputs	Instructions for operation of local parking facilities to support regional traffic management objectives (e.g. which parking lot exits to use). Also, includes inputs from traffic sensors to support calculation of parking lot occupancy and support more effective management of parking entrances and exits.

Flow Name	Flow Description
parking lot reservation confirmation	Confirmation for parking lot reservation.
parking reservations request	Reservation request for parking lot.
personal transit information	General and personalized transit information for a particular fixed route, flexible route, or paratransit system.
probe archive data	Probe data that allows calculation of travel times, volumes, and other measures that support transportation planning. Optionally, this flow also includes origin and destination information for vehicles that opt to provide this information.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
request transit information	Request for transit service information and current transit status.
resource coordination	Coordination of resource inventory information, specific resource status information, resource prioritization and reallocation between jurisdictions, and specific requests for resources and responses that service those requests.
resource deployment status	Status of resource deployment identifying the resources (vehicles, equipment, materials, and personnel) available and their current status. General resource inventory information and specific status of deployed resources may be included.
resource request	A request for resources to implement special traffic control measures, assist in clean up, verify an incident, etc. The request may poll for resource availability or request pre-staging, staging, or immediate deployment of resources. Resources may be explicitly requested or a service may be requested and the specific resource deployment may be determined by the responding agency.
reversible lane control	Control of automated reversible lane configuration and driver information systems.
reversible lane status	Current reversible lane status including traffic sensor and surveillance data and the operational status and mode of the reversible lane control equipment.
road network conditions	Current and forecasted traffic information, road and weather conditions, and other road network status. Either raw data, processed data, or some combination of both may be provided by this architecture flow. Information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) in effect is included along with a definition of the links, nodes, and routes that make up the road network.
road network environmental probe data	Aggregated vehicle probe information that can be used to estimate current environmental conditions. Collected information would include measured air temperature, exterior light status, wiper status, sun sensor status, rain sensor status, traction control status, ALB status, and other collected vehicle system status and sensor information.
road network status assessment	Assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.
road network traffic probe data	Aggregated route usage, travel times, and other aggregated data collected from probe vehicles that can be used to estimate current traffic conditions.
road weather information	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.
roadside archive data	A broad set of data derived from roadside sensors that include current traffic conditions, environmental conditions, and any other data that can be directly collected by roadside sensors. This data also indicates the status of the sensors and reports of any identified sensor faults.
roadway equipment coordination	The direct flow of information between field equipment. This includes transfer of information between sensors and driver information systems (e.g., DMS, HAR) or control devices (e.g., traffic signals, ramp meters), direct coordination between adjacent control devices, interfaces between detection and warning or alarm systems, and any other direct communications between field equipment. This includes information exchanged between a Signal System Master (SSM) and the Signal System Local (SSL) equipment.
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, and 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.

Flow Name	Flow Description
roadway maintenance status	Summary of maintenance fleet operations affecting the road network. This includes the status of winter maintenance (snow plow schedule and current status).
route plan	Tailored route provided by ISP in response to a specific request.
route request	Request for a tailored route based on given constraints.
route restrictions	Information about routes, road segments, and areas that do not allow the transport of security sensitive hazmat cargoes or include other restrictions (such as height or weight limits).
safety inspection report	Report containing results of commercial vehicle safety inspection. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
safety status information	Safety information such as safety ratings, security ratings or flags, inspection summaries, and violation summaries. A unique identifier is included. Corresponds to the safety and security portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.
selected routes	Routes selected based on route request criteria.
short range communications status	Status of the short range communications equipment including the current state or mode of operation and the current equipment status.
signal control data	Information used to configure and control traffic signal systems.
signal control status	Status of surface street signal controls including operating condition and current operational state.
speed monitoring control	Information used to configure and control automated speed monitoring, speed warning, and speed enforcement systems.
speed monitoring information	System status including current operational state and logged information including measured speeds, warning messages displayed, and violation records.
tax filing	Commercial vehicle tax filing data. Authorization for payment is included.
threat information	Threats regarding transportation infrastructure, facilities, or systems detected by a variety of methods (sensors, surveillance, threat analysis of advisories from outside agencies, etc.
threat information coordination	Sensor, surveillance, and threat data including raw and processed data that is collected by sensor and surveillance equipment located in secure areas.
toll advisories	Alerts and advisories provided to toll plazas to keep toll operators informed of identified threats that may impact toll operations or public safety on a toll facility.
toll archive data	Data indicating toll facility usage and pricing schedules. Content may include a catalog of available information, the actual information to be archived and associated meta data that describes the archived information.
toll data	Current toll schedules for different types of vehicles as well as advanced toll payment information.
toll data request	Request made to obtain toll schedule information or pay a toll in advance. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
toll instructions	Information provided to configure and support toll plaza operations including toll pricing information.
toll probe data	Aggregate probe data derived from electronic toll collection operations. Data collected could include vehicle speeds and travel times for a given link or collection of links.
toll service change request	Request to change pricing, modify restrictions, or modify operations of a toll road facility
toll service change response	Response to toll service change requests indicating level of compliance with request.
toll transactions	Detailed list of transactions from a toll station.
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.
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 control priority request	Request for signal priority at one or more intersections along a particular route.

Flow Name	Flow Description
traffic control priority status	Status of signal priority request functions at the roadside (e.g. enabled or disabled).
traffic flow	Raw and/or processed traffic detector data which allows derivation of traffic flow variables (e.g., speed, volume, and density measures) and associated information (e.g., congestion, potential incidents). This flow includes the traffic data and the operational status of the traffic detectors.
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications. This flow includes the images and the operational status of the surveillance system.
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.
traffic operator data	Presentation of traffic operations data to the operator including traffic conditions, current operating status of field equipment, maintenance activity status, incident status, video images, security alerts, emergency response plan updates and other information. This data keeps the operator apprised of current road network status, provides feedback to the operator as traffic control actions are implemented, provides transportation security inputs, and supports review of historical data and preparation for future traffic operations activities.
traffic probe data	Vehicle data that is used to determine traffic conditions. In a basic implementation, the data could be limited to time stamped unique identifiers that can be used to measure a vehicle's progress through the network. In more advanced implementations, the vehicle may report current position, speed, and heading and snapshots of recent events including route information, starts and stops, speed changes, and other information that can be used to estimate traffic conditions.
traffic sensor control	Information used to configure and control traffic sensor systems.
transit and fare schedules	Transit service information including routes, schedules, and fare information.
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.
transit demand management request	Request to change the demand for transit facility use through pricing or other mechanisms.
transit demand management response	Response to transit demand management change requests indicating level of compliance with request.
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.
transit fare coordination	Fare and pricing information shared between local/regional transit organizations.
transit incident information	Information on transit incidents that impact transit services for public dissemination.
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.
transit information user request	Request for special transit routing, real-time schedule information, and availability information.
transit probe data	Aggregate probe data derived from tracking transit vehicles. Data collected could include transit vehicle speeds and travel times for a given link or collection of links.
transit request confirmation	Confirmation of a request for transit information or service.
transit schedule adherence information	Dynamic transit schedule adherence and transit vehicle location information.
transit service coordination	Schedule coordination information shared between local/regional transit organizations.
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.
transit system status assessment	Assessment of damage sustained by the public transportation system including location and extent of the damage, current operational status including an estimate of remaining capacity and necessary restrictions, and time frame for repair and recovery.

Flow Name	Flow Description
transit traveler information coordination	Transit schedules, real-time arrival information, fare schedules, and general transit service information shared between transit organizations to support transit traveler information systems.
transportation information for operations	Information on the state of transportation system operations including traffic and road conditions, advisories, incidents, transit service information, weather information, parking information, and other related data.
transportation system status	Current status and condition of transportation infrastructure (e.g., tunnels, bridges, interchanges, TMC offices, maintenance facilities). In case of disaster or major incident, this flow provides an assessment of damage sustained by the surface transportation system including location and extent of the damage, estimate of remaining capacity and necessary restrictions, and time frame for repair and recovery.
traveler alerts	Traveler information alerts reporting congestion, incidents, adverse road or weather conditions, parking availability, transit service delays or interruptions, and other information that may impact the traveler. Relevant alerts are provided based on traveler-supplied profile information including trip characteristics and preferences.
traveler archive data	Data associated with traveler information services including service requests, facility usage, rideshare, routing, and traveler payment transaction data. Content may include a catalog of available information, the actual information to be archived and associated meta data that describes the archived information.
traveler profile	Information about a traveler including equipment capabilities, personal preferences, and traveler alert subscriptions.
traveler request	A request for traveler information including traffic, transit, toll, parking, road weather conditions, event, and passenger rail information. The request identifies the type of information, the area of interest, parameters that are used to prioritize or filter the returned information, and sorting preferences.
trip confirmation	Acknowledgement by the driver/traveler of acceptance of a trip plan with associated personal and payment information required to confirm reservations.
trip plan	A travel itinerary identifying a route and associated traveler information and instructions identifying recommended modes and transfer information, ride sharing options, and transit and parking reservation information.
trip request	Request for trip planning services that identifies the trip origin, destination(s), timing, preferences, and constraints. The request may also include a request for transit and parking reservations and ridesharing options associated with the trip.
vehicle signage data	In-vehicle signing data that augments regulatory, warning, and informational road signs and signals. The information provided would include static sign information (e.g., stop, curve warning, guide signs, service signs, and directional signs) and dynamic information (e.g., current signal states, grade crossing information, local traffic and road conditions, advisories, and detours).
video surveillance control	Information used to configure and control video surveillance systems.
work plan coordination	Coordination of work plan schedules and activities between maintenance and construction organizations or systems. This information includes the work plan schedules and comments and suggested changes that are exchanged as work plans are coordinated and finalized.
work plan feedback	Comments and suggested changes to proposed construction and maintenance work schedules and activities. This information influences work plan schedules so that they minimize impact to other system operations and the overall transportation system.
work zone information	Summary of maintenance and construction work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.
work zone warning device control	Data used to configure and control work zone safety monitoring and warning devices.
work zone warning status	Status of a work zone safety monitoring and warning devices. This flow documents system activations and includes additional supporting information (e.g., an image) that allows verification of the alarm.
yellow pages information	Travel service information and reservations for tourist attractions, lodging, dining, service stations, emergency services, and other services and businesses of interest to the traveler.
yellow pages request	Request for travel service information including tourist attractions, lodging, restaurants, service stations, and emergency services. The request identifies the type of service, the area of interest, optional reservation request information, parameters that are used to prioritize or filter the returned information, and sorting preferences.

Appendix B - New Orleans Regional Architecture Interface Diagrams.

