

Santa Fe Regional ITS Architecture

Final Report

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Prepared by

ConSysTec Corp.

ConSysTec Corp

The logo for ConSysTec Corp features the company name in a bold, sans-serif font. The word "Corp" is partially obscured by a solid purple circle. A horizontal purple line is positioned below the text, extending from the start of "ConSysTec" to the end of "Corp".

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Revision History

Filename	Version	Date	Authors	Comment
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Santa Fe Regional ITS Architecture Document	1.00	4/8/05	B. Eisenhart, T. Harris	Initial Release of Architecture

1. Introduction

The *Santa Fe Regional Intelligent Transportation Systems (ITS) Architecture* is a roadmap for transportation systems integration in the Santa Fe region over the next 20 years. The architecture has been developed through a cooperative effort by the region's transportation agencies, covering all modes and all roads in the region. The architecture 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 is an important new tool that will be used by:

- Operating Agencies to recognize and plan for transportation integration opportunities in the region.
- Planning Agencies to better reflect integration opportunities and operational needs into the transportation planning process.
- Other organizations and individuals that use the transportation system in the region.

The architecture provides an overarching framework that spans all of these 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.

1.1. Document Overview

This document is organized into twelve main sections. Section 1 provides introductory information. Section 2 describes the process used to develop the regional ITS architecture. The stakeholders are identified in Section 3, while their systems are inventoried in Section 4. The transportation services, information exchanges, functional requirements, and standards associated with the systems are discussed in Sections 5, 6, 7, and 8, respectively. Section 9 describes regional projects and sequencing, while Section 10 discusses the agreements needed between stakeholders to maximize system benefits. Finally, Section 11 provides guidance on using the regional ITS architecture and Section 12 summarizes the architecture maintenance plan.

1.2. Scope of the Architecture

The geographic scope of the architecture is the Santa Fe MPO region augmented by the remainder of Santa Fe County, Los Alamos County, and the municipality of Espanola. This regional ITS architecture interfaces with the following statewide or regional ITS architectures:

- Albuquerque Regional ITS Architecture
- New Mexico Statewide Architecture (when one is developed).

The timeframe considered is a 20-year outlook for ITS activities in the region. This means that the architecture addresses existing ITS systems as well as those planned for development over the next 20 years. It represents a snapshot of the currently anticipated projects based on information from stakeholders. As such, the architecture will require regular updates to ensure that it maintains accurate representation of the region.

The architecture covers services across a broad range of ITS, including traffic management, transit management, traveler information, emergency services, archived data management, maintenance and construction operations, and electronic payment.

2. Regional ITS Architecture Development Process

2.1. Process used to create the architecture.

Development of the Santa Fe Regional ITS Architecture relied heavily on stakeholder input to ensure that the ITS architecture reflected local and regional needs and plans. A five-step process was used to develop the ITS architecture: 1) create an initial draft inventory of architecture elements and a draft set of customized ITS Services to be provided, 2) conduct stakeholder outreach through a three days of workshops, 3) create a complete draft ITS architecture for review, 4) conduct stakeholder review of the draft ITS architecture, and 5) finalize the ITS architecture based on review comments.

1) Create Initial Inventory and Services

The initial draft set of ITS elements, services and interconnections was created based upon review of existing documentation regarding Santa Fe region projects and systems.

The Santa Fe regional architecture elements identified through this review were mapped to National ITS Architecture Version 5 entities (subsystems and terminators). This created an initial inventory mapped to the National ITS Architecture. The existing and planned ITS projects were used to establish an initial list of services that the elements of the architecture would provide. The elements and their mapping to National ITS Architecture entities were entered into the software tool Turbo Architecture. For each existing or future service expected in the region, the market package diagram for that service from the National ITS Architecture was edited so that each National ITS Architecture subsystem or terminator was associated with the local stakeholder element name. In some cases, multiple instances of the market package were developed, where the service has more than one instance in the region. This set of customized market packages using the draft elements was created in preparation for stakeholder outreach.

2) Stakeholder Outreach Workshops

An array of stakeholders across many aspects of surface transportation in the region were invited and attended workshops that were held on March 8-10, 2005. A key overall objective of the workshop was that the resultant Regional ITS Architecture should be a *consensus architecture*, that is, each of the participants *understands and agrees* to the ITS elements and specific information exchanges between the ITS elements identified in the architecture that they participated in defining. (*This is not to say that the resulting ITS Architecture has credible funding identified that would lead to full deployment. The ITS architecture only identifies ITS elements and interfaces that the stakeholders agree to. Existing funding processes will continue to be used to decide how to allocate limited resources to which ITS elements and interfaces for deployment.*) The workshops also incorporated training in the National ITS Architecture and regional ITS architecture so that stakeholders would understand and more fully participate in the ITS Architecture development process. The morning of the first day of the workshop focused on refinement of the draft inventory, with each participant's ITS elements being discussed and clarified. In the afternoon of the first day, the discussion turned to ITS services. Using the National ITS Architecture Market Packages to define ITS services, a set of customized market

packages were reviewed with the stakeholders to identify which elements are associated with each market package (or transportation service), and to identify the interconnections associated with the market packages. This effort continued through the second day of the workshops. On the third day of the workshops, the operational concept for the region was discussed, followed by a discussion of ITS projects. In the afternoon of the third day the use and maintenance of the architecture was discussed.

3) Create a Draft Architecture for Review

Following the Workshop, a complete draft architecture was created. Using the customized market package diagrams (as modified during the workshop), the Turbo Architecture database was completed to create a many aspects of the draft ITS architecture. This involved the following activities:

- Updating the ITS inventory
- Revising the customized market packages
- Creating a Turbo Architecture database that represents the sum of all of the customized market packages.

In addition to creating the Turbo Architecture database and the customized set of market packages a high level *Architecture Interconnect Diagram (AID)*, also known as a *Sausage Diagram*) of all the elements in the ITS architecture was created. Also developed was a hypertext version of the complete Turbo Architecture database placed on a generally accessible website (www.consystem.com). This website described each ITS element of the ITS architecture and all of its interconnections with other elements within the architecture. The website was developed using additional software tools that go beyond the basic Turbo Architecture software.

Stakeholders were notified by email and by a letter that a review period has commenced, and feedback was solicited. Stakeholders were encouraged to review the regional ITS architecture on the website, and were encouraged to provide feedback electronically from the website. Comments received starting at this point in the process were maintained in a database. These stakeholders' comments and their dispositions are summarized in Appendix A.

4) Conduct stakeholder review of the draft ITS architecture

In addition to the stakeholder website review, stakeholder review telecons were held on March 17, 2005 and March 22, 2005 to review any comments on the outputs. .

5) Finalize the architecture based on review comments.

Following the comments and review telecon, the draft architecture was revised based on comments from the workshop and a new version of the website was generated. Additional architecture aspects such as functional requirements, project sequencing, and agreements were developed and additional stakeholder review comments were solicited. The information was compiled into this final report.

In recognition of the dynamic nature of ITS activities (i.e. ITS elements and interfaces that at one time are designated *future*, and later become *existing*) and because stakeholder requirements in a

region that drive an ITS architecture will evolve, a maintenance plan was developed to provide a systematic means of keeping the architecture updated.

2.2. Requirements of the Final FHWA Rule and FTA Policy on Architecture

The FHWA Final Rule (23CFR 940) and FTA Policy on Intelligent Transportation System Architecture and Standards, which took effect on April 8, 2001 defines a set of requirements that regional ITS architectures should meet. Table 1 shows how the requirements of the rule are met by the outputs developed for the Santa Fe Regional ITS Architecture.

Table 1: Mapping of Requirements to Architecture Outputs

Regional ITS Architecture Requirements	Where Requirements documented
Description of region	Geographic definition, as well as timeframe and scope of services are given in Section 1.2 of this document.
Identification of participating agencies and other stakeholders	Listing of stakeholders and their definitions is given in Section 3.1 of this document. An inventory of the elements operated by the stakeholders is contained in Section 4 of this document. The same information is also available in the hyperlinked web site and in the Turbo Architecture database.
An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders	The operational concept is defined in Section 3.2 of this document.
A list of any agreements (existing or new) required for operations	A discussion of existing and needed new agreements is given in Section 10 of this document
System functional requirements;	The functional requirements of the ITS systems are described in an overview in Section 0 of this document, and are provided in detail a separate document (Appendix B).
Interface requirements and information exchanges with planned and existing systems and subsystems	The Interfaces and information flows are described in an overview in Section 6 of the document, and are described in detail in the hyperlinked web site and in the Turbo Architecture database.
Identification of ITS standards supporting regional and national interoperability	The identification of standards for ITS in Santa Fe region is discussed in Section 8 of this document.
The sequence of projects required for implementation	Projects and their sequencing for Santa Fe region are covered in Section 9 of this document.

3. Identification of Stakeholders

3.1. Regional Stakeholders

Stakeholder coordination and involvement is one of the key elements of the development of a regional ITS architecture. Because ITS often transcends traditional transportation infrastructure, it is important to consider a range of stakeholders beyond the traditional traffic, transit, and maintenance areas. In addition, it is important to consider stakeholders at a regional level or stakeholders in adjoining regions.

The Santa Fe Regional ITS architecture includes a wide range of stakeholders. Many of these stakeholders were present at the stakeholder workshop described in the previous section. The following list of agencies were represented and provided their inputs on the architecture:

- Santa Fe MPO
- City of Santa Fe Public Works
- City of Santa Fe Police
- City of Santa Fe Fire
- City of Santa Fe Convention and Visitors Bureau
- City of Santa Fe Parking
- Santa Fe Trails
- Santa Fe RECC
- Rio Arriba County Department of Emergency Management
- NMDOT
- New Mexico Motor Transportation Division
- New Mexico Emergency Operations Center
- FHWA

Table 2 identifies the stakeholders that own or operate elements within the Regional ITS Architecture. The table provides a name and description of the agency, department, or organization represented by the stakeholder. This table includes the full range of stakeholders assigned to the all of the elements in the architecture.

Table 2: Stakeholders

Stakeholder	Stakeholder Description
Albuquerque Transit	A transit provider that offers linked service to the city of Albuquerque for transit providers within the Santa Fe region.
Bureau of Indian Affairs	Bureau of Indian Affairs provides some emergency services for those pueblos without their own departments.
City of Santa Fe	Represents overall the municipal government and miscellaneous departments for the City of Santa Fe.
City of Santa Fe Department of Planning and Land Use	This department operates the Metropolitan Planning Organization for the Santa Fe Region.
City of Santa Fe Fire Department	Provides fire, rescue and emergency medical services to the City of Santa Fe.

Stakeholder	Stakeholder Description
City of Santa Fe Police Department	Law enforcement provider for the City of Santa Fe.
City of Santa Fe Public Works Department	Department responsible for the overall management and control of vehicular and pedestrian traffic within the City. The Public Works Department includes the following six divisions: Engineering (including Traffic Engineering and Traffic Operations sections), Property Control, Solid Waste Management, Streets, Drainage and Fleet Management, Transit (Santa Fe Trails), and Transportation Operations).
City of Santa Fe Senior Services	A transit authority that operates within the City of Santa Fe that provides demand response and paratransit services to seniors.
City/County of Santa Fe	Stakeholder that represents a joint partnership of the City of Santa Fe and Santa Fe County regarding the ownership and operation of their joint Emergency Operations Center.
Commercial Vehicle Operators	Private commercial vehicle operators
Correctional Facilities	Federal, State and County correctional facilities within the Santa Fe region.
County Emergency Management Agencies	Coordination of mitigation and response for natural and man-made disasters and emergencies
County Public Safety Agencies	Represents county sheriff and fire agencies in the Santa Fe region.
Department of Game and Fish	The state department responsible for managing the region's wildlife population, regional fish population, and the state laws governing each.
DPS Office of Emergency Management	DPS Office responsible for mitigation and response for natural and man-made disasters and emergencies.
Financial Institution	Banks involved in the transfer of funds for toll and fare collection as well as for other fee based transportation services.
Independent School Districts	Includes public schools throughout the Santa Fe Region.
Local Media	Includes both print (newspaper) and broadcast (TV, radio) news media.
Local Transit Operators	Local transit agencies (public or private) that service the Santa Fe region not explicitly called out in this architecture.
Municipal Government	Local city/town/village offices and departments within the Santa Fe region.
Municipal Public Safety	Local city or county agencies responsible for emergency coordination within the Santa Fe region.
Municipal Public Works Department	Local city department responsible for street maintenance within the Santa Fe region.
New Mexico DPS	New Mexico Department of Public Safety includes the State Police and the Motor Transport Division.
New Mexico General Services Department	The New Mexico General Services Department provides, through the Information Systems Division (ISD), data processing, application development, telecommunications and radio communications resources and services to the State of New Mexico.
NMDOT	New Mexico Department of Transportation
NOAA	National Oceanic and Atmospheric Administration (National Weather Service).
North Central Regional Transit District	A regional transit provider within the region that provides fixed route and demand responsive transit service.

Stakeholder	Stakeholder Description
Northern New Mexico Park and Ride Service	Provider of transit services including scheduled route-line transportation, deluxe motor coach charters and shuttles, customized group tour packages, quality escorted tours, and convention coordination and planning.
Operation Respond Institute	The Operation Respond Institute (ORI) is a not-for-profit, public/private partnership serving the emergency response community with time and lifesaving technology tools to combat safety and security incidents occurring on North American railroads and highways.
Private Concierge Service Providers	Private concierge service providers within the Santa Fe region. Includes Onstar, etc.
Private Consultants	Private consultants within the Santa Fe region.
Private Equipment Repair Providers	Private providers of equipment repair facilities that are contracted by the city, county, or other municipalities within the Santa Fe region.
Private Information Service Providers	Local, regional and national information service providers that provide travel information, including local media (print, TV and radio), Internet sites, service bureaus, etc
Private Taxi Providers	Private companies providing taxi service.
Private Tow/Wrecker Providers	Private towing companies
Private Transportation Providers	Other private transportation providers not specifically called out within the region.
Private Travelers	Traveling public accessing various modes of transportation, including surface street, air, rail/transit, and non-motorized.
Private Weather Service Providers	Private weather service providers that provide real-time weather information for the Santa Fe Region and surrounding communities.
Private/Public Ambulance Providers	Private ambulance providers within the region.
Rail Operators	Operators of private rail systems (e.g. Santa Fe Southern), including passenger and freight.
RECC Joint Powers Agreement	The Regional Emergency Communications Center is chartered by a joint powers agreement between City of Santa Fe and Santa Fe County
Regional Medical Center	Hospital/trauma centers in the region.
Regional Public Safety Agencies	Other public safety agencies not specifically called out in the architecture.
Santa Fe Convention and Visitors Bureau	Organization responsible for event information in the municipalities of the Santa Fe region.
Santa Fe County Public Works	Santa Fe County agency responsible for maintaining county roads and bridges in the Santa Fe Region.
Santa Fe Trails	A Transit service provider within the Santa Fe region that includes fixed route service and paratransit/demand response service.
Transit Partnership	Stakeholder group involved in Multimodal Transit Center
Tribal Councils	Tribal government, which is responsible for providing emergency services on the pueblos
Volunteer Fire Departments	Volunteer fire departments that operate within the region.

The stakeholders listed in Table 3 represent a mix of specific agencies or organizations and generic names used to represent a variety of stakeholders. Examples of specific agency or organizations would be City of Santa Fe Public Works. An example of a generic stakeholder

name would be Municipal Public Works Department, which represents the municipal agencies in the region responsible for roadway or equipment maintenance.

3.2. Operational Concept

An Operational Concept documents each stakeholder’s current and future roles and responsibilities in the operation of the regional ITS systems. The operational concept documents these roles and responsibilities across a range of transportation services. The services covered are:

- **Traffic Signal Control:** the development of signaling systems that react to changing traffic conditions and provide coordinated intersection timing over a corridor, an area, or multiple jurisdictions.
- **Highway Management:** the development of systems to monitor highway traffic flow and roadway conditions. Includes systems to provide information to travelers on the roadway.
- **Incident Management:** the development of systems to provide rapid and effective response to incidents. Includes systems to detect and verify incidents, along with coordinated agency response to the incidents.
- **Transit Management:** the development of systems to more efficiently manage fleets of transit vehicles or transit rail. Includes systems to provide transit traveler information both pre-trip and during the trip.
- **Traveler Information:** the development of systems to provide static and real time transportation information to travelers.
- **Emergency Management:** the development of systems to provide emergency call taking, public safety dispatch, and emergency operations center operations.
- **Maintenance Management:** the development of systems to manage the maintenance of roadways in the region, including winter snow and ice clearance. Includes the managing of construction operations.
- **Archive Data Management:** the development of systems to collect transportation data for use in non-operational purposes (e.g. planning and research).
- **Electronic Payment:** the development of electronic fare payment systems for use by transit and other agencies (e.g. parking).

Table 3 identifies the roles and responsibilities of key stakeholders for a range of transportation services.

Table 3: Stakeholder Roles and Responsibilities

Transportation Service	Stakeholder	Roles/ Responsibilities
Traffic Signal Control	NMDOT	<ul style="list-style-type: none"> • Operate traffic signal systems on state owned arterials • Interconnect with signal systems operated by counties or municipalities adjoining the NMDOT systems. • Provide signal preemption for emergency vehicles

Transportation Service	Stakeholder	Roles/ Responsibilities
	City of Santa Fe Public Works	<ul style="list-style-type: none"> Operate traffic signal systems for City of Santa Fe. Interconnect with signal systems operated by NMDOT and Santa Fe County adjoining the city (future) Provide signal preemption for emergency vehicles
	Santa Fe County Public Works	<ul style="list-style-type: none"> Operate traffic signal systems for Santa Fe County (future). Interconnect with signal systems operated by NMDOT and municipalities adjoining the Santa Fe County systems (future). Provide signal preemption for emergency vehicles (future).
	Municipal PWD	<ul style="list-style-type: none"> Operate traffic signal systems for municipality owned arterials. Interconnect with signal systems in adjacent jurisdictions (future). Provide signal preemption for emergency vehicles
Highway Management	NMDOT District 5	<ul style="list-style-type: none"> Monitor traffic sensors on highways (future). Determine travel times for highways (future). Collect road weather information. Operate traffic information devices on freeway (e.g. DMS and Highway Advisory Radios - HAR). Provide traffic information reports to other agencies (future).
Incident Management	NMDOT District 5	<ul style="list-style-type: none"> Perform network surveillance for detection and verification of incidents Dispatch Freeway Service Vehicles (future) Provide incident information to travelers via traffic information devices on freeways (e.g. DMS and Highway Advisory Radios- HAR) Coordinate maintenance resource response to incidents with state police and RECC. Coordinate operations with City of Santa Fe during scheduled events.
	NMDOT	<ul style="list-style-type: none"> Adjust signal timing patterns in response to incidents.
	City of Santa Fe Public Works	<ul style="list-style-type: none"> Perform incident detection and verification for arterial streets in the City of Santa Fe through video surveillance. Adjust signal timing patterns in response to incidents. Coordinate incident response with City of Santa Fe Public Safety (Police, Fire, and EMS). Operate Dynamic Message Signs on City of Santa Fe arterials to inform travelers of incidents (future) Coordinate maintenance resources for incident response with NMDOT and county. Coordinate operations with NMDOT during scheduled events.

Transportation Service	Stakeholder	Roles/ Responsibilities
	Regional Emergency Communications (RECC)	<ul style="list-style-type: none"> Receive emergency calls for incidents within the City of Santa Fe and Santa Fe County Dispatch Police, Fire, and EMS to incidents within the City and Sheriff, Fire, and EMS to incidents within Santa Fe County. Provide incident information to traffic and other public safety agencies. Coordinate incident response between Santa Fe County public safety and City of Santa Fe public safety. Coordinate incident response with public safety in surrounding counties.
	City of Santa Fe Fire	<ul style="list-style-type: none"> Respond to Hazmat incidents with City of Santa Fe.
	New Mexico Department of Public Safety (includes State Police and Motor Transport Division)	<ul style="list-style-type: none"> Receive emergency calls from cell phones for incidents within the region. Dispatch State Police vehicles for incidents on freeways. Coordinate incident response with NMDOT, RECC and municipal public safety. Provide incident information to traffic and public safety agencies.
	Municipalities	<ul style="list-style-type: none"> Perform incident detection and verification for arterial streets within municipalities in the region. Dispatch Police, Fire, and EMS to incidents within the municipalities. Coordinate incident response for incidents within the municipality.
	City of Santa Fe Convention and Visitors Bureau	<ul style="list-style-type: none"> Provide event information to the public via website.
Transit Management	Santa Fe Trails	<ul style="list-style-type: none"> Provide fixed route bus service for City of Santa Fe. Provide paratransit service for City of Santa Fe.
	North Central Regional Transit District	<ul style="list-style-type: none"> Provide fixed route bus service for Espanola and surrounding communities.
	NMDOT	<ul style="list-style-type: none"> Operate Commuter Rail (future)
	Transit Partnership	<ul style="list-style-type: none"> Develop and operate Transit Multimodal Center.(future)
	School Districts	<ul style="list-style-type: none"> Provide fixed route school bus services to the region.
	State Employees Commuter Association (SECA)	<ul style="list-style-type: none"> Operate Commuter Van service for state employees.

Transportation Service	Stakeholder	Roles/ Responsibilities
Traveler Information	NMDOT District 5	<ul style="list-style-type: none"> • Provide traffic and maintenance information for region to the CARS Server (for distribution to the public via website and 511 system).(future) • Provide traveler information directly to drivers via DMS. (future) • Provide traveler information to the local print and broadcast media and websites (through Public Information Office).
	City of Santa Fe	<ul style="list-style-type: none"> • Provide traffic and maintenance information for City of Santa Fe to the public via website. (future) • Provide traffic and maintenance information for City of Santa Fe to the local media. • Provide traveler information directly to drivers via DMS and other technologies. (future)
	Santa Fe Trails	<ul style="list-style-type: none"> ▪ Provide transit information for Santa Fe Services the public via website ▪ Provide on-line reservation capability for paratransit services (future)
	Santa Fe County	<ul style="list-style-type: none"> • Provide traffic and maintenance information for Santa Fe County to the public via website.
Emergency Management	Regional Emergency Communications (RECC)	<ul style="list-style-type: none"> • Provide emergency call taking (9-1-1) for unincorporated areas of Santa Fe County and for the City of Santa Fe. • Dispatch Santa Fe County sheriff, fire, and EMS. • Dispatch City of Santa Fe police, fire, and EMS. • Coordinate emergency operations with State Police, county, and municipal public safety.
	City of Santa Fe Police and Fire	<ul style="list-style-type: none"> • Develop city emergency preparedness plan • Provide Emergency Operations Center for city responsible for directing emergency operations during major emergencies and disasters. (jointly with Santa Fe County)
	New Mexico Department of Public Safety	<ul style="list-style-type: none"> • Receive emergency calls from cell phones for incidents within the region. • Dispatch State Police vehicles for emergencies on freeway and other state owned roads. • Coordinate emergency response with NMDOT, Santa Fe County sheriff, City of Santa Fe Police, and other municipal public safety.
	County Sheriff	<ul style="list-style-type: none"> • Develop county emergency preparedness plan • Provide Emergency Operations Center for County of Santa Fe responsible for directing emergency operations during major emergencies and disasters (jointly with City of Santa Fe)

Transportation Service	Stakeholder	Roles/ Responsibilities
	Municipalities	<ul style="list-style-type: none"> • Provide emergency call taking (9-1-1) for municipalities and townships in the region. • Dispatch police, fire and EMS for municipalities in the region. • Coordinate emergency response with State Police and county sheriff.
Maintenance Management	NMDOT District 5	<ul style="list-style-type: none"> • Provide maintenance of state highways in the region including snow and ice control and pavement maintenance. • Manage work zones on state owned roads. • Collect road weather information (future)
	NMDOT	<ul style="list-style-type: none"> • Maintain signalized intersection and other ITS equipment
	City of Santa Fe Public Works	<ul style="list-style-type: none"> • Provide maintenance of arterials in the city including snow and ice control and pavement maintenance. • Maintain signalized intersection and other ITS equipment • Manage work zones in the City of Santa Fe. • Collect road weather information.
	Santa Fe County Public Works	<ul style="list-style-type: none"> • Provide maintenance of County roads including snow and ice control and pavement maintenance. • Maintain signalized intersection equipment.
	Municipalities	<ul style="list-style-type: none"> • Provide maintenance of municipal roads including snow and ice control and pavement maintenance. • Maintains signalized intersection equipment.
Archived Data Management	City of Santa Fe	<ul style="list-style-type: none"> • Collect and archive traffic count data for the City of Santa Fe • Collect and archive accident data for the City of Santa Fe.
	Santa Fe MPO	<ul style="list-style-type: none"> • Collect and archive transportation data for region, including traffic count and crash data.
	NMDOT	<ul style="list-style-type: none"> • Collect and archive asset information • Collect and archive traffic count data for state owned roads. • Collect and archive crash records for all roads in the state.