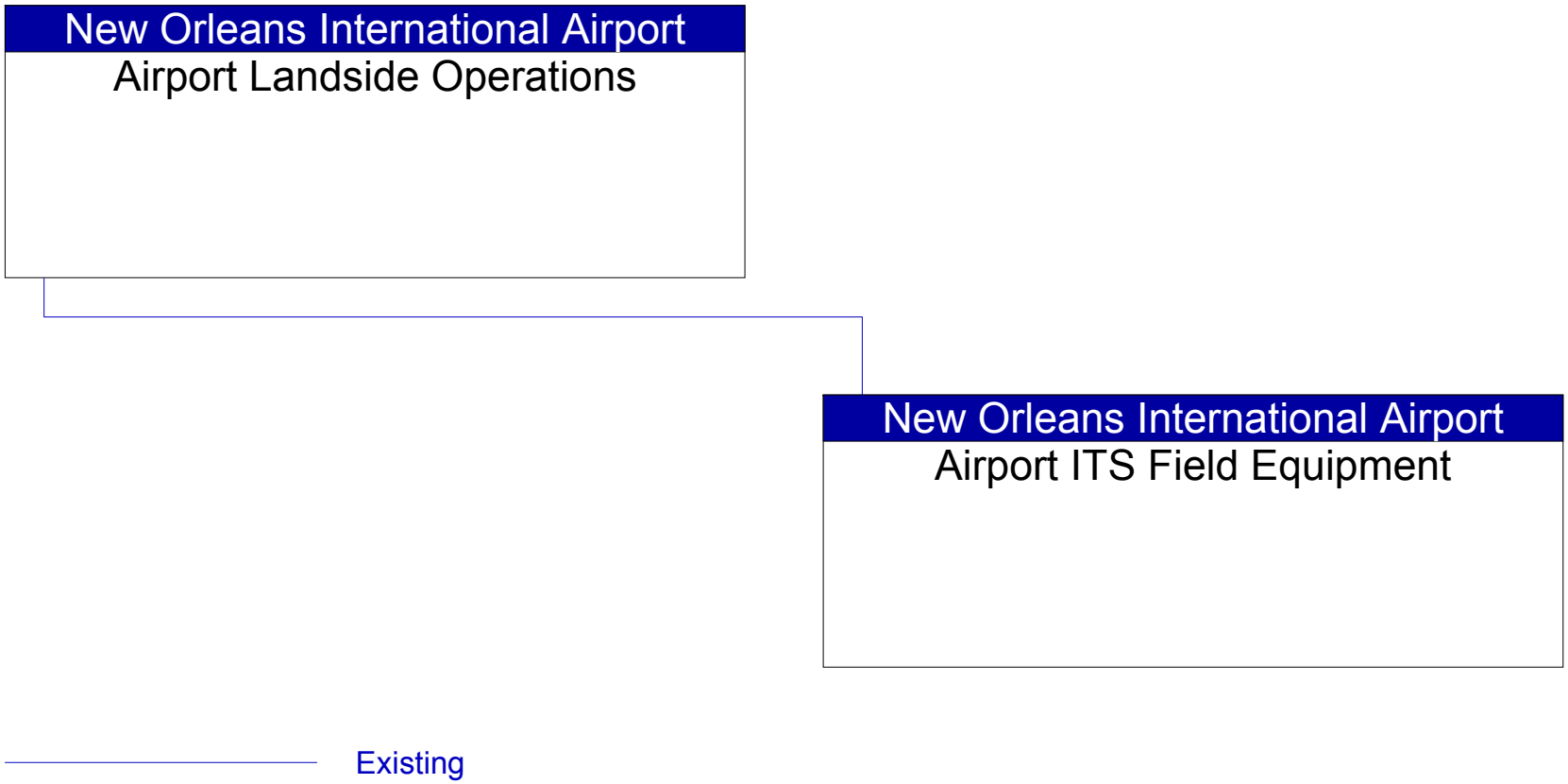

Figure 6: Airport ITS Field Equipment Interconnect Context Diagram

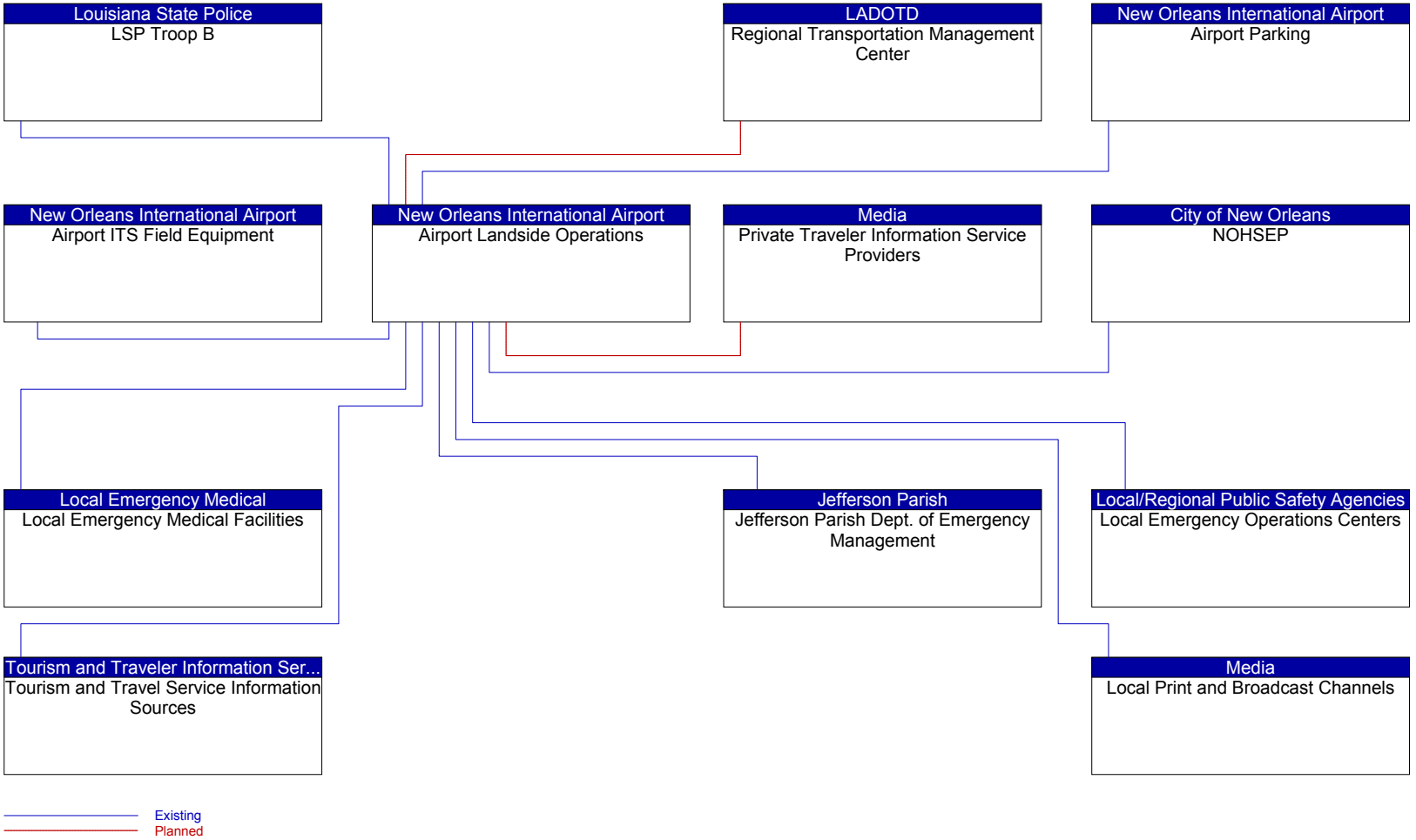

Figure 7: Airport Landside Operations Interconnect Context Diagram

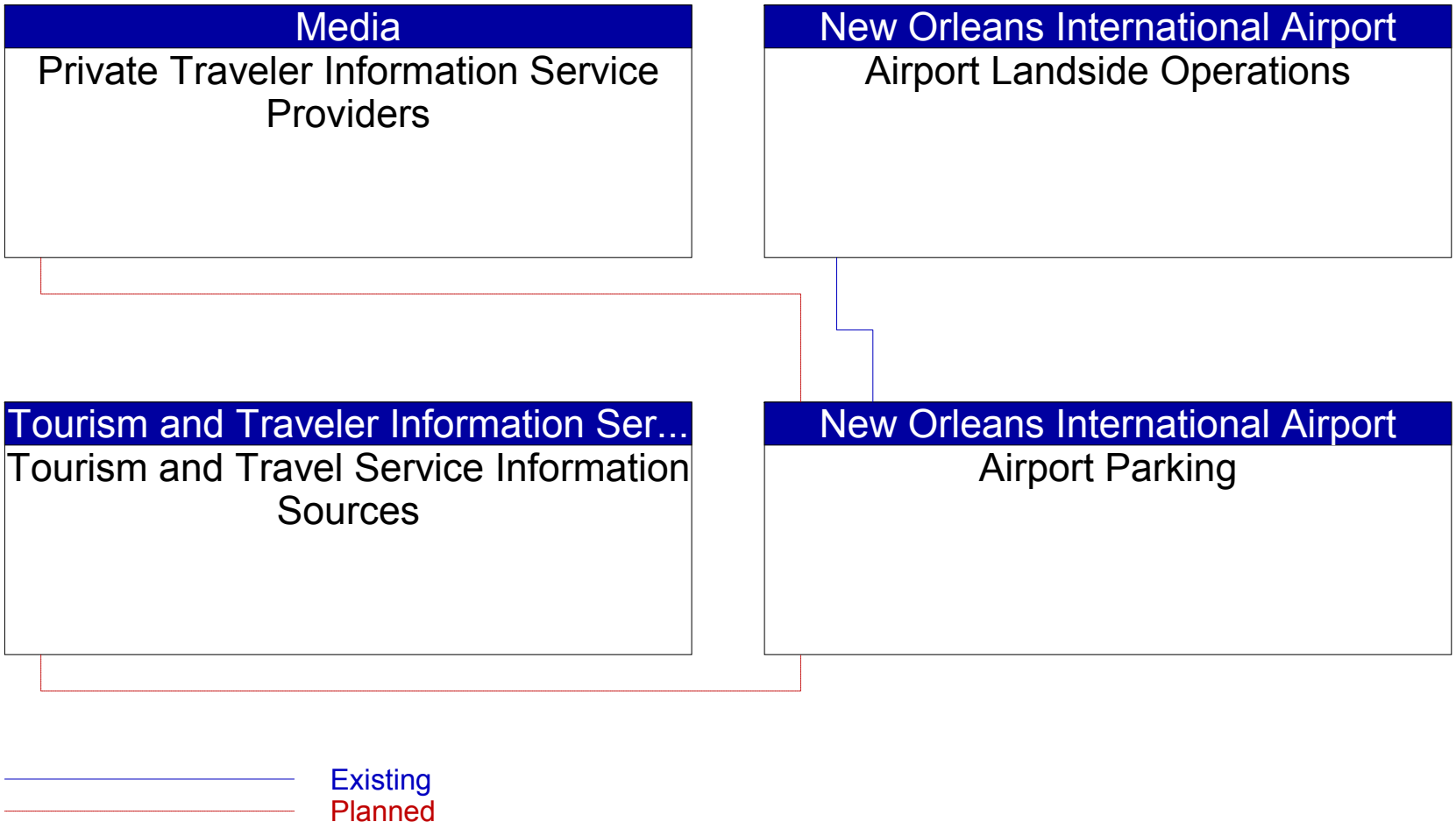

Figure 8: Airport Parking Interconnect Context Diagram

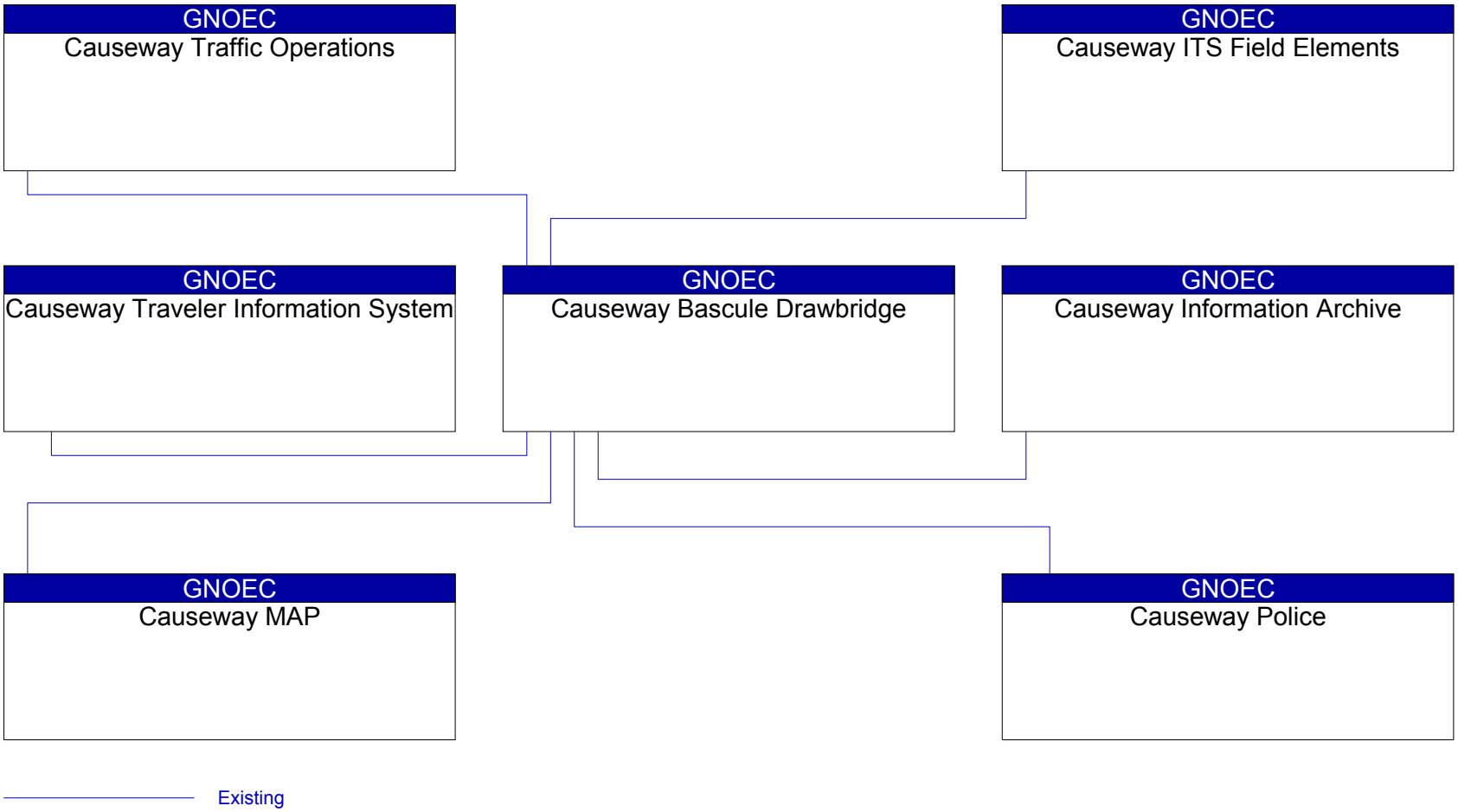

Figure 9: Causeway Bascule Drawbridge Interconnect Context Diagram

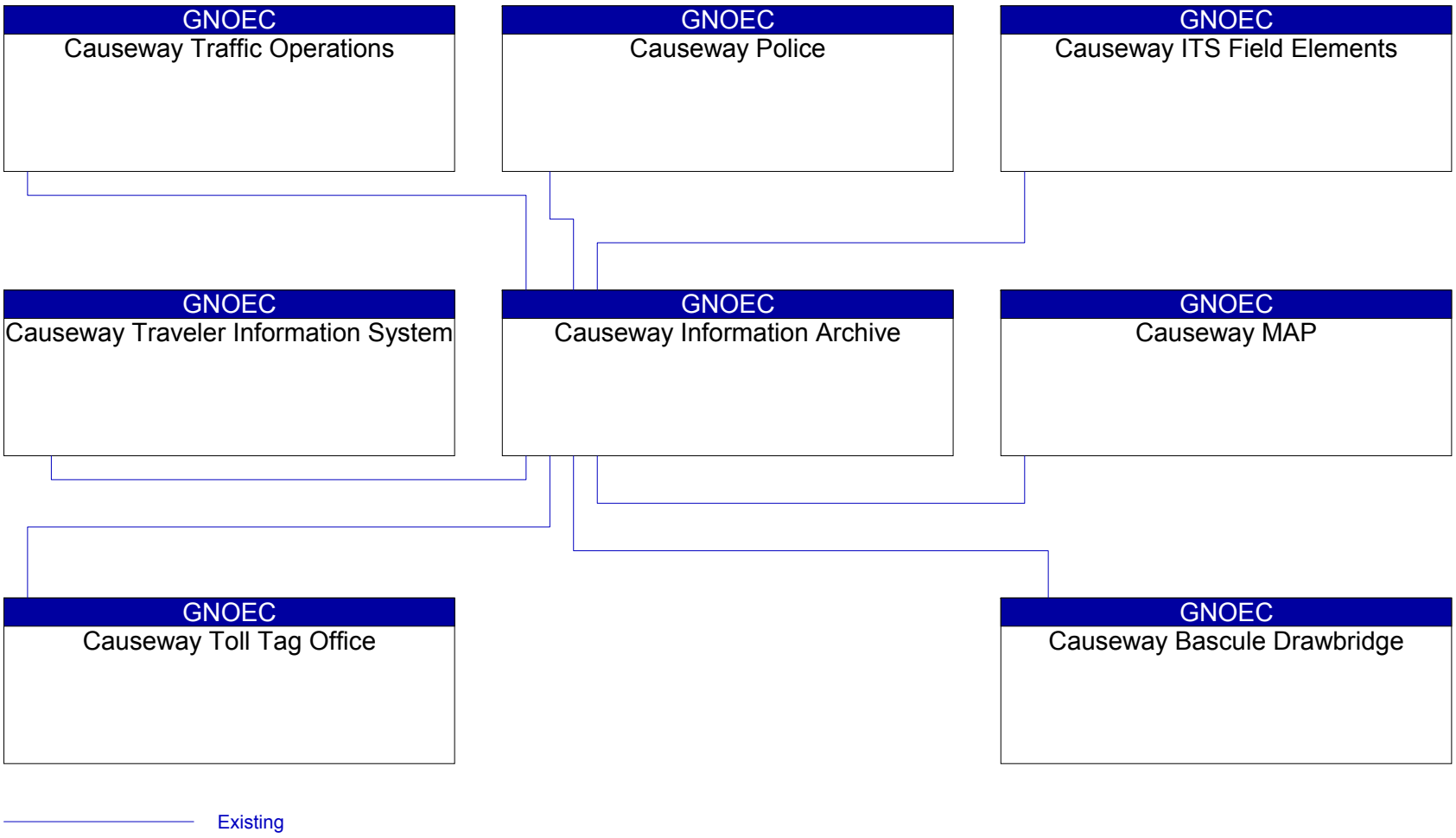

Figure 10: Causeway Information Archive Interconnect Context Diagram

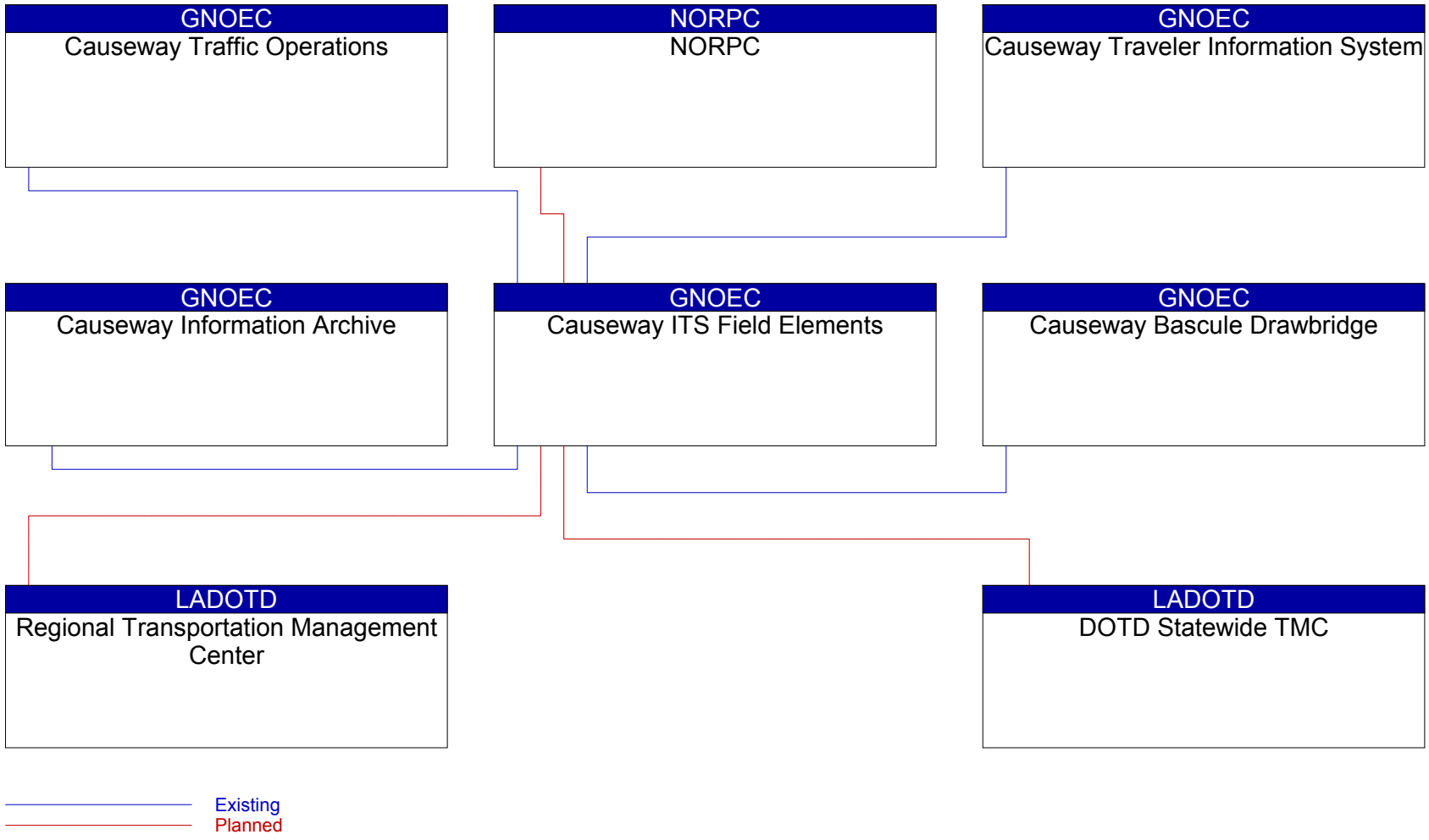

Figure 11: Causeway ITS Field Elements Interconnect Context Diagram

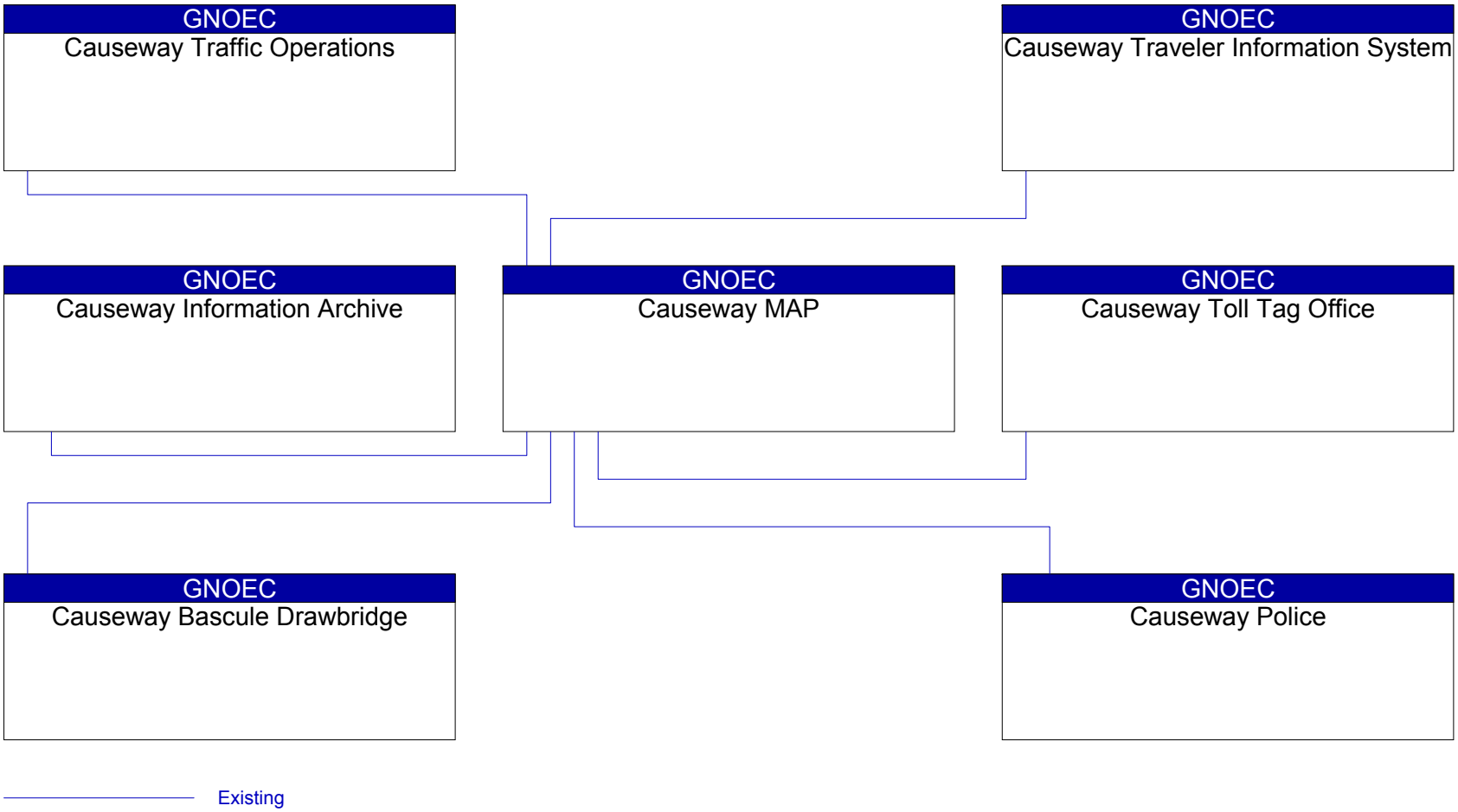

Figure 12: Causeway MAP Interconnect Context Diagram

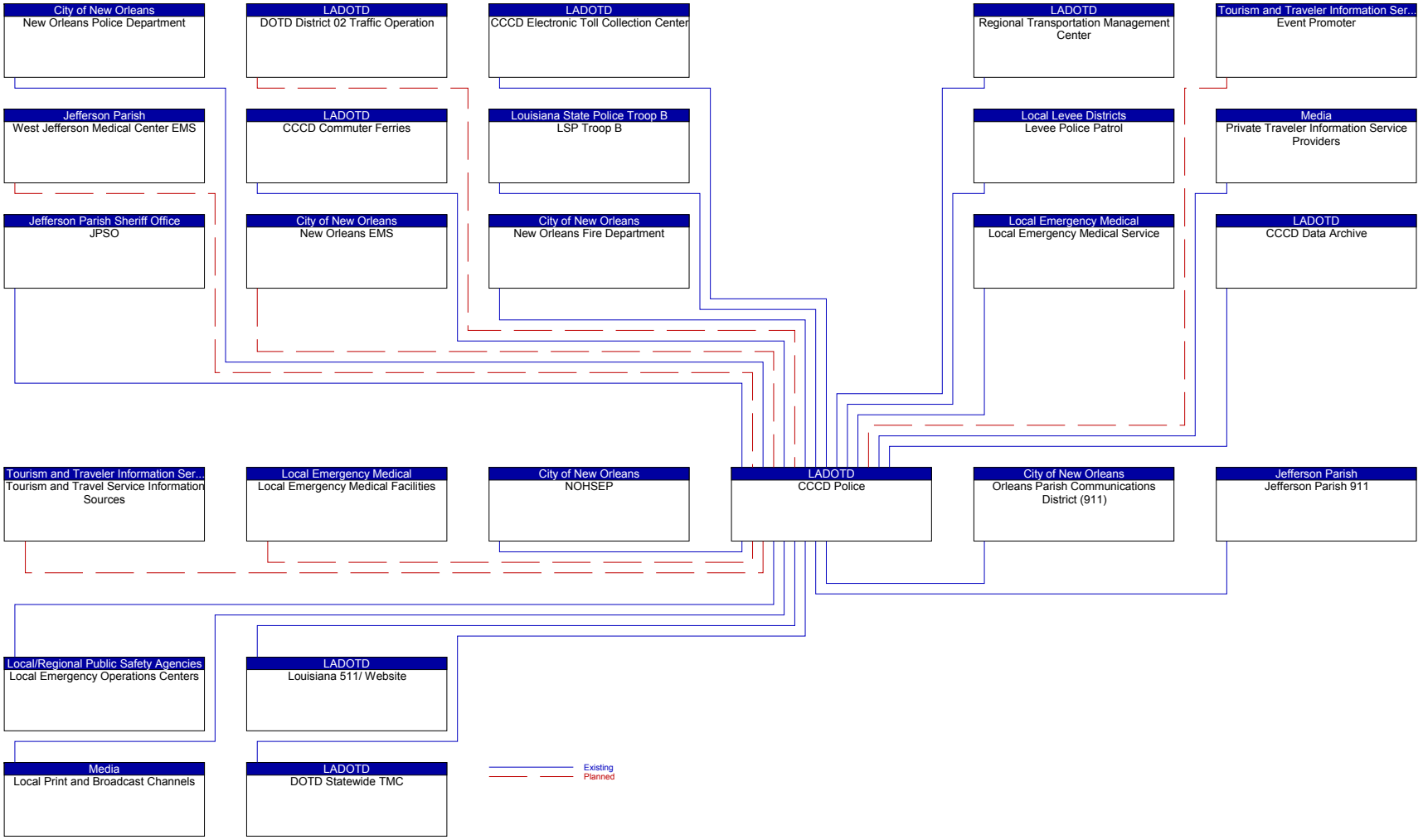

Figure 13: Causeway Police Interconnect Context Diagram

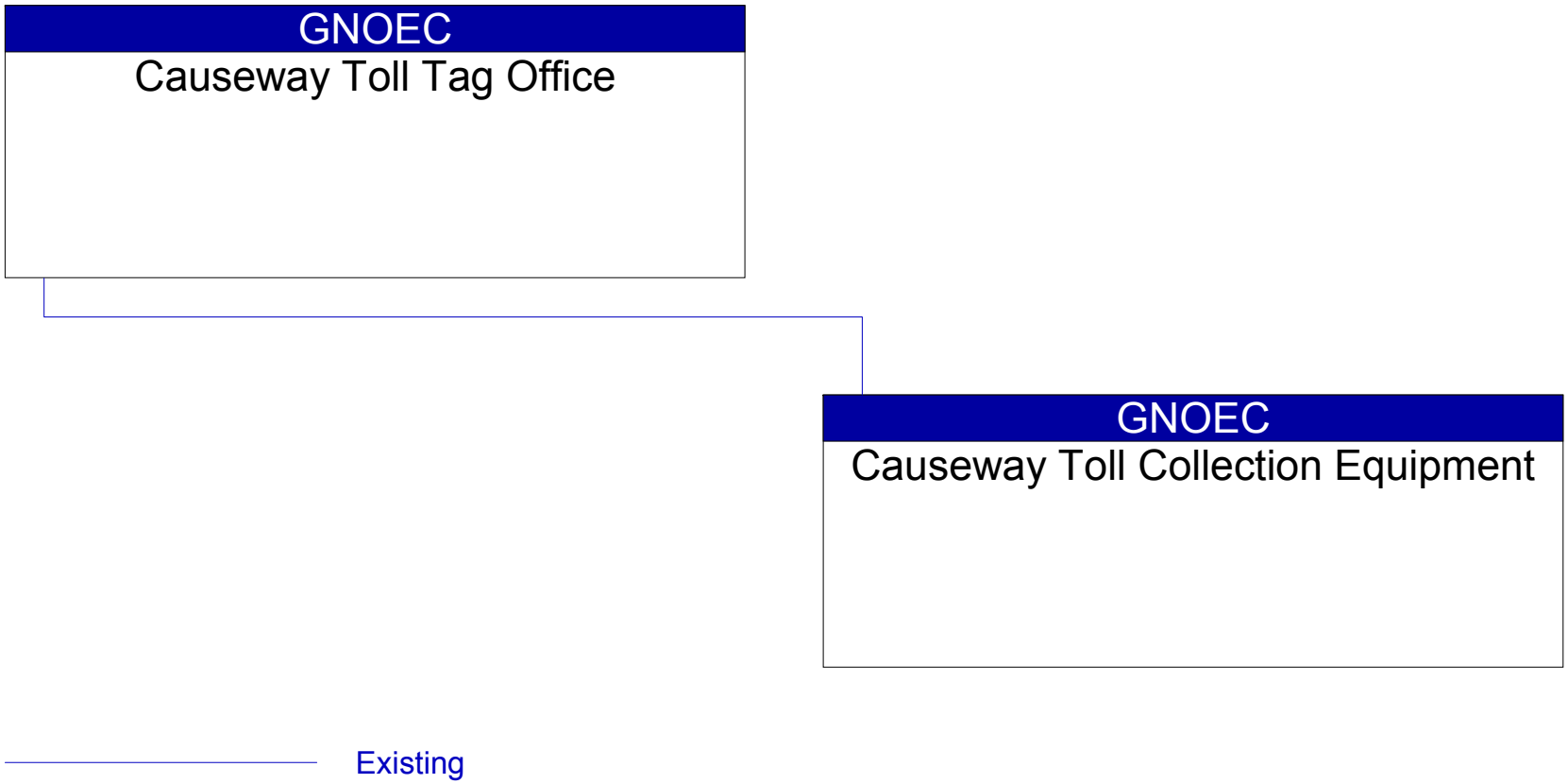

Figure 14: Causeway Toll Collection Equipment Interconnect Context Diagram

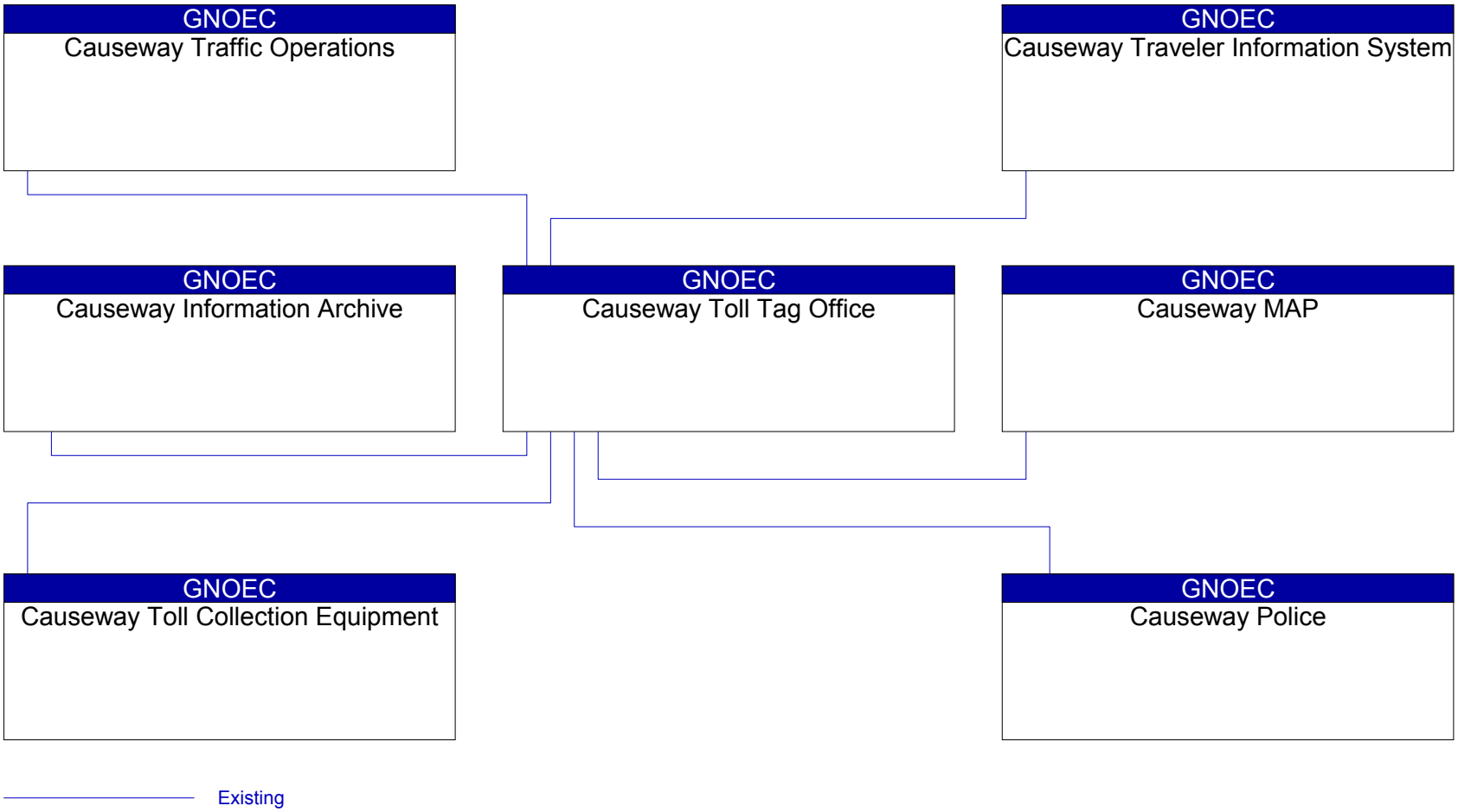

Figure 15: Causeway Toll Tag Office Interconnect Context Diagram

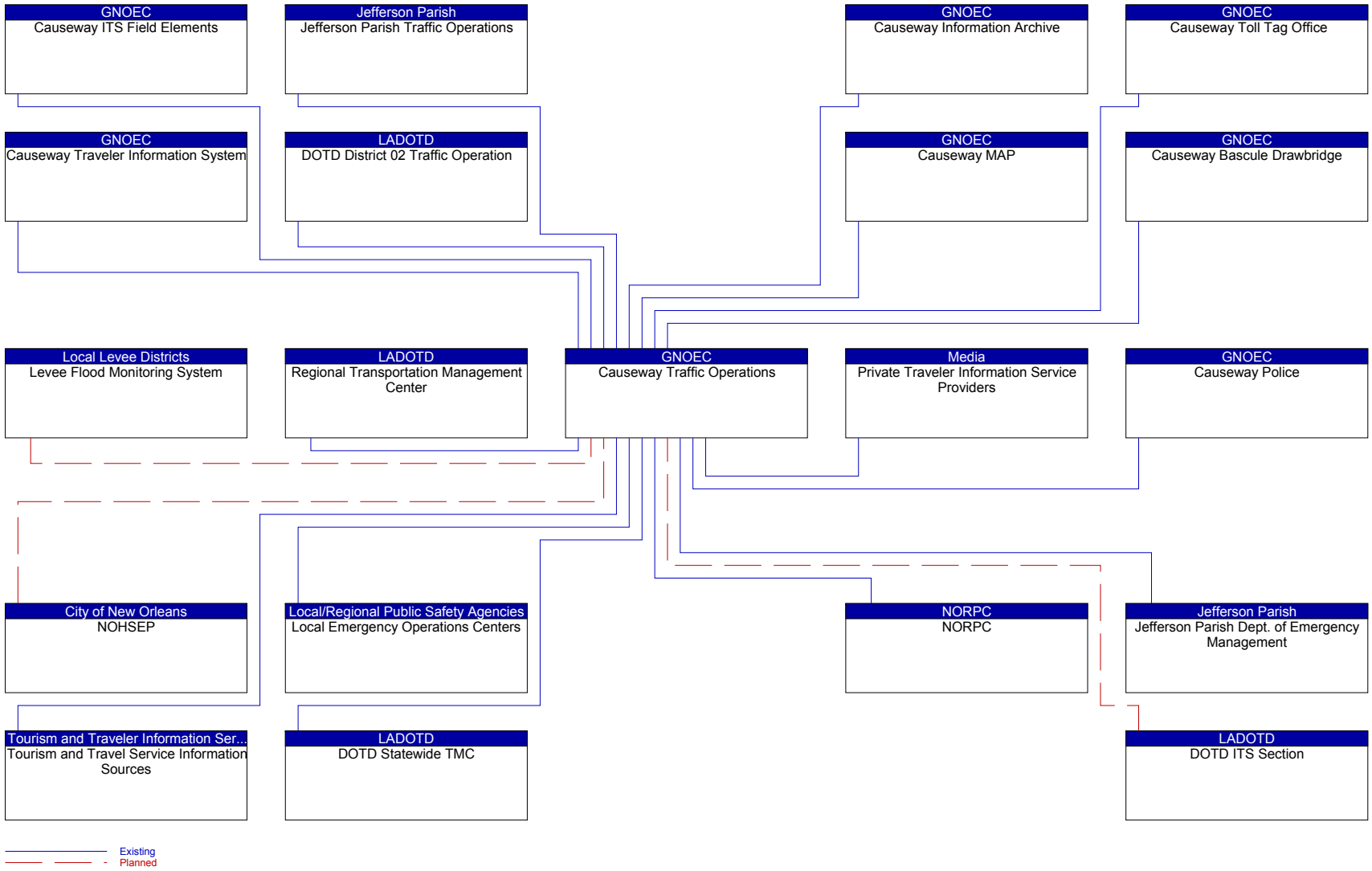

Figure 16: Causeway Traffic Operations Interconnect Context Diagram

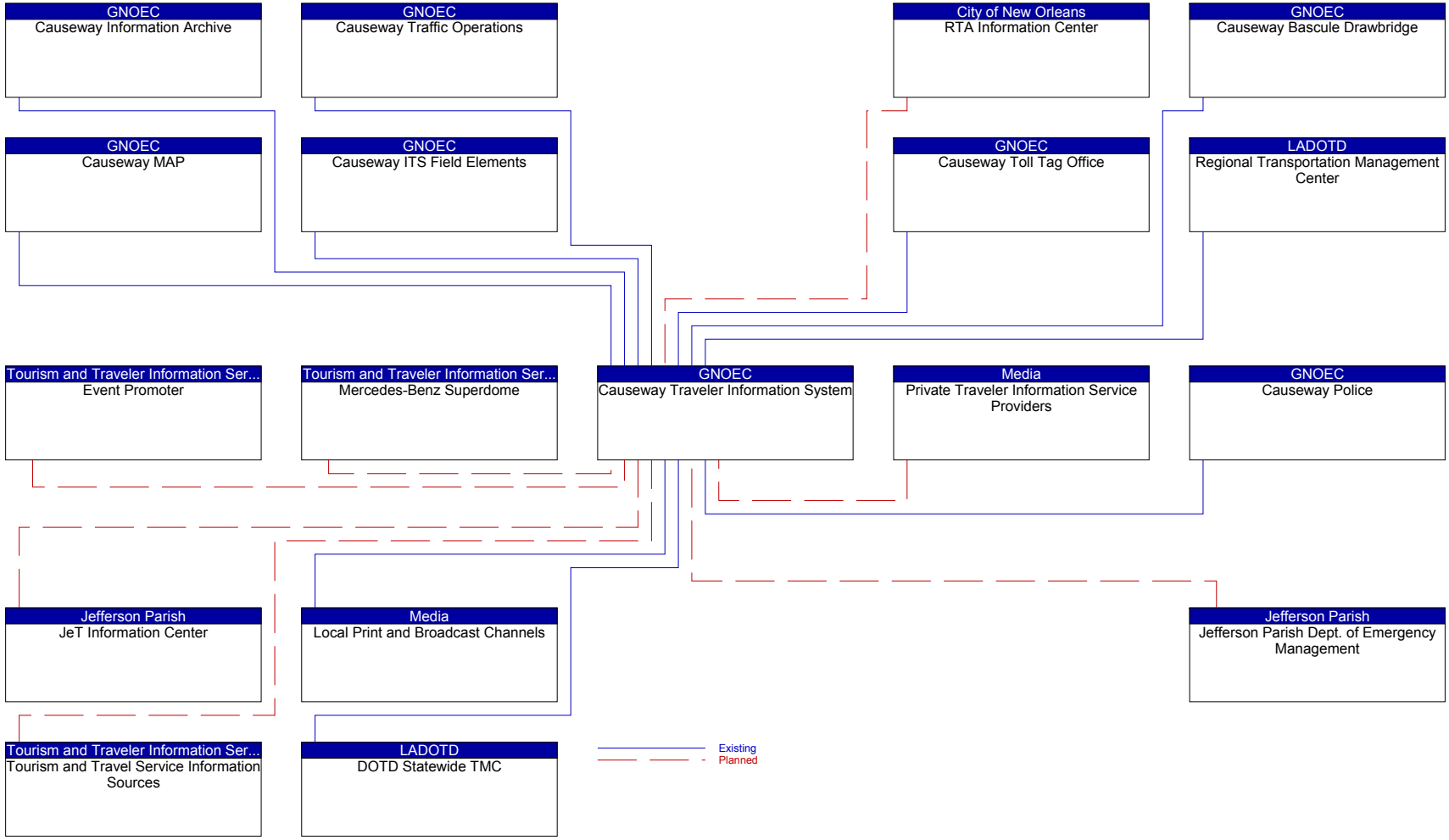