4. Inventory

Each stakeholder agency, company, or group owns, operates, maintains or plans ITS systems in the region. The Regional ITS Architecture inventory is a list of “elements” that represent all existing and planned ITS systems in a region as well as non-ITS systems that provide information to or get information from the ITS systems. The focus of the inventory is on those systems that support, or may support, interfaces that cross stakeholder boundaries (e.g., inter-agency interfaces, public/private interfaces).

The vast majority of the inventory represents ITS systems in the region, but the inventory does contain some elements that represent systems in adjoining regions. An example of an element in an adjoining region would be the NMDOT ITS Bureau Statewide Traffic Operations Center, which represents a planned statewide traffic management center in Albuquerque. It would interface with a traffic element in region.

Each element in the inventory is described by a name, the associated stakeholder, a description, general status (e.g. existing or planned), and the associated subsystems or terminators from the National ITS Architecture.

4.1. *Systems by Stakeholder*

Table 4 sorts the inventory by stakeholder so that each stakeholder can easily identify all the relevant elements that are defined in the architecture. For each element in the inventory the table provides an element description and an indication of whether the element exists or is planned.

The majority of elements in the inventory represent a specific existing or planned system. Some examples of specific systems are the NMDOT District 5 TMC and City of Santa Fe Streets, Drainage, and Fleet Dispatch.

Some of the elements represent sets of devices, rather than a single specific system or device. An example of this type of element is the element “City of Santa Fe CCTV”. This element represents all of the CCTV that are or will be operated by City of Santa Fe. The element describes the type of field device, not the specific number of devices.

A third type of element in the inventory is a “generic” element that represents all of the systems of a certain type in the region. An example of this type of element is Municipal Public Safety Dispatch, which represents the police, fire, and EMS emergency dispatch functions at the municipal level. These generic elements have been created for two primary reasons. First, they represent elements with similar types of interfaces, so from a standardization standpoint, describing how one of the major elements in the region (e.g. the NMDOT District 5 TMC) interfaces with various public safety dispatch functions would be the same. Second, describing many systems with a single element helps keep the architecture from growing too large.

Table 4: Inventory sorted by Stakeholder

Stakeholder	Element	Element Description	Status
Albuquerque Transit	Albuquerque Transit Dispatch	Paratransit and demand response services for Albuquerque Transit.	Existing
Bureau of Indian Affairs	Bureau of Indian Affairs Dispatch	Dispatch function for the Bureau of Indian Affairs (BIA). The BIA provides emergency services for pueblos that do not have their own police forces.	Existing
City of Santa Fe	City of Santa Fe Parking Garages	Parking facilities owned and operated by the City of Santa Fe. Includes facilities to be constructed at the Santa Fe Convention Center.	Existing
City of Santa Fe	City of Santa Fe Public Information Office	The office provides the official interface between the City of Santa Fe traffic department and interests outside the department such as the media.	Existing
City of Santa Fe	City of Santa Fe Traffic Counts Program	The traffic count division of the City of Santa Fe who is responsible for collecting all traffic sensor and flow information from the City's ITS field devices.	Existing
City of Santa Fe	City of Santa Fe Website	Transportation information web page for the City of Santa Fe. In the future will include real-time construction, work zone, special event, incident, and traffic information.	Existing
City of Santa Fe Department of Planning and Land Use	Santa Fe MPO Archive	Archive management system for the Metropolitan Planning Organization for the City of Santa Fe. Potentially includes traffic counts.	Existing
City of Santa Fe Department of Planning and Land Use	Santa Fe MPO Archive Users	Users of the City of Santa Fe MPO's archive data system.	Existing
City of Santa Fe Department of Planning and Land Use	Santa Fe MPO Field Devices	Field devices owned and operated by the Santa Fe MPO - generally for traffic counts.	Existing
City of Santa Fe Fire Department	City of Santa Fe Fire/EMS Vehicles	Represents the ITS equipment (e.g., mobile data terminals) on the City of Santa Fe's Fire and EMS vehicles.	Existing
City of Santa Fe Police Department	City of Santa Fe Accident Database	Crash records database collected by the City of Santa Fe.	Existing
City of Santa Fe Police Department	City of Santa Fe Police Vehicles	Represents the ITS equipment (e.g. mobile data terminals) in City of Santa Fe police vehicles.	Existing

Stakeholder	Element	Element Description	Status
City of Santa Fe Public Works Department	City of Santa Fe CCTV	Closed circuit television owned by the City of Santa Fe.	Existing
City of Santa Fe Public Works Department	City of Santa Fe DMS	Fixed or portable dynamic message signs owned and operated by City of Santa Fe.	Planned
City of Santa Fe Public Works Department	City of Santa Fe Equipment Repair Facility	The equipment repair facility for the City of Santa Fe where signal systems, or other types of ITS field equipment, are repaired.	Existing
City of Santa Fe Public Works Department	City of Santa Fe Field Sensors	Field sensors such as vehicle detectors (e.g. loops and VIVDS)	Existing
City of Santa Fe Public Works Department	City of Santa Fe Maintenance and Construction Vehicles	Maintenance and construction vehicles for the City of Santa Fe.	Existing
City of Santa Fe Public Works Department	City of Santa Fe Public Works Public Information Office	The office provides the official interface between the City of Santa Fe's Public Works and the City's traffic department and outside interests such as the media.	Planned
City of Santa Fe Public Works Department	City of Santa Fe RWIS systems	Road weather information systems operated by City of Santa Fe	Planned
City of Santa Fe Public Works Department	City of Santa Fe School Pager System	The school pager system operated by the City of Santa Fe.	Existing
City of Santa Fe Public Works Department	City of Santa Fe Storage Yard	Storage yard owned and operated by the City of Santa Fe	Existing
City of Santa Fe Public Works Department	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Dispatch function for city of Santa Fe Streets, Drainage, and Fleet. Includes asset management functions for the Division.	Existing
City of Santa Fe Public Works Department	City of Santa Fe Traffic Database	The archive data management system for traffic operations and traffic information for the City of Santa Fe.	Planned
City of Santa Fe Public Works Department	City of Santa Fe Traffic Database Users	Users of the traffic archive data management system for the City of Santa Fe.	Planned
City of Santa Fe Public Works Department	City of Santa Fe Traffic Operations Section	The traffic operations division for the City of Santa Fe. The system includes closed loop signal controls and CCTV.	Existing
City of Santa Fe Public Works Department	City of Santa Fe Traffic Signal Shop	The maintenance shop for all roadside equipment owned and operated by the City of Santa Fe.	Existing
City of Santa Fe Public Works Department	City of Santa Fe Traffic Signals	Traffic signal systems operated by City of Santa Fe.	Existing
City of Santa Fe Public Works Department	City of Santa Fe Work Zone Equipment	Work zone equipment (such as portable DMS) operated by the City of Santa Fe.	Existing

Stakeholder	Element	Element Description	Status
City of Santa Fe Public Works Department	Santa Fe Municipal Airport	Regional airport in the Santa Fe region.	Existing
City of Santa Fe Senior Services	City of Santa Fe Senior Services Demand Response Dispatch	The demand response transit dispatch center for the City of Santa Fe's Senior Services.	Existing
City of Santa Fe Senior Services	City of Santa Fe Senior Services Vehicles	The demand response transit vehicles operated by the City of Santa Fe Senior Services. Includes the ITS field equipment installed on each vehicle.	Planned
City/County of Santa Fe	Santa Fe City/County EOC	The joint Emergency Operations Center for the City and County of Santa Fe.	Existing
Commercial Vehicle Operators	Commercial Vehicles	Privately owned commercial vehicles. Included in the architecture to cover HAZMAT incident reporting.	Existing
Commercial Vehicle Operators	Private Fleet Management Systems	Includes private commercial fleet management operations in the region.	Planned
Correctional Facilities	Correctional Facilities Operations	Operations centers for regional correctional facilities. Includes county and state correctional facilities.	Existing
County Emergency Management Agencies	Other County EOC	Emergency Operations Centers of other counties located outside the region.	Existing
County Public Safety Agencies	County Public Safety Administration	The administration function of county sheriffs, which collect crash records of their jurisdiction and provide them to the state.	Existing
County Public Safety Agencies	County Public Safety Vehicles	Public safety vehicles (sheriff, fire, and EMS) operated by a county within the region.	Existing
County Public Safety Agencies	Other County Public Safety Dispatch and PSAP	Dispatch centers for police, fire, EMS, and PSAP at the county level in the counties adjoining the region.	Existing
Department of Game and Fish	Department of Game and Fish Vehicles	Vehicles operated by the Department of Game and Fish.	Existing
DPS Office of Emergency Management	State EOC	Statewide Emergency Operations Center	Existing
Financial Institution	Financial Institution	Represents the financial institutions the regional transit agencies will use as part of electronic fare payment systems. Includes Health Services through NMDOT.	Existing
Independent School Districts	Independent School District Buses	The buses owned and operated by the various independent school districts in the region.	Existing

Stakeholder	Element	Element Description	Status
Independent School Districts	Independent School District Dispatch	Dispatch function for each of the Independent School Districts throughout the region. Includes radio communication with school buses.	Existing
Local Media	Local Print and Broadcast Media	Local TV (including cable TV), radio, and newspapers.	Existing
Local Transit Operators	Santa Fe Region Intermodal Transit Terminal	Intermodal transit terminal planned for the Santa Fe area.	Planned
Municipal Government	Municipal ITS Field Equipment	Represents ITS roadway devices that are owned and operated by municipalities. These devices include loop detectors, DMSs, pre-emption devices, flood detection devices and CCTV cameras.	Existing
Municipal Government	Municipal or County Permitting System	Every city has a CVO HAZMAT, OS/OW permitting process.	Existing
Municipal Government	Municipal Public Information Office	The office provides the official interface between municipality traffic and maintenance departments and interests outside the departments such as the media.	Planned
Municipal Government	Municipal Traffic Operations Center	Operation of traffic signal systems by municipalities.	Planned
Municipal Government	Municipal Website	Transportation information web page for each municipality. In the future will include real-time construction, work zone, special event, incident, and traffic information.	Existing
Municipal Public Safety	Municipal EOC	Municipal Emergency Operations Center.	Existing
Municipal Public Safety	Municipal Public Safety Administration	The administration function of municipal police, which collect crash records of their jurisdiction and provide them to the state.	Existing
Municipal Public Safety	Municipal Public Safety Dispatch	Municipal public dispatch center for police, fire, EMS, and PSAP for cities in the region.	Existing
Municipal Public Safety	Municipal Public Safety Vehicles	Municipal emergency vehicles including police, fire, and EMS. Some pre-emption for fire and EMS vehicles.	Existing
Municipal Public Works Department	Municipal Equipment Repair Facility	The equipment repair facility for other municipalities within the region where signal systems, or other types of ITS field equipment, are repaired.	Existing
Municipal Public Works Department	Municipal PWD	Municipal maintenance and construction agency.	Existing
Municipal Public Works Department	Municipal PWD Vehicles	The maintenance vehicles that are dispatch by municipal maintenance organizations.	Existing