Figure 17: Causeway Traveler Information System Interconnect Context Diagram

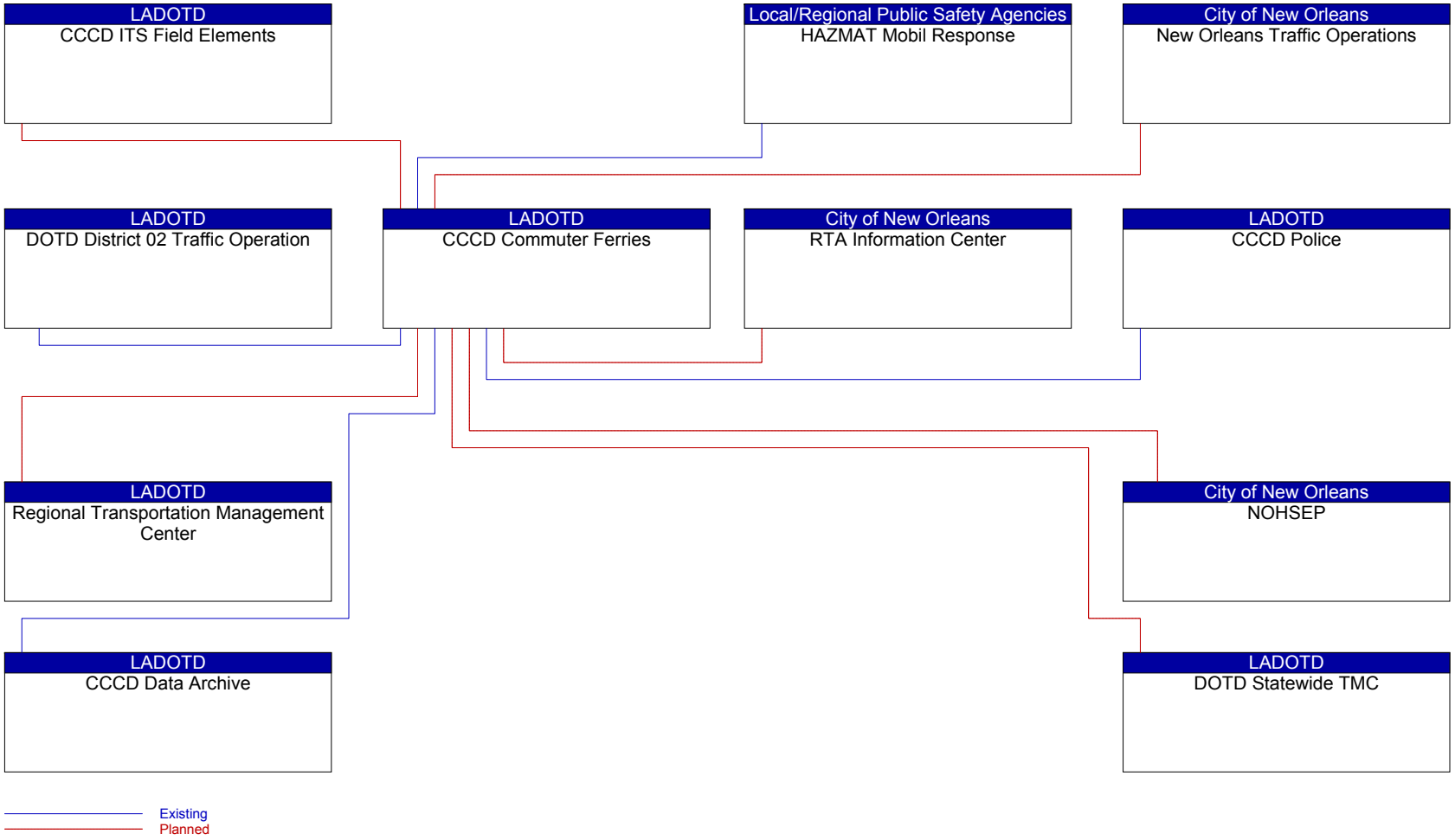

Figure 18: CCCD Commuter Ferries Interconnect Context Diagram

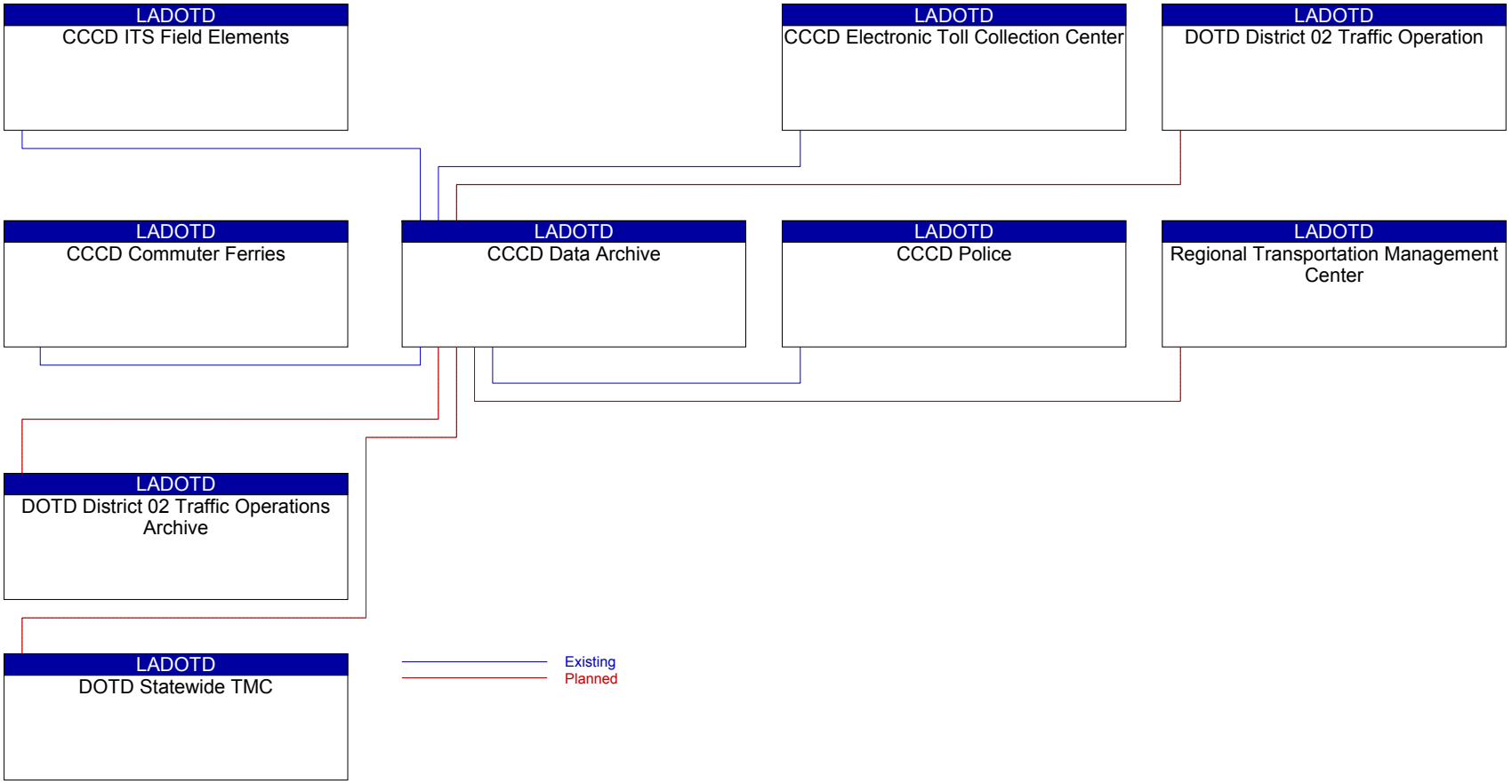

Figure 19: CCCD Data Archive Interconnect Context Diagram

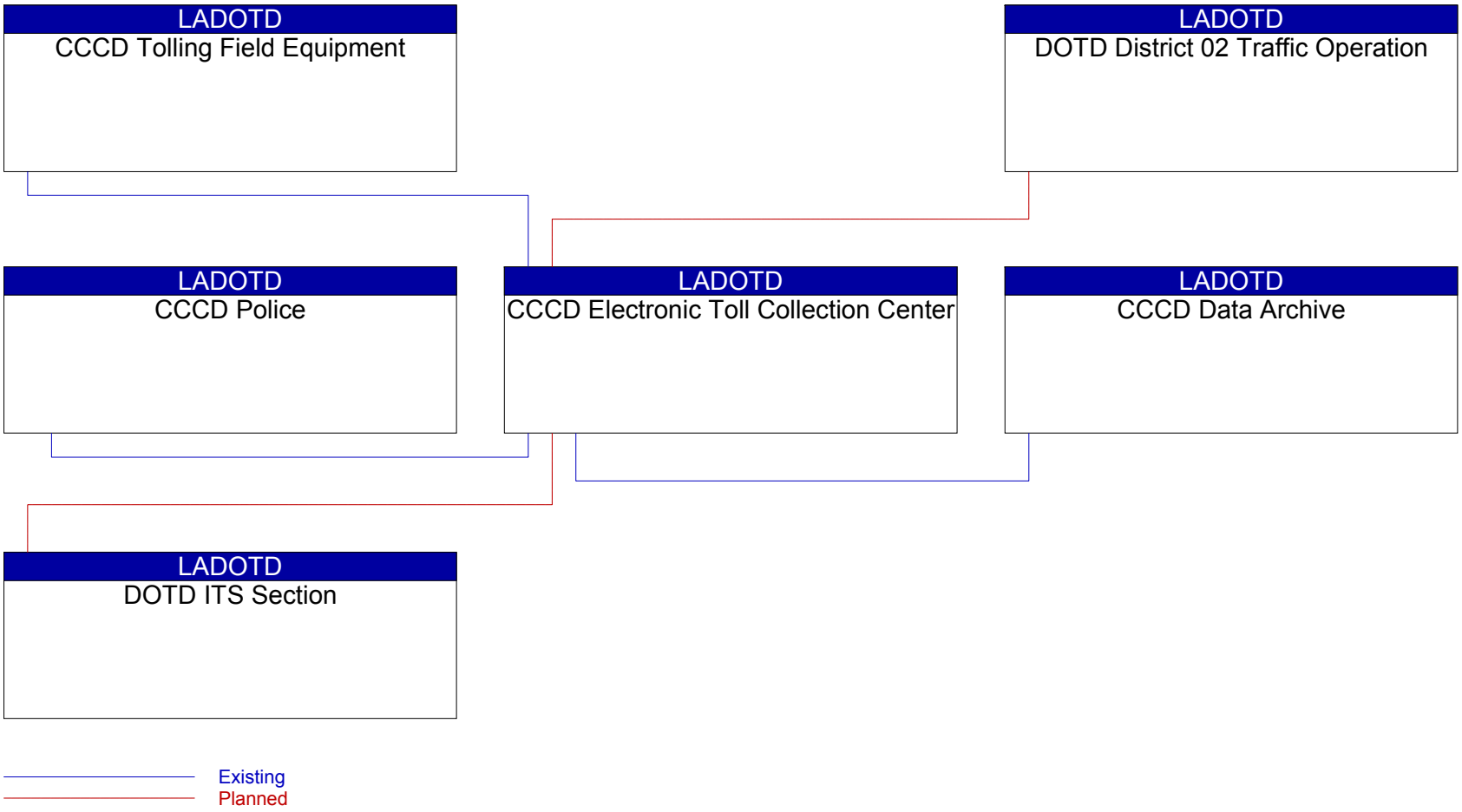

Figure 20: CCCD Electronic Toll Collection Center Interconnect Context Diagram

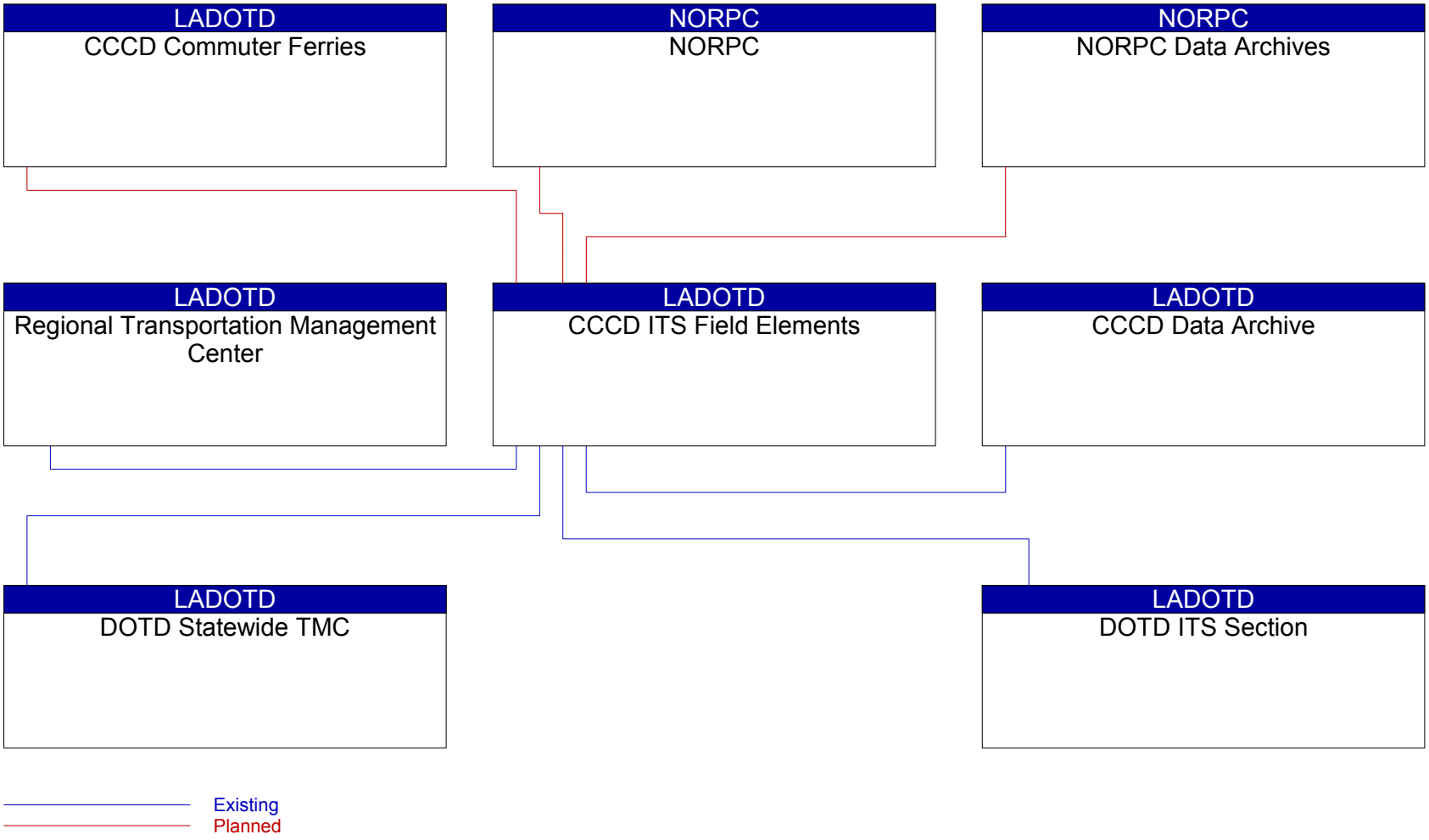

Figure 21: CCCD ITS Field Elements Interconnect Context Diagram

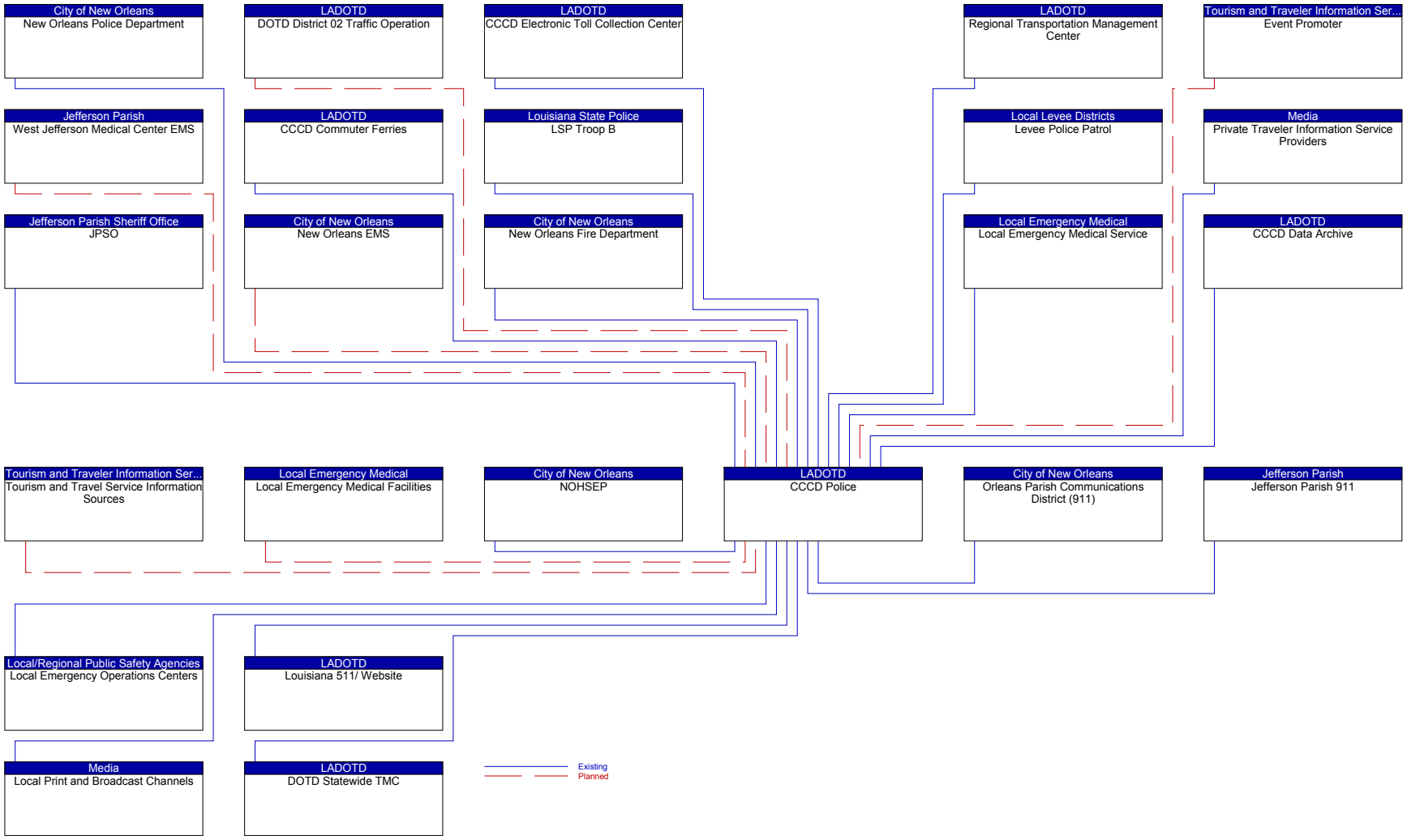

Figure 22: CCCD Police Interconnect Context Diagram

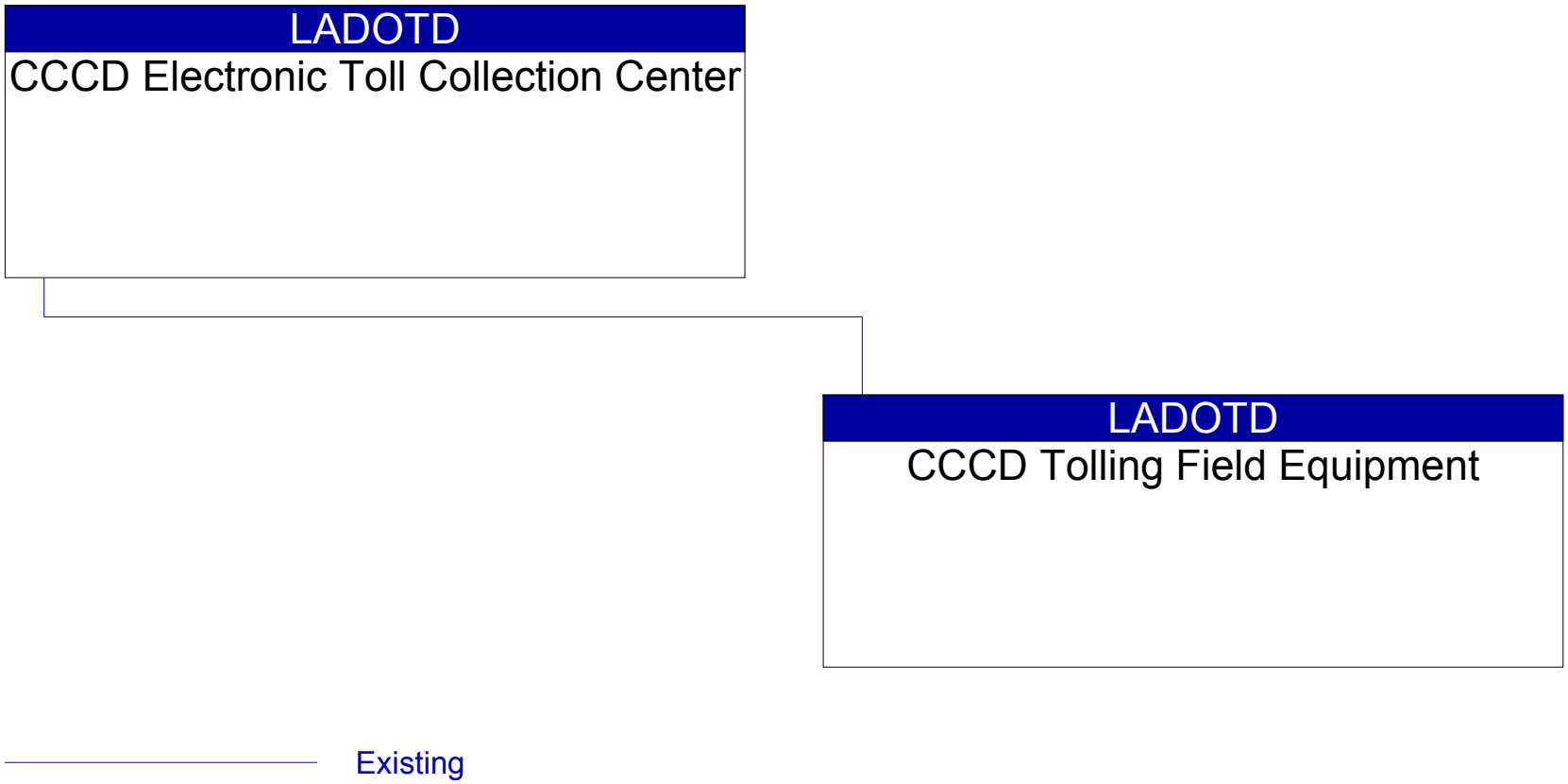

Figure 23: CCCD Tolling Field Equipment Interconnect Context Diagram

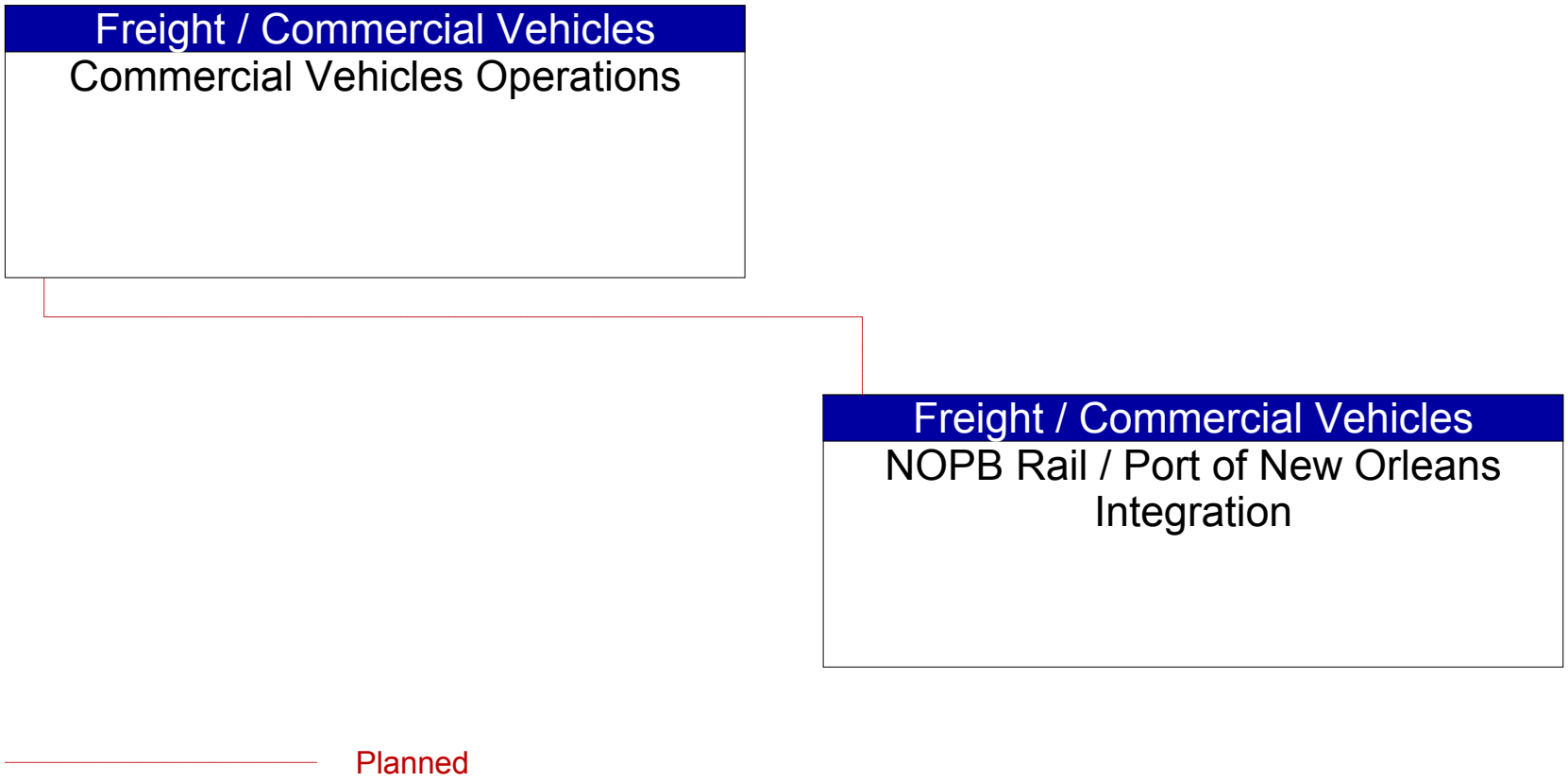

Figure 24: Commercial Vehicles Operations Interconnect Context Diagram

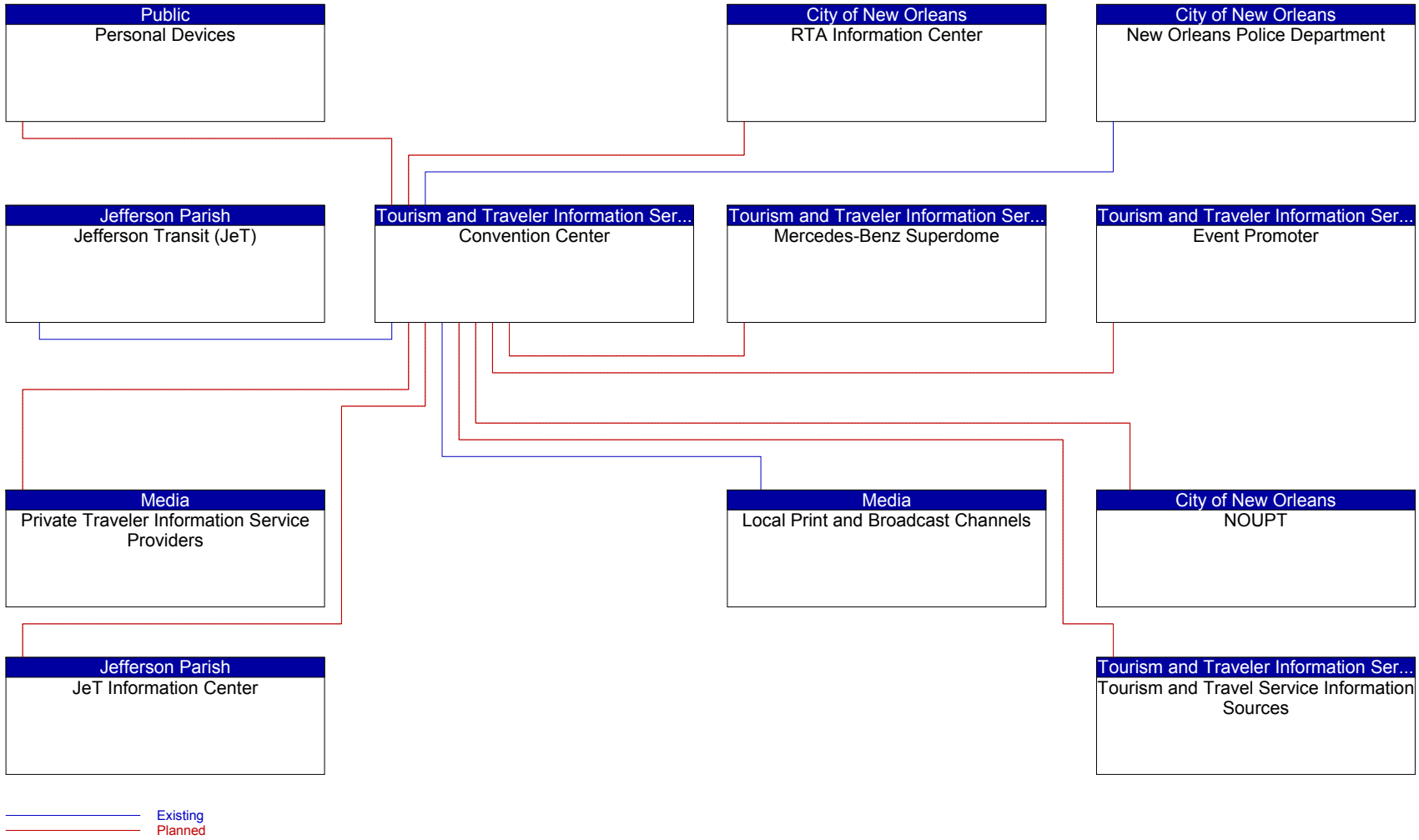

Figure 25: Convention Center Interconnect Context Diagram

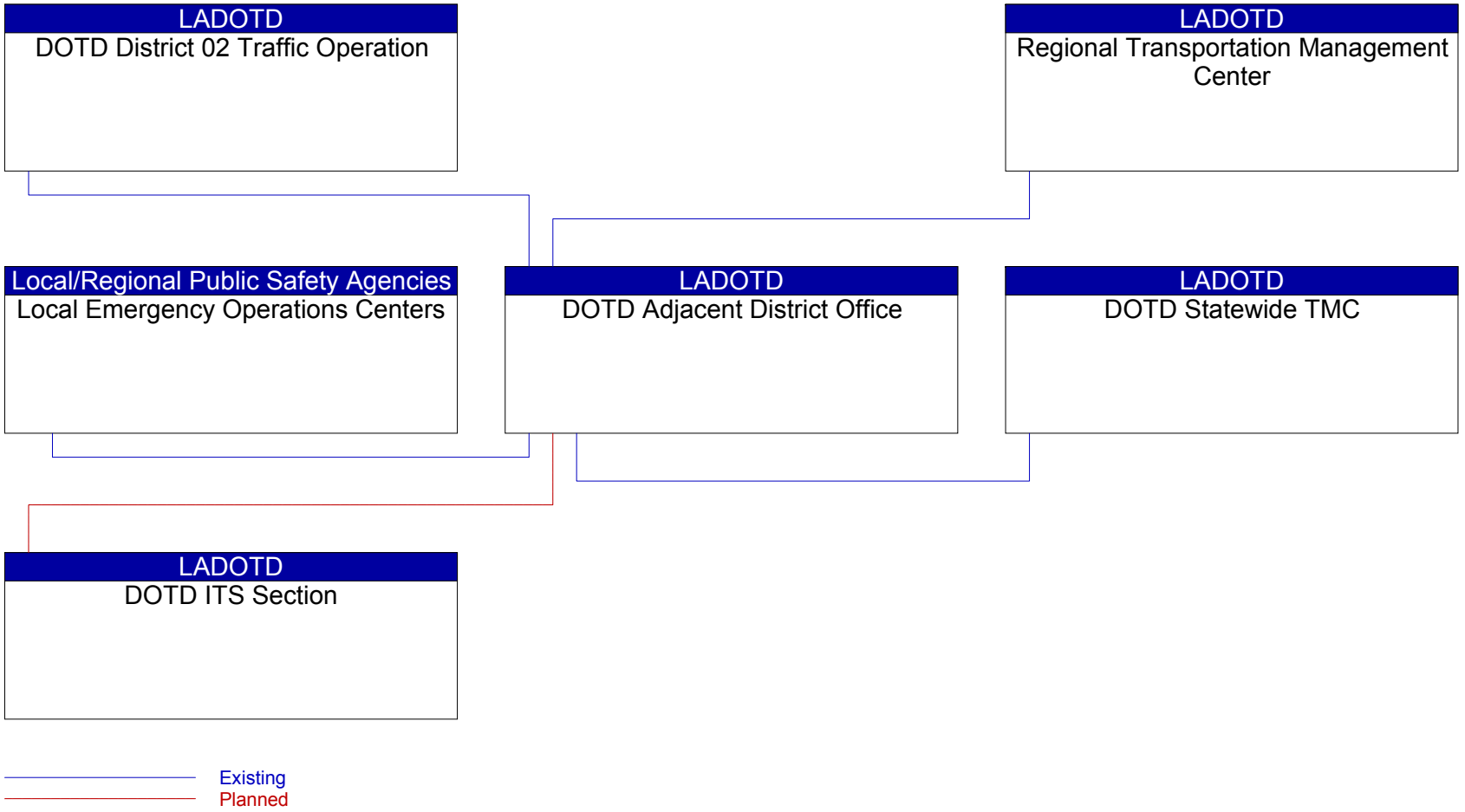

Figure 26: DOTD Adjacent District Office Interconnect Context Diagram

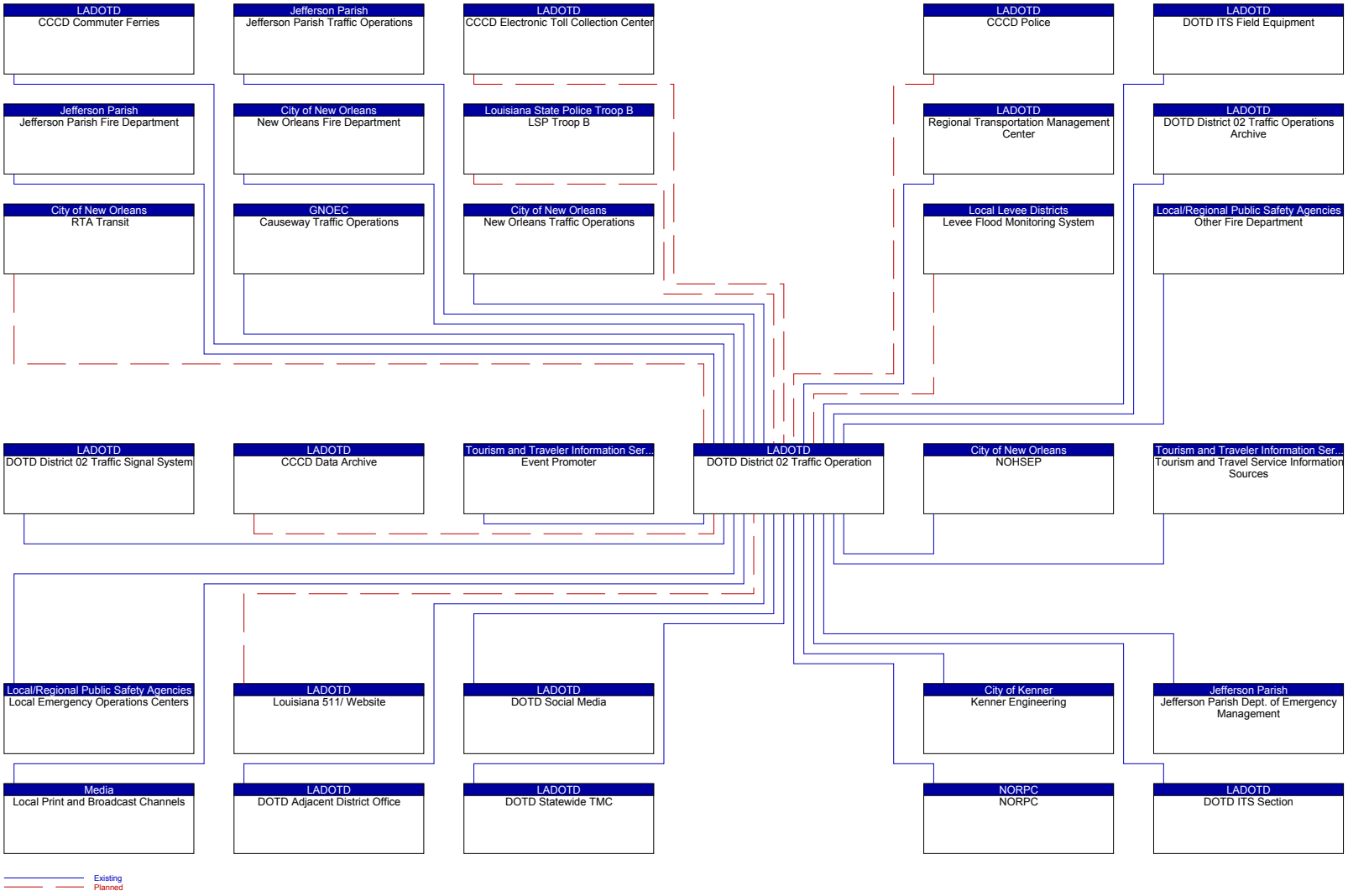

Figure 27: DOTD District 02 Traffic Operation Interconnect Context Diagram

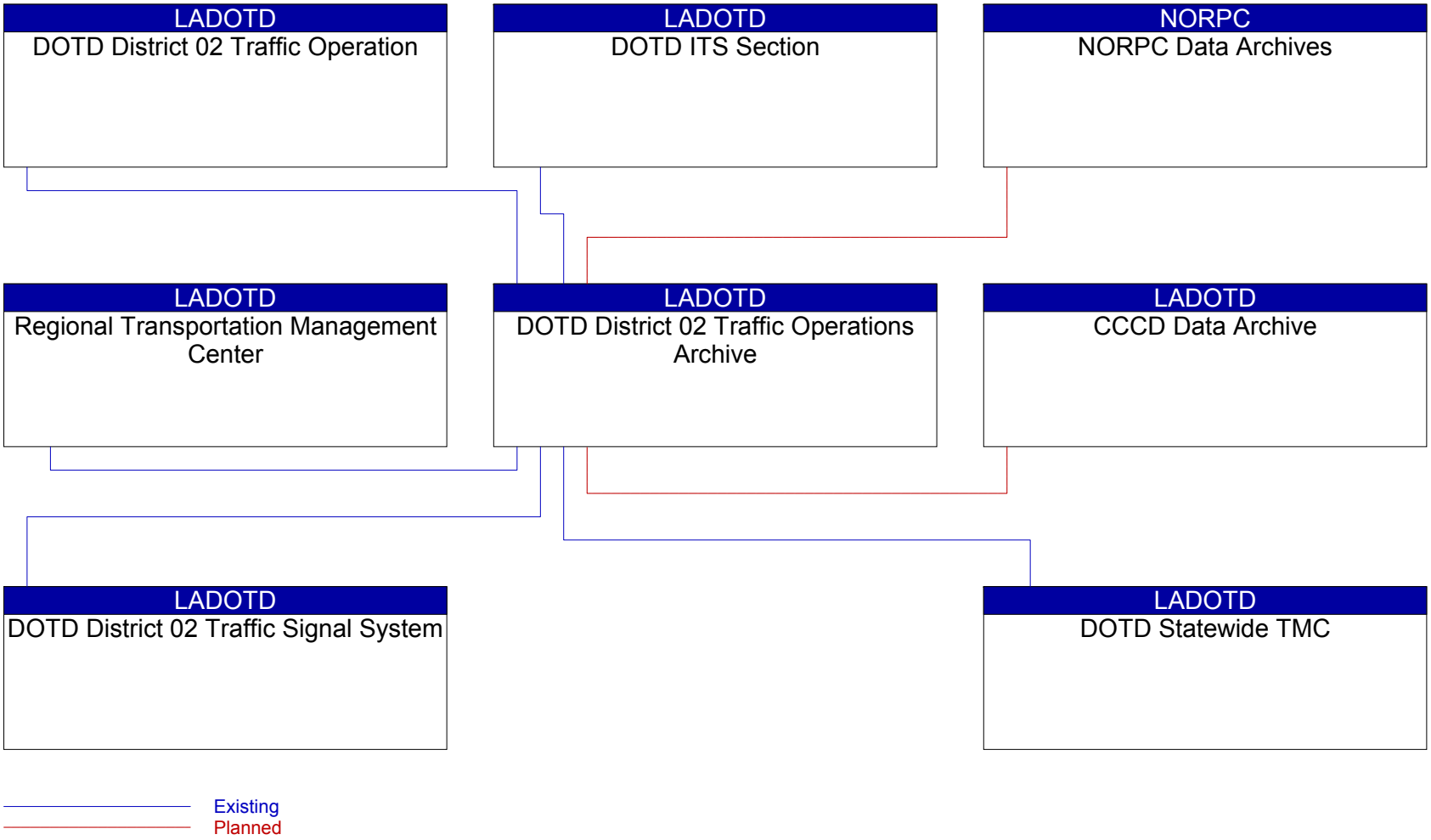

Figure 28: DOTD District 02 Traffic Operations Archive Interconnect Context Diagram

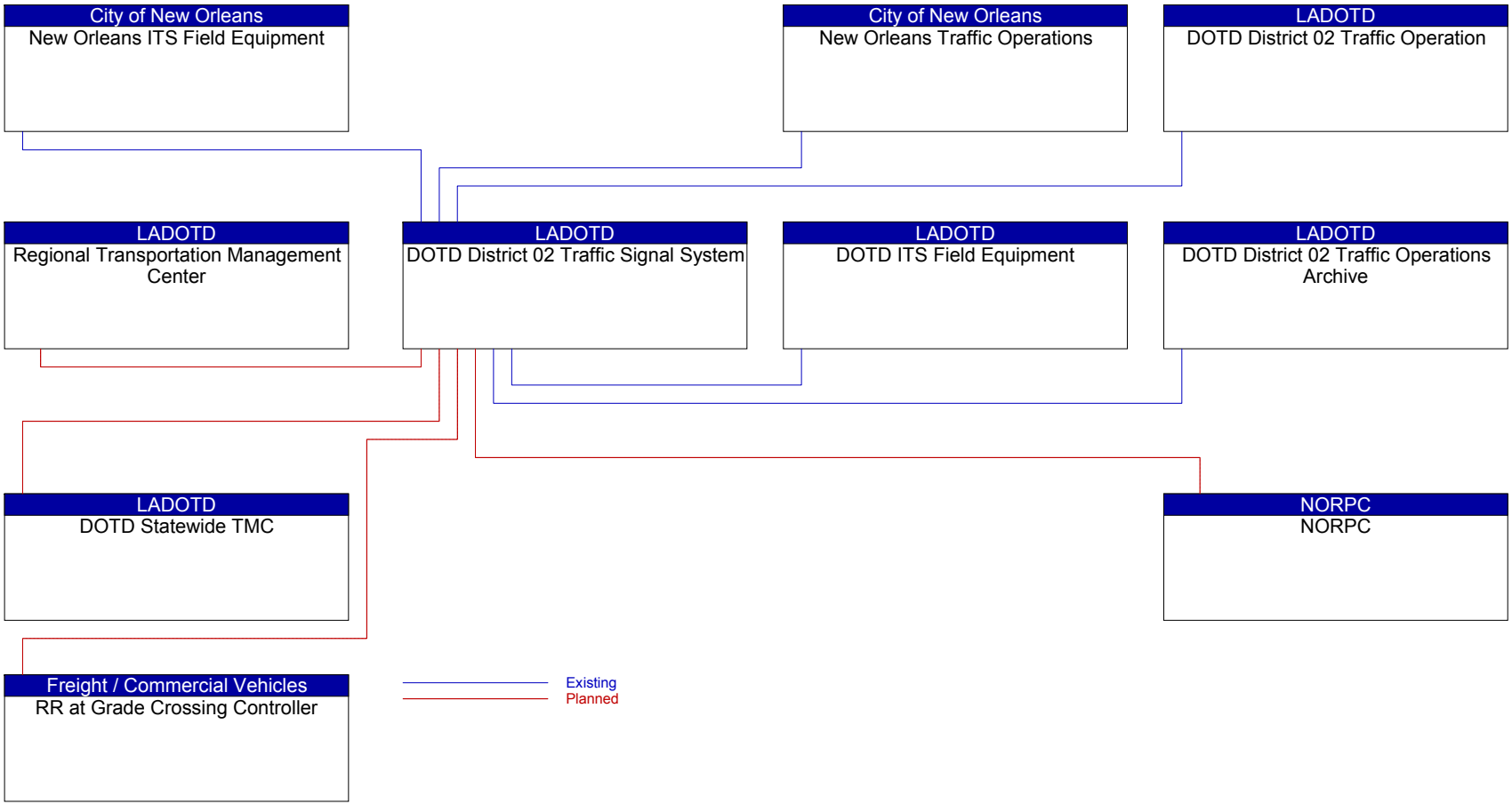

Figure 29: DOTD District 02 Traffic Signal System Interconnect Context Diagram

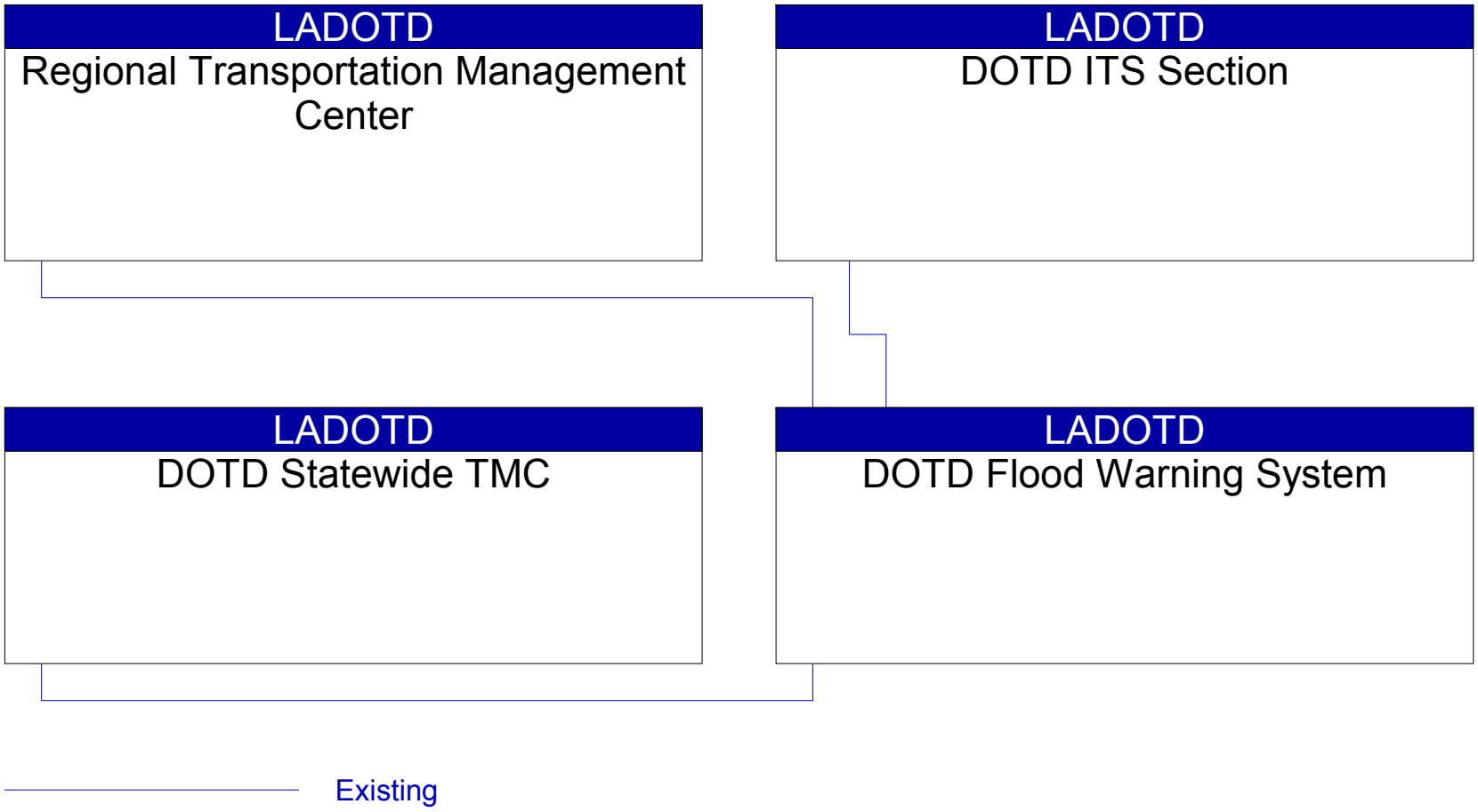

Figure 30: DOTD Flood Warning System Interconnect Context Diagram

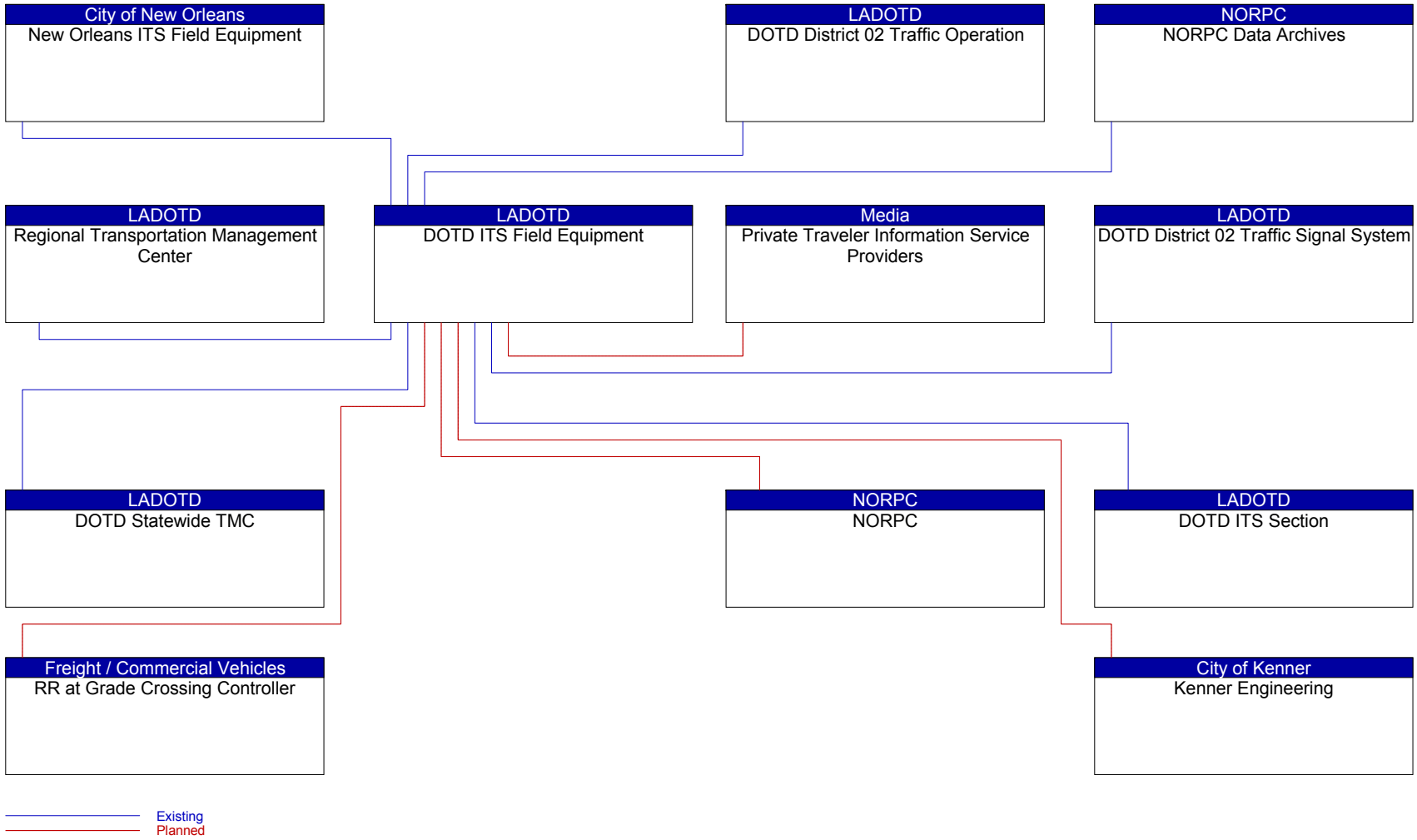

Figure 31: DOTD ITS Field Equipment Interconnect Context Diagram

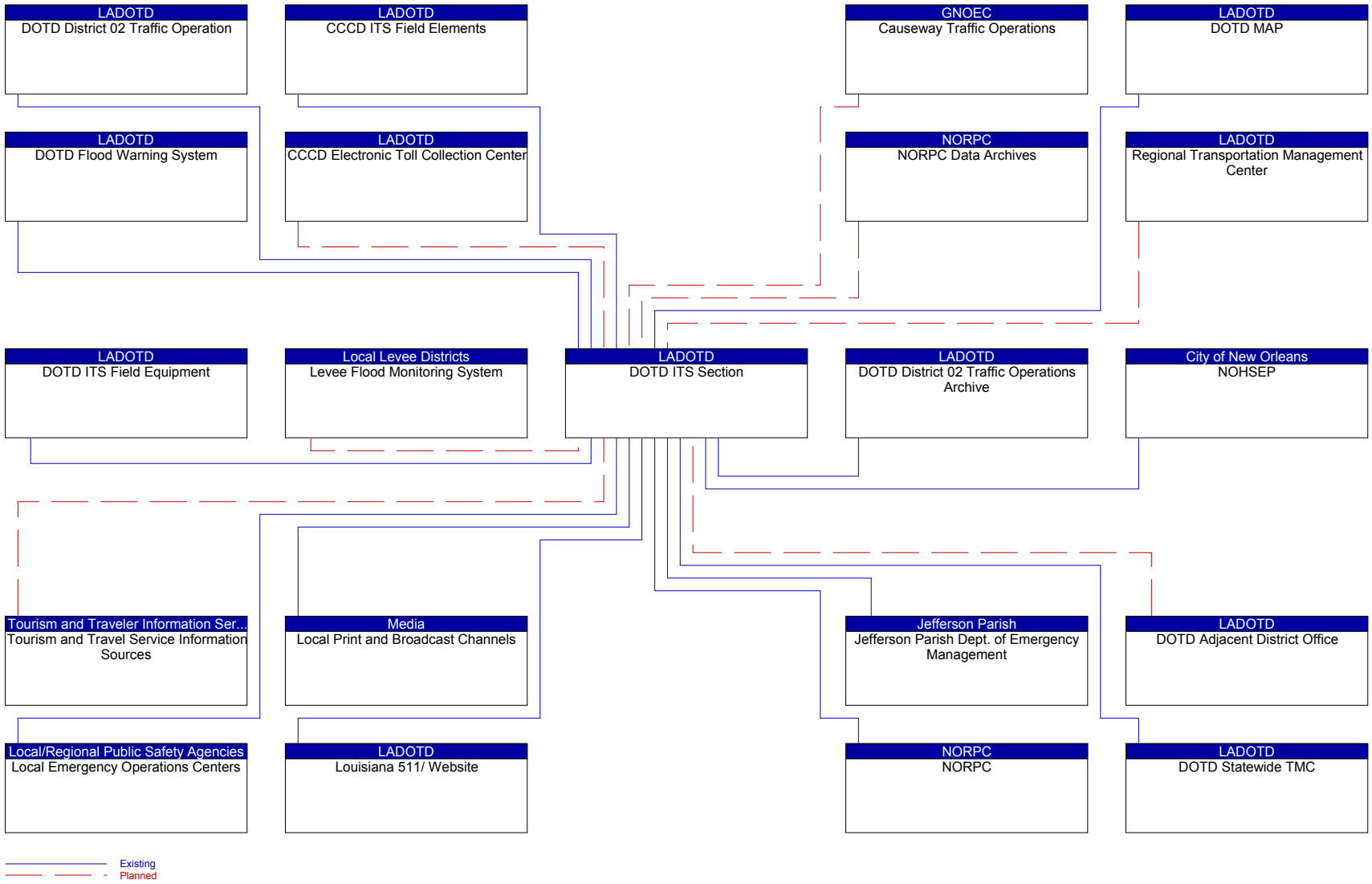

Figure 32: DOTD ITS Section Interconnect Context Diagram

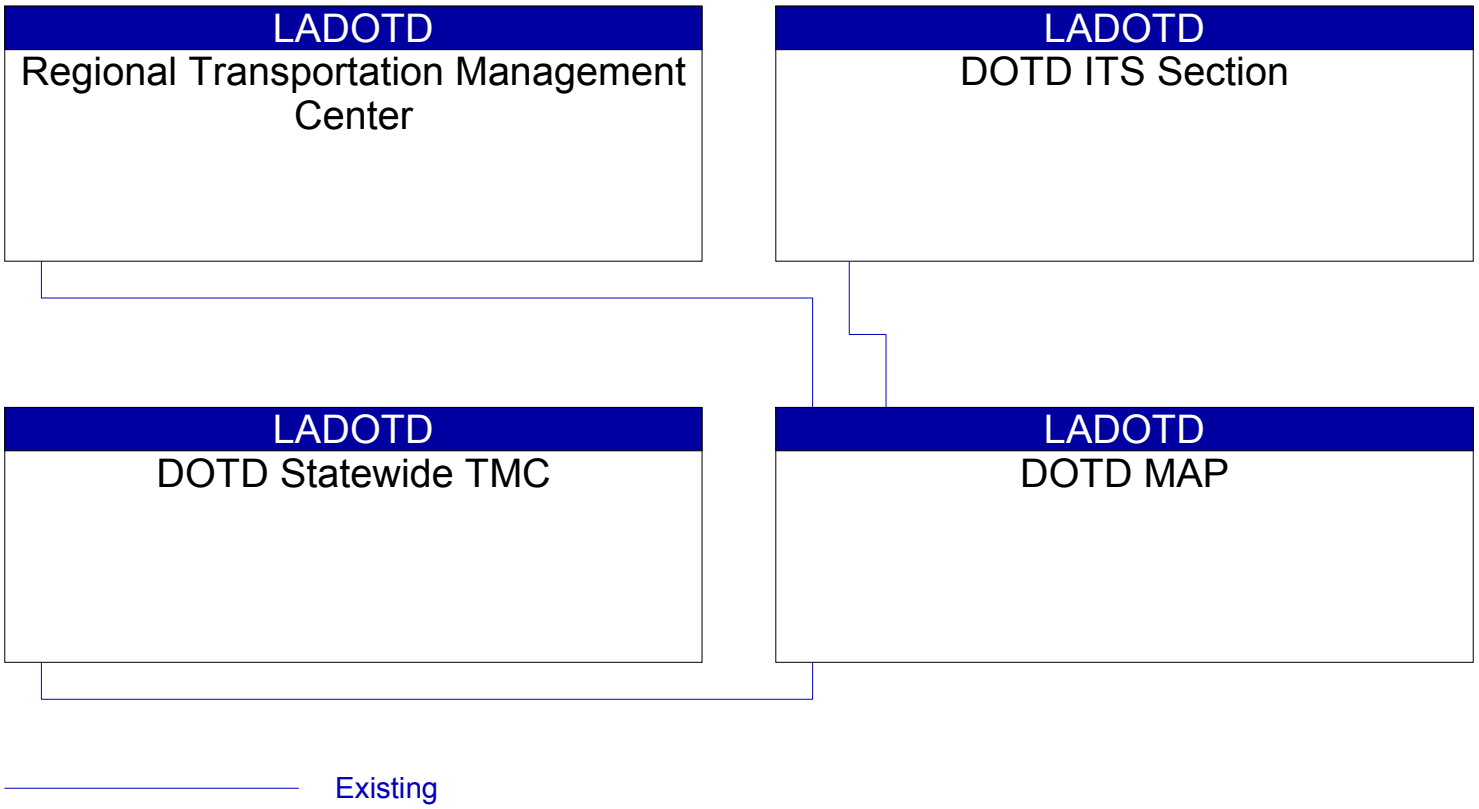

Figure 33: DOTD MAP Interconnect Context Diagram

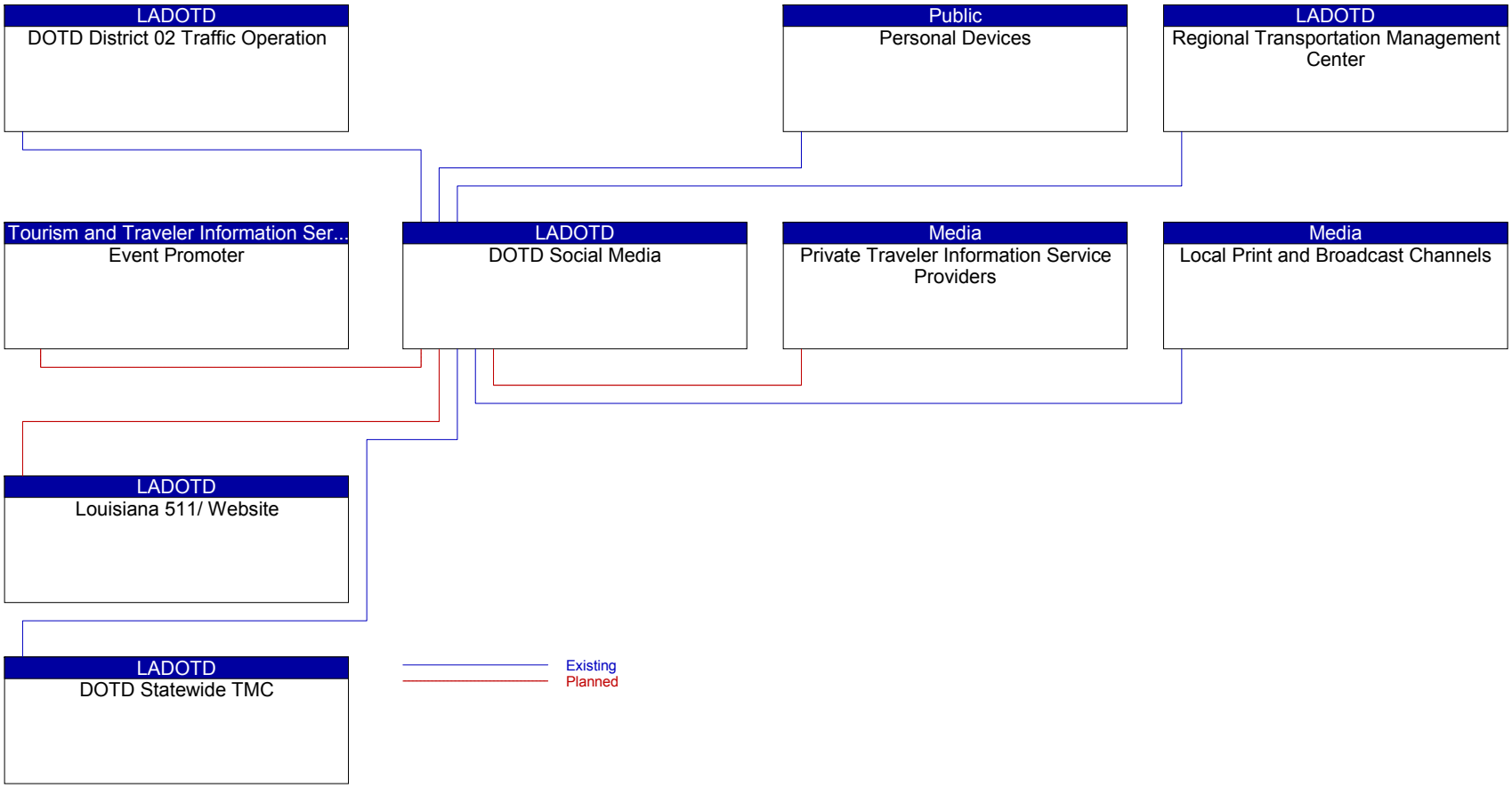

Figure 34: DOTD Social Media Interconnect Context Diagram

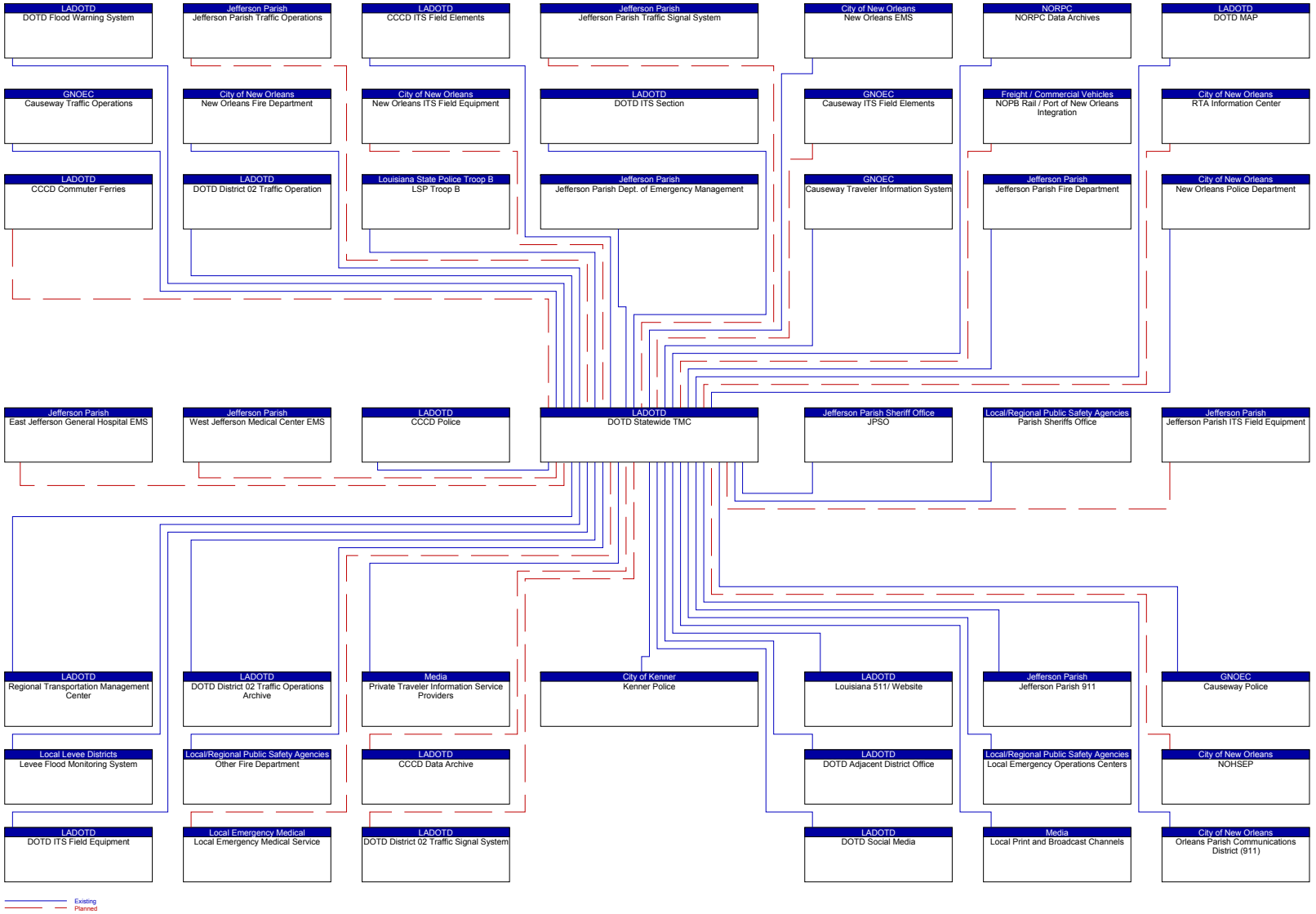

Figure 35: DOTD Statewide TMC Interconnect Context Diagram

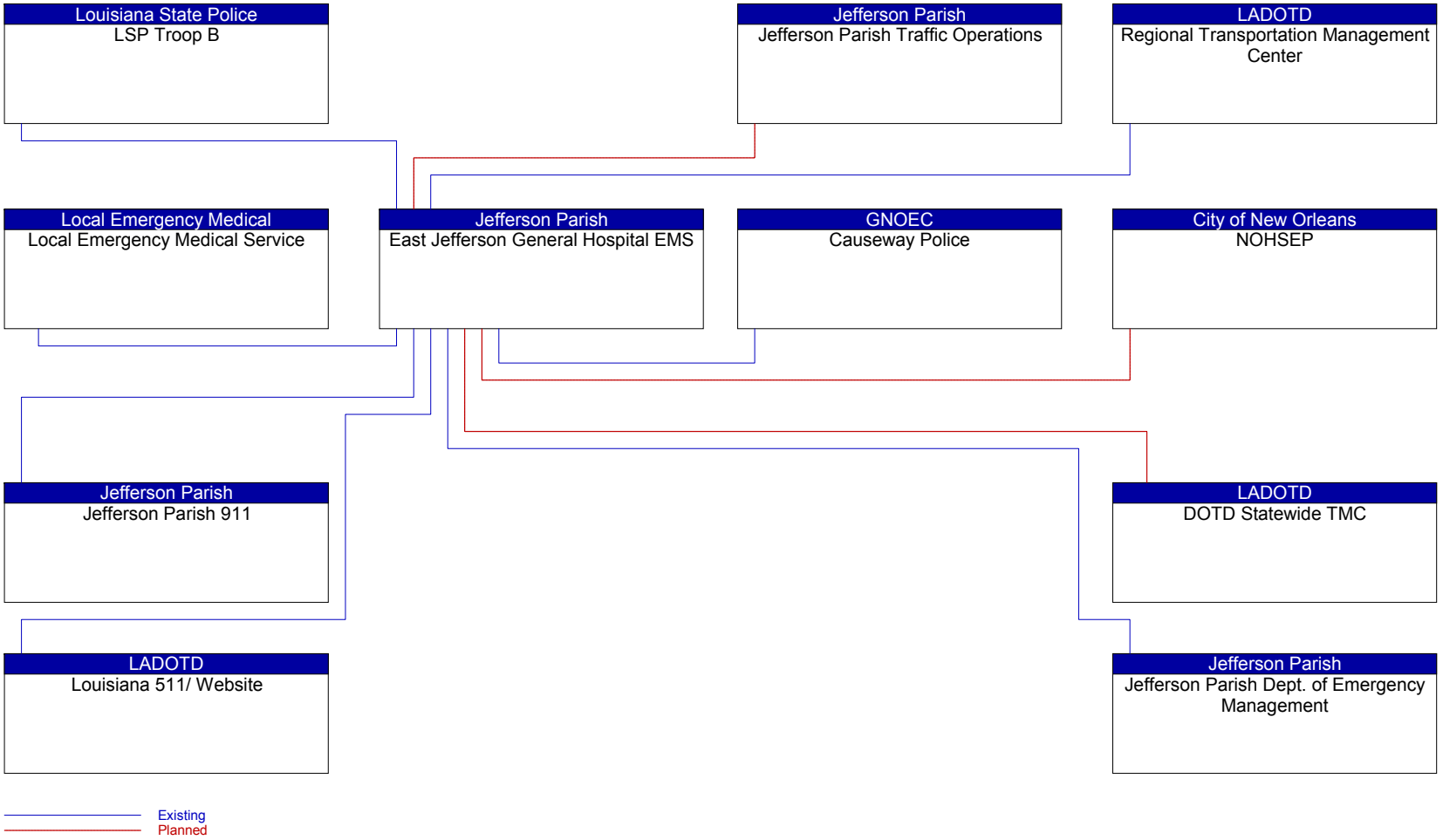

Figure 36: East Jefferson General Hospital EMS Interconnect Context Diagram

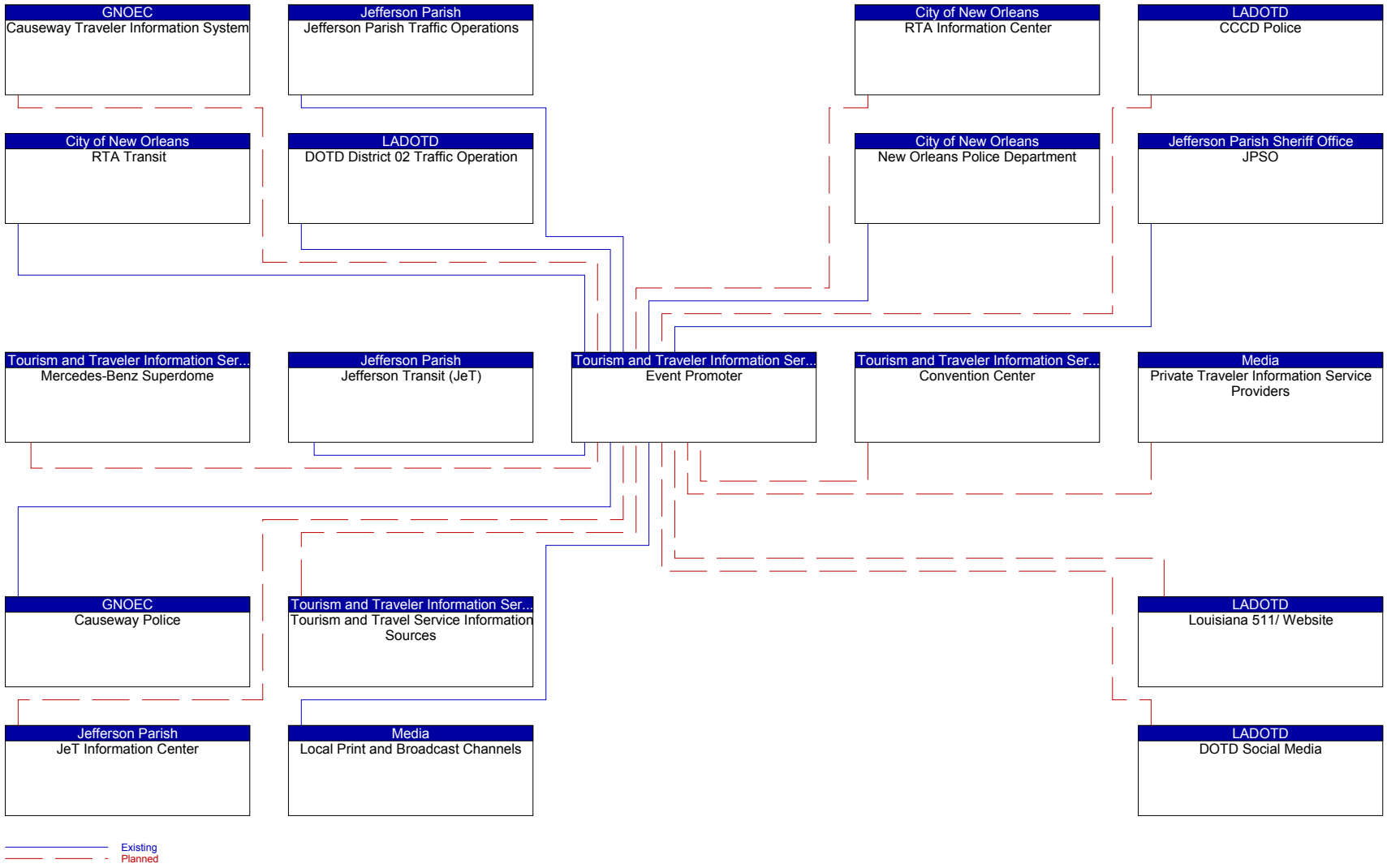

Figure 37: Event Promoter Interconnect Context Diagram

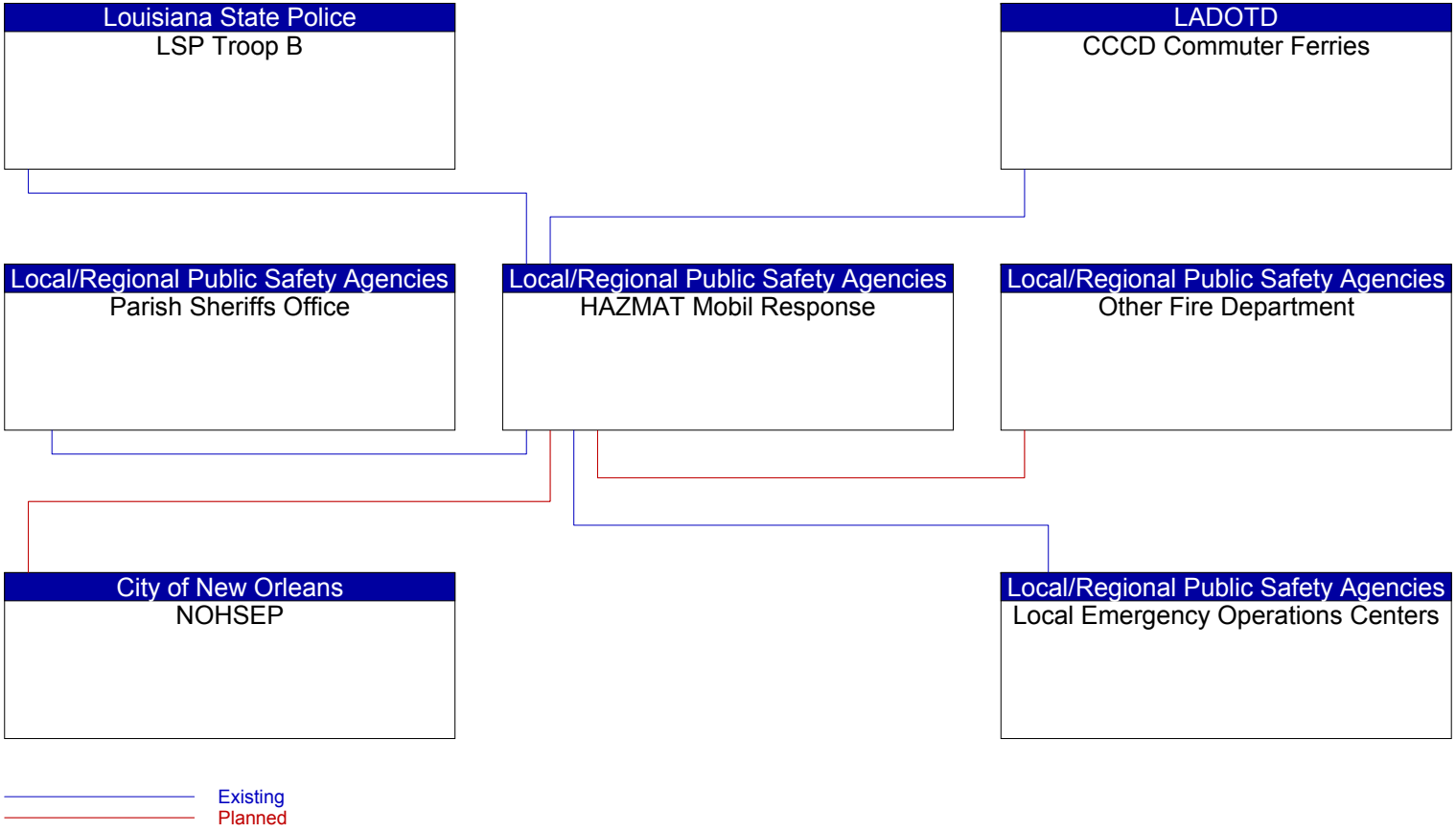

Figure 38: HAZMAT Mobil Response Interconnect Context Diagram

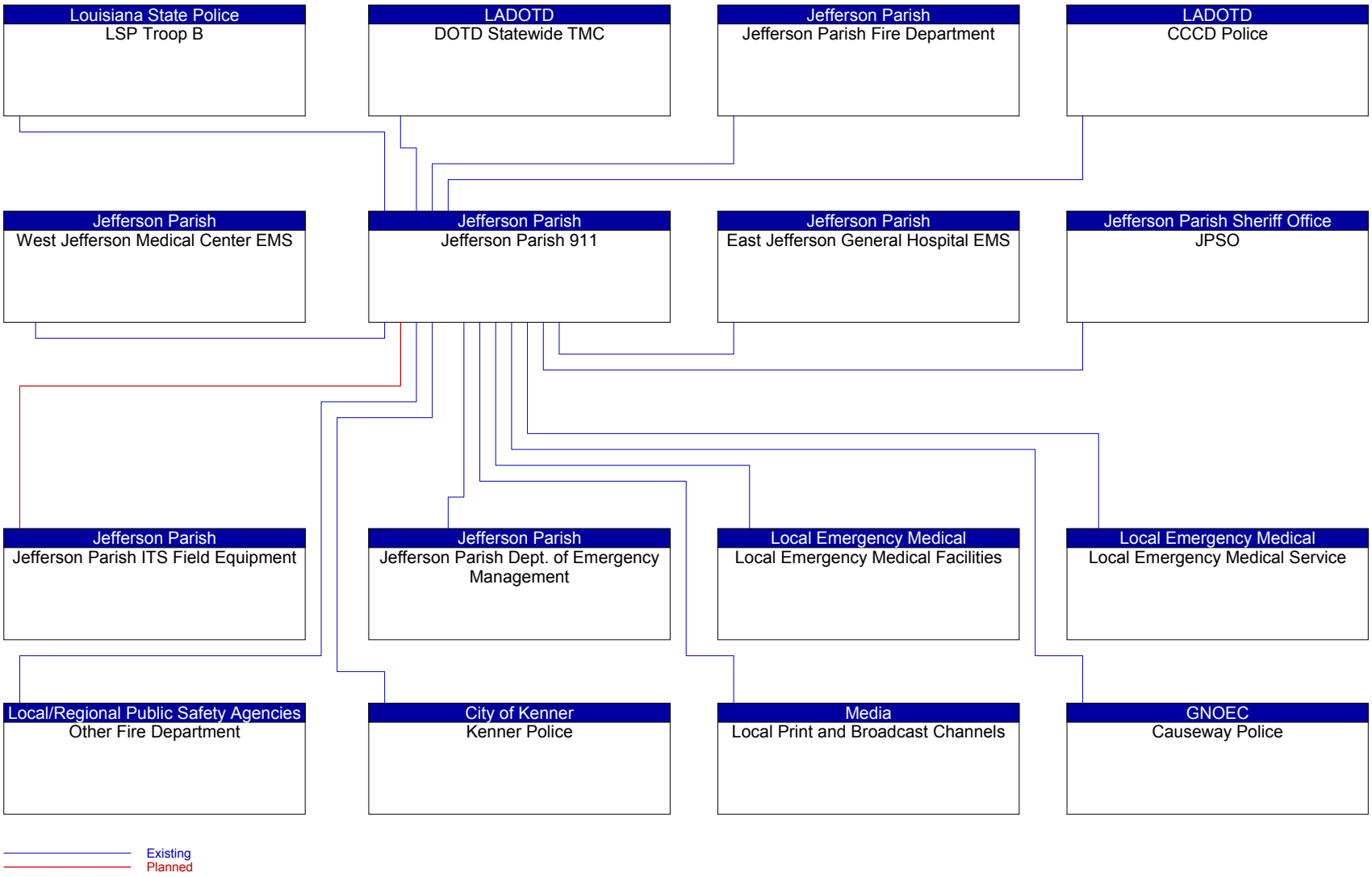

Figure 39: Jefferson Parish 911 Interconnect Context Diagram

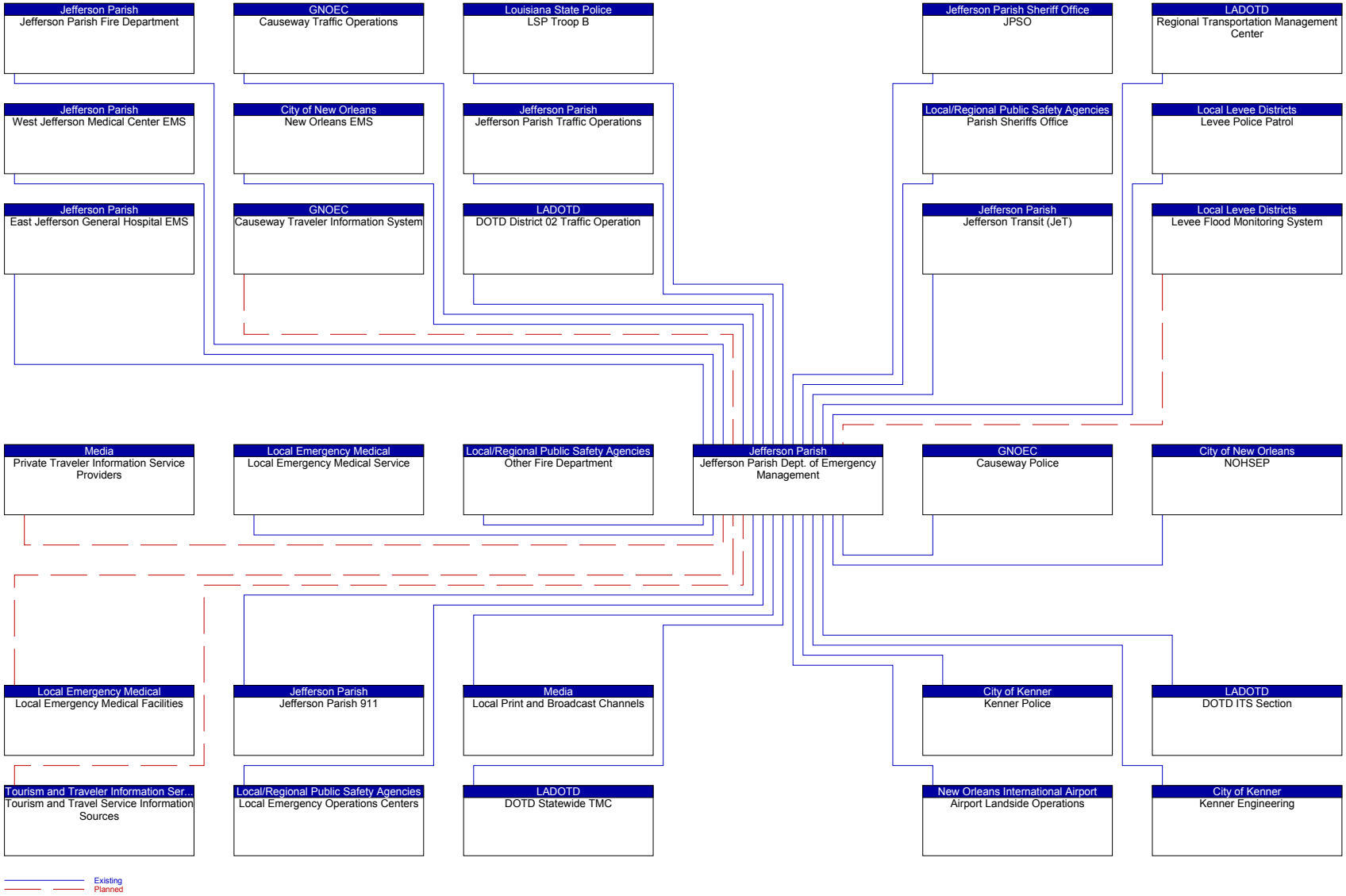

Figure 40: Jefferson Parish Dept. of Emergency Management Interconnect Context Diagram