Stakeholder	Element	Element Description	Status
New Mexico DPS	Motor Transport Division	Motor Transport Division is the DPS division that enforces commercial vehicle regulations in the state of New Mexico.	Existing
New Mexico DPS	NMDOT Crash Database Users	Users systems for accessing the Statewide Crash Record Information System	Existing
New Mexico DPS	State Office of Emergency Management	The statewide office of emergency management where information on emergencies, disasters, or incidents come from and go to.	Existing
New Mexico DPS	State Police District 1 Administration	Highway Patrol function in the region that collects crash information for forwarding to statewide system.	Existing
New Mexico DPS	State Police District 1 Dispatch	Dispatches State Police Vehicles using two-way radio communication. Responsible for regional evacuation.	Existing
New Mexico DPS	State Police Vehicles	State Police vehicles that provide public safety services on state owned roads and highways. Represents the ITS equipment installed in state police vehicles (MDTs, Cameras, etc.).	Existing
New Mexico General Services Department	Santa Fe Control	State communications dispatch for EM, MC, Forest Service, EMS, and hospitals.	Existing
NMDOT	Commuter Rail Operations	Operations center for the commuter rail line that is planned to run from Belen to Albuquerque to Santa Fe.	Planned
NMDOT	Commuter Rail Vehicles	Rail vehicles of the commuter rail line.	Planned
NMDOT	Highway Maintenance Management System	The Highway Maintenance Management System contains a record of the maintenance activities carried out by NMDOT.	Existing
NMDOT	ITA System	Alert system for the state of New Mexico.	Existing
NMDOT	NMDOT 511 System	Planned statewide phone based traveler information system.	Planned
NMDOT	NMDOT CARS Server	The Conditions Acquisition Reporting System (CARS) provides a multi-state database of travel events such as accidents and roadwork. CARS software allows authorized staff to input construction, accident, delay, and other roadway, weather and tourism event	Planned
NMDOT	NMDOT Central Permit Office	The central permit office for NMDOT. Coordinates permits with other states and acts as a data repository for regional permits.	Existing

Stakeholder	Element	Element Description	Status
NMDOT	NMDOT Consolidated Highway Database	Comprehensive database of NMDOT roadway information including basic identification, dimensional data, roadway condition, historical references, legal descriptions, roadway construction data, location information, presence of structures and railroads, safe	Existing
NMDOT	NMDOT Crash Database	Statewide database of vehicle crash records. Input to system provided by elements in the region.	Existing
NMDOT	NMDOT District 5 Anti-icing Equipment	Anti-icing equipment located on the region's bridges that is operated by NMDOT.	Existing
NMDOT	NMDOT District 5 Automated Gates	Automatic gate closure equipment. Currently manual, but should be electronic in the future.	Planned
NMDOT	NMDOT District 5 CCTV	Closed Circuit Television devices that are operated and maintained by NMDOT.	Planned
NMDOT	NMDOT District 5 DMS	Dynamic Message Signs operated and maintained by NMDOT. Includes: portable DMS, permanent DMS, and speed warning signs.	Planned
NMDOT	NMDOT District 5 Field Sensors	Traffic vehicle sensors, including VIVDS or microwave vehicle detection, owned by NMDOT.	Planned
NMDOT	NMDOT District 5 HAR	Highway Advisory Radio operated and maintained by NMDOT.	Planned
NMDOT	NMDOT District 5 Maintenance and Construction Vehicles	The maintenance vehicles that are dispatch by NMDOT maintenance.	Existing
NMDOT	NMDOT District 5 Maintenance Dispatch	NMDOT maintenance sections for District 5. Dispatches maintenance vehicles and equipment for maintaining road and ITS equipment owned by NMDOT.	Existing
NMDOT	NMDOT District 5 Pavement Management System	District Pavement Management System to assist in storing, retrieving, analyzing and reporting information to help with pavement-related decision-making processes.	Existing
NMDOT	NMDOT District 5 Public Information Office	The office provides the official interface between NMDOT traffic and maintenance departments and interests outside the departments such as the media.	Planned
NMDOT	NMDOT District 5 Public Transportation Management System (PTMS)	Maintains a Transit Vehicle Inventory for public transit vehicles that receive federal and state funds. Also able to generate ridership information such as cost per mile, revenues per mile,	Existing

Stakeholder	Element	Element Description	Status
		total revenues, etc.	
NMDOT	NMDOT District 5 Roadway Service Patrols	Motorist service patrols that are dispatched to stranded vehicles or persons located on the NMDOT highways, roads, or other.	Planned
NMDOT	NMDOT District 5 RWIS	Road weather information systems (RWIS) owned and operated by the Santa Fe district.	Planned
NMDOT	NMDOT District 5 Security Equipment	Security equipment owned and operated by the NMDOT Santa Fe district office.	Planned
NMDOT	NMDOT District 5 Shop	This facility provides repair and maintenance services for NMDOT maintenance vehicles and equipment (e.g. portable DMS).	Existing
NMDOT	NMDOT District 5 TMC	The traffic management center for NMDOT. the TMC will manage traffic on freeways and state owned arterials.	Planned
NMDOT	NMDOT District 5 Traffic Signals	This includes lane control, ramp metering and traffic signals owned by NMDOT.	Existing
NMDOT	NMDOT District 5 Web Page	Transportation information web page for Santa Fe district. In the future will include real-time construction, work zone, special event, incident, and traffic information. (Handled by the Information Resource Office.)	Existing
NMDOT	NMDOT District 5 Work Zone Equipment	Work zone monitoring and alerting equipment owned by NMDOT.	Planned
NMDOT	NMDOT Highway Maintenance Management System	NMDOT Bridge Inspection and Inventory System. Statewide system holding information regarding the inventory and inspection status of all bridges.	Existing
NMDOT	NMDOT ITS Bureau	New Mexico Department of Transportation ITS Bureau responsible for managing ITS inventory.	Existing
NMDOT	NMDOT ITS Bureau Statewide Traffic Operations Center	Statewide traffic operations center which will be an expansion of the District 3 TMC capabilities.	Planned
NMDOT	NMDOT ITS Database	Database of ITS assets owned by NMDOT. Also includes service patrol dispatch archives.	Existing
NMDOT	NMDOT ITS Database Users	Systems and agencies that make use of NMDOT ITS Database information.	Existing
NMDOT	NMDOT Maintenance Signal Lab	NMDOT facility for providing maintenance on NMDOT traffic signal systems.	Existing
NMDOT	NMDOT Patrol Yard	Storage facility used by the New Mexico Department of	Existing

Stakeholder	Element	Element Description	Status
		Transportation.	
NMDOT	NMDOT Rest Areas/Visitor Centers/Truck Stops/Service Plaza Kiosks	Several rest areas and visitor centers with varied amenities are planned by NMDOT. Tourist information, emergency evacuation information, and general traffic information could be provided in the future.	Planned
NMDOT	NMDOT Road Features Inventory	Road features inventory for signs, roadside hardware (e.g. guardrails). Legacy system.	Existing
NMDOT	NMDOT Traffic Count Collection Section	Department of NMDOT that is responsible for traffic count collection.	Existing
NMDOT	NMDOT Traffic Signal Shop	The traffic signal repair facility for the NMDOT Santa Fe District.	Existing
NMDOT	Other NMDOT District Maintenance Dispatch	NMDOT Maintenance dispatch function in neighboring districts.	Existing
NMDOT	Other NMDOT District TMCs	Transportation Management Centers in other New Mexico regions (Distinct 4 and 6).	Existing
NMDOT	Statewide Advanced Traveler Information System Website	Statewide website, driven by CARS, that provides weather information and road network conditions to the traveling public.	Planned
NOAA	National Weather Service	National service for national, regional, and local weather information.	Existing
North Central Regional Transit District	North Central Regional Transit Dispatch	Fixed route and paratransit dispatch functions. North Central Regional offers specialized door thru door transportation for the disabled who qualify under the Americans with Disabilities Act of 1990. It also operates fixed routes in the city of Espanola	Planned
North Central Regional Transit District	North Central Regional Transit Vehicles	Fixed route and demand response transit vehicles operated by the North Central Regional Transit	Planned
North Central Regional Transit District	North Central Regional Transit Website	Transit and Paratransit schedule and fare information. In the future, tied into AVL for real time schedules.	Planned
Northern New Mexico Park and Ride Service	Northern New Mexico Park and Ride Dispatch	Dispatch function of Northern New Mexico Park and Ride. Dispatches both Demand-Response and Fixed Route vehicles.	Existing
Northern New Mexico Park and Ride Service	Northern New Mexico Park and Ride Vehicles	Fixed route transit vehicles operated by Northern New Mexico Park and Ride.	Existing
Northern New Mexico Park and Ride Service	Northern New Mexico Park and Ride Website	The website run by the Northern New Mexico Park and Ride (currently only contains static scheduling information).	Existing
Operation Respond Institute	Operation Respond	Operation Respond provides hazmat information.	Existing

Stakeholder	Element	Element Description	Status
Private Concierge Service Providers	Private Concierge Service Providers	Private concierge service providers within the Santa Fe region. Includes Onstar, etc. May transmit operational data for road network condition determination and traffic count information.	Existing
Private Consultants	Project Private Consultants	Private consultants on highway projects who collect traffic count data as part of their development activities.	Planned
Private Equipment Repair Providers	County Equipment Repair Facility	Equipment repair facilities operated at the county level.	Existing
Private Information Service Providers	Private Sector Traveler Information Services	Private traveler information providers serving the region. This element could, in the future, provide support to the National Traveler Information 511 number since it collects information from a broad array of operating centers. Could also include website	Planned
Private Taxi Providers	Private Taxi Provider Dispatch	Dispatch function for private taxi providers. Includes SECA, a non-profit van pool org. for state employees.	Existing
Private Tow/Wrecker Providers	Private Tow/Wrecker Dispatch	Dispatch function for privately owned tow or wrecker service. Based on a rotation list.	Planned
Private Tow/Wrecker Providers	Private Tow/Wrecker Vehicles	The tow or wrecker vehicles in the region.	Existing
Private Transportation Providers	Intercity Bus Company Dispatch	Fixed route transit dispatch functions for intercity buses.	Existing
Private Travelers	Private Travelers Personal Computing Devices	Includes personal and office computers, pagers, and handheld devices used by travelers to receive ITS information.	Existing
Private Travelers	Private Vehicles	Vehicles owned by private individuals in the area.	Existing
Private Weather Service Providers	Private Weather Service	Companies that provide transportation focused weather information.	Existing
Private/Public Ambulance Providers	Private/Public Ambulance Dispatch	Dispatch functions for private ambulance companies in the region.	Existing
Private/Public Ambulance Providers	Private/Public Ambulance Vehicle	The vehicles dispatched by private ambulance companies.	Existing
Rail Operators	Rail Operations Centers	The dispatch centers for major railroads in the region (e.g. Santa Fe Southern).	Existing
Rail Operators	Rail Operators Wayside Equipment	The rail operated equipment at highway rail intersections. Interconnect with the region's traffic control departments.	Existing