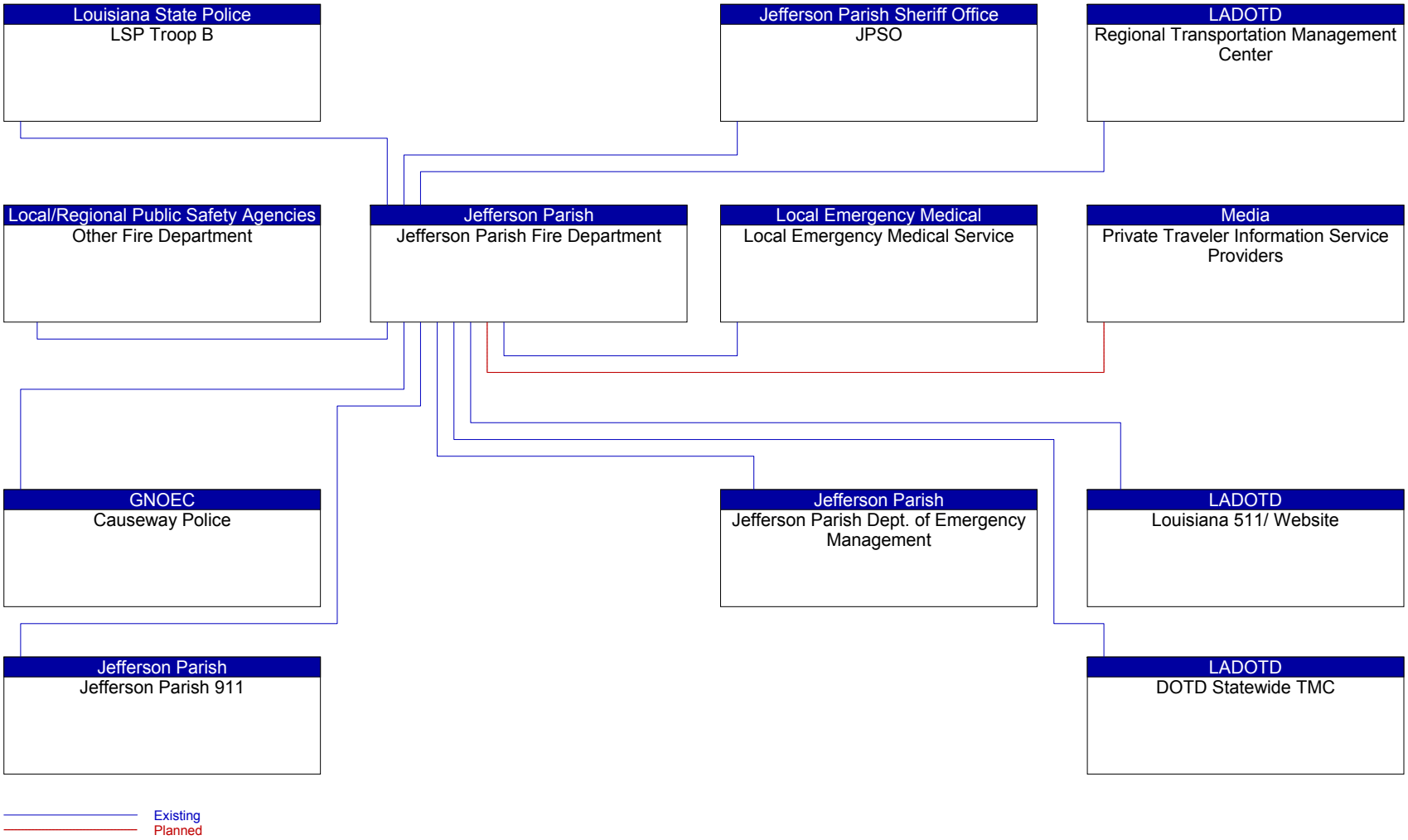

Figure 41: Jefferson Parish Fire Department Interconnect Context Diagram

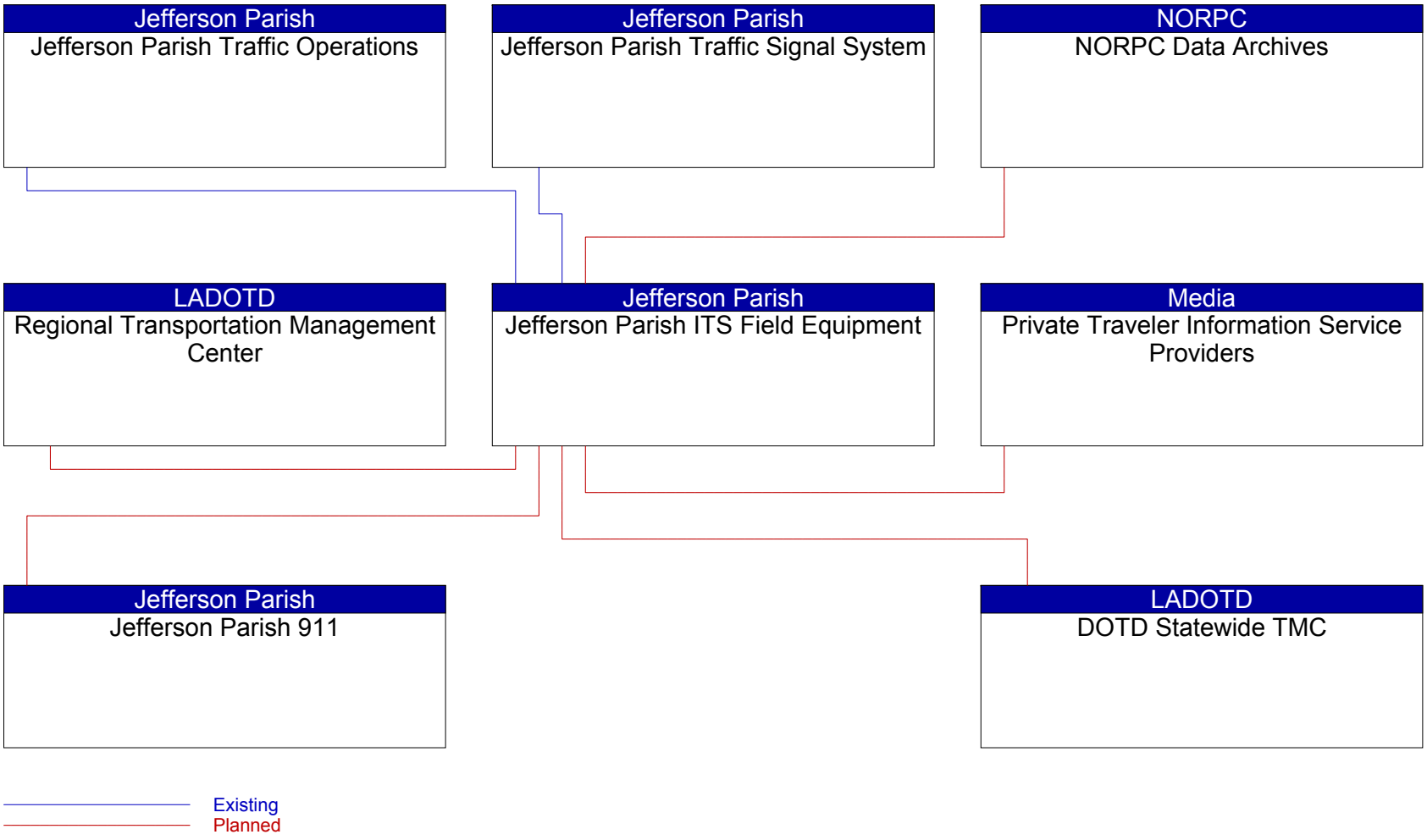

Figure 42: Jefferson Parish ITS Field Equipment Interconnect Context Diagram

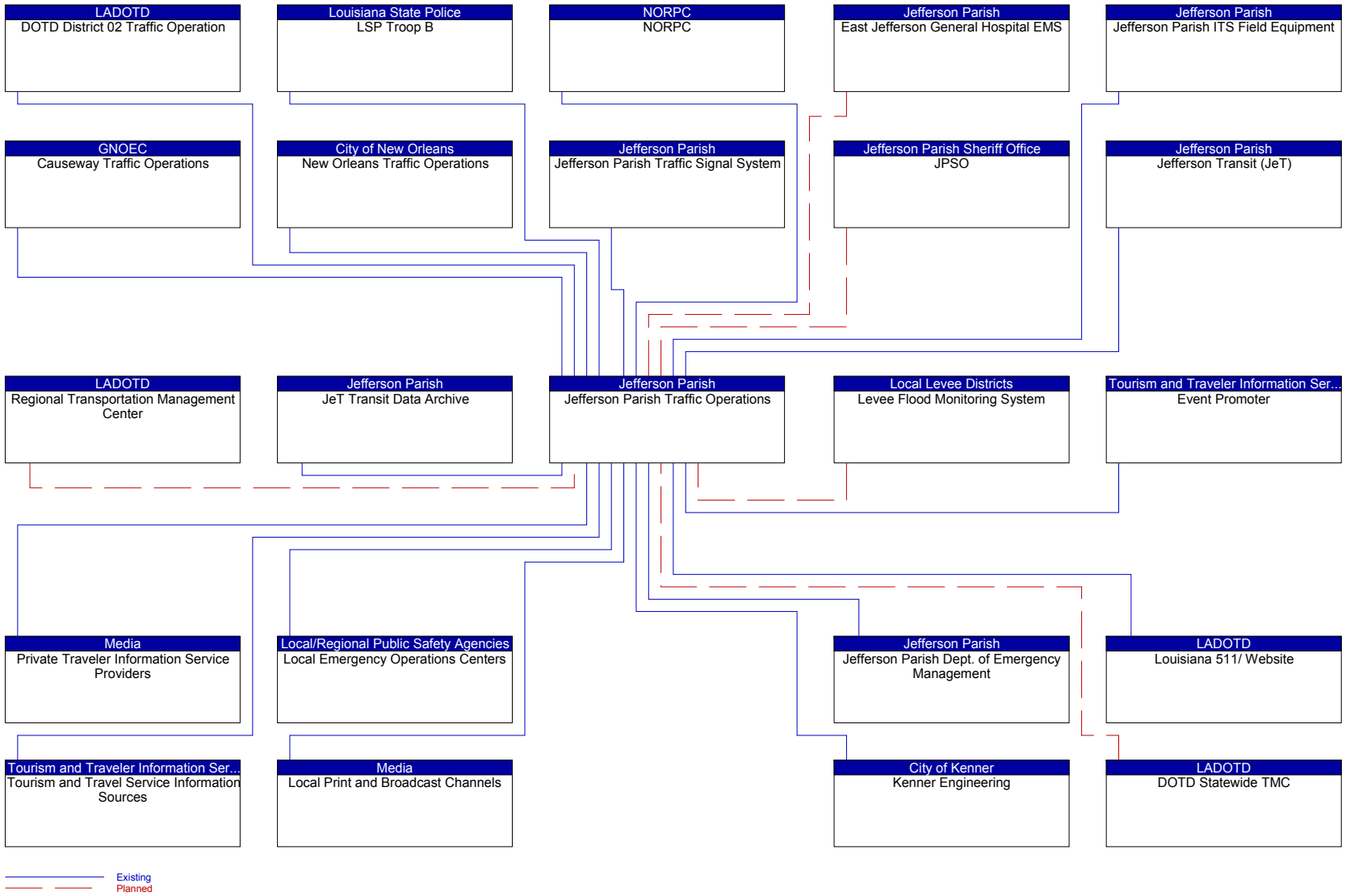

Figure 43: Jefferson Parish Traffic Operations Interconnect Context Diagram

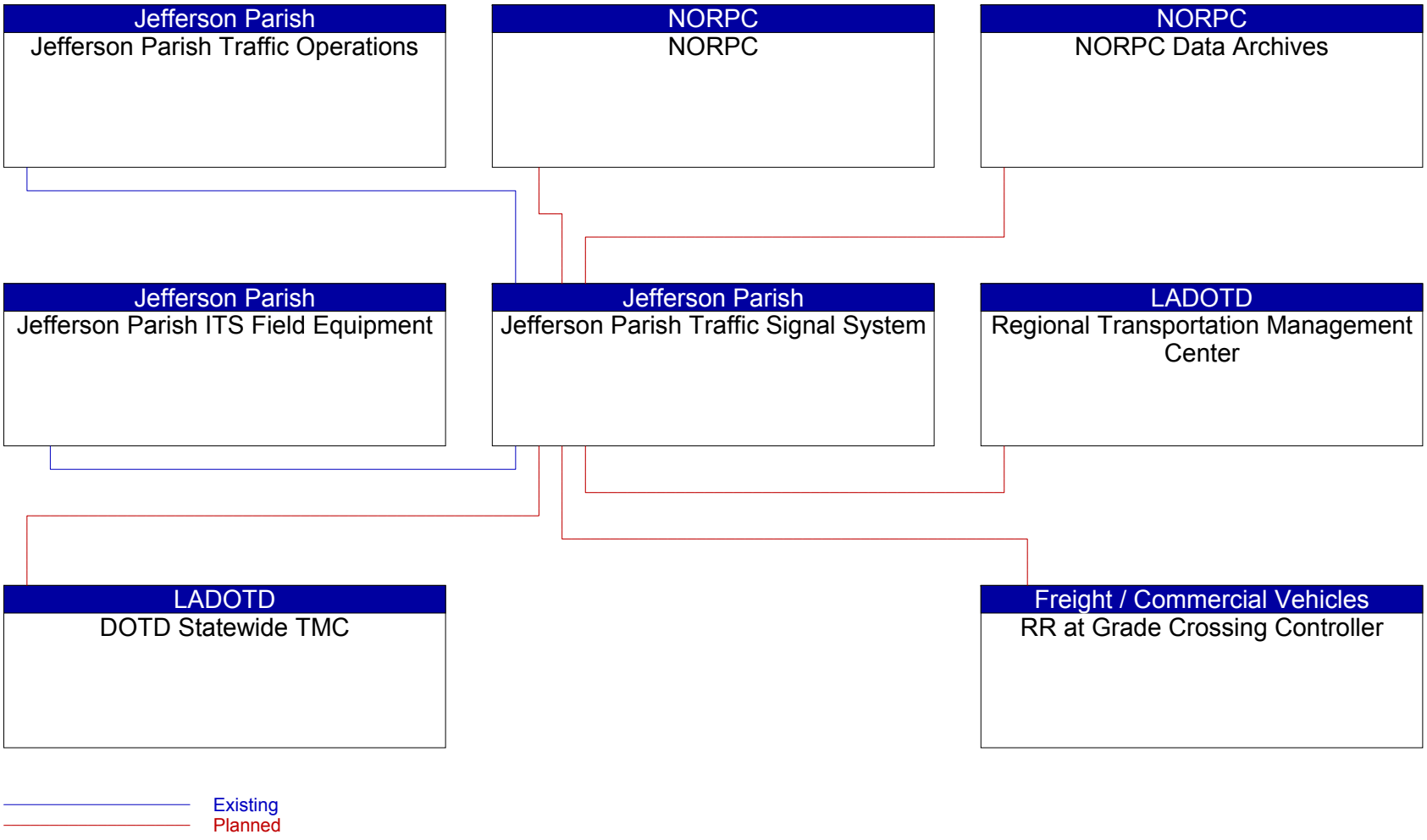

Figure 44: Jefferson Parish Traffic Signal System Interconnect Context Diagram

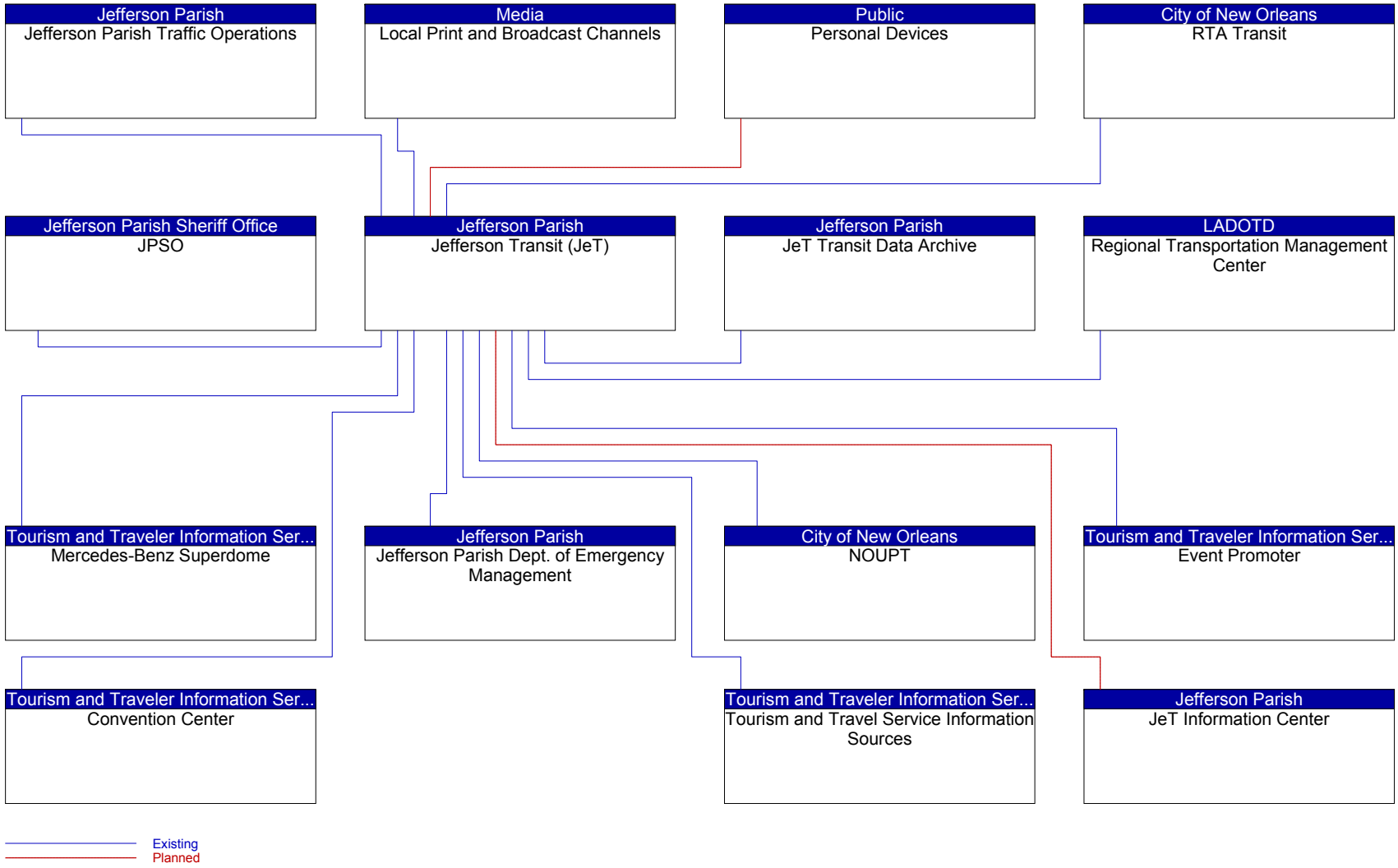

Figure 45: Jefferson Transit (JeT) Interconnect Context Diagram

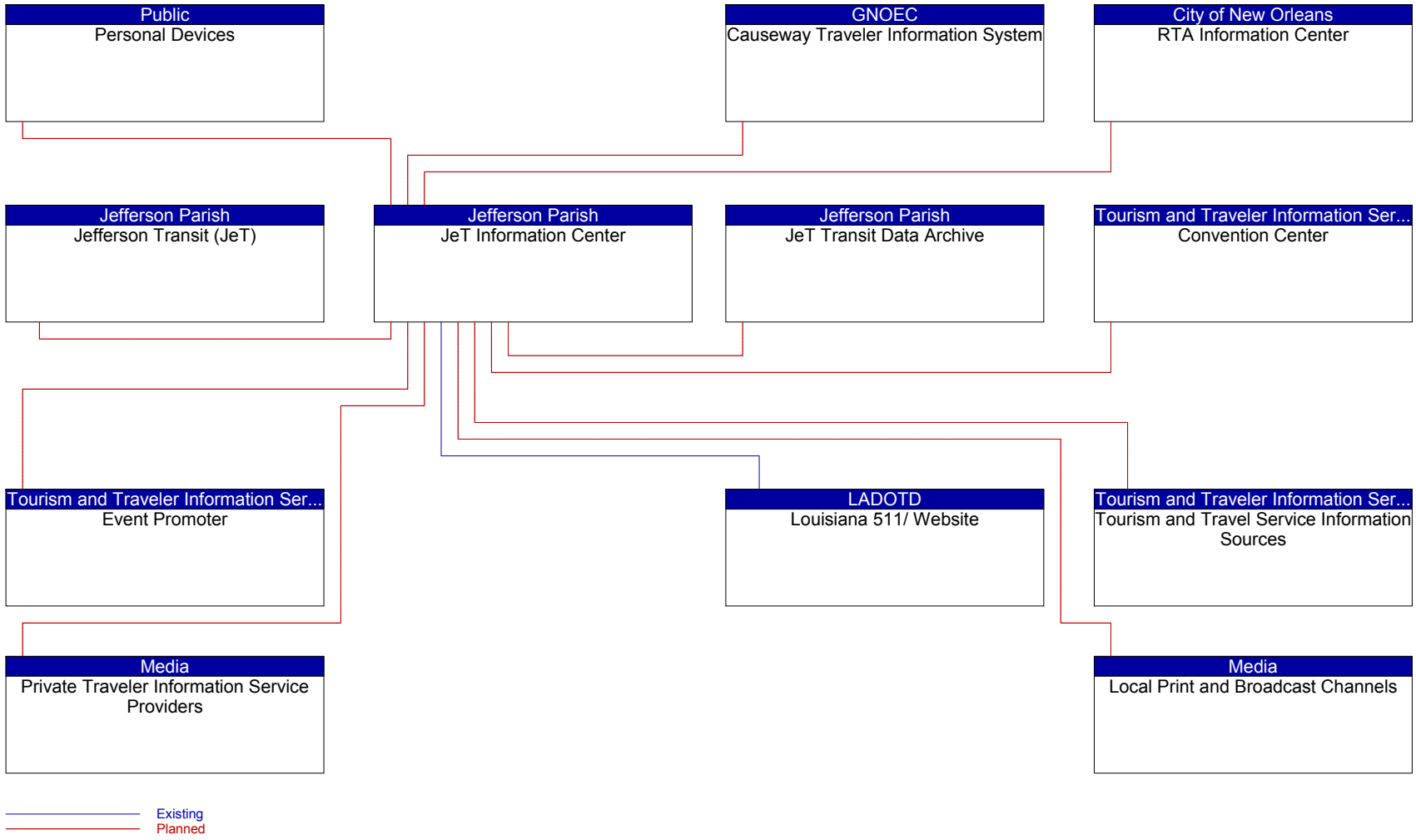

Figure 46: JeT Information Center Interconnect Context Diagram

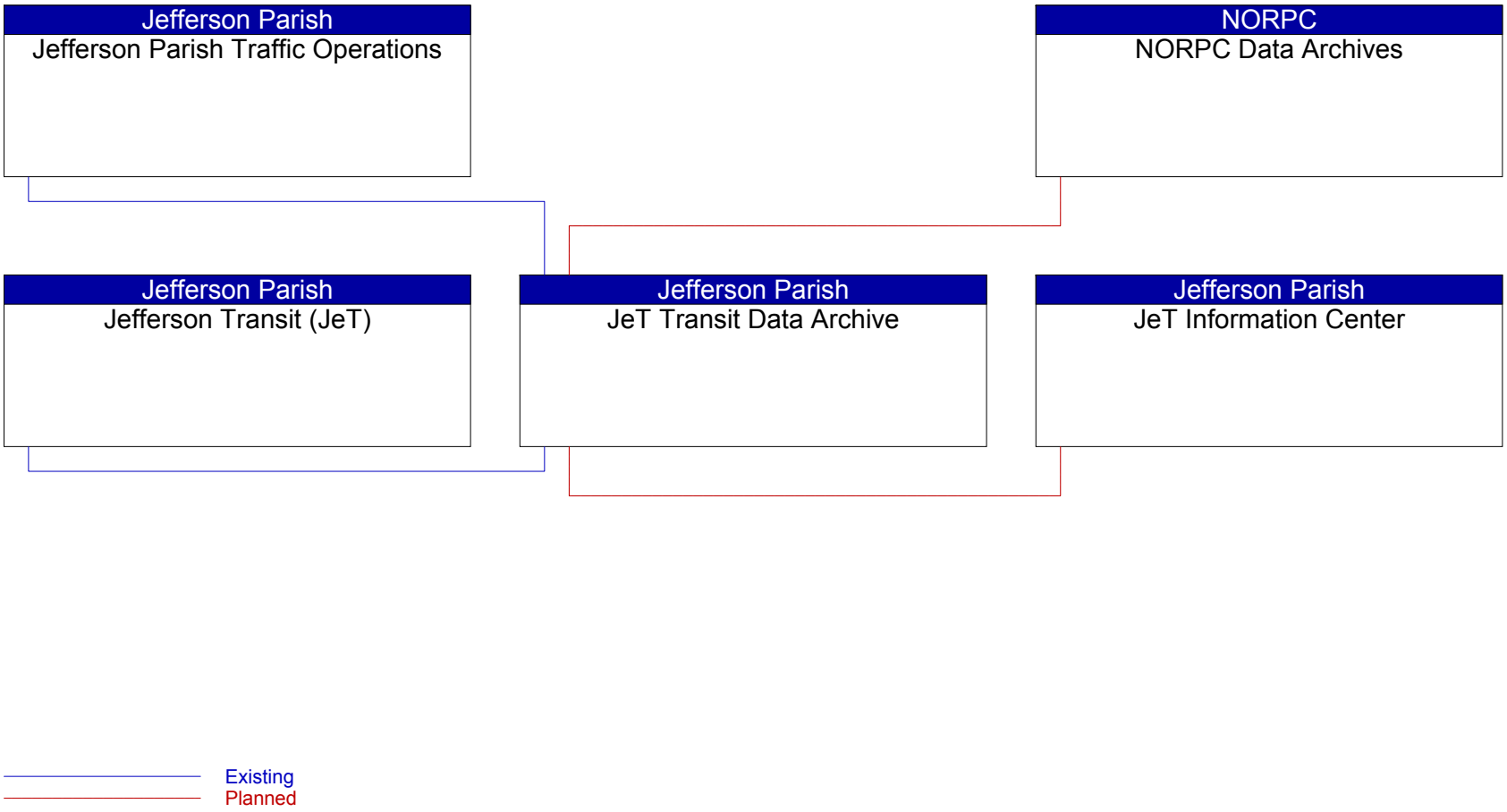

Figure 47: JeT Transit Data Archive Interconnect Context Diagram

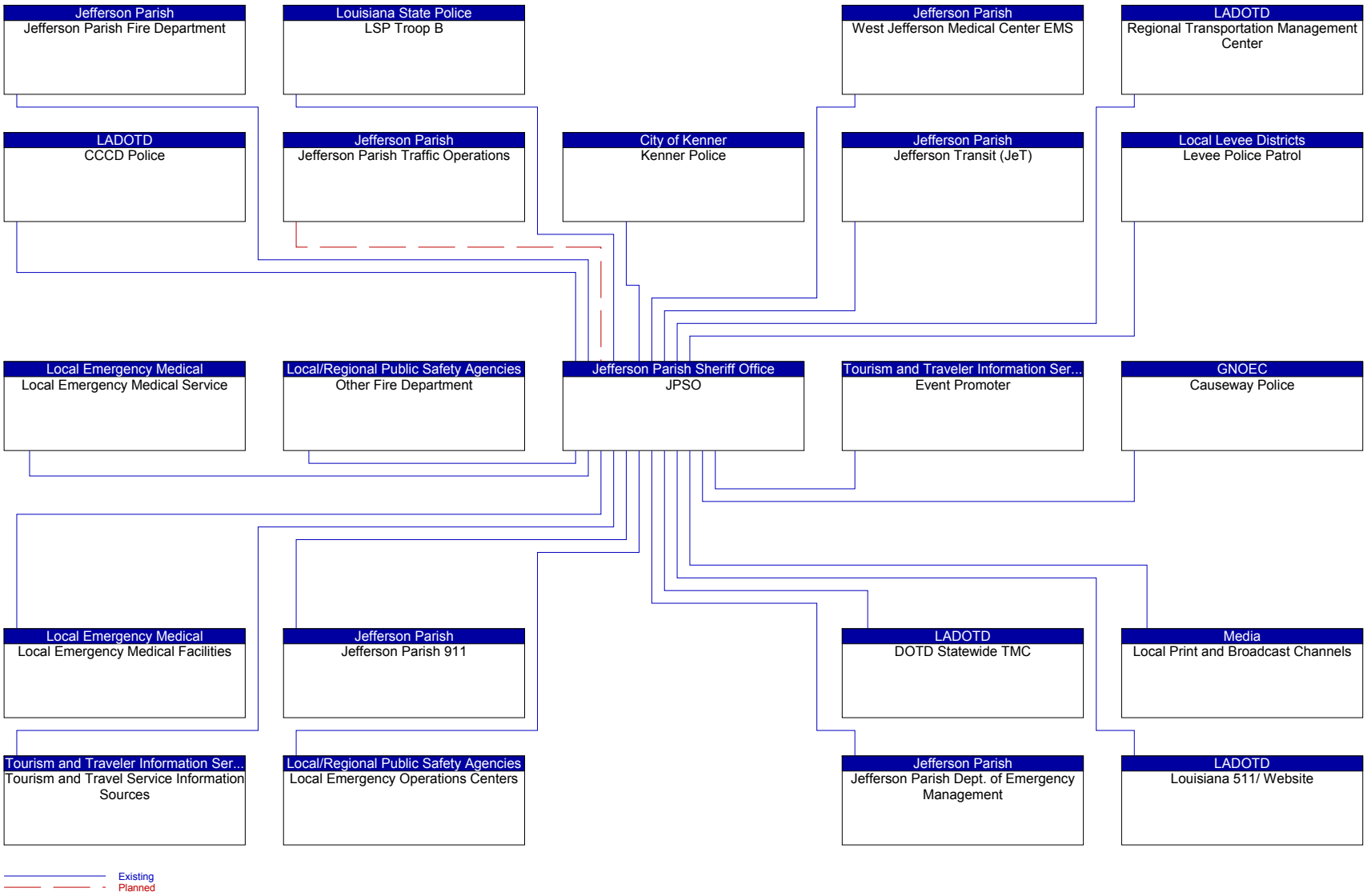

Figure 48: JPSO Interconnect Context Diagram

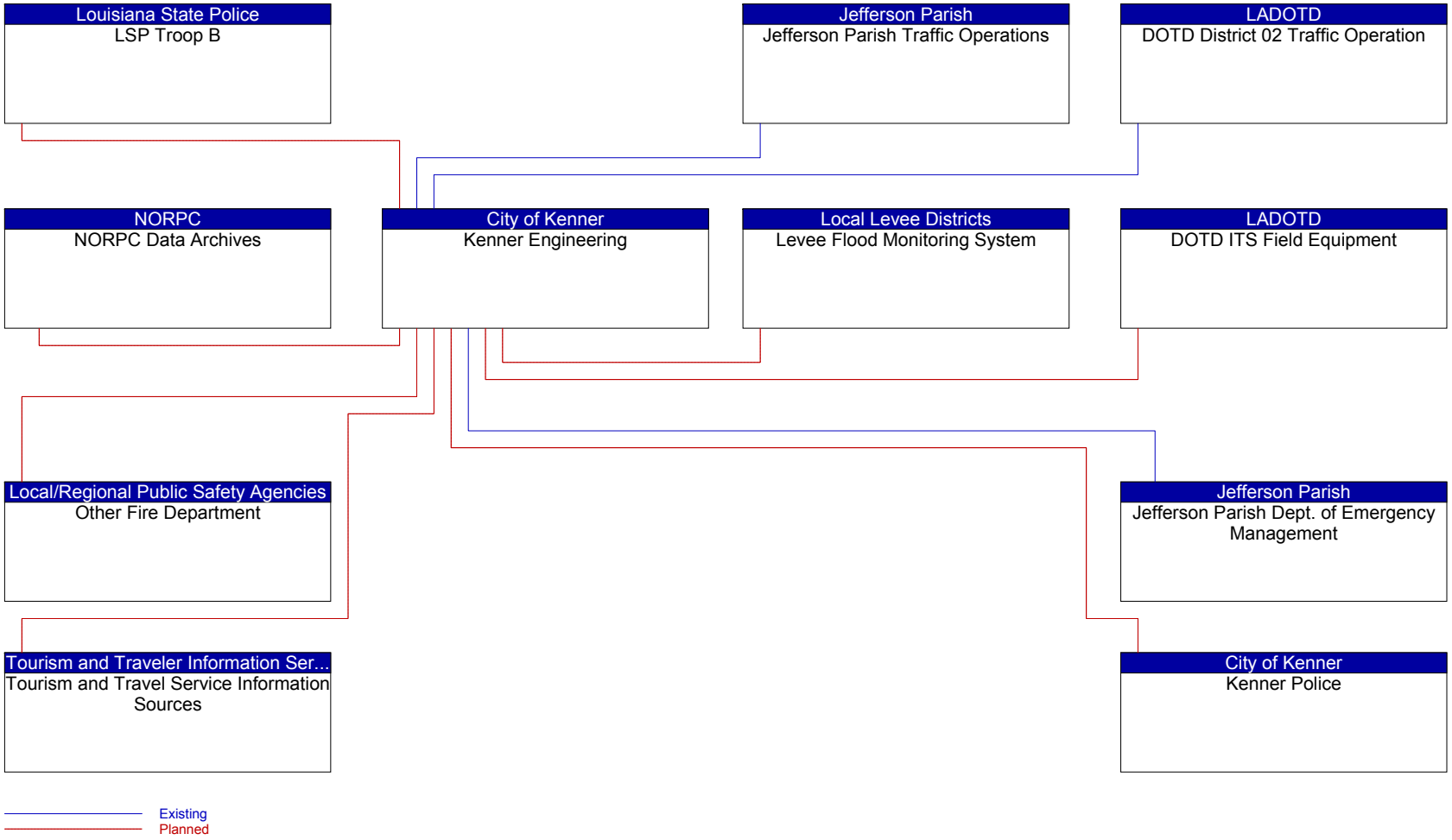

Figure 49: Kenner Engineering Interconnect Context Diagram

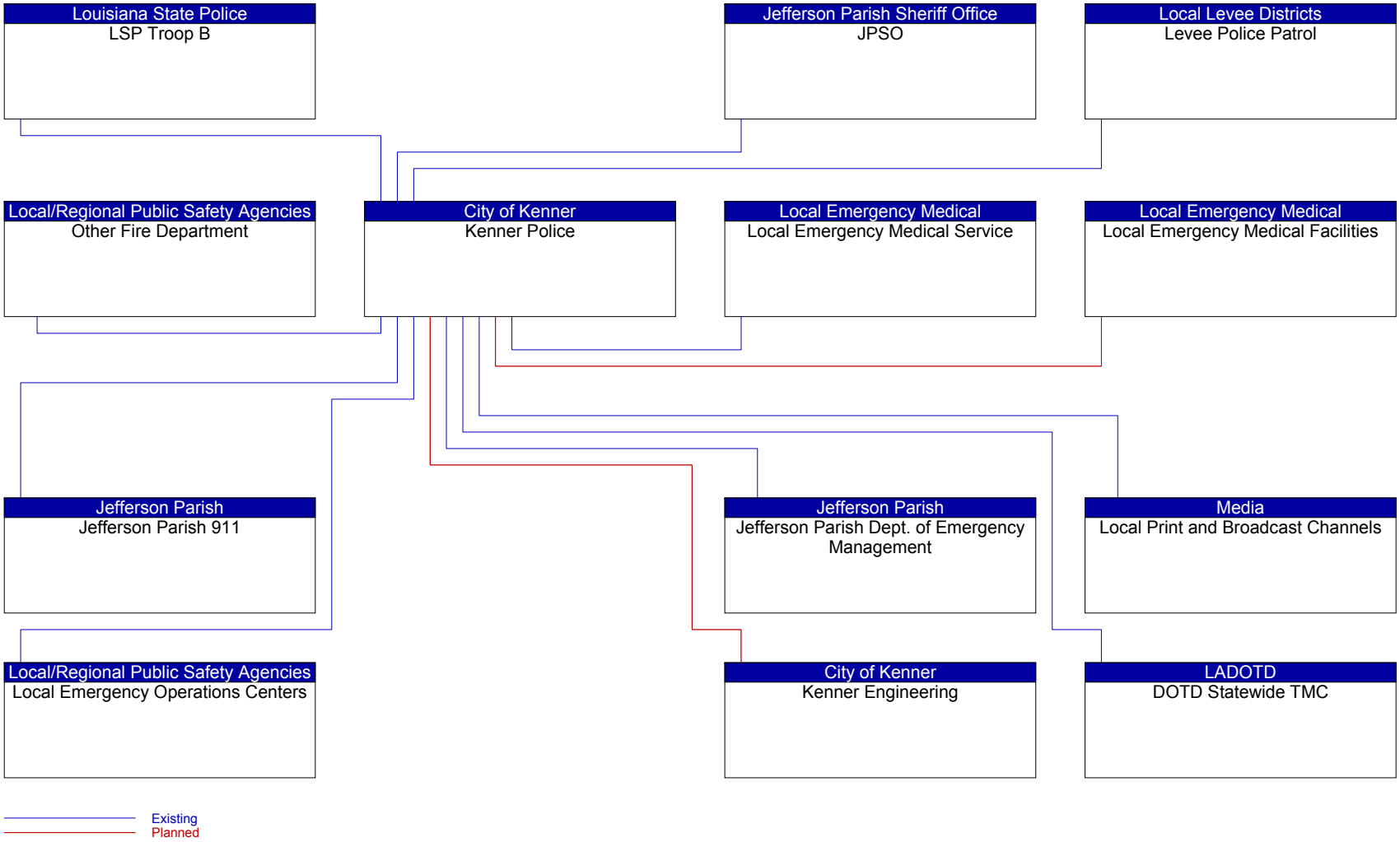

Figure 50: Kenner Police Interconnect Context Diagram

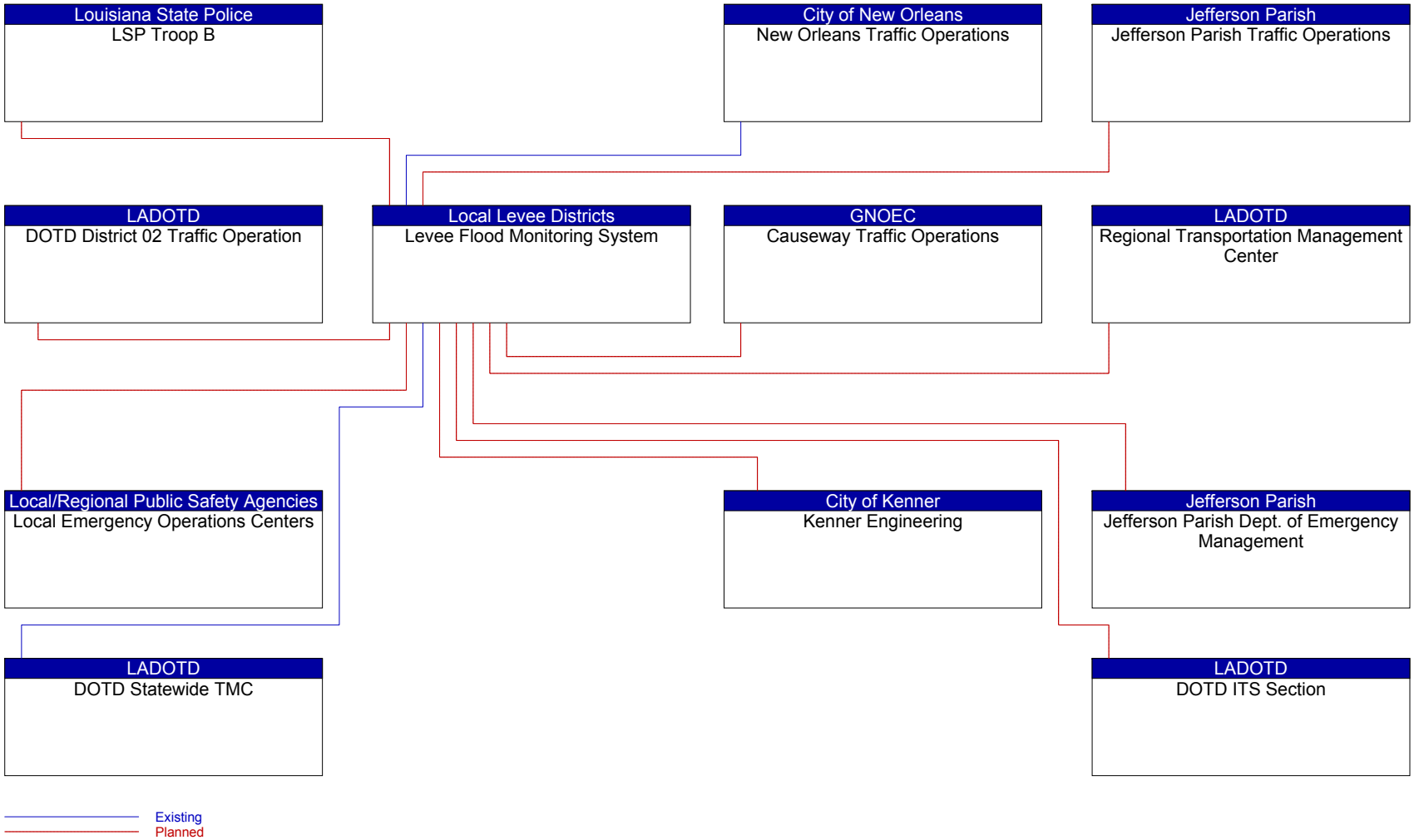

Figure 51: Levee Flood Monitoring System Interconnect Context Diagram

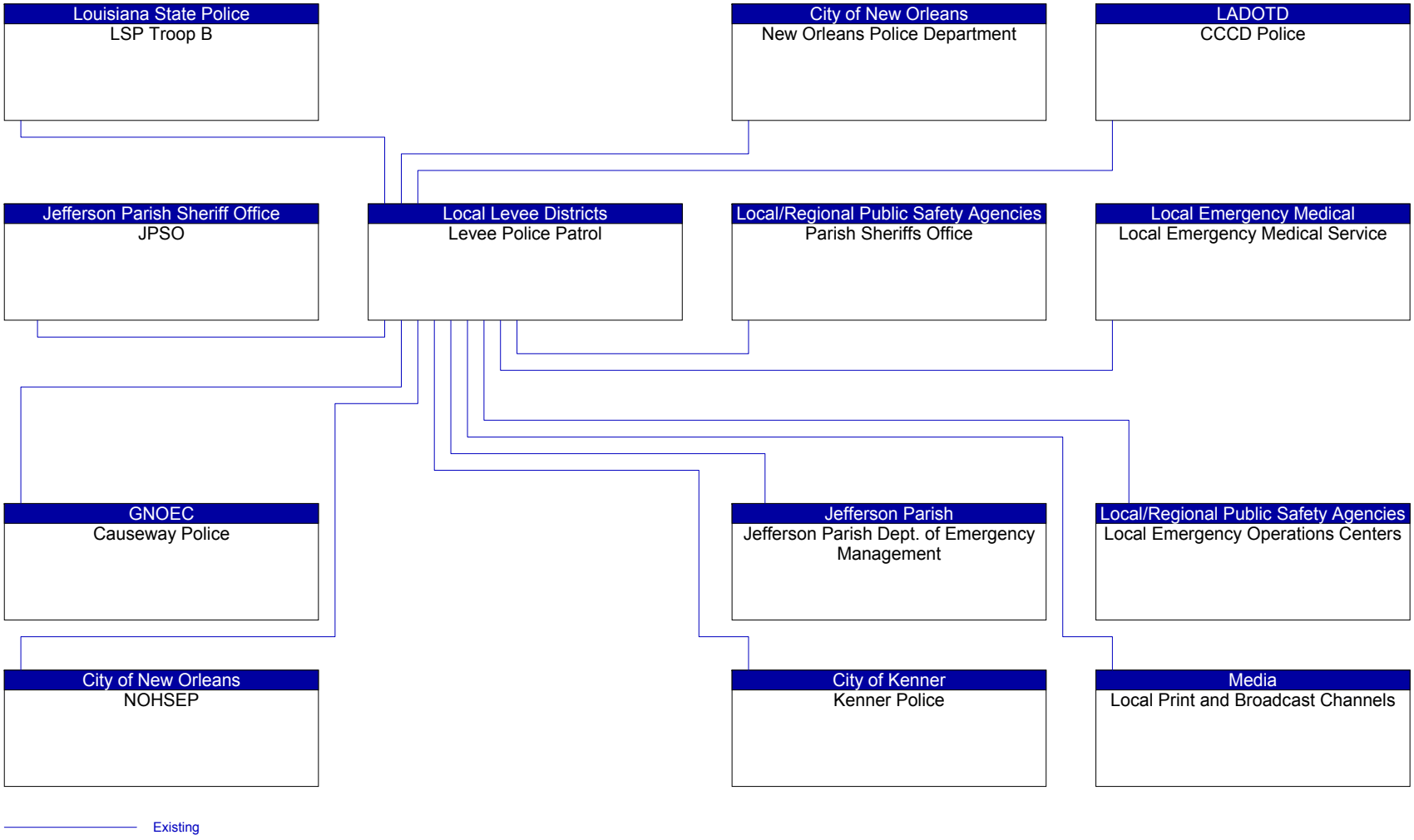

Figure 52: Levee Police Patrol Interconnect Context Diagram

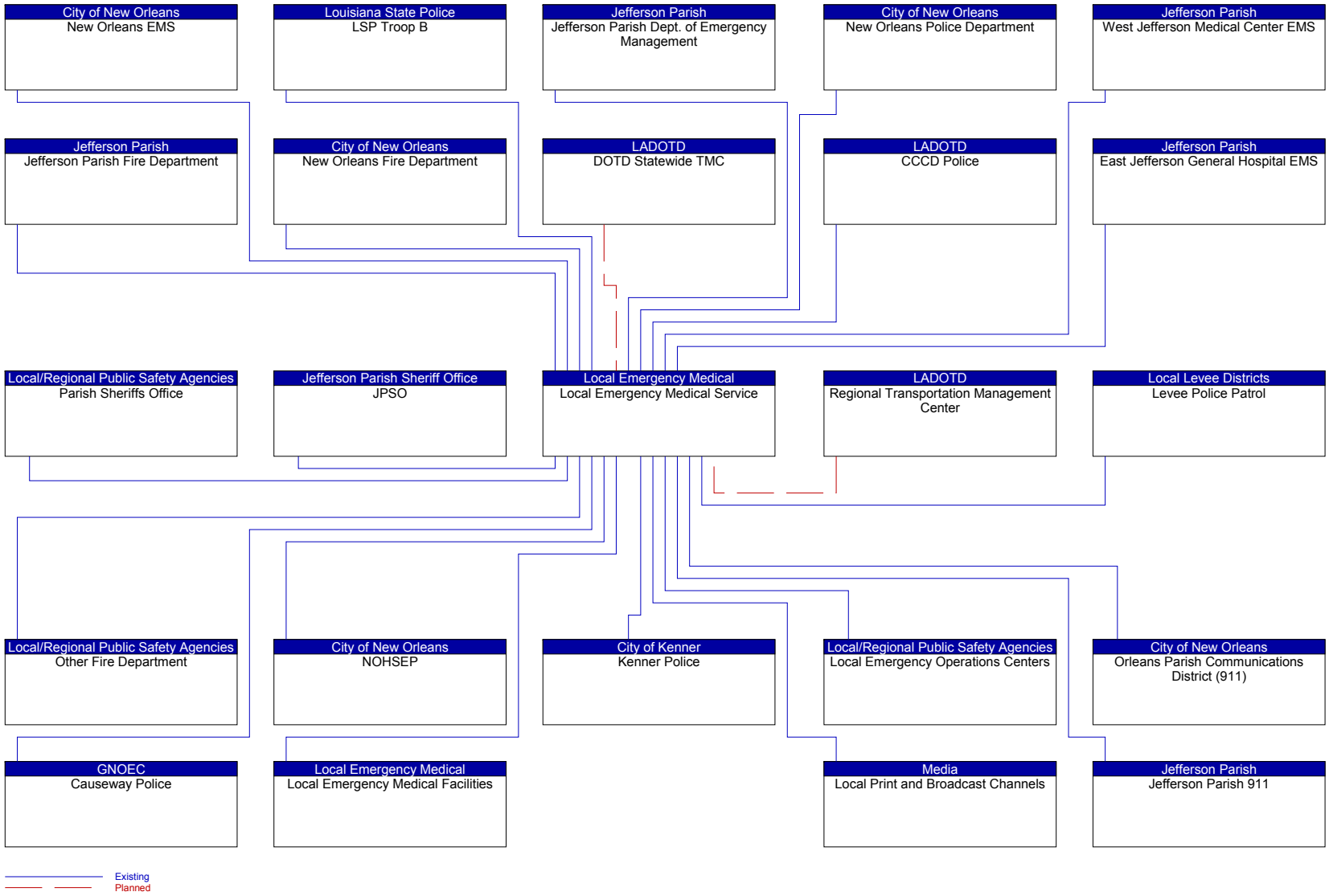

Figure 53: Local Emergency Medical Service Interconnect Context Diagram

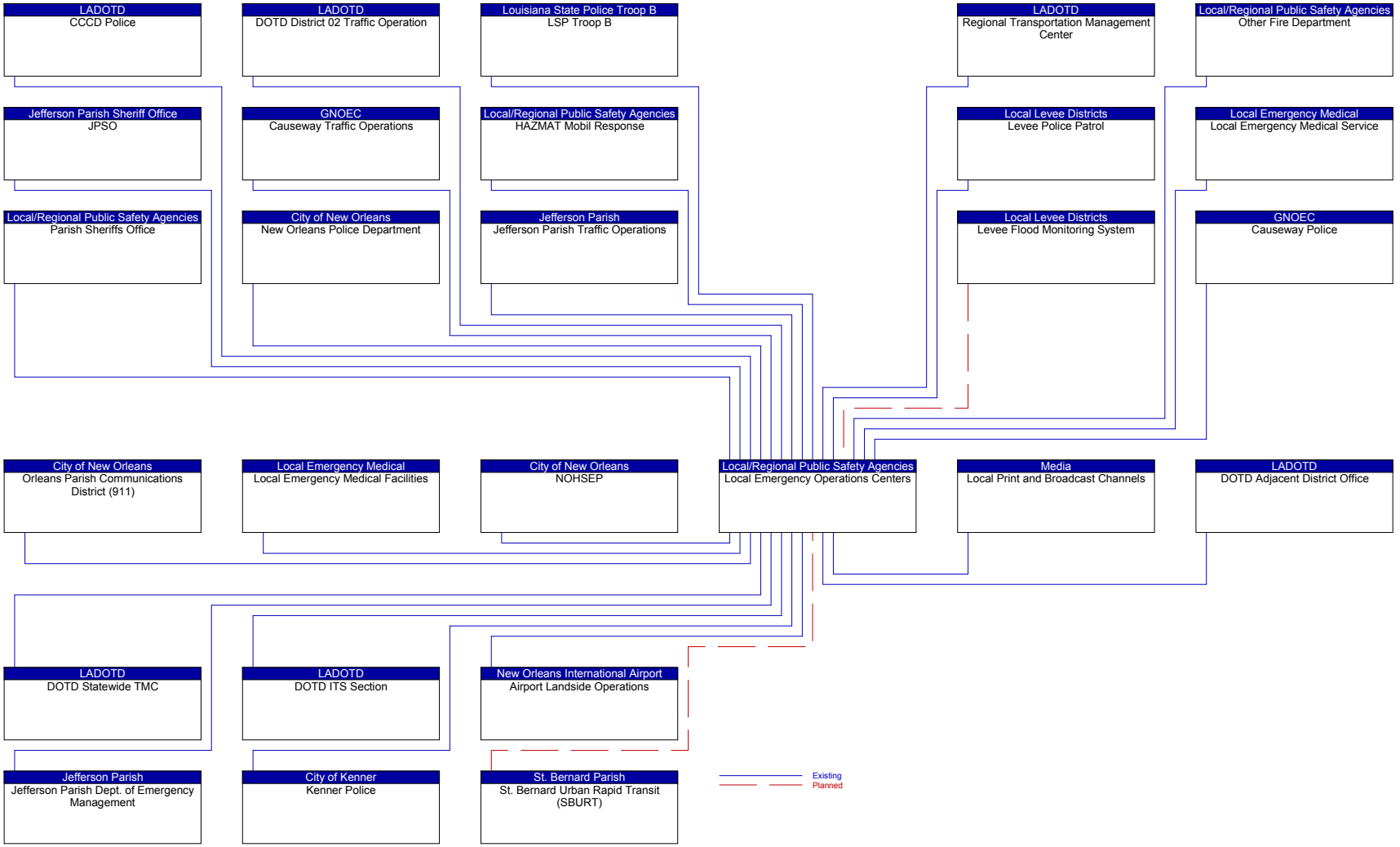