Stakeholder	Element	Element Description	Status
RECC Joint Powers Agreement	Regional Emergency Communications Center (RECC)	An independent emergency 911 center serving both the city and the county public safety agencies. The center began operations in July 2002	Existing
Regional Medical Center	Regional Medical Centers	Medical centers that are located within the Santa Fe region (hospitals) or within the adjacent regions (Albuquerque, NM).	Existing
Regional Public Safety Agencies	Regional Emergency Communications Network	Regional public safety communications network.	Planned
Santa Fe Convention and Visitors Bureau	Santa Fe Convention and Visitors Bureau	Municipal Convention and Visitors Bureau has information on upcoming events in the region.	Existing
Santa Fe County Public Works	Santa Fe County Field Equipment	The field equipment owned and operated by the County Road and Bridge agency for maintenance and other activities. Includes portable dynamic message signs.	Planned
Santa Fe County Public Works	Santa Fe County Maintenance Dispatch	Public works. Maintenance of roads and bridges in Santa Fe County.	Existing
Santa Fe County Public Works	Santa Fe County Maintenance Vehicles	The maintenance vehicles that are dispatch by Santa Fe County.	Existing
Santa Fe County Public Works	Santa Fe County Public Information Office	The office provides the official interface between Santa Fe County and traffic and maintenance departments as well as interests outside these departments such as the media.	Existing
Santa Fe County Public Works	Santa Fe County Storage Yard	Storage yard owned and operated by Santa Fe County.	Existing
Santa Fe County Public Works	Santa Fe County Traffic Count Section	The traffic count division of Santee Fe County who is responsible for collecting all traffic sensor and flow information from the County's ITS field devices.	Existing
Santa Fe County Public Works	Santa Fe County Traffic Operations Center	The Traffic Operations Center operated by Santa Fe County.	Planned
Santa Fe County Public Works	Santa Fe County Website	Website for Santa Fe County that could be used in the future to provide traffic or maintenance information.	Existing
Santa Fe Trails	Santa Fe Trails Fixed Route Dispatch	Fixed route dispatch function of Santa Fe Trails.	Existing
Santa Fe Trails	Santa Fe Trails Fixed Route Transit Vehicles	Fixed Route transit vehicles for Santa Fe Trails. Includes the ITS elements installed on the fixed route transit vehicles.	Existing
Santa Fe Trails	Santa Fe Trails Paratransit	The demand response and paratransit dispatch center for Santa	Planned

Stakeholder	Element	Element Description	Status
	Dispatch	Fe Trails.	
Santa Fe Trails	Santa Fe Trails Paratransit Transit Vehicles	Demand response and paratransit vehicles for Santa Fe Trails. Includes the ITS elements installed on the demand response and paratransit vehicles.	Existing
Santa Fe Trails	Santa Fe Trails Website	Transit website for Santa Fe Trails which shows static schedule information for Santa Fe Trails fixed route vehicles. Future applications will include a means to request demand response or paratransit vehicle service through the website.	Existing
Santa Fe Trails	Transit Fare Card	Planned smart card for use on Santa Fe Trails transit.	Planned
Transit Partnership	Transit Multimodal Center	Combined commuter rail/ transit centers in the City of Santa Fe. Future applications may include transit kiosks.	Planned
Tribal Councils	Tribal Emergency Dispatch	The dispatch function of tribal police.	Existing
Volunteer Fire Departments	Volunteer Fire Departments	Volunteer fire departments dispatched by the County Sheriff's office.	Existing

4.2. Systems by Architecture Entity

Each element in the regional architecture inventory is mapped to one or more entities from the National ITS Architecture. In version 5.0 of the National ITS Architecture (on which this architecture is based) there are 95 entities defined. These 22 subsystems and 73 terminators describe a wide array of systems that provide ITS services, or interface with systems that provide ITS services. The mapping of statewide architecture elements to National ITS Architecture entities has two primary benefits. First it allows the full set of information flows contained in the National ITS Architecture to be used in the description of regional ITS architecture interfaces, and second, it allows the elements of the regional architecture to be grouped by like entity. Table 5 provides just such a sorting of inventory elements by entity. This table allows the users of the architecture to immediately identify all the elements that have functions relating to transit management, or traffic management.

The Santa Fe Regional ITS Architecture inventory contains the following number of elements mapped to different types of entities:

Archived Data Management: 13
 Emergency Management: 21
 Information Service Providers: 17
 Maintenance and Construction Management: 8
 Traffic Management: 7
 Transit Management: 9

Table 5: Inventory Sorted by Entity

Entity	Element	Stakeholder	Status
Alerting and Advisory Systems	ITA System	NMDOT	Existing
Archived Data Management Subsystem	City of Santa Fe Accident Database	City of Santa Fe Police Department	Existing
Archived Data Management Subsystem	City of Santa Fe Traffic Counts Program	City of Santa Fe	Existing
Archived Data Management Subsystem	City of Santa Fe Traffic Database	City of Santa Fe Public Works Department	Planned
Archived Data Management Subsystem	Highway Maintenance Management System	NMDOT	Existing
Archived Data Management Subsystem	NMDOT Consolidated Highway Database	NMDOT	Existing
Archived Data Management Subsystem	NMDOT Crash Database	NMDOT	Existing
Archived Data Management Subsystem	NMDOT District 5 Public Transportation Management System (PTMS)	NMDOT	Existing
Archived Data Management Subsystem	NMDOT ITS Database	NMDOT	Existing
Archived Data Management Subsystem	NMDOT Road Features Inventory	NMDOT	Existing
Archived Data Management Subsystem	NMDOT Traffic Count Collection Section	NMDOT	Existing
Archived Data	Project Private Consultants	Private Consultants	Planned

Entity	Element	Stakeholder	Status
Management Subsystem			
Archived Data Management Subsystem	Santa Fe County Traffic Count Section	Santa Fe County Public Works	Existing
Archived Data Management Subsystem	Santa Fe MPO Archive	City of Santa Fe Department of Planning and Land Use	Existing
Archived Data User Systems	City of Santa Fe Traffic Database Users	City of Santa Fe Public Works Department	Planned
Archived Data User Systems	NMDOT Crash Database Users	New Mexico DPS	Existing
Archived Data User Systems	NMDOT ITS Database Users	NMDOT	Existing
Archived Data User Systems	Santa Fe MPO Archive Users	City of Santa Fe Department of Planning and Land Use	Existing
Asset Management	NMDOT District 5 Pavement Management System	NMDOT	Existing
Asset Management	NMDOT Highway Maintenance Management System	NMDOT	Existing
Care Facility	Regional Medical Centers	Regional Medical Center	Existing
Commercial Vehicle Administration	Municipal or County Permitting System	Municipal Government	Existing
Commercial Vehicle Administration	NMDOT Central Permit Office	NMDOT	Existing
Commercial Vehicle Subsystem	Commercial Vehicles	Commercial Vehicle Operators	Existing
Emergency Management	Bureau of Indian Affairs Dispatch	Bureau of Indian Affairs	Existing
Emergency Management	Correctional Facilities Operations	Correctional Facilities	Existing
Emergency Management	County Public Safety Administration	County Public Safety Agencies	Existing
Emergency Management	Motor Transport Division	New Mexico DPS	Existing
Emergency Management	Municipal EOC	Municipal Public Safety	Existing
Emergency Management	Municipal Public Safety Administration	Municipal Public Safety	Existing
Emergency Management	Municipal Public Safety Dispatch	Municipal Public Safety	Existing
Emergency Management	NMDOT District 5 TMC	NMDOT	Planned
Emergency Management	North Central Regional Transit Dispatch	North Central Regional Transit District	Planned
Emergency Management	Northern New Mexico Park and Ride Dispatch	Northern New Mexico Park and Ride Service	Existing
Emergency Management	Operation Respond	Operation Respond Institute	Existing
Emergency Management	Other County EOC	County Emergency Management Agencies	Existing
Emergency Management	Other County Public Safety Dispatch and PSAP	County Public Safety Agencies	Existing
Emergency Management	Private Tow/Wrecker Dispatch	Private Tow/Wrecker Providers	Planned
Emergency Management	Private/Public Ambulance Dispatch	Private/Public Ambulance Providers	Existing

Entity	Element	Stakeholder	Status
Emergency Management	Regional Emergency Communications Center (RECC)	RECC Joint Powers Agreement	Existing
Emergency Management	Santa Fe City/County EOC	City/County of Santa Fe	Existing
Emergency Management	Santa Fe Control	New Mexico General Services Department	Existing
Emergency Management	Santa Fe Trails Fixed Route Dispatch	Santa Fe Trails	Existing
Emergency Management	State EOC	DPS Office of Emergency Management	Existing
Emergency Management	State Police District 1 Administration	New Mexico DPS	Existing
Emergency Management	State Police District 1 Dispatch	New Mexico DPS	Existing
Emergency Management	Tribal Emergency Dispatch	Tribal Councils	Existing
Emergency Management	Volunteer Fire Departments	Volunteer Fire Departments	Existing
Emergency Vehicle Subsystem	City of Santa Fe Fire/EMS Vehicles	City of Santa Fe Fire Department	Existing
Emergency Vehicle Subsystem	City of Santa Fe Police Vehicles	City of Santa Fe Police Department	Existing
Emergency Vehicle Subsystem	County Public Safety Vehicles	County Public Safety Agencies	Existing
Emergency Vehicle Subsystem	Department of Game and Fish Vehicles	Department of Game and Fish	Existing
Emergency Vehicle Subsystem	Municipal Public Safety Vehicles	Municipal Public Safety	Existing
Emergency Vehicle Subsystem	NMDOT District 5 Roadway Service Patrols	NMDOT	Planned
Emergency Vehicle Subsystem	Private Tow/Wrecker Vehicles	Private Tow/Wrecker Providers	Existing
Emergency Vehicle Subsystem	Private/Public Ambulance Vehicle	Private/Public Ambulance Providers	Existing
Emergency Vehicle Subsystem	State Police Vehicles	New Mexico DPS	Existing
Equipment Repair Facility	City of Santa Fe Equipment Repair Facility	City of Santa Fe Public Works Department	Existing
Equipment Repair Facility	City of Santa Fe Traffic Signal Shop	City of Santa Fe Public Works Department	Existing
Equipment Repair Facility	County Equipment Repair Facility	Private Equipment Repair Providers	Existing
Equipment Repair Facility	Municipal Equipment Repair Facility	Municipal Public Works Department	Existing
Equipment Repair Facility	NMDOT District 5 Shop	NMDOT	Existing
Equipment Repair Facility	NMDOT Traffic Signal Shop	NMDOT	Existing
Event Promoters	Santa Fe Convention and Visitors Bureau	Santa Fe Convention and Visitors Bureau	Existing
Financial Institution	Financial Institution	Financial Institution	Existing
Fleet and Freight Management	Private Fleet Management Systems	Commercial Vehicle Operators	Planned
Fleet and Freight Management	Rail Operations Centers	Rail Operators	Existing
Information Service Provider	City of Santa Fe Public Information Office	City of Santa Fe	Existing

Entity	Element	Stakeholder	Status
Information Service Provider	City of Santa Fe Public Works Public Information Office	City of Santa Fe Public Works Department	Planned
Information Service Provider	City of Santa Fe Website	City of Santa Fe	Existing
Information Service Provider	Municipal Public Information Office	Municipal Government	Planned
Information Service Provider	Municipal Website	Municipal Government	Existing
Information Service Provider	NMDOT 511 System	NMDOT	Planned
Information Service Provider	NMDOT CARS Server	NMDOT	Planned
Information Service Provider	NMDOT Crash Database	NMDOT	Existing
Information Service Provider	NMDOT District 5 Public Information Office	NMDOT	Planned
Information Service Provider	NMDOT District 5 Web Page	NMDOT	Existing
Information Service Provider	North Central Regional Transit Website	North Central Regional Transit District	Planned
Information Service Provider	Northern New Mexico Park and Ride Website	Northern New Mexico Park and Ride Service	Existing
Information Service Provider	Private Sector Traveler Information Services	Private Information Service Providers	Planned
Information Service Provider	Santa Fe County Public Information Office	Santa Fe County Public Works	Existing
Information Service Provider	Santa Fe County Website	Santa Fe County Public Works	Existing
Information Service Provider	Santa Fe Trails Website	Santa Fe Trails	Existing
Information Service Provider	Statewide Advanced Traveler Information System Website	NMDOT	Planned
Maintenance and Construction Management	City of Santa Fe Streets, Drainage, and Fleet Dispatch	City of Santa Fe Public Works Department	Existing
Maintenance and Construction Management	Municipal PWD	Municipal Public Works Department	Existing
Maintenance and Construction Management	NMDOT CARS Server	NMDOT	Planned
Maintenance and Construction Management	NMDOT District 5 Maintenance Dispatch	NMDOT	Existing
Maintenance and Construction Management	NMDOT ITS Bureau	NMDOT	Existing
Maintenance and Construction Management	NMDOT Maintenance Signal Lab	NMDOT	Existing
Maintenance and Construction Management	Other NMDOT District Maintenance Dispatch	NMDOT	Existing
Maintenance and Construction Management	Santa Fe County Maintenance Dispatch	Santa Fe County Public Works	Existing
Maintenance and Construction Vehicle	City of Santa Fe Maintenance and Construction Vehicles	City of Santa Fe Public Works Department	Existing
Maintenance and Construction Vehicle	Municipal PWD Vehicles	Municipal Public Works Department	Existing
Maintenance and	NMDOT District 5 Maintenance	NMDOT	Existing

Entity	Element	Stakeholder	Status
Construction Vehicle	and Construction Vehicles		
Maintenance and Construction Vehicle	Santa Fe County Maintenance Vehicles	Santa Fe County Public Works	Existing
Media	Local Print and Broadcast Media	Local Media	Existing
Multimodal Transportation Service Provider	Santa Fe Municipal Airport	City of Santa Fe Public Works Department	Existing
Multimodal Transportation Service Provider	Santa Fe Region Intermodal Transit Terminal	Local Transit Operators	Planned
Parking Management	City of Santa Fe Parking Garages	City of Santa Fe	Existing
Personal Information Access	Private Travelers Personal Computing Devices	Private Travelers	Existing
Rail Operations	Rail Operations Centers	Rail Operators	Existing
Remote Traveler Support	NMDOT Rest Areas/Visitor Centers/Truck Stops/Service Plaza Kiosks	NMDOT	Planned
Remote Traveler Support	Transit Multimodal Center	Transit Partnership	Planned
Roadway Subsystem	City of Santa Fe CCTV	City of Santa Fe Public Works Department	Existing
Roadway Subsystem	City of Santa Fe DMS	City of Santa Fe Public Works Department	Planned
Roadway Subsystem	City of Santa Fe Field Sensors	City of Santa Fe Public Works Department	Existing
Roadway Subsystem	City of Santa Fe RWIS systems	City of Santa Fe Public Works Department	Planned
Roadway Subsystem	City of Santa Fe School Pager System	City of Santa Fe Public Works Department	Existing
Roadway Subsystem	City of Santa Fe Traffic Signals	City of Santa Fe Public Works Department	Existing
Roadway Subsystem	City of Santa Fe Work Zone Equipment	City of Santa Fe Public Works Department	Existing
Roadway Subsystem	Municipal ITS Field Equipment	Municipal Government	Existing
Roadway Subsystem	NMDOT District 5 Anti-icing Equipment	NMDOT	Existing
Roadway Subsystem	NMDOT District 5 Automated Gates	NMDOT	Planned
Roadway Subsystem	NMDOT District 5 CCTV	NMDOT	Planned
Roadway Subsystem	NMDOT District 5 DMS	NMDOT	Planned
Roadway Subsystem	NMDOT District 5 Field Sensors	NMDOT	Planned
Roadway Subsystem	NMDOT District 5 HAR	NMDOT	Planned
Roadway Subsystem	NMDOT District 5 RWIS	NMDOT	Planned
Roadway Subsystem	NMDOT District 5 Traffic Signals	NMDOT	Existing
Roadway Subsystem	NMDOT District 5 Work Zone Equipment	NMDOT	Planned
Roadway Subsystem	Santa Fe County Field Equipment	Santa Fe County Public Works	Planned
Roadway Subsystem	Santa Fe MPO Field Devices	City of Santa Fe Department of Planning and Land Use	Existing

Entity	Element	Stakeholder	Status
Security Monitoring Subsystem	NMDOT District 5 Security Equipment	NMDOT	Planned
Storage Facility	City of Santa Fe Storage Yard	City of Santa Fe Public Works Department	Existing
Storage Facility	NMDOT Patrol Yard	NMDOT	Existing
Storage Facility	Santa Fe County Storage Yard	Santa Fe County Public Works	Existing
Traffic Management	City of Santa Fe Traffic Operations Section	City of Santa Fe Public Works Department	Existing
Traffic Management	Municipal Traffic Operations Center	Municipal Government	Planned
Traffic Management	NMDOT District 5 TMC	NMDOT	Planned
Traffic Management	NMDOT ITS Bureau	NMDOT	Existing
Traffic Management	NMDOT ITS Bureau Statewide Traffic Operations Center	NMDOT	Planned
Traffic Management	Other NMDOT District TMCs	NMDOT	Existing
Traffic Management	Santa Fe County Traffic Operations Center	Santa Fe County Public Works	Planned
Transit Management	Albuquerque Transit Dispatch	Albuquerque Transit	Existing
Transit Management	City of Santa Fe Senior Services Demand Response Dispatch	City of Santa Fe Senior Services	Existing
Transit Management	Commuter Rail Operations	NMDOT	Planned
Transit Management	Independent School District Dispatch	Independent School Districts	Existing
Transit Management	Intercity Bus Company Dispatch	Private Transportation Providers	Existing
Transit Management	North Central Regional Transit Dispatch	North Central Regional Transit District	Planned
Transit Management	Northern New Mexico Park and Ride Dispatch	Northern New Mexico Park and Ride Service	Existing
Transit Management	Private Taxi Provider Dispatch	Private Taxi Providers	Existing
Transit Management	Santa Fe Trails Fixed Route Dispatch	Santa Fe Trails	Existing
Transit Management	Santa Fe Trails Paratransit Dispatch	Santa Fe Trails	Planned
Transit Vehicle Subsystem	City of Santa Fe Senior Services Vehicles	City of Santa Fe Senior Services	Planned
Transit Vehicle Subsystem	Commuter Rail Vehicles	NMDOT	Planned
Transit Vehicle Subsystem	Independent School District Buses	Independent School Districts	Existing
Transit Vehicle Subsystem	North Central Regional Transit Vehicles	North Central Regional Transit District	Planned
Transit Vehicle Subsystem	Northern New Mexico Park and Ride Vehicles	Northern New Mexico Park and Ride Service	Existing
Transit Vehicle Subsystem	Santa Fe Trails Fixed Route Transit Vehicles	Santa Fe Trails	Existing
Transit Vehicle Subsystem	Santa Fe Trails Paratransit Transit Vehicles	Santa Fe Trails	Existing
Traveler Card	Transit Fare Card	Santa Fe Trails	Planned
Vehicle	Commercial Vehicles	Commercial Vehicle Operators	Existing

Entity	Element	Stakeholder	Status
Vehicle	Private Vehicles	Private Travelers	Existing
Wayside Equipment	Rail Operators Wayside Equipment	Rail Operators	Existing
Weather Service	National Weather Service	NOAA	Existing
Weather Service	Private Weather Service	Private Weather Service Providers	Existing
Yellow Pages Service Providers	Private Concierge Service Providers	Private Concierge Service Providers	Existing

5. Market Packages

The ITS systems in the region currently provide a wide array of transportation services and that list will grow as more systems are developed or upgraded. The services can be described by the set of market packages that are shown in Table 6. This table provides for each market package the status (existing or planned) and the primary elements associated with the market package. Where the service is currently provided by some of the elements (but not others) there is a mix of existing and planned status within a single market package. A service is considered to be existing if some interfaces to provide the service are currently provided via electronic communications.

Table 6: Regional Market Packages

Market Package	Market Package Name	Element	Status
AD1	ITS Data Mart	City of Santa Fe Accident Database	Planned
AD1	ITS Data Mart	City of Santa Fe Field Sensors	Planned
AD1	ITS Data Mart	City of Santa Fe Senior Services Demand Response Dispatch	Planned
AD1	ITS Data Mart	City of Santa Fe Traffic Counts Program	Planned
AD1	ITS Data Mart	City of Santa Fe Traffic Database Users	Planned
AD1	ITS Data Mart	City of Santa Fe Traffic Operations Section	Planned
AD1	ITS Data Mart	County Public Safety Administration	Planned
AD1	ITS Data Mart	Highway Maintenance Management System	Planned
AD1	ITS Data Mart	Municipal Public Safety Administration	Planned
AD1	ITS Data Mart	NMDOT Consolidated Highway Database	Planned
AD1	ITS Data Mart	NMDOT Crash Database	Planned
AD1	ITS Data Mart	NMDOT Crash Database Users	Planned
AD1	ITS Data Mart	NMDOT District 5 Maintenance Dispatch	Planned
AD1	ITS Data Mart	NMDOT District 5 Public Transportation Management System (PTMS)	Planned
AD1	ITS Data Mart	NMDOT ITS Bureau	Planned
AD1	ITS Data Mart	NMDOT ITS Database	Planned
AD1	ITS Data Mart	NMDOT ITS Database Users	Planned
AD1	ITS Data Mart	NMDOT Road Features Inventory	Planned
AD1	ITS Data Mart	NMDOT Traffic Count Collection Section	Planned
AD1	ITS Data Mart	North Central Regional Transit Dispatch	Planned
AD1	ITS Data Mart	Project Private Consultants	Planned
AD1	ITS Data Mart	Santa Fe County Traffic Count Section	Planned
AD1	ITS Data Mart	Santa Fe MPO Archive	Planned
AD1	ITS Data Mart	Santa Fe MPO Archive Users	Planned

Market Package	Market Package Name	Element	Status
AD1	ITS Data Mart	Santa Fe MPO Field Devices	Planned
AD1	ITS Data Mart	Santa Fe Trails Fixed Route Dispatch	Planned
AD1	ITS Data Mart	Santa Fe Trails Paratransit Dispatch	Planned
AD1	ITS Data Mart	State Police District 1 Administration	Planned
APTS1	Transit Vehicle Tracking	City of Santa Fe Senior Services Demand Response Dispatch	Planned
APTS1	Transit Vehicle Tracking	City of Santa Fe Senior Services Vehicles	Planned
APTS1	Transit Vehicle Tracking	Independent School District Buses	Planned
APTS1	Transit Vehicle Tracking	Independent School District Dispatch	Planned
APTS1	Transit Vehicle Tracking	North Central Regional Transit Dispatch	Planned
APTS1	Transit Vehicle Tracking	North Central Regional Transit Vehicles	Planned
APTS1	Transit Vehicle Tracking	Northern New Mexico Park and Ride Dispatch	Planned
APTS1	Transit Vehicle Tracking	Northern New Mexico Park and Ride Vehicles	Planned
APTS1	Transit Vehicle Tracking	Santa Fe Trails Fixed Route Dispatch	Planned
APTS1	Transit Vehicle Tracking	Santa Fe Trails Fixed Route Transit Vehicles	Planned
APTS1	Transit Vehicle Tracking	Santa Fe Trails Paratransit Dispatch	Planned
APTS1	Transit Vehicle Tracking	Santa Fe Trails Paratransit Transit Vehicles	Planned
APTS2	Transit Fixed-Route Operations	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
APTS2	Transit Fixed-Route Operations	City of Santa Fe Traffic Operations Section	Planned
APTS2	Transit Fixed-Route Operations	Commuter Rail Operations	Planned
APTS2	Transit Fixed-Route Operations	Commuter Rail Vehicles	Planned
APTS2	Transit Fixed-Route Operations	Independent School District Buses	Planned
APTS2	Transit Fixed-Route Operations	Independent School District Dispatch	Planned
APTS2	Transit Fixed-Route Operations	Municipal PWD	Planned
APTS2	Transit Fixed-Route Operations	Municipal Traffic Operations Center	Planned
APTS2	Transit Fixed-Route Operations	NMDOT 511 System	Planned
APTS2	Transit Fixed-Route Operations	NMDOT CARS Server	Planned
APTS2	Transit Fixed-Route Operations	NMDOT District 5 TMC	Planned
APTS2	Transit Fixed-Route Operations	North Central Regional Transit Dispatch	Planned