Figure 54: Local Emergency Operations Centers Interconnect Context Diagram

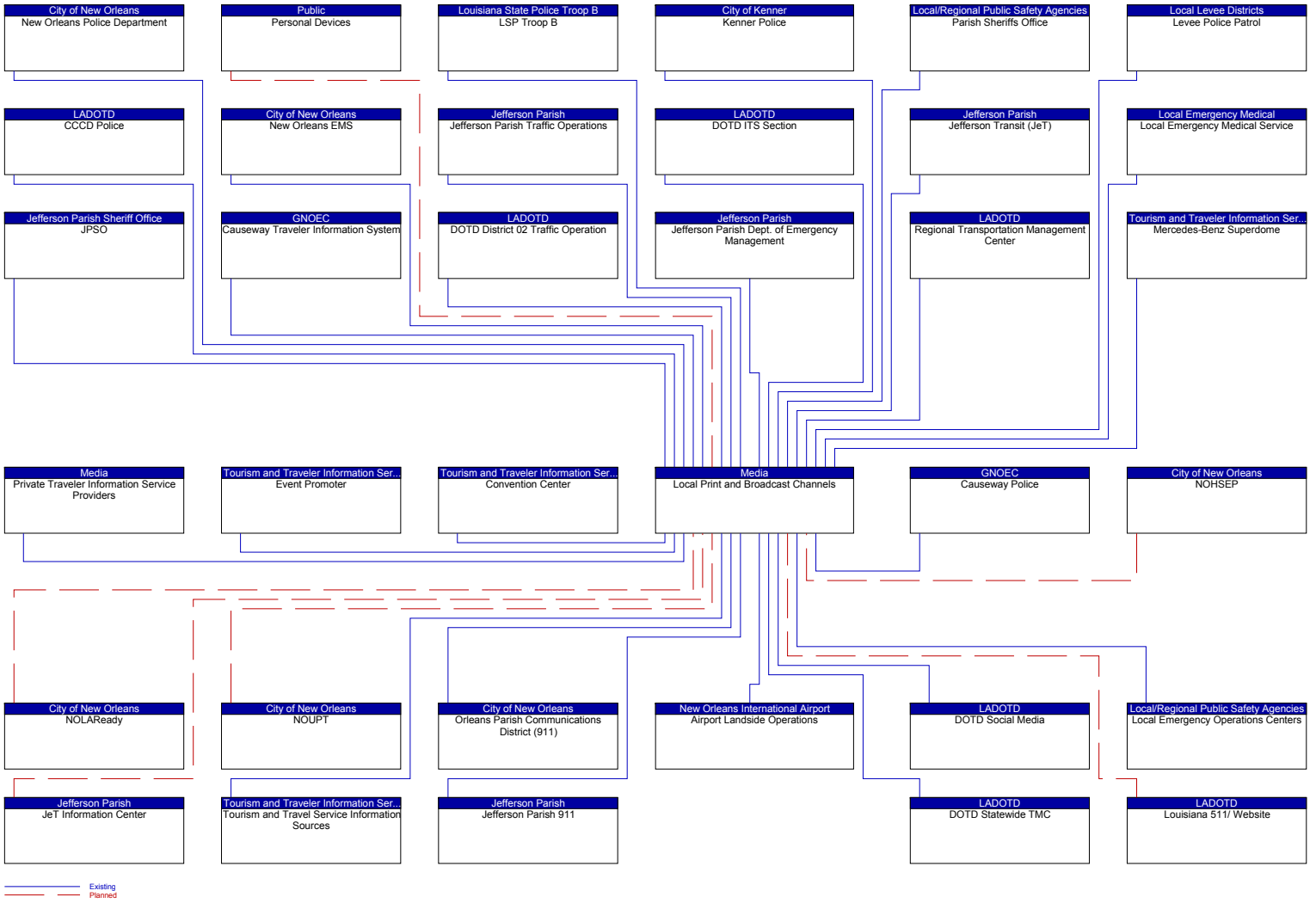

Figure 55: Local Print and Broadcast Channels Interconnect Context Diagram

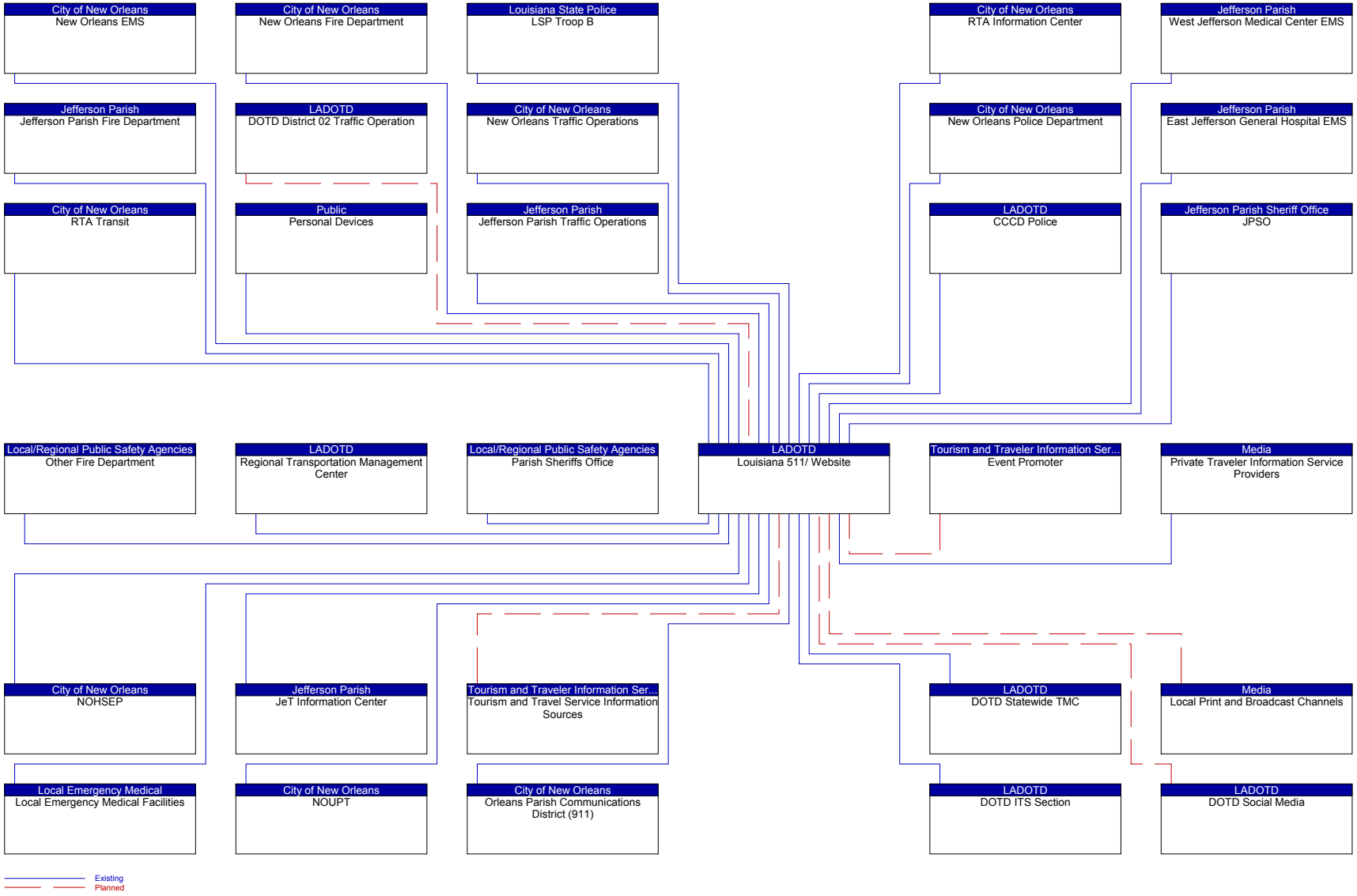

Figure 56: Louisiana 511/ Website Interconnect Context Diagram

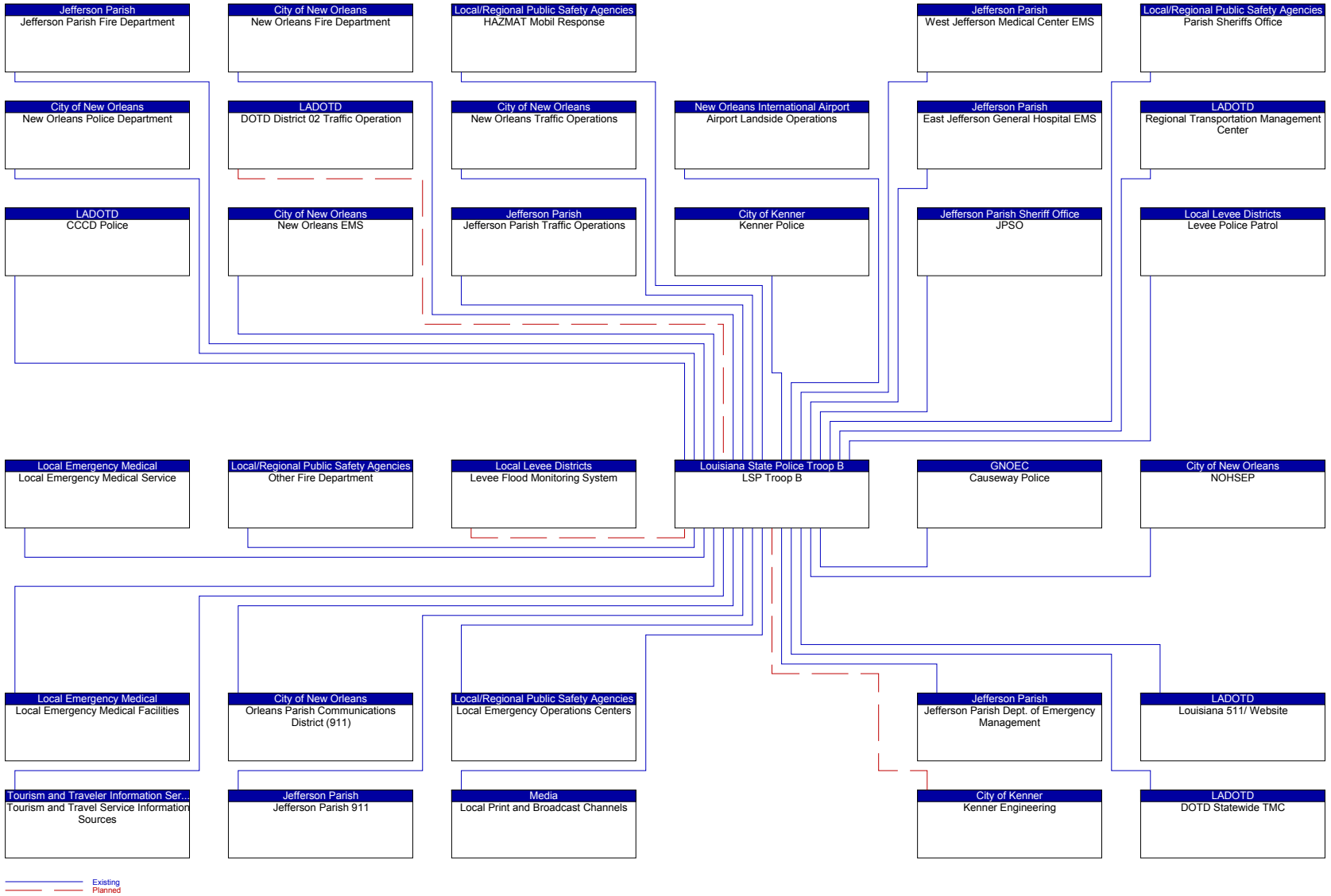

Figure 57: LSP Troop B Interconnect Context Diagram

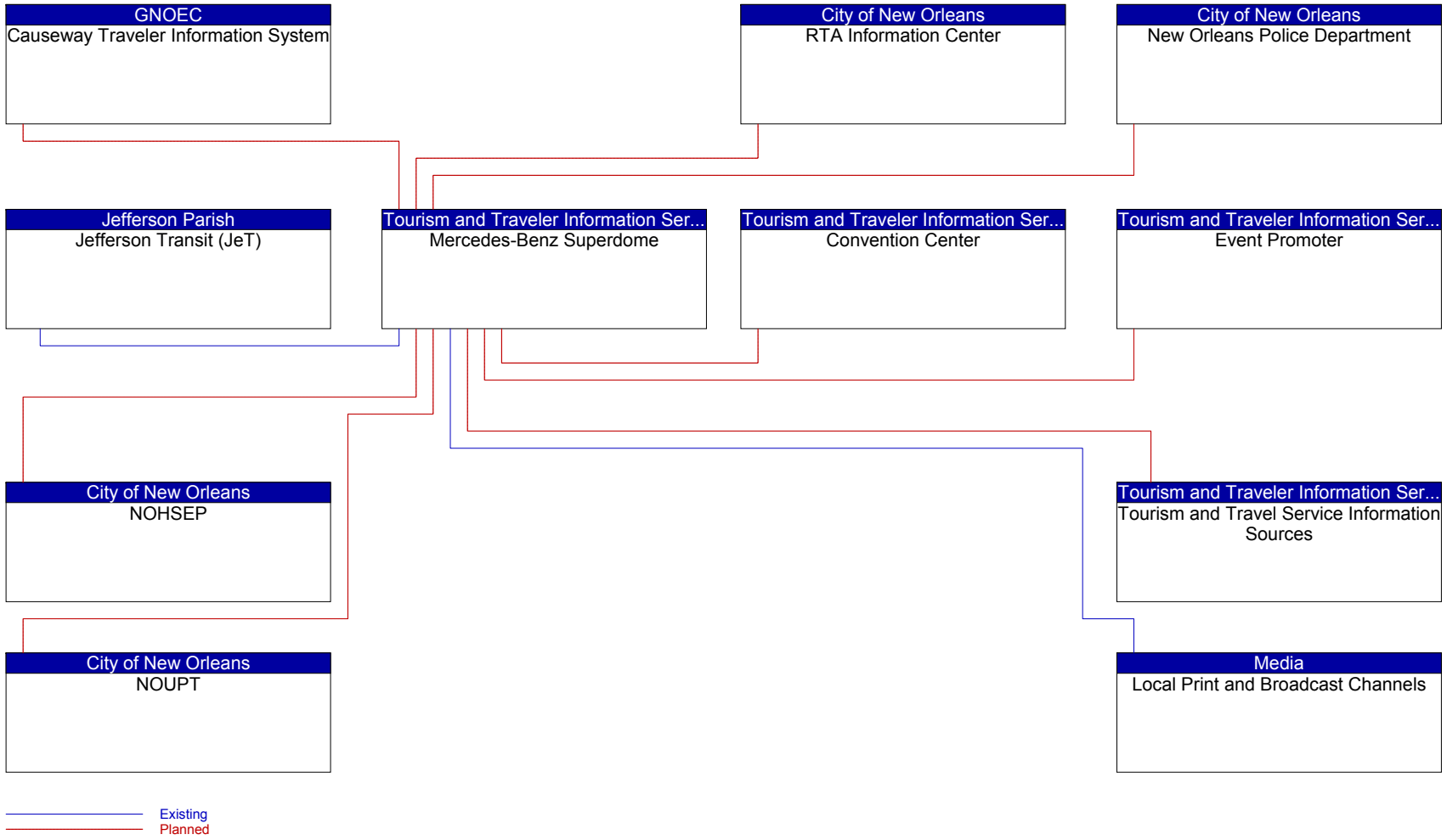

Figure 58: Mercedes-Benz Superdome Interconnect Context Diagram

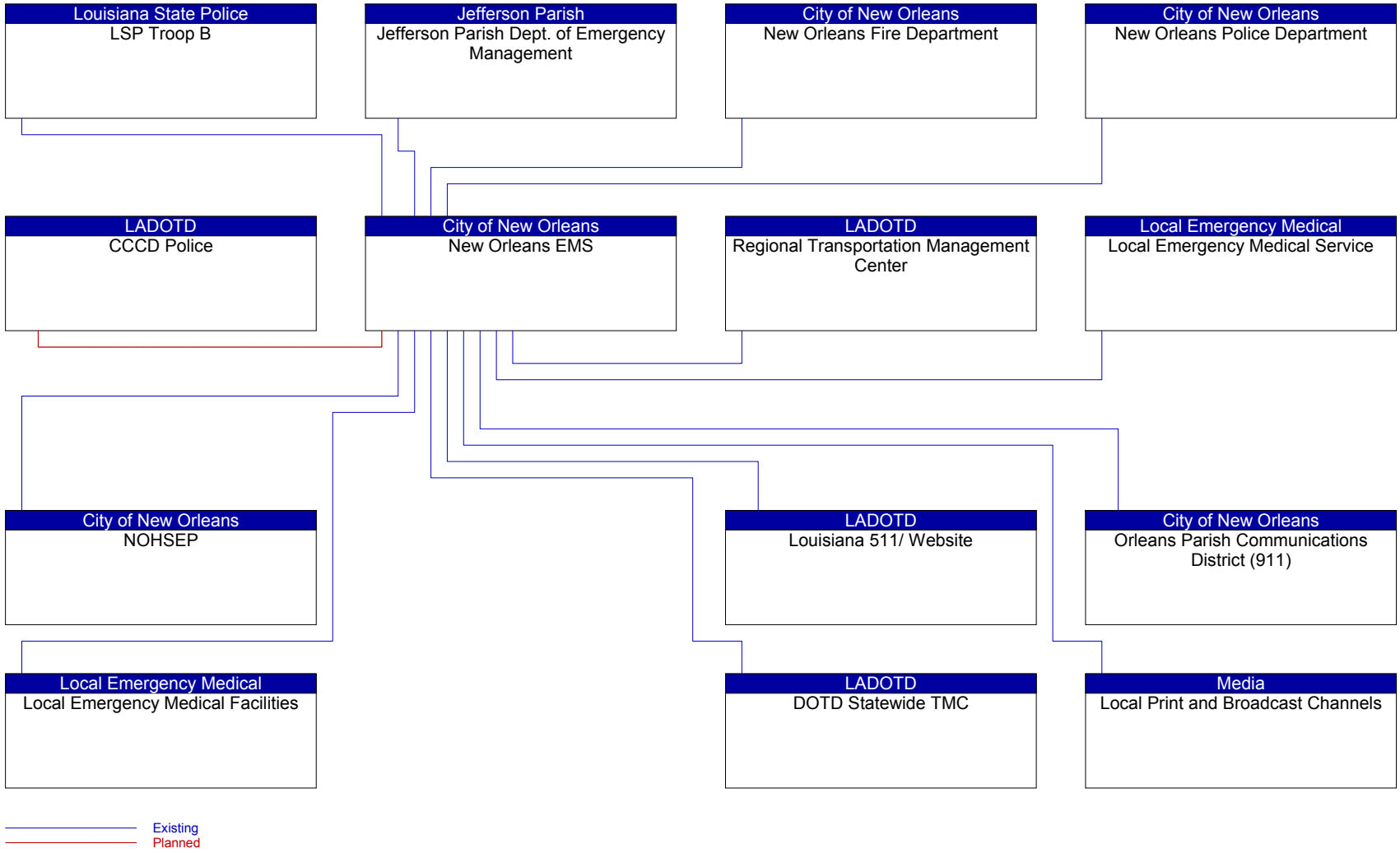

Figure 59: New Orleans EMS Interconnect Context Diagram

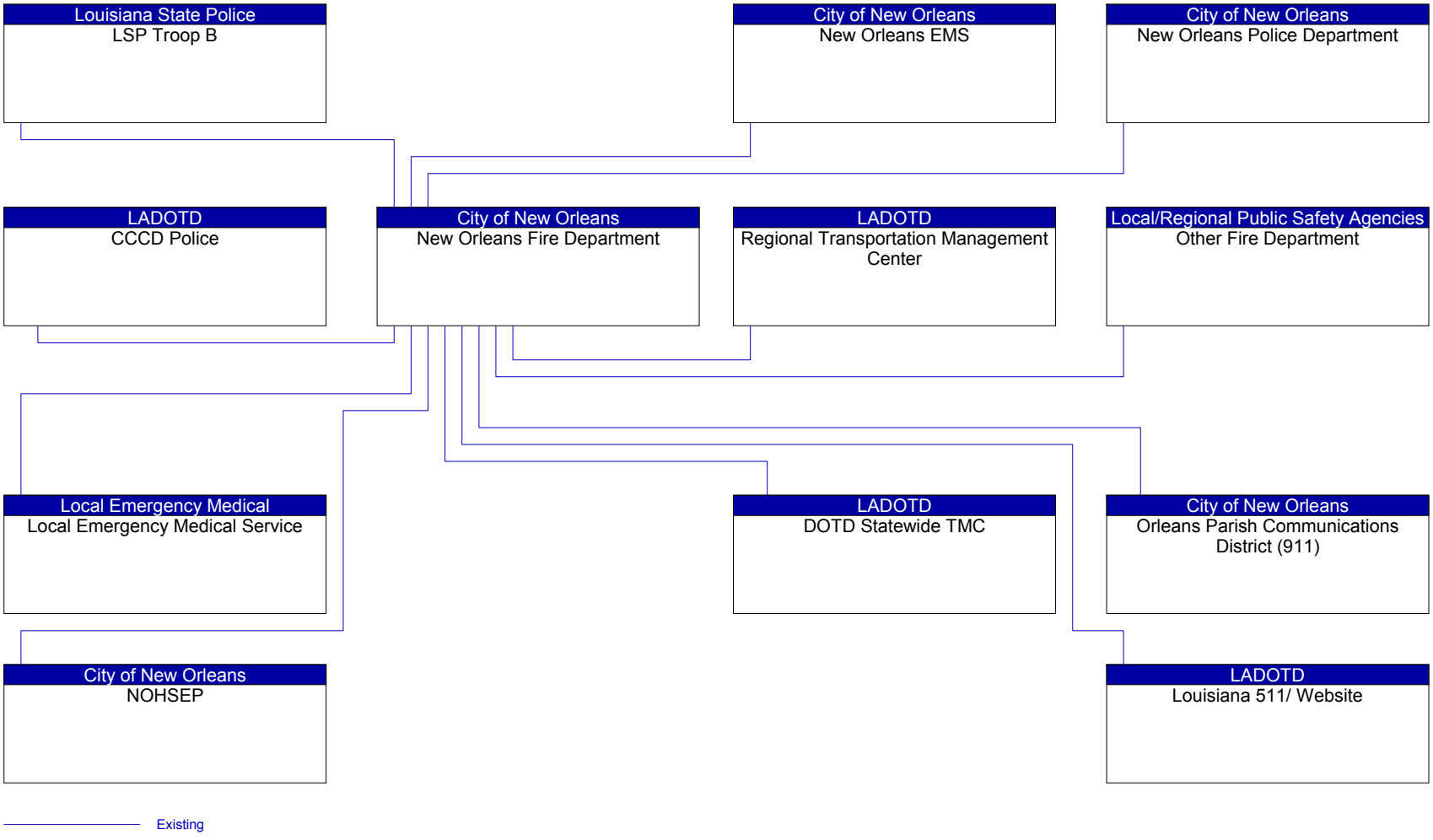

Figure 60: New Orleans Fire Department Interconnect Context Diagram

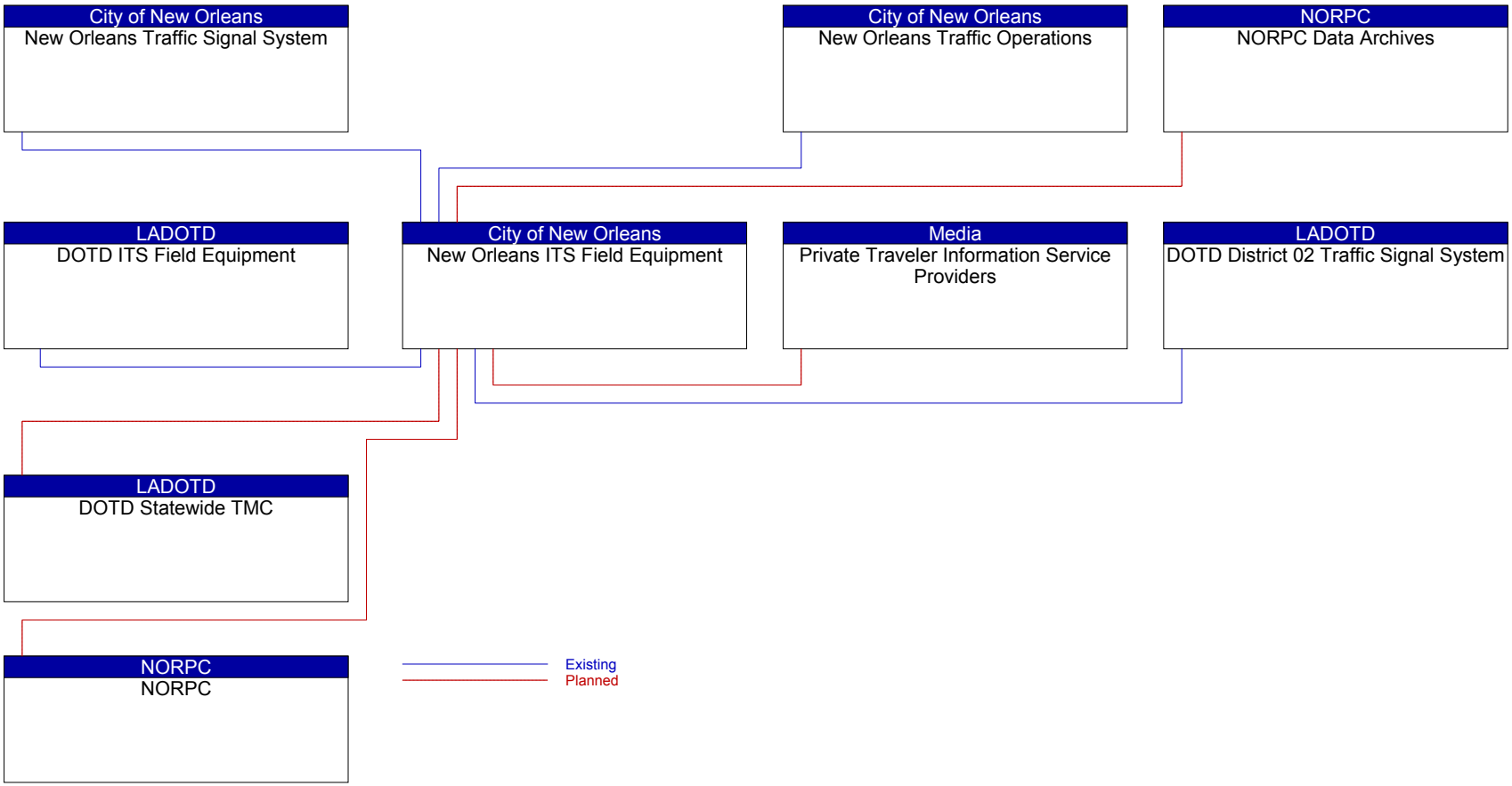

Figure 61: New Orleans ITS Field Equipment Interconnect Context Diagram

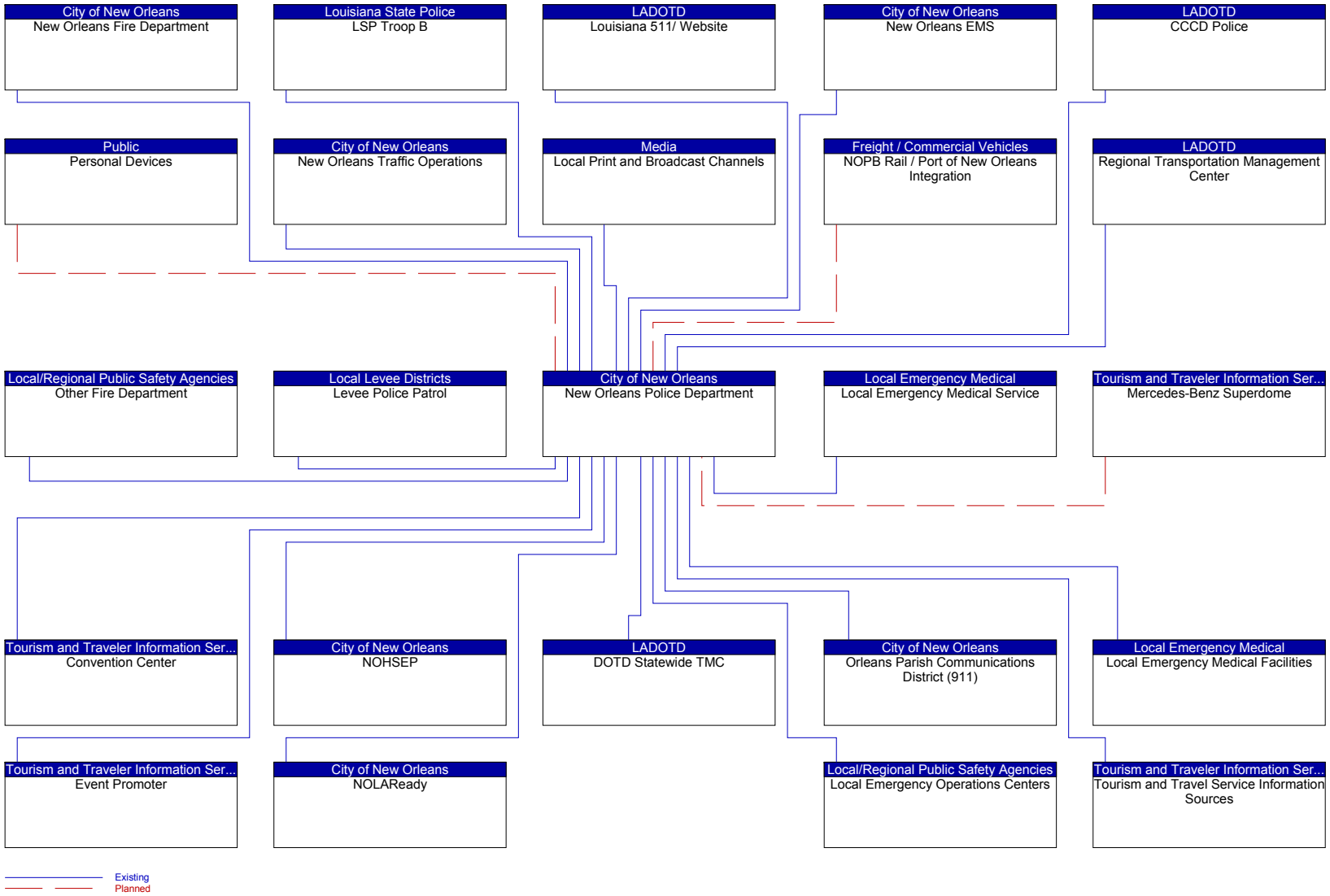

Figure 62: New Orleans Police Department Interconnect Context Diagram

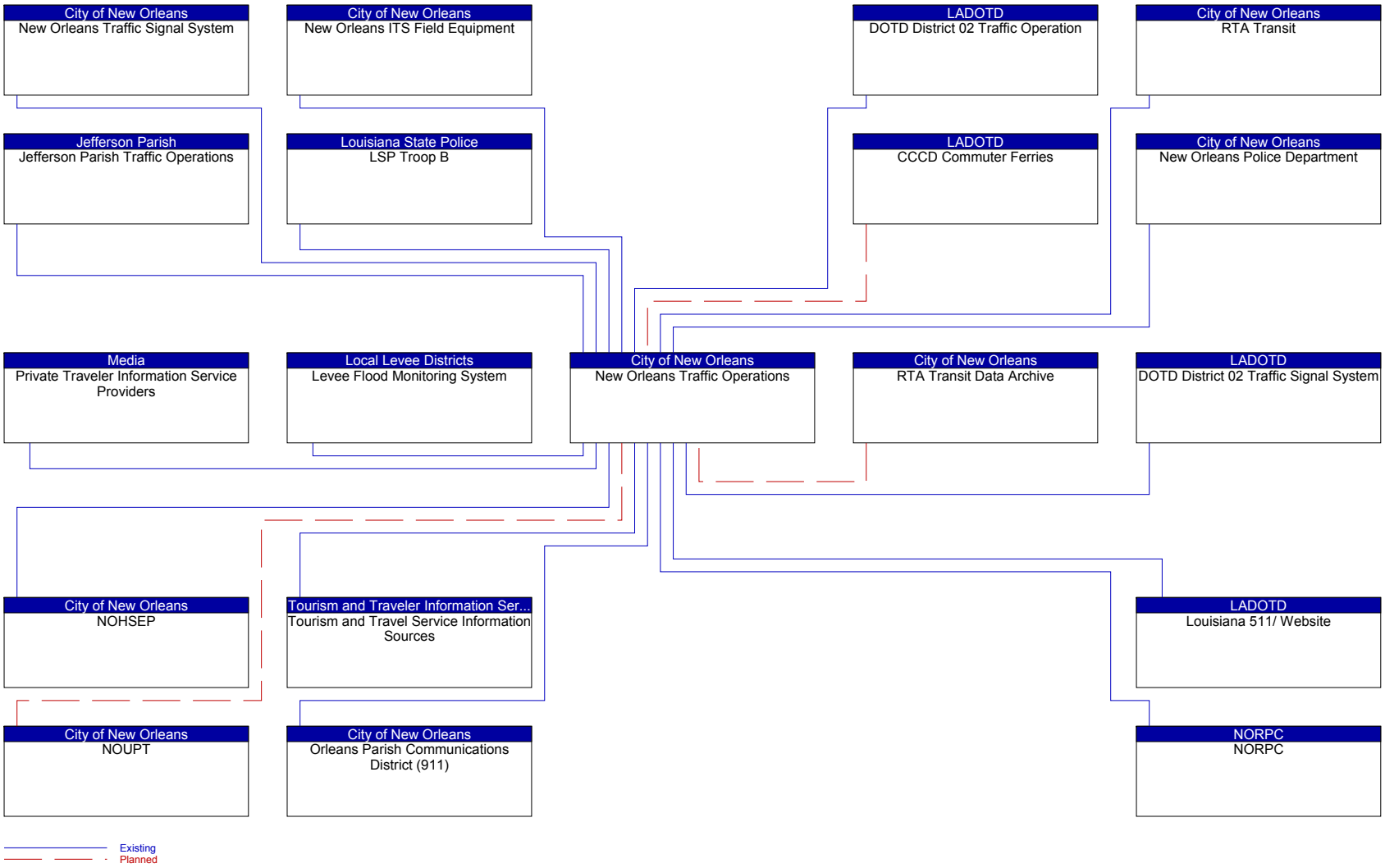

Figure 63: New Orleans Traffic Operations Interconnect Context Diagram

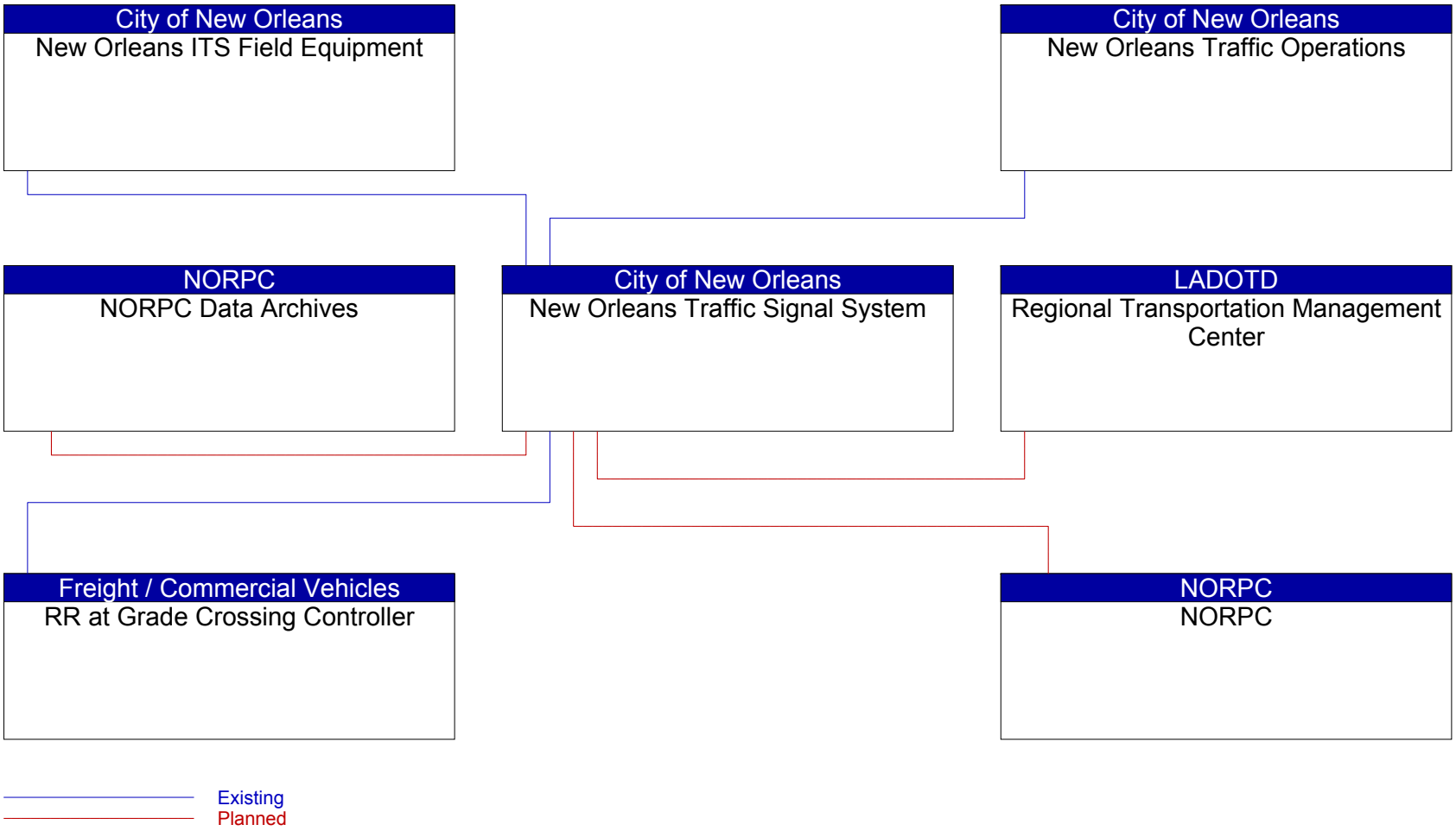

Figure 64: New Orleans Traffic Signal System Interconnect Context Diagram

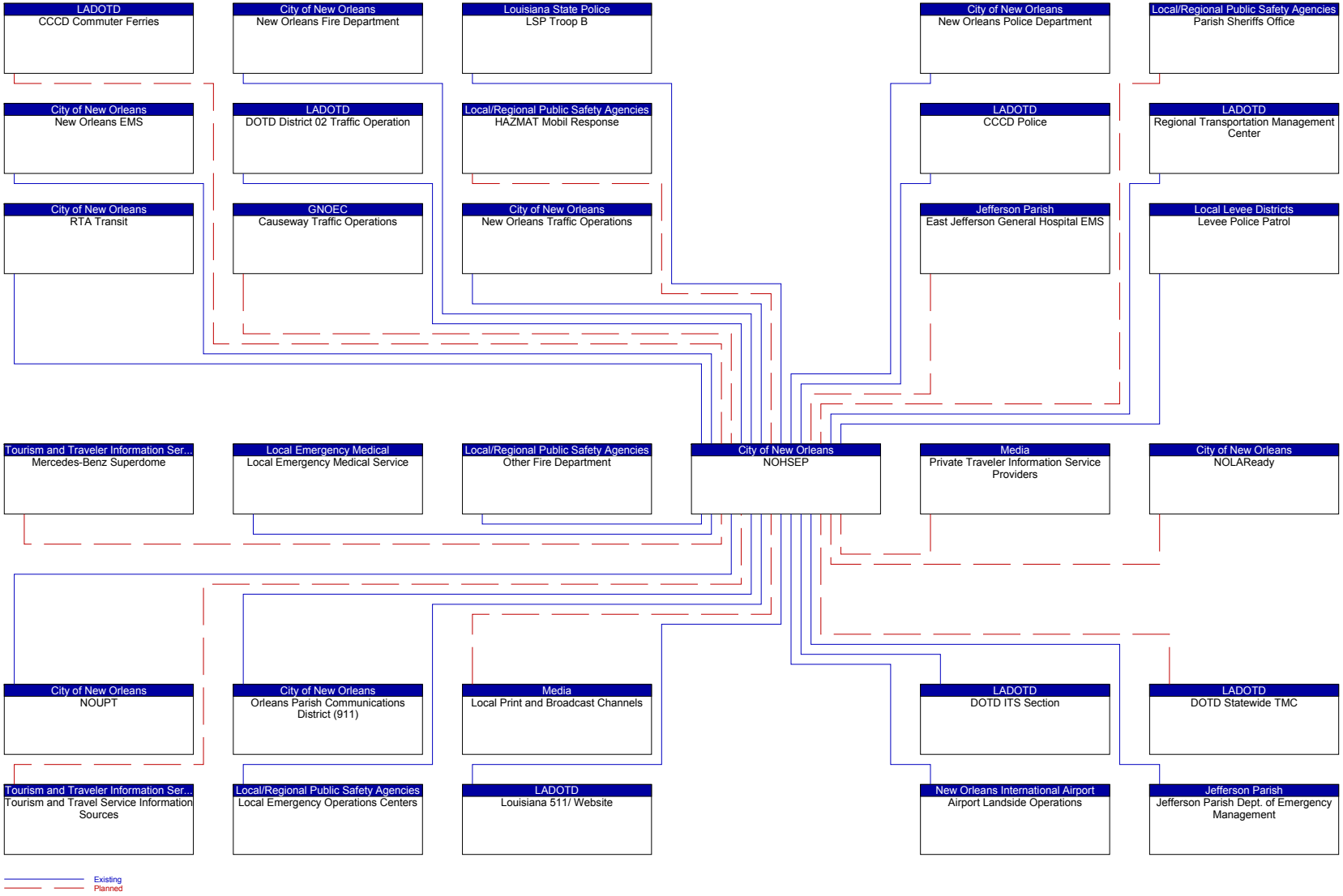

Figure 65: NOHSEP Interconnect Context Diagram

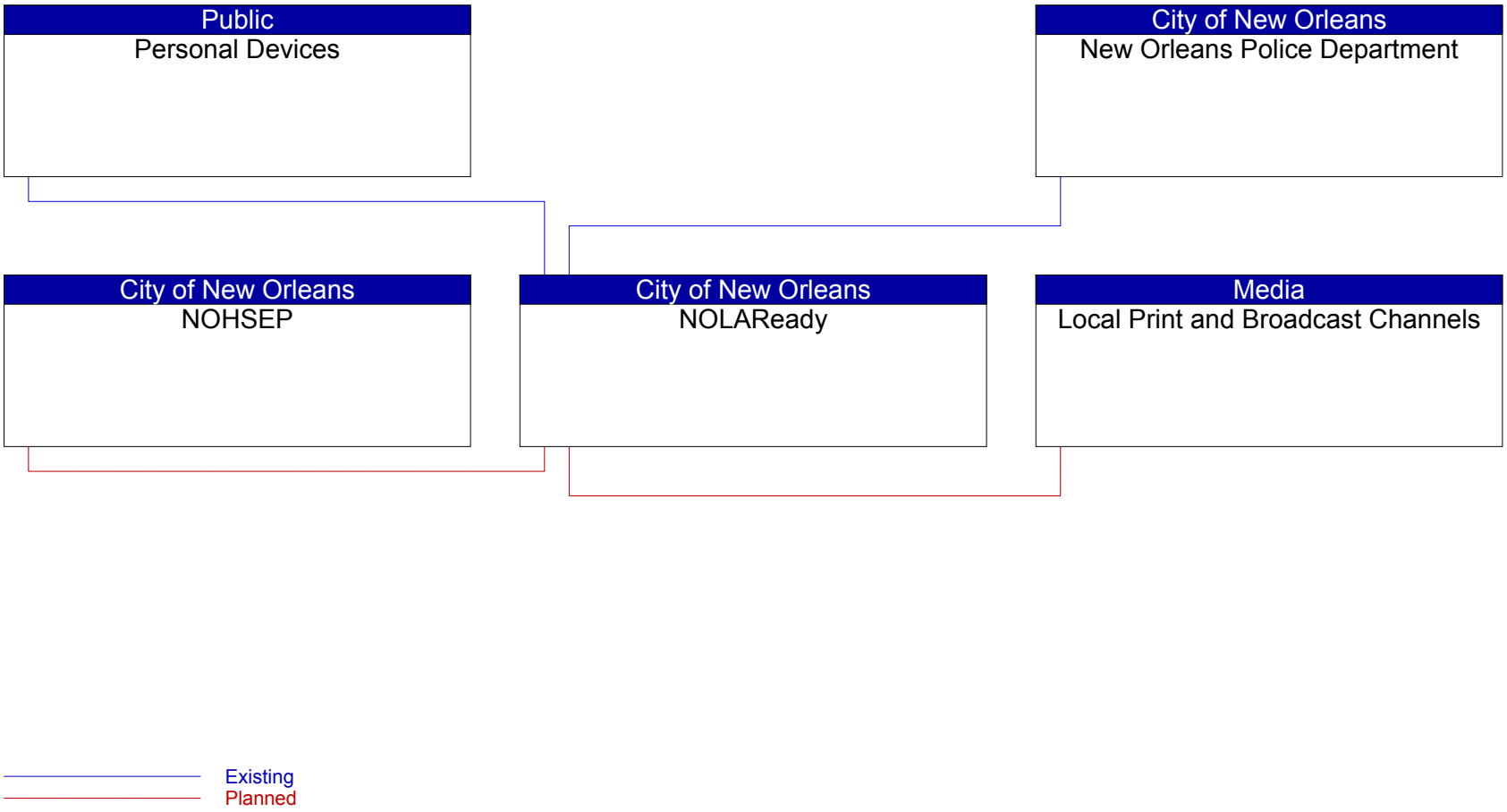

Figure 66: NOLA Ready Interconnect Context Diagram

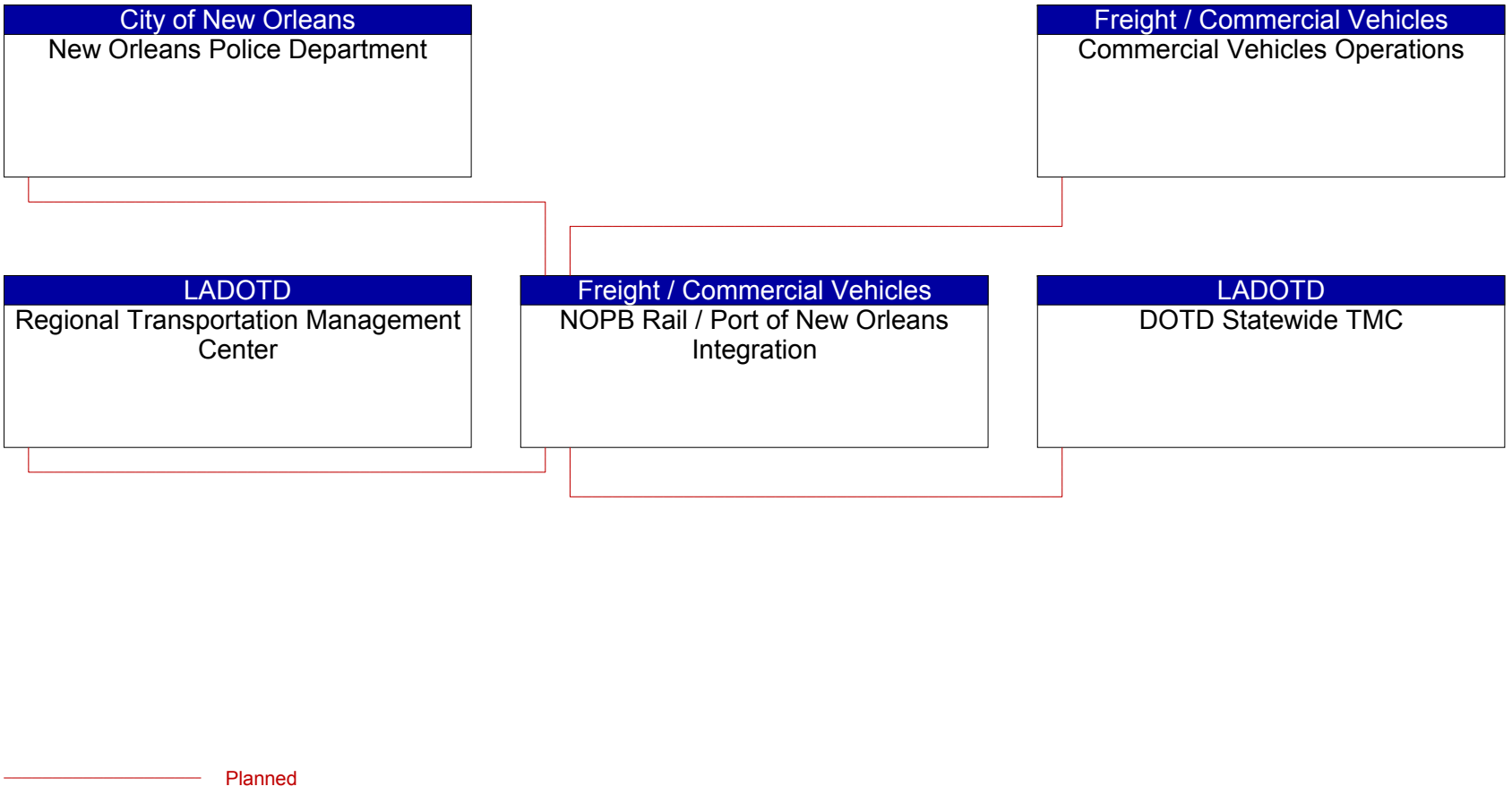

Figure 67: NOPB Rail / Port of New Orleans Integration Interconnect Context Diagram

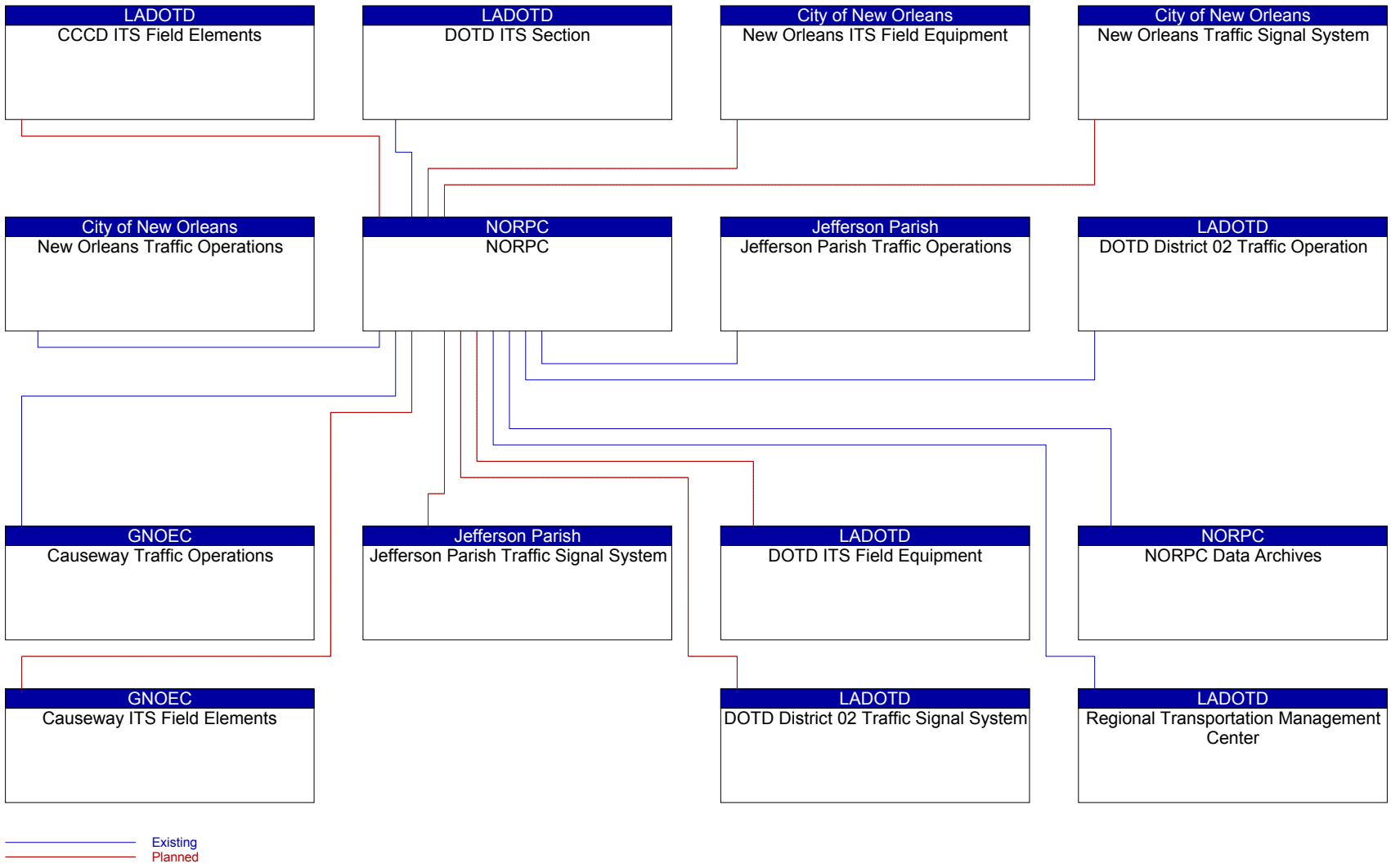

Figure 68: NORPC Interconnect Context Diagram

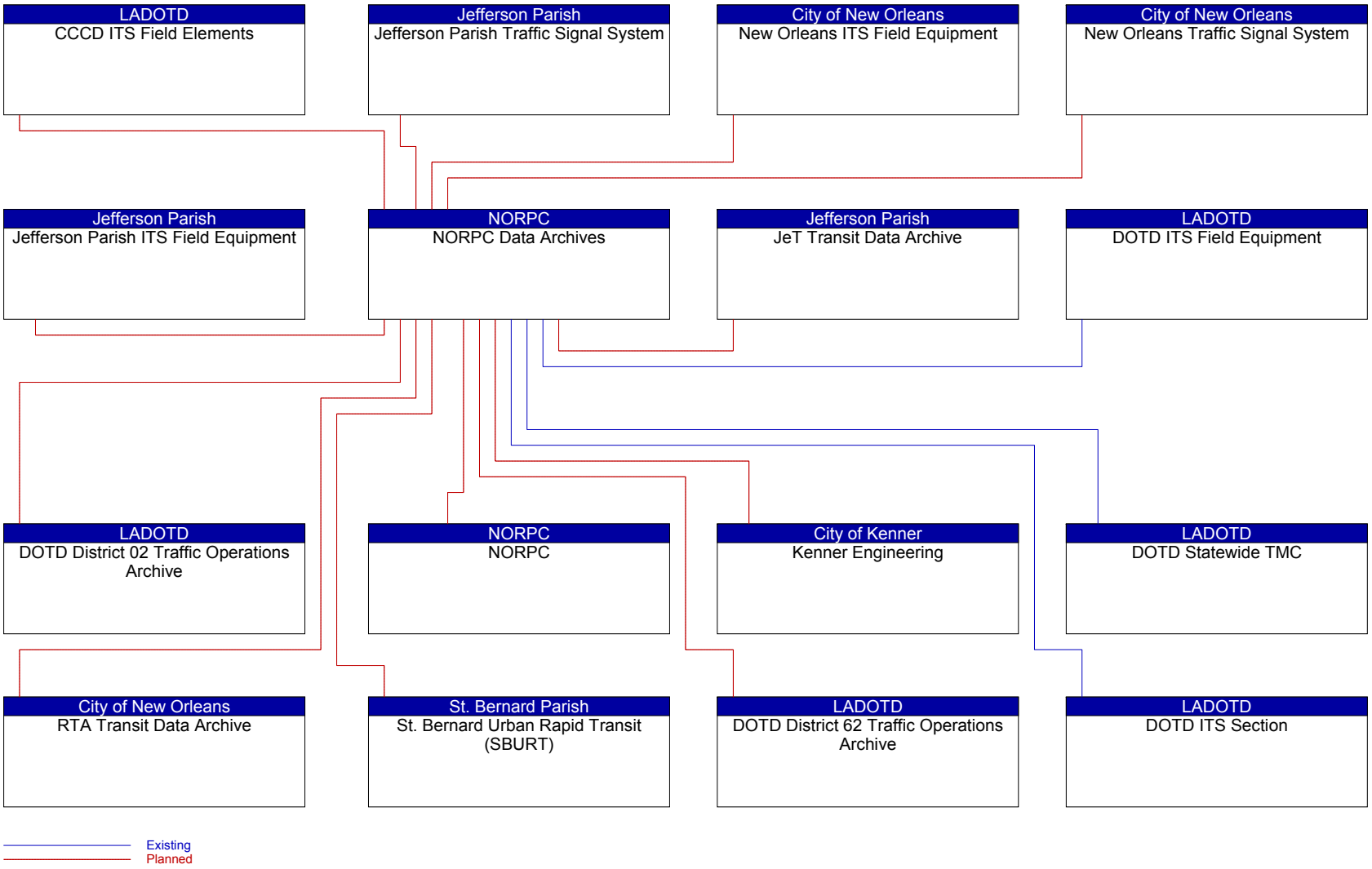

Figure 69: NORPC Data Archives Interconnect Context Diagram

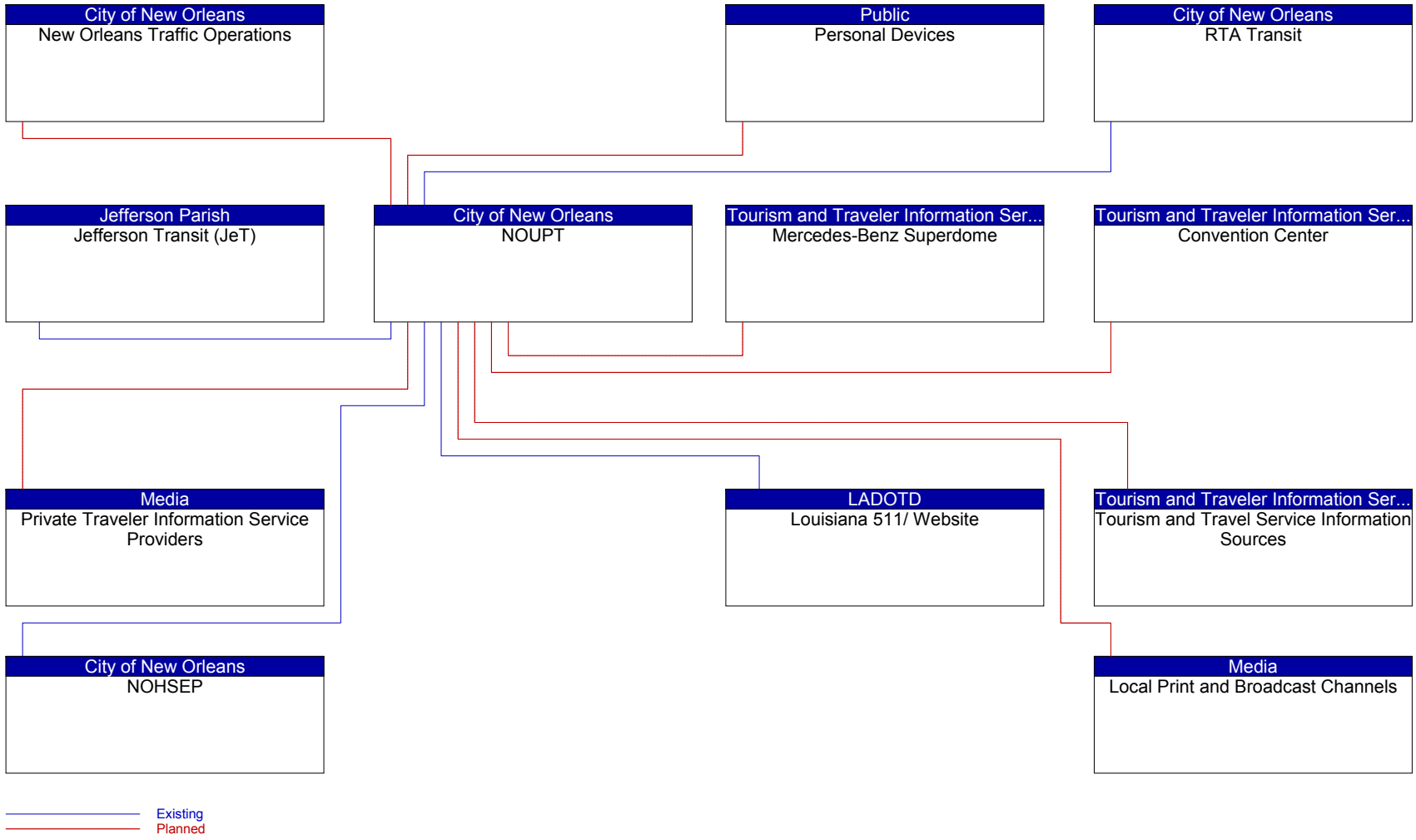

Figure 70: NOUPT Interconnect Context Diagram

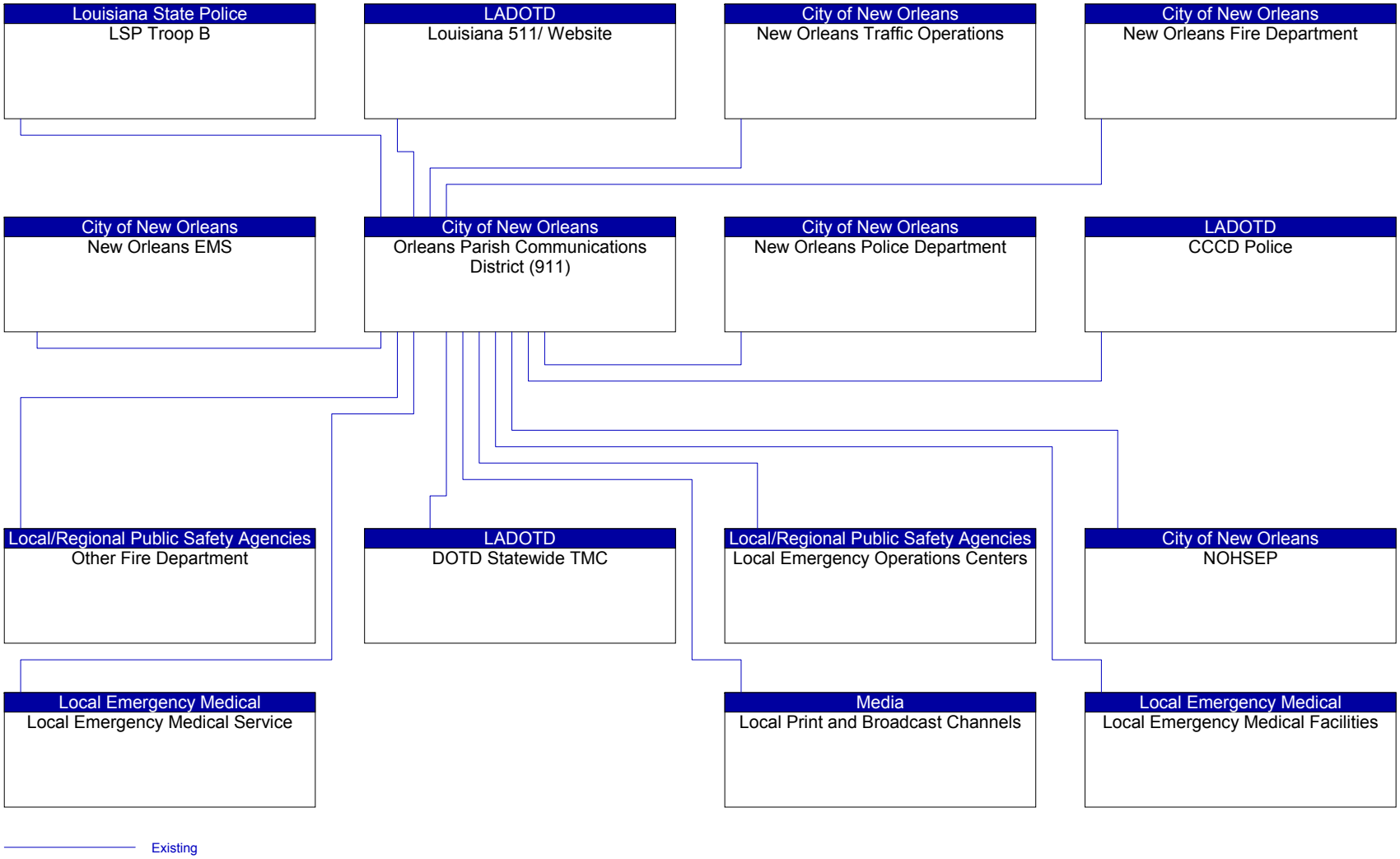

Figure 71: Orleans Parish Communications District (911) Interconnect Context Diagram

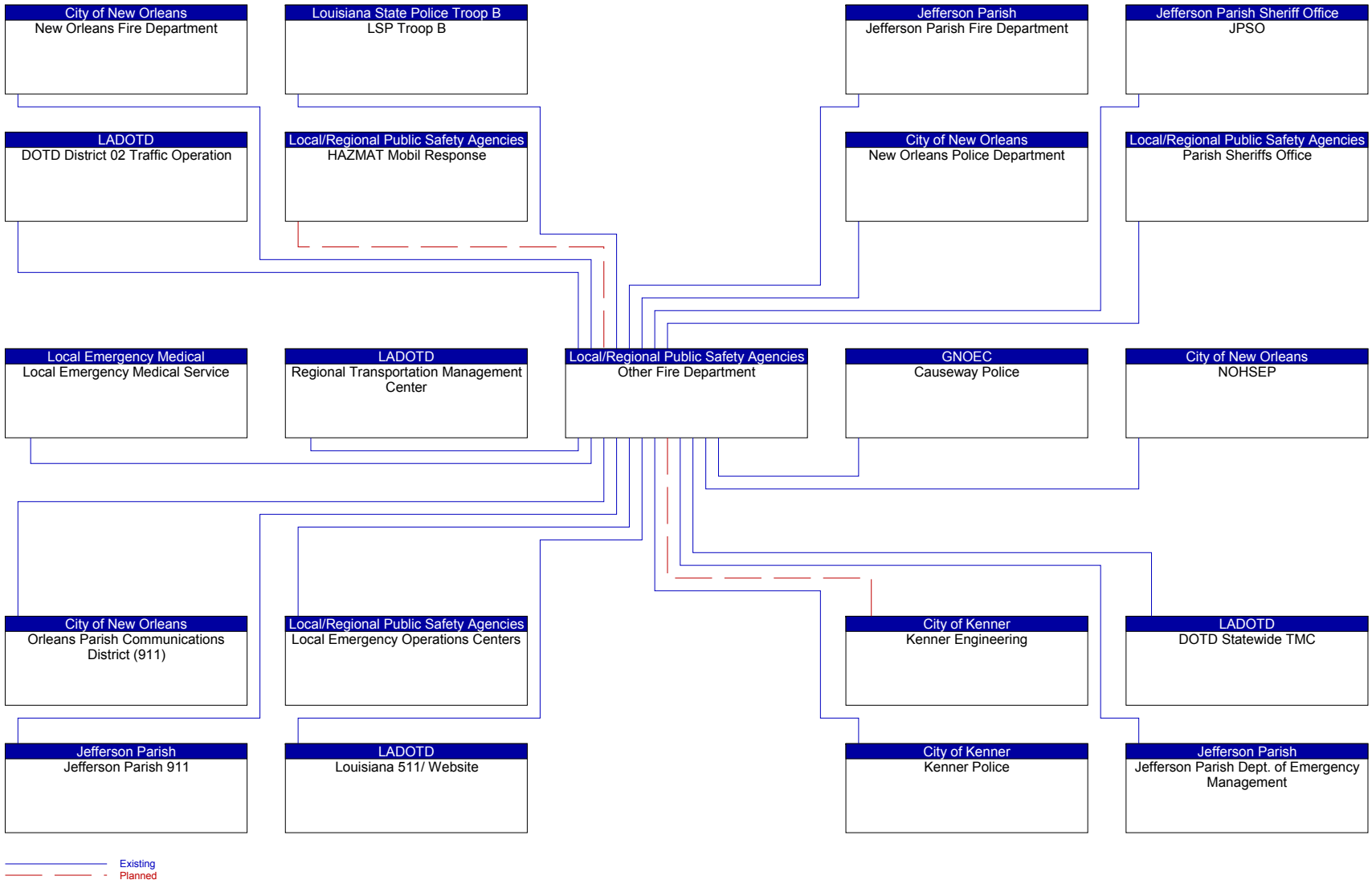

Figure 72: Other Fire Department Interconnect Context Diagram

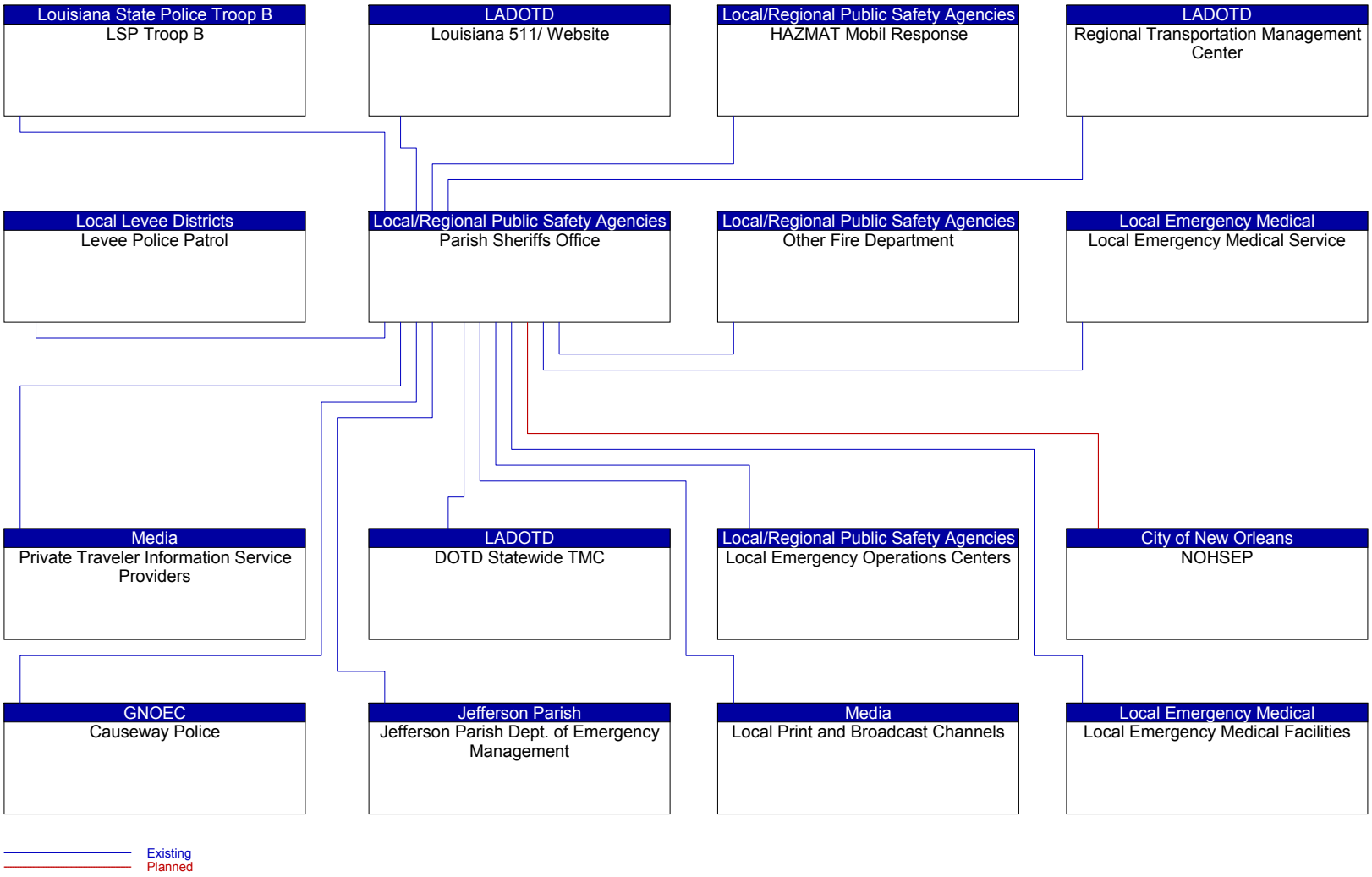

Figure 73: Parish Sheriff's Office Interconnect Context Diagram

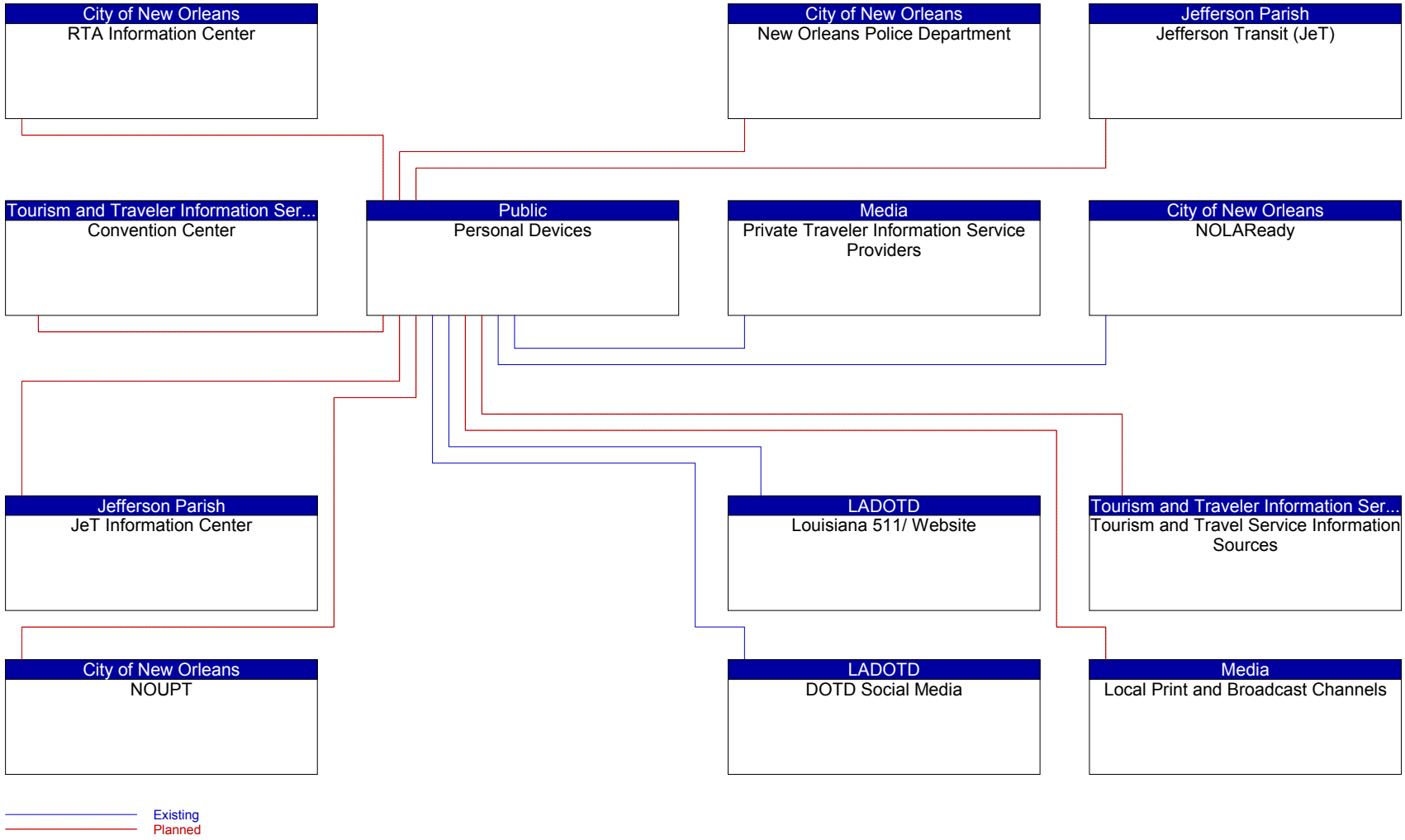

Figure 74: Personal Devices Interconnect Context Diagram

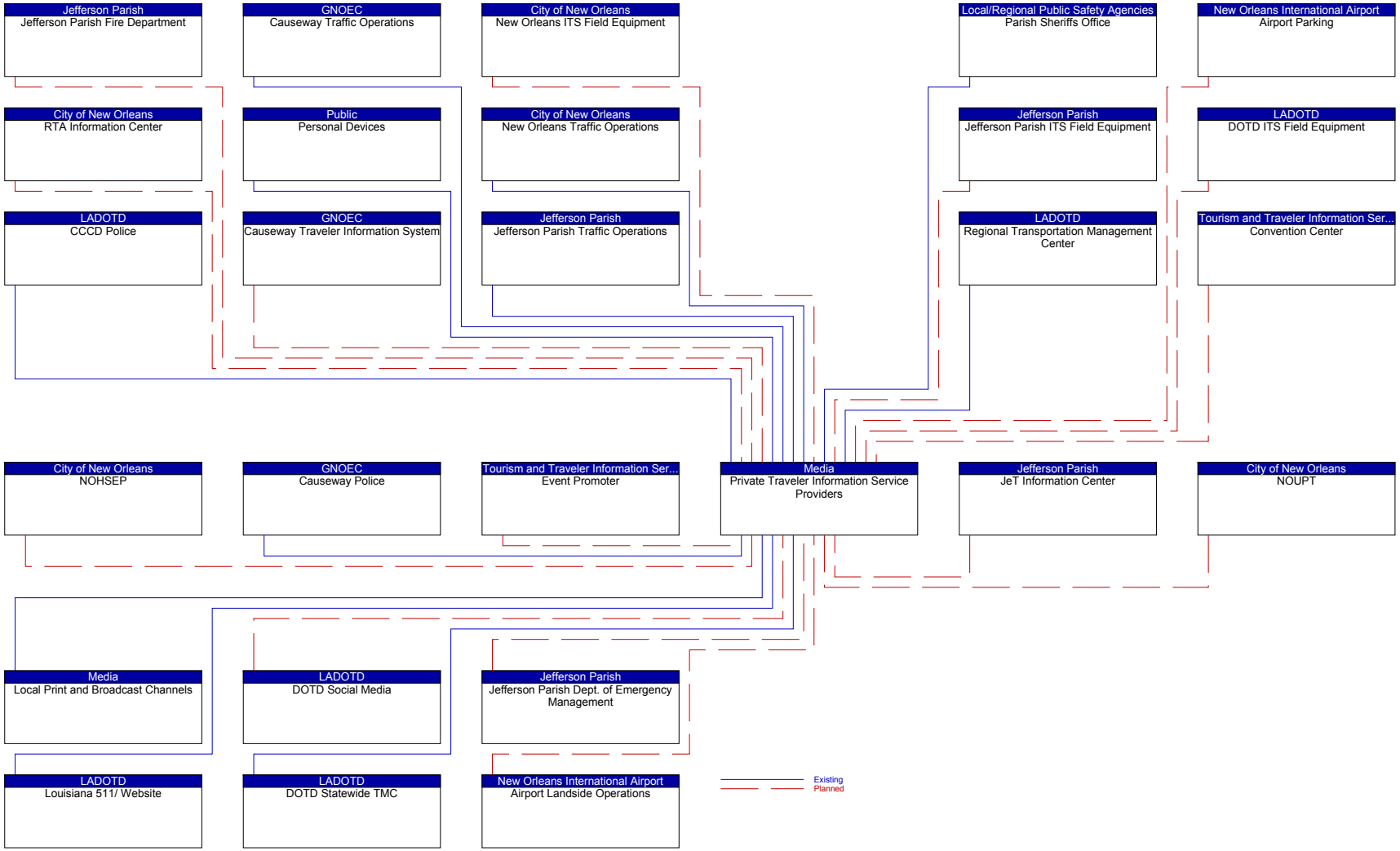

Figure 75: Private Traveler Information Service Providers Interconnect Context Diagram

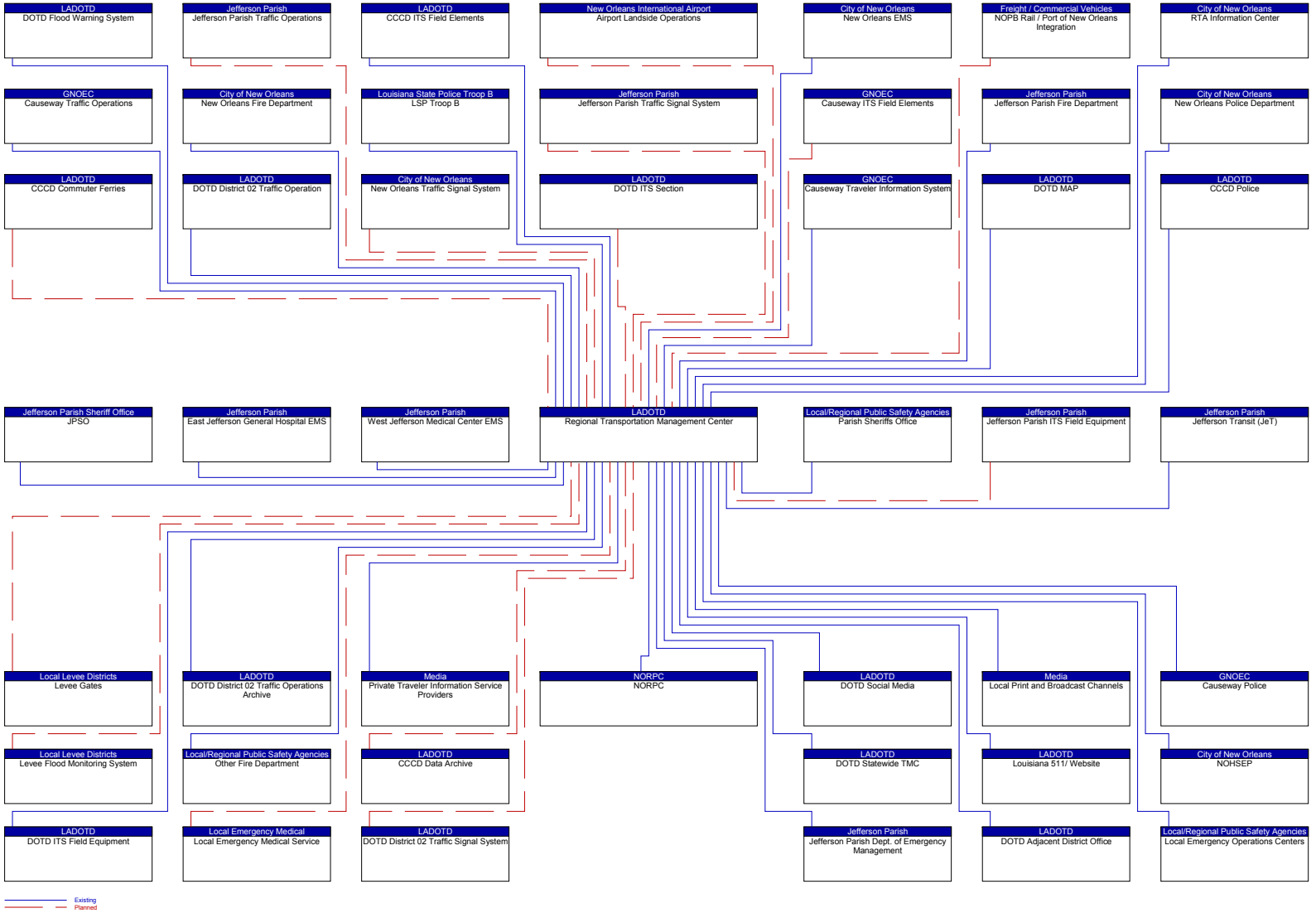

Figure 76: Regional Transportation Management Center Interconnect Context Diagram