Market Package	Market Package Name	Element	Status
APTS2	Transit Fixed-Route Operations	North Central Regional Transit Vehicles	Planned
APTS2	Transit Fixed-Route Operations	North Central Regional Transit Website	Planned
APTS2	Transit Fixed-Route Operations	Northern New Mexico Park and Ride Dispatch	Planned
APTS2	Transit Fixed-Route Operations	Northern New Mexico Park and Ride Vehicles	Planned
APTS2	Transit Fixed-Route Operations	Northern New Mexico Park and Ride Website	Planned
APTS2	Transit Fixed-Route Operations	Other NMDOT District Maintenance Dispatch	Planned
APTS2	Transit Fixed-Route Operations	Other NMDOT District TMCs	Planned
APTS2	Transit Fixed-Route Operations	Private Sector Traveler Information Services	Planned
APTS2	Transit Fixed-Route Operations	Santa Fe County Maintenance Dispatch	Planned
APTS2	Transit Fixed-Route Operations	Santa Fe Trails Fixed Route Dispatch	Planned
APTS2	Transit Fixed-Route Operations	Santa Fe Trails Fixed Route Transit Vehicles	Planned
APTS2	Transit Fixed-Route Operations	Santa Fe Trails Website	Planned
APTS3	Demand Response Transit Operations	City of Santa Fe Senior Services Demand Response Dispatch	Planned
APTS3	Demand Response Transit Operations	City of Santa Fe Senior Services Vehicles	Planned
APTS3	Demand Response Transit Operations	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
APTS3	Demand Response Transit Operations	City of Santa Fe Traffic Operations Section	Planned
APTS3	Demand Response Transit Operations	City of Santa Fe Website	Planned
APTS3	Demand Response Transit Operations	NMDOT CARS Server	Planned
APTS3	Demand Response Transit Operations	NMDOT District 5 Maintenance Dispatch	Planned
APTS3	Demand Response Transit Operations	NMDOT District 5 TMC	Planned
APTS3	Demand Response Transit Operations	Other NMDOT District TMCs	Planned
APTS3	Demand Response Transit Operations	Private Sector Traveler Information Services	Planned
APTS3	Demand Response Transit Operations	Santa Fe County Maintenance Dispatch	Planned
APTS3	Demand Response Transit Operations	Santa Fe County Traffic Operations Center	Planned

Market Package	Market Package Name	Element	Status
APTS3	Demand Response Transit Operations	Santa Fe Trails Paratransit Dispatch	Planned
APTS3	Demand Response Transit Operations	Santa Fe Trails Paratransit Transit Vehicles	Planned
APTS3	Demand Response Transit Operations	Santa Fe Trails Website	Planned
APTS4	Transit Passenger and Fare Management	Financial Institution	Planned
APTS4	Transit Passenger and Fare Management	Santa Fe Trails Fixed Route Dispatch	Planned
APTS4	Transit Passenger and Fare Management	Santa Fe Trails Fixed Route Transit Vehicles	Planned
APTS4	Transit Passenger and Fare Management	Transit Fare Card	Planned
APTS4	Transit Passenger and Fare Management	Transit Multimodal Center	Planned
APTS5	Transit Security	Independent School District Buses	Planned
APTS5	Transit Security	Independent School District Dispatch	Planned
APTS5	Transit Security	Municipal Public Safety Dispatch	Planned
APTS5	Transit Security	North Central Regional Transit Dispatch	Planned
APTS5	Transit Security	North Central Regional Transit Vehicles	Planned
APTS5	Transit Security	Northern New Mexico Park and Ride Dispatch	Planned
APTS5	Transit Security	Regional Emergency Communications Center (RECC)	Planned
APTS5	Transit Security	Santa Fe Trails Fixed Route Dispatch	Planned
APTS5	Transit Security	Santa Fe Trails Fixed Route Transit Vehicles	Planned
APTS5	Transit Security	Santa Fe Trails Paratransit Dispatch	Planned
APTS5	Transit Security	Santa Fe Trails Paratransit Transit Vehicles	Planned
APTS5	Transit Security	State Police District 1 Dispatch	Planned
APTS6	Transit Maintenance	North Central Regional Transit Dispatch	Planned
APTS6	Transit Maintenance	North Central Regional Transit Vehicles	Planned
APTS6	Transit Maintenance	Santa Fe Trails Fixed Route Dispatch	Planned
APTS6	Transit Maintenance	Santa Fe Trails Fixed Route Transit Vehicles	Planned
APTS6	Transit Maintenance	Santa Fe Trails Paratransit Dispatch	Planned
APTS6	Transit Maintenance	Santa Fe Trails Paratransit Transit Vehicles	Planned
APTS7	Multi-modal Coordination	Albuquerque Transit Dispatch	Planned
APTS7	Multi-modal Coordination	City of Santa Fe Senior Services Demand Response Dispatch	Planned
APTS7	Multi-modal Coordination	Commuter Rail Operations	Planned
APTS7	Multi-modal Coordination	Intercity Bus Company Dispatch	Planned
APTS7	Multi-modal Coordination	North Central Regional Transit Dispatch	Planned
APTS7	Multi-modal Coordination	North Central Regional Transit Vehicles	Planned

Market Package	Market Package Name	Element	Status
APTS7	Multi-modal Coordination	Northern New Mexico Park and Ride Dispatch	Planned
APTS7	Multi-modal Coordination	Northern New Mexico Park and Ride Vehicles	Planned
APTS7	Multi-modal Coordination	Private Taxi Provider Dispatch	Planned
APTS7	Multi-modal Coordination	Santa Fe Municipal Airport	Planned
APTS7	Multi-modal Coordination	Santa Fe Region Intermodal Transit Terminal	Planned
APTS7	Multi-modal Coordination	Santa Fe Trails Fixed Route Dispatch	Planned
APTS7	Multi-modal Coordination	Santa Fe Trails Fixed Route Transit Vehicles	Planned
APTS7	Multi-modal Coordination	Santa Fe Trails Paratransit Dispatch	Planned
APTS7	Multi-modal Coordination	Santa Fe Trails Paratransit Transit Vehicles	Planned
APTS8	Transit Traveler Information	NMDOT 511 System	Planned
APTS8	Transit Traveler Information	NMDOT CARS Server	Planned
APTS8	Transit Traveler Information	NMDOT Rest Areas/Visitor Centers/Truck Stops/Service Plaza Kiosks	Planned
APTS8	Transit Traveler Information	North Central Regional Transit Dispatch	Planned
APTS8	Transit Traveler Information	North Central Regional Transit Website	Planned
APTS8	Transit Traveler Information	Northern New Mexico Park and Ride Dispatch	Planned
APTS8	Transit Traveler Information	Northern New Mexico Park and Ride Website	Planned
APTS8	Transit Traveler Information	Private Travelers Personal Computing Devices	Planned
APTS8	Transit Traveler Information	Santa Fe Trails Fixed Route Dispatch	Planned
APTS8	Transit Traveler Information	Santa Fe Trails Paratransit Dispatch	Planned
APTS8	Transit Traveler Information	Santa Fe Trails Website	Planned
APTS8	Transit Traveler Information	Transit Multimodal Center	Planned
ATIS1	Broadcast Traveler Information	City of Santa Fe Public Information Office	Planned
ATIS1	Broadcast Traveler Information	City of Santa Fe Public Works Public Information Office	Planned
ATIS1	Broadcast Traveler Information	City of Santa Fe Traffic Operations Section	Planned
ATIS1	Broadcast Traveler Information	City of Santa Fe Website	Planned
ATIS1	Broadcast Traveler Information	Local Print and Broadcast Media	Planned
ATIS1	Broadcast Traveler Information	NMDOT CARS Server	Planned
ATIS1	Broadcast Traveler Information	Private Travelers Personal Computing Devices	Planned
ATIS1	Broadcast Traveler Information	Statewide Advanced Traveler Information System Website	Planned

Market Package	Market Package Name	Element	Status
ATIS2	Interactive Traveler Information	City of Santa Fe Senior Services Demand Response Dispatch	Planned
ATIS2	Interactive Traveler Information	City of Santa Fe Traffic Operations Section	Planned
ATIS2	Interactive Traveler Information	Municipal Traffic Operations Center	Planned
ATIS2	Interactive Traveler Information	NMDOT 511 System	Planned
ATIS2	Interactive Traveler Information	NMDOT CARS Server	Planned
ATIS2	Interactive Traveler Information	NMDOT District 5 Maintenance Dispatch	Planned
ATIS2	Interactive Traveler Information	NMDOT District 5 TMC	Planned
ATIS2	Interactive Traveler Information	North Central Regional Transit Dispatch	Planned
ATIS2	Interactive Traveler Information	Northern New Mexico Park and Ride Dispatch	Planned
ATIS2	Interactive Traveler Information	Private Travelers Personal Computing Devices	Planned
ATIS2	Interactive Traveler Information	Santa Fe County Traffic Operations Center	Planned
ATIS2	Interactive Traveler Information	Santa Fe Trails Fixed Route Dispatch	Planned
ATIS2	Interactive Traveler Information	Santa Fe Trails Paratransit Dispatch	Planned
ATMS01	Network Surveillance	City of Santa Fe CCTV	Existing
ATMS01	Network Surveillance	City of Santa Fe Field Sensors	Existing
ATMS01	Network Surveillance	City of Santa Fe Traffic Operations Section	Existing
ATMS01	Network Surveillance	City of Santa Fe Website	Existing
ATMS01	Network Surveillance	Municipal ITS Field Equipment	Existing
ATMS01	Network Surveillance	Municipal Traffic Operations Center	Existing
ATMS01	Network Surveillance	Municipal Website	Existing
ATMS01	Network Surveillance	NMDOT CARS Server	Existing
ATMS01	Network Surveillance	NMDOT District 5 CCTV	Existing
ATMS01	Network Surveillance	NMDOT District 5 Field Sensors	Existing
ATMS01	Network Surveillance	NMDOT District 5 TMC	Existing
ATMS01	Network Surveillance	Santa Fe County Field Equipment	Existing
ATMS01	Network Surveillance	Santa Fe County Traffic Operations Center	Existing
ATMS01	Network Surveillance	Santa Fe County Website	Existing
ATMS02	Probe Surveillance	Commercial Vehicles	Planned
ATMS02	Probe Surveillance	NMDOT District 5 Field Sensors	Planned
ATMS02	Probe Surveillance	NMDOT District 5 TMC	Planned
ATMS02	Probe Surveillance	Private Vehicles	Planned
ATMS03	Surface Street Control	City of Santa Fe CCTV	Existing