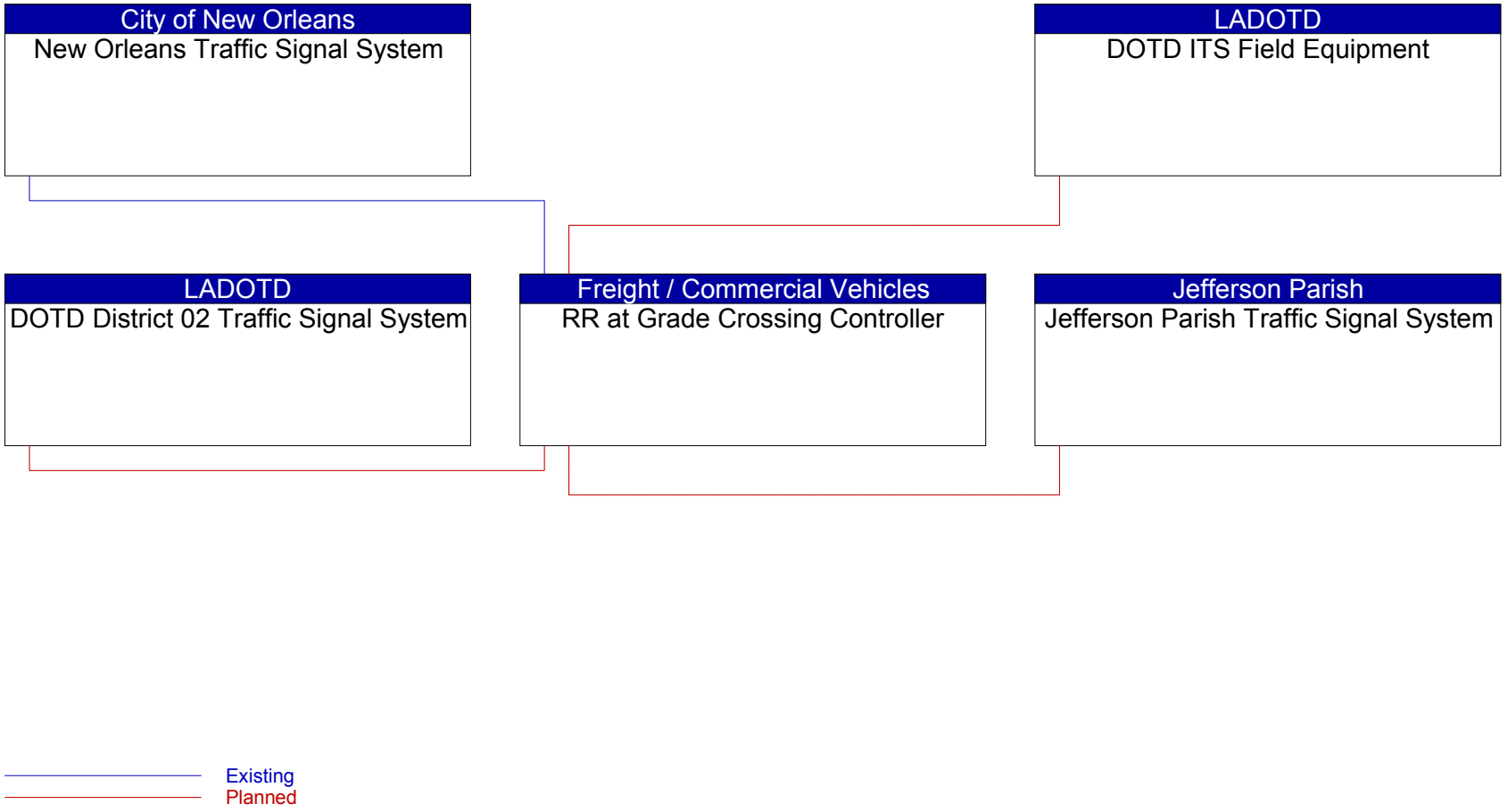

Figure 77: RR at Grade Crossing Controller Interconnect Context Diagram

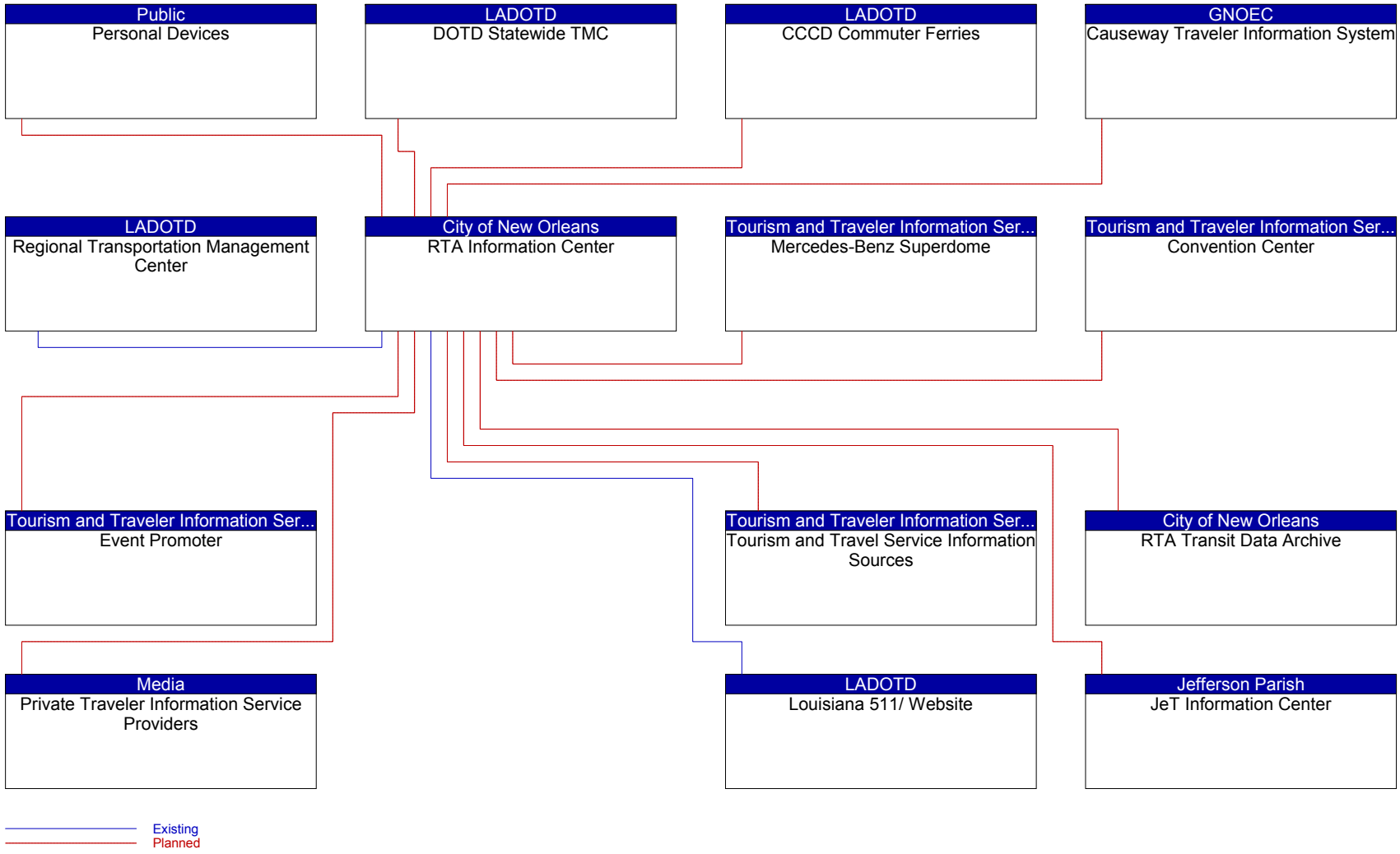

Figure 78: RTA Information Center Interconnect Context Diagram

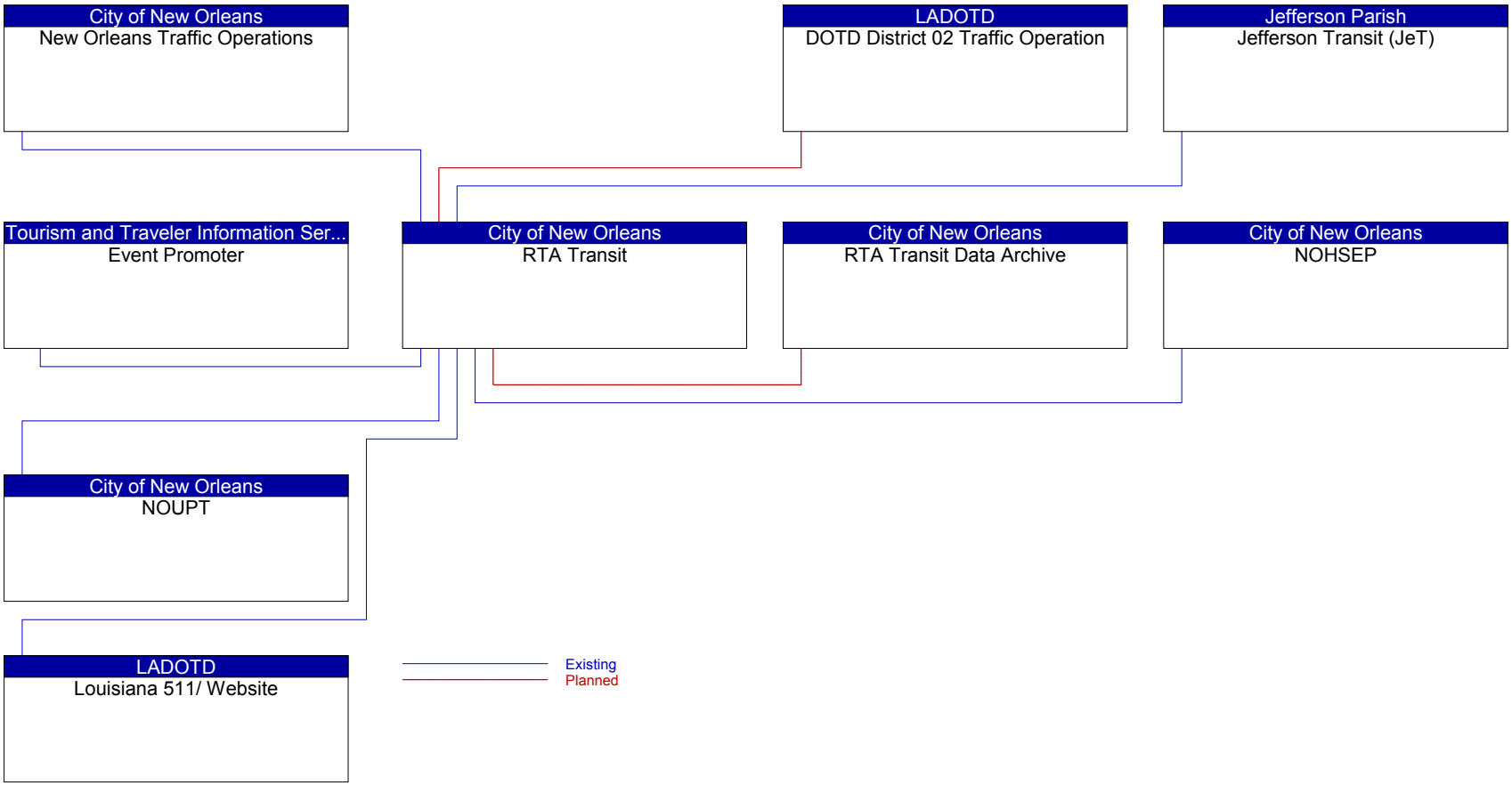

Figure 79: RTA Transit Interconnect Context Diagram

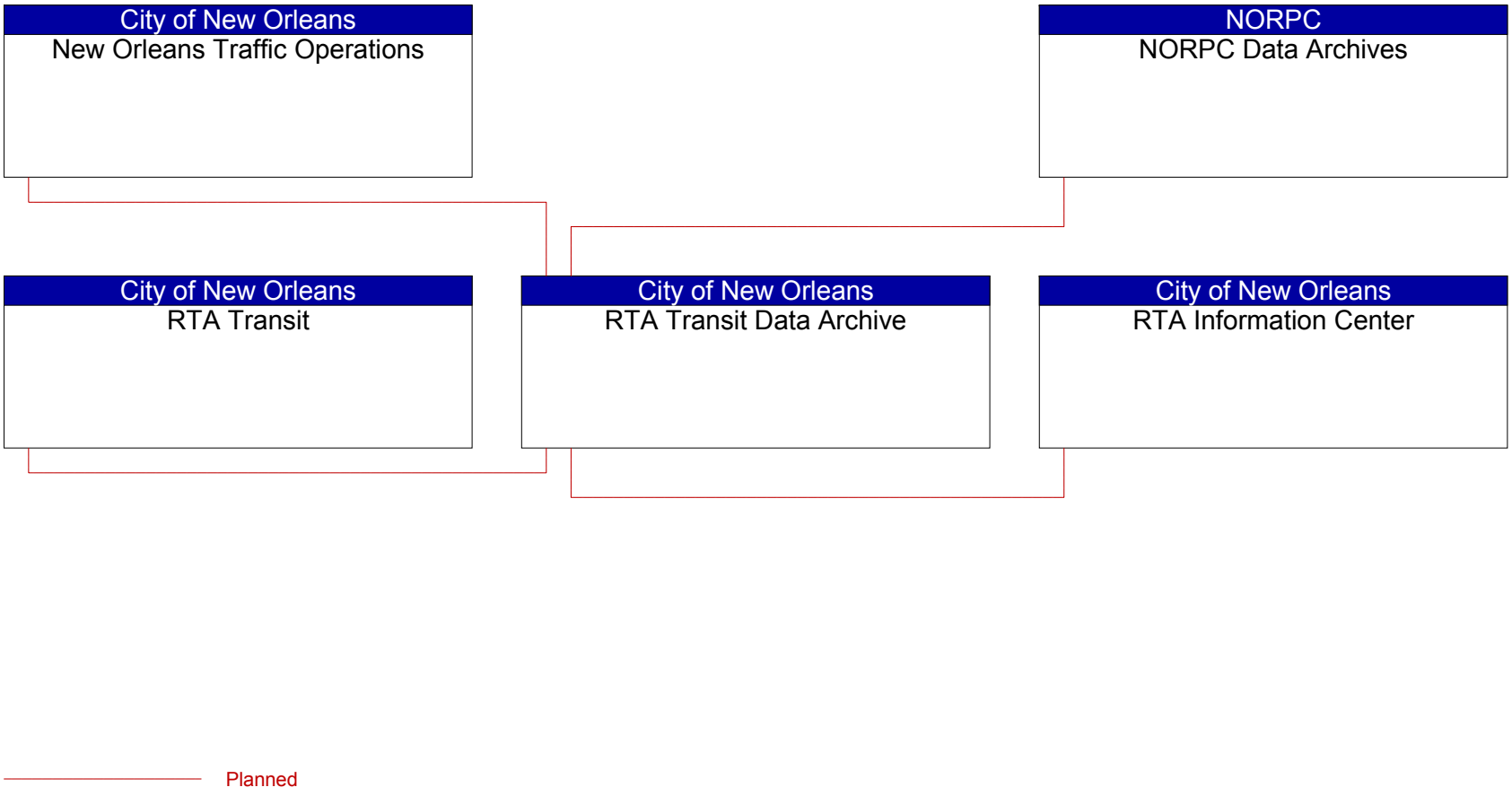

Figure 80: RTA Transit Data Archive Interconnect Context Diagram

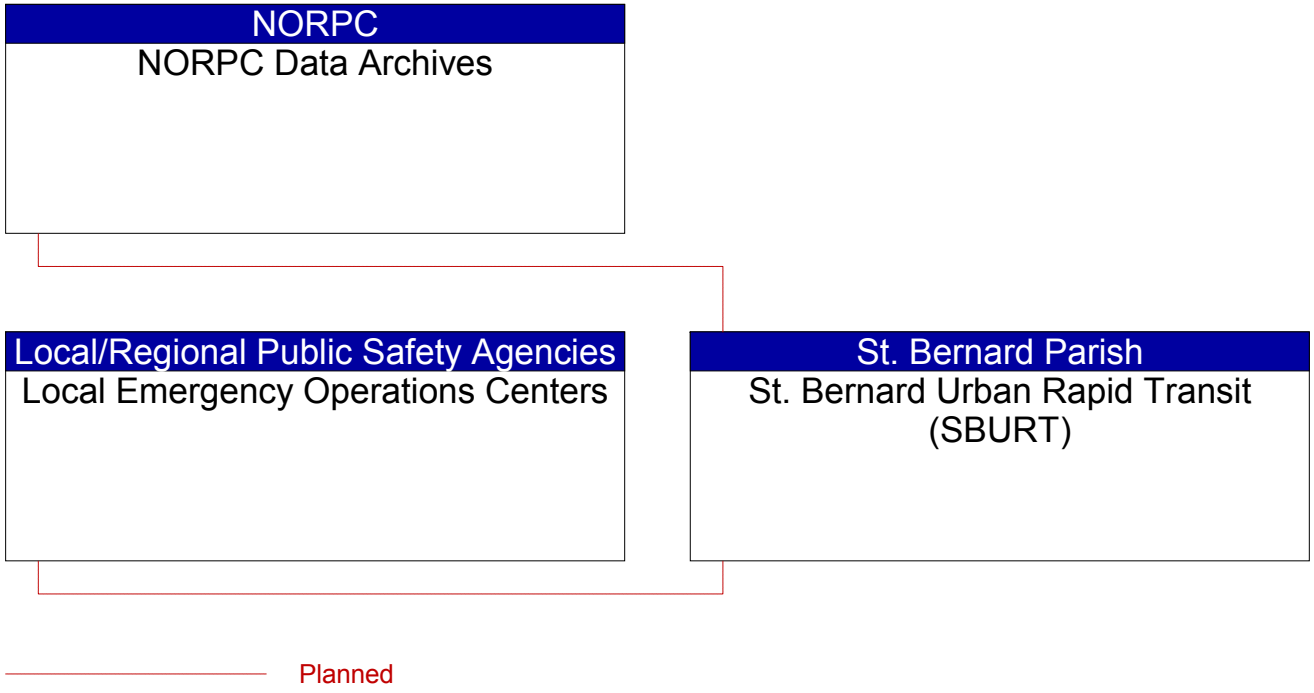

Figure 81: SBURT Interconnect Context Diagram

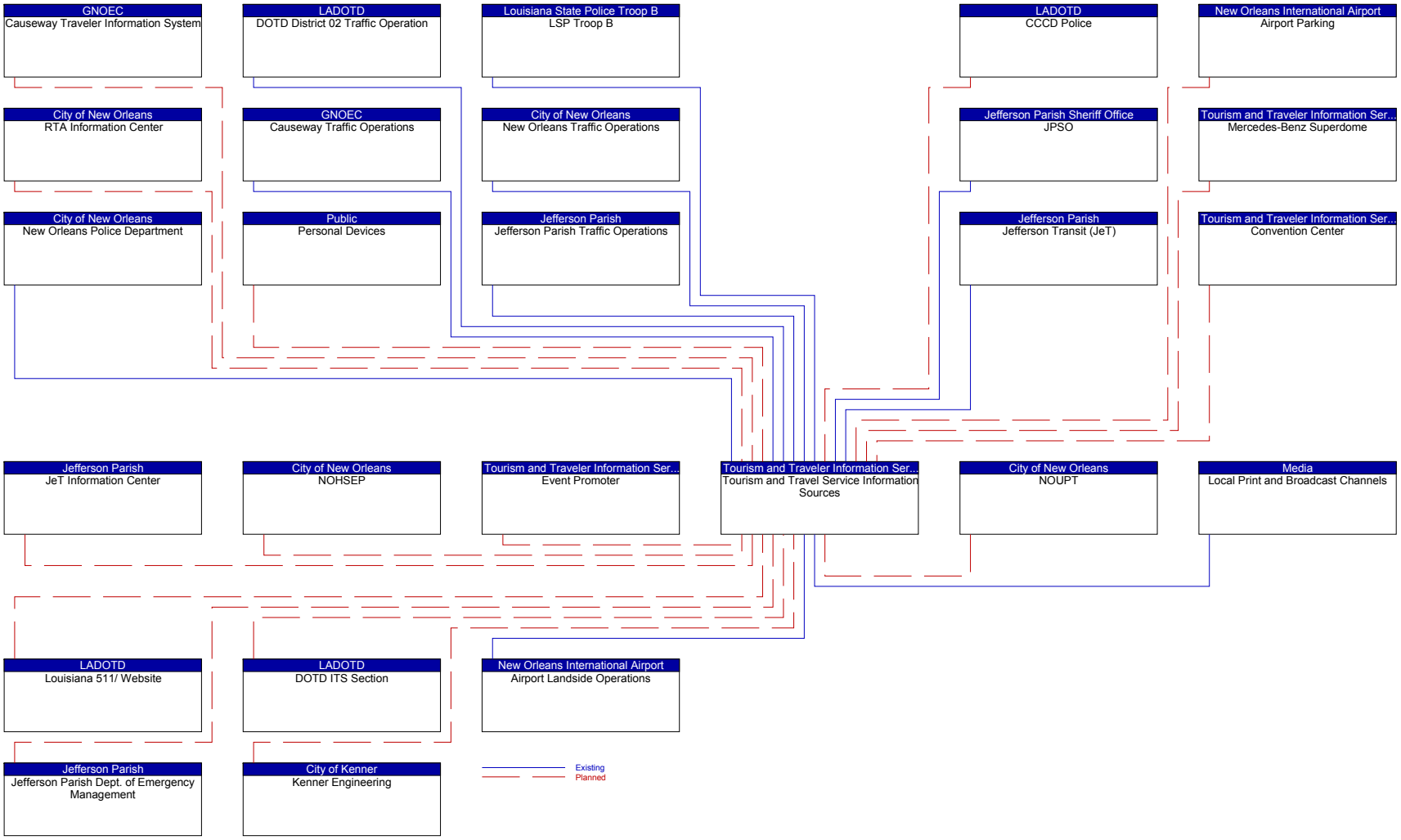

Figure 82: Tourism and Travel Service Information Sources Interconnect Context Diagram

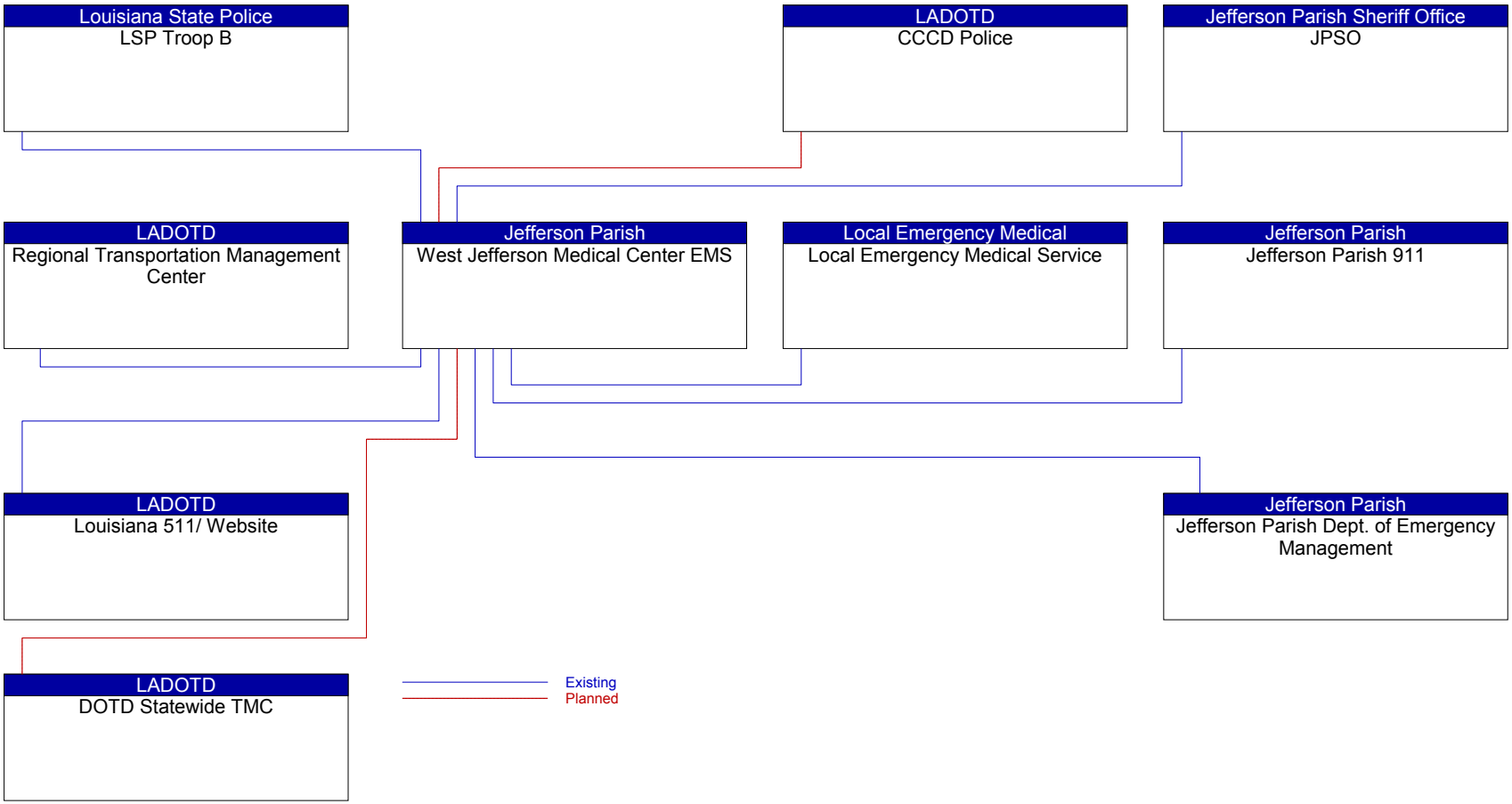

Figure 83: West Jefferson Medical Center EMS Interconnect Context Diagram

Appendix C – ITS Deployment Plan Detailed Schematics

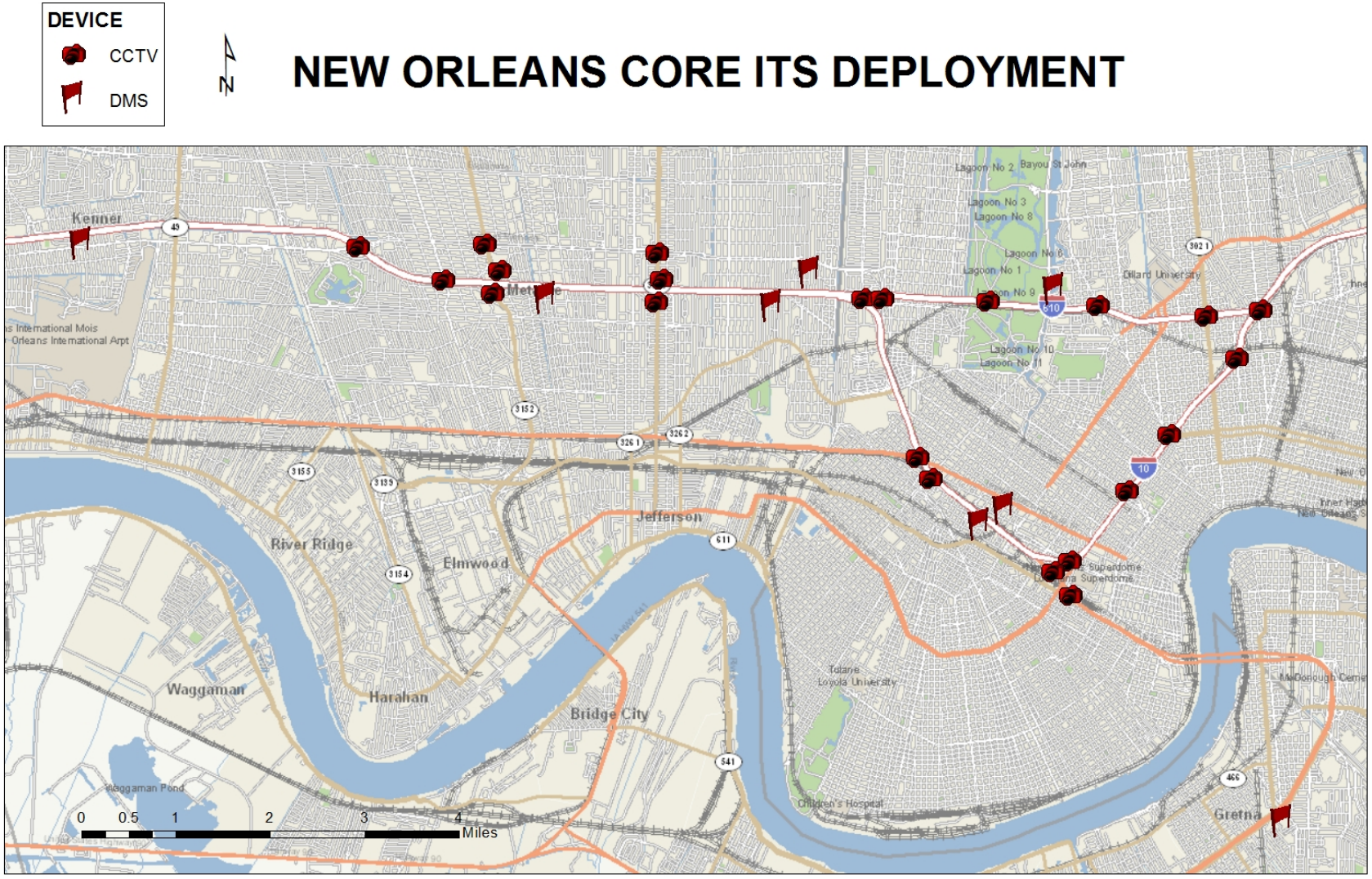

Figure 84: New Orleans CORE ITS Deployment

Figure 85: CCCD Traveler Message Signing

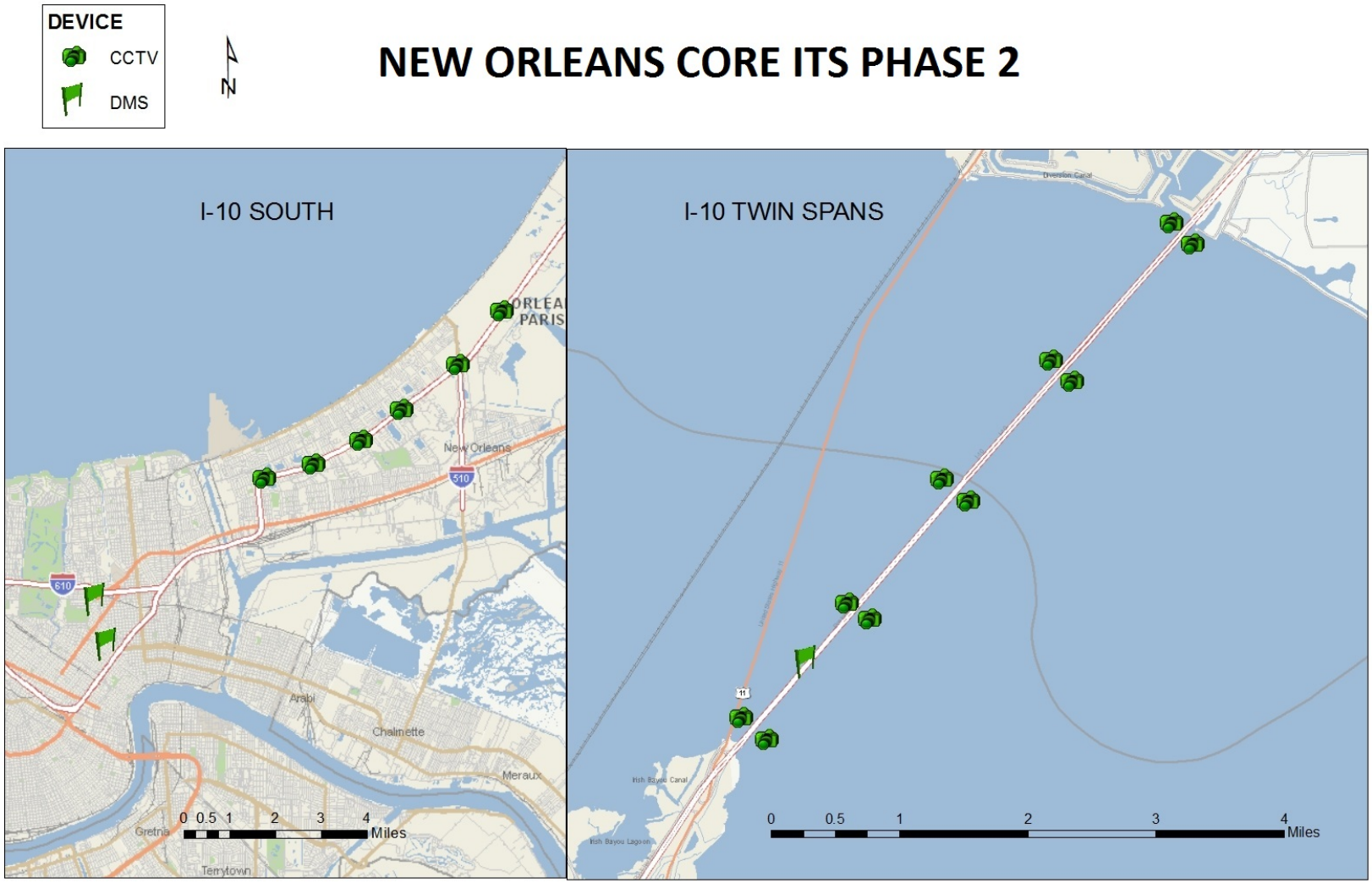

Figure 86: New Orleans Core ITS Phase 2

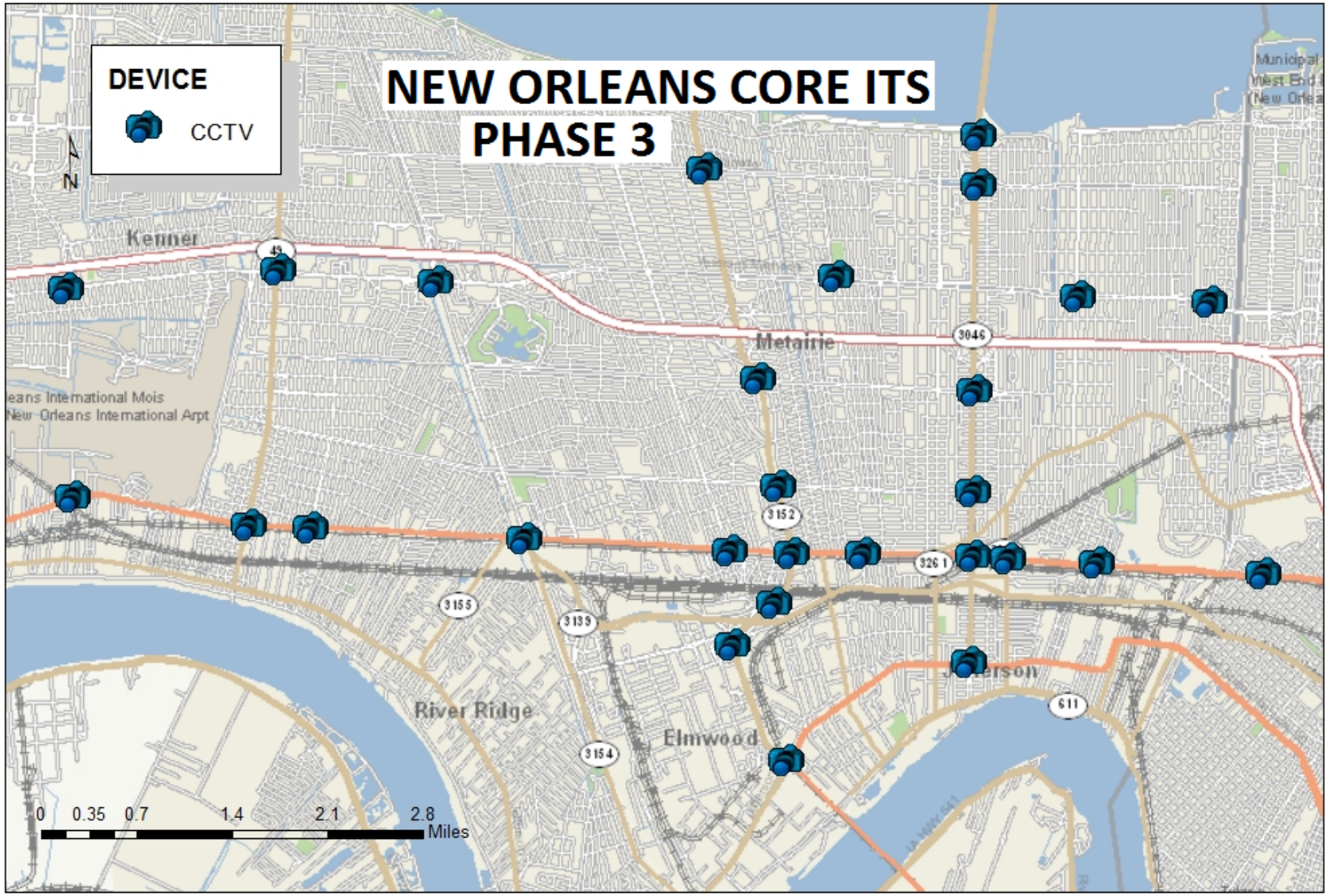

Figure 87: New Orleans Core ITS Phase 3

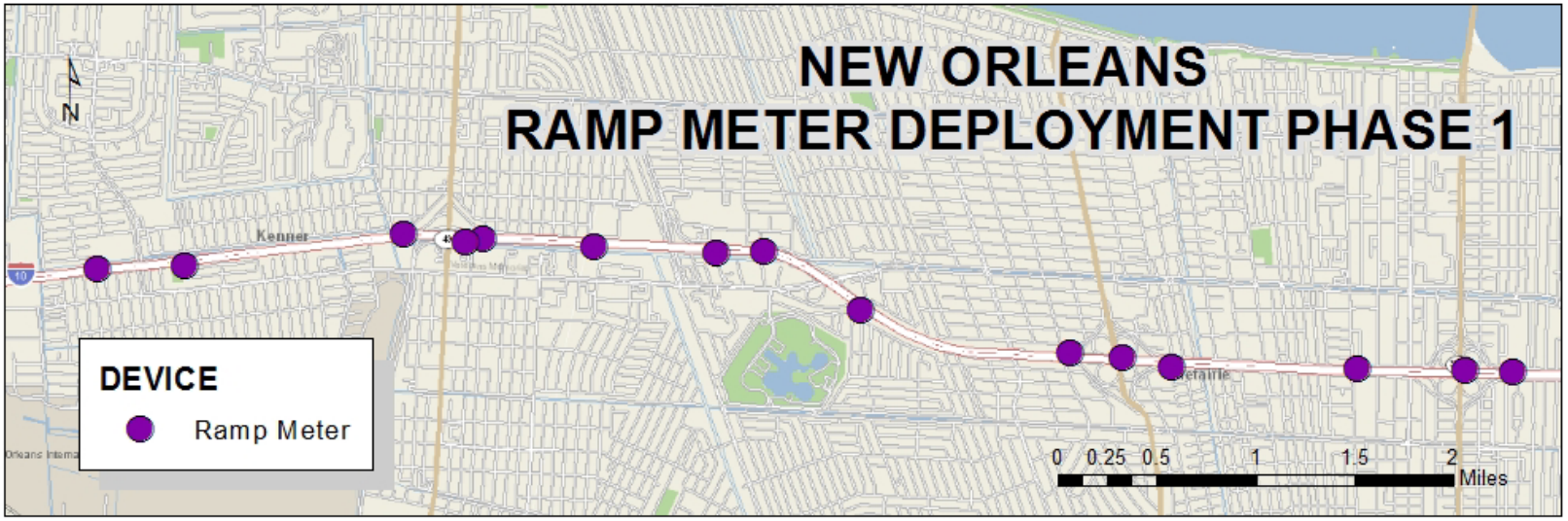

Figure 88: New Orleans Ramp Meter Deployment Phase 1