Market Package	Market Package Name	Element	Status
ATMS03	Surface Street Control	City of Santa Fe Field Sensors	Existing
ATMS03	Surface Street Control	City of Santa Fe School Pager System	Existing
ATMS03	Surface Street Control	City of Santa Fe Traffic Operations Section	Existing
ATMS03	Surface Street Control	City of Santa Fe Traffic Signals	Existing
ATMS03	Surface Street Control	Municipal ITS Field Equipment	Existing
ATMS03	Surface Street Control	Municipal Traffic Operations Center	Existing
ATMS03	Surface Street Control	NMDOT District 5 CCTV	Existing
ATMS03	Surface Street Control	NMDOT District 5 Field Sensors	Existing
ATMS03	Surface Street Control	NMDOT District 5 TMC	Existing
ATMS03	Surface Street Control	NMDOT District 5 Traffic Signals	Existing
ATMS03	Surface Street Control	Santa Fe County Field Equipment	Existing
ATMS03	Surface Street Control	Santa Fe County Traffic Operations Center	Existing
ATMS04	Freeway Control	NMDOT District 5 Field Sensors	Planned
ATMS04	Freeway Control	NMDOT District 5 TMC	Planned
ATMS06	Traffic Information Dissemination	City of Santa Fe DMS	Planned
ATMS06	Traffic Information Dissemination	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
ATMS06	Traffic Information Dissemination	City of Santa Fe Traffic Operations Section	Planned
ATMS06	Traffic Information Dissemination	City of Santa Fe Website	Planned
ATMS06	Traffic Information Dissemination	Local Print and Broadcast Media	Planned
ATMS06	Traffic Information Dissemination	Municipal Public Safety Dispatch	Planned
ATMS06	Traffic Information Dissemination	NMDOT CARS Server	Planned
ATMS06	Traffic Information Dissemination	NMDOT District 5 DMS	Planned
ATMS06	Traffic Information Dissemination	NMDOT District 5 HAR	Planned
ATMS06	Traffic Information Dissemination	NMDOT District 5 TMC	Planned
ATMS06	Traffic Information Dissemination	Other County Public Safety Dispatch and PSAP	Planned
ATMS06	Traffic Information Dissemination	Regional Emergency Communications Center (RECC)	Planned
ATMS06	Traffic Information Dissemination	Santa Fe Control	Planned
ATMS06	Traffic Information Dissemination	Santa Fe Trails Fixed Route Dispatch	Planned
ATMS06	Traffic Information Dissemination	State Police District 1 Dispatch	Planned

Market Package	Market Package Name	Element	Status
ATMS06	Traffic Information Dissemination	Tribal Emergency Dispatch	Planned
ATMS07	Regional Traffic Control	City of Santa Fe Traffic Operations Section	Planned
ATMS07	Regional Traffic Control	NMDOT District 5 TMC	Planned
ATMS07	Regional Traffic Control	NMDOT ITS Bureau Statewide Traffic Operations Center	Planned
ATMS07	Regional Traffic Control	Other NMDOT District TMCs	Planned
ATMS07	Regional Traffic Control	Santa Fe County Traffic Operations Center	Planned
ATMS08	Traffic Incident Management System	City of Santa Fe Fire/EMS Vehicles	Planned
ATMS08	Traffic Incident Management System	City of Santa Fe Police Vehicles	Planned
ATMS08	Traffic Incident Management System	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
ATMS08	Traffic Incident Management System	City of Santa Fe Traffic Operations Section	Planned
ATMS08	Traffic Incident Management System	County Public Safety Vehicles	Planned
ATMS08	Traffic Incident Management System	Department of Game and Fish Vehicles	Planned
ATMS08	Traffic Incident Management System	Municipal Public Safety Dispatch	Planned
ATMS08	Traffic Incident Management System	Municipal Public Safety Vehicles	Planned
ATMS08	Traffic Incident Management System	Municipal PWD	Planned
ATMS08	Traffic Incident Management System	Municipal Traffic Operations Center	Planned
ATMS08	Traffic Incident Management System	NMDOT District 5 Maintenance Dispatch	Planned
ATMS08	Traffic Incident Management System	NMDOT District 5 TMC	Planned
ATMS08	Traffic Incident Management System	Other County Public Safety Dispatch and PSAP	Planned
ATMS08	Traffic Incident Management System	Other NMDOT District Maintenance Dispatch	Planned
ATMS08	Traffic Incident Management System	Private/Public Ambulance Vehicle	Planned
ATMS08	Traffic Incident Management System	Rail Operations Centers	Planned
ATMS08	Traffic Incident Management System	Regional Emergency Communications Center (RECC)	Planned
ATMS08	Traffic Incident Management System	Santa Fe Control	Planned
ATMS08	Traffic Incident Management System	Santa Fe Convention and Visitors Bureau	Planned

Market Package	Market Package Name	Element	Status
ATMS08	Traffic Incident Management System	Santa Fe County Maintenance Dispatch	Planned
ATMS08	Traffic Incident Management System	Santa Fe County Traffic Operations Center	Planned
ATMS08	Traffic Incident Management System	State EOC	Planned
ATMS08	Traffic Incident Management System	State Police District 1 Dispatch	Planned
ATMS08	Traffic Incident Management System	State Police Vehicles	Planned
ATMS13	Standard Railroad Grade Crossing	City of Santa Fe Traffic Operations Section	Planned
ATMS13	Standard Railroad Grade Crossing	City of Santa Fe Traffic Signals	Planned
ATMS13	Standard Railroad Grade Crossing	Municipal ITS Field Equipment	Planned
ATMS13	Standard Railroad Grade Crossing	Municipal Traffic Operations Center	Planned
ATMS13	Standard Railroad Grade Crossing	NMDOT District 5 TMC	Planned
ATMS13	Standard Railroad Grade Crossing	NMDOT District 5 Traffic Signals	Planned
ATMS13	Standard Railroad Grade Crossing	Rail Operators Wayside Equipment	Planned
ATMS13	Standard Railroad Grade Crossing	Santa Fe County Field Equipment	Planned
ATMS13	Standard Railroad Grade Crossing	Santa Fe County Traffic Operations Center	Planned
ATMS16	Parking Facility Management	City of Santa Fe Parking Garages	Planned
ATMS16	Parking Facility Management	City of Santa Fe Traffic Operations Section	Planned
ATMS16	Parking Facility Management	City of Santa Fe Website	Planned
ATMS16	Parking Facility Management	Financial Institution	Planned
ATMS16	Parking Facility Management	Private Vehicles	Planned
ATMS21	Roadway Closure Management	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
ATMS21	Roadway Closure Management	Municipal Public Safety Dispatch	Planned
ATMS21	Roadway Closure Management	Municipal PWD	Planned
ATMS21	Roadway Closure Management	NMDOT 511 System	Planned
ATMS21	Roadway Closure Management	NMDOT CARS Server	Planned
ATMS21	Roadway Closure Management	NMDOT District 5 Automated Gates	Planned
ATMS21	Roadway Closure Management	NMDOT District 5 CCTV	Planned

Market Package	Market Package Name	Element	Status
ATMS21	Roadway Closure Management	NMDOT District 5 DMS	Planned
ATMS21	Roadway Closure Management	NMDOT District 5 HAR	Planned
ATMS21	Roadway Closure Management	NMDOT District 5 Maintenance Dispatch	Planned
ATMS21	Roadway Closure Management	NMDOT District 5 TMC	Planned
ATMS21	Roadway Closure Management	Other County EOC	Planned
ATMS21	Roadway Closure Management	Other NMDOT District Maintenance Dispatch	Planned
ATMS21	Roadway Closure Management	Private Sector Traveler Information Services	Planned
ATMS21	Roadway Closure Management	Santa Fe City/County EOC	Planned
ATMS21	Roadway Closure Management	Santa Fe Control	Planned
ATMS21	Roadway Closure Management	Santa Fe County Maintenance Dispatch	Planned
ATMS21	Roadway Closure Management	State EOC	Planned
ATMS21	Roadway Closure Management	State Police District 1 Dispatch	Planned
ATMS21	Roadway Closure Management	Volunteer Fire Departments	Planned
CVO04	CV Administrative Processes	Municipal or County Permitting System	Planned
CVO04	CV Administrative Processes	NMDOT Central Permit Office	Planned
CVO04	CV Administrative Processes	Private Fleet Management Systems	Planned
CVO10	HAZMAT Management	Municipal Public Safety Dispatch	Planned
CVO10	HAZMAT Management	Operation Respond	Planned
CVO10	HAZMAT Management	Private Fleet Management Systems	Planned
CVO10	HAZMAT Management	Regional Emergency Communications Center (RECC)	Planned
CVO10	HAZMAT Management	State Police District 1 Dispatch	Planned
EM01	Emergency Call-Taking and Dispatch	Bureau of Indian Affairs Dispatch	Planned
EM01	Emergency Call-Taking and Dispatch	City of Santa Fe Fire/EMS Vehicles	Planned
EM01	Emergency Call-Taking and Dispatch	City of Santa Fe Police Vehicles	Planned
EM01	Emergency Call-Taking and Dispatch	Correctional Facilities Operations	Planned
EM01	Emergency Call-Taking and Dispatch	Department of Game and Fish Vehicles	Planned
EM01	Emergency Call-Taking and Dispatch	Municipal EOC	Planned

Market Package	Market Package Name	Element	Status
EM01	Emergency Call-Taking and Dispatch	Municipal Public Safety Dispatch	Planned
EM01	Emergency Call-Taking and Dispatch	Municipal Public Safety Vehicles	Planned
EM01	Emergency Call-Taking and Dispatch	Other County EOC	Planned
EM01	Emergency Call-Taking and Dispatch	Other County Public Safety Dispatch and PSAP	Planned
EM01	Emergency Call-Taking and Dispatch	Private Tow/Wrecker Dispatch	Planned
EM01	Emergency Call-Taking and Dispatch	Private/Public Ambulance Dispatch	Planned
EM01	Emergency Call-Taking and Dispatch	Private/Public Ambulance Vehicle	Planned
EM01	Emergency Call-Taking and Dispatch	Regional Emergency Communications Center (RECC)	Planned
EM01	Emergency Call-Taking and Dispatch	Regional Emergency Communications Network	Planned
EM01	Emergency Call-Taking and Dispatch	Santa Fe City/County EOC	Planned
EM01	Emergency Call-Taking and Dispatch	Santa Fe Control	Planned
EM01	Emergency Call-Taking and Dispatch	State EOC	Planned
EM01	Emergency Call-Taking and Dispatch	State Police District 1 Dispatch	Planned
EM01	Emergency Call-Taking and Dispatch	State Police Vehicles	Planned
EM01	Emergency Call-Taking and Dispatch	Tribal Emergency Dispatch	Planned
EM01	Emergency Call-Taking and Dispatch	Volunteer Fire Departments	Planned
EM02	Emergency Routing	City of Santa Fe Fire/EMS Vehicles	Existing
EM02	Emergency Routing	City of Santa Fe Traffic Operations Section	Existing
EM02	Emergency Routing	City of Santa Fe Traffic Signals	Existing
EM02	Emergency Routing	Municipal ITS Field Equipment	Existing
EM02	Emergency Routing	Municipal Public Safety Dispatch	Existing
EM02	Emergency Routing	Municipal Public Safety Vehicles	Existing
EM02	Emergency Routing	Municipal Traffic Operations Center	Existing
EM02	Emergency Routing	NMDOT District 5 TMC	Existing
EM02	Emergency Routing	NMDOT District 5 Traffic Signals	Existing
EM02	Emergency Routing	Private/Public Ambulance Dispatch	Existing
EM02	Emergency Routing	Private/Public Ambulance Vehicle	Existing
EM02	Emergency Routing	Regional Emergency Communications Center (RECC)	Existing
EM02	Emergency Routing	Regional Medical Centers	Existing

Market Package	Market Package Name	Element	Status
EM02	Emergency Routing	State Police District 1 Dispatch	Existing
EM02	Emergency Routing	State Police Vehicles	Existing
EM04	Roadway Service Patrols	NMDOT District 5 Roadway Service Patrols	Planned
EM04	Roadway Service Patrols	NMDOT District 5 TMC	Planned
EM05	Transportation Infrastructure Protection	City of Santa Fe Traffic Operations Section	Planned
EM05	Transportation Infrastructure Protection	ITA System	Planned
EM05	Transportation Infrastructure Protection	Municipal Traffic Operations Center	Planned
EM05	Transportation Infrastructure Protection	NMDOT District 5 Maintenance Dispatch	Planned
EM05	Transportation Infrastructure Protection	NMDOT District 5 Security Equipment	Planned
EM05	Transportation Infrastructure Protection	NMDOT District 5 TMC	Planned
EM05	Transportation Infrastructure Protection	Other County Public Safety Dispatch and PSAP	Planned
EM05	Transportation Infrastructure Protection	Other NMDOT District TMCs	Planned
EM05	Transportation Infrastructure Protection	Santa Fe County Traffic Operations Center	Planned
EM05	Transportation Infrastructure Protection	State Office of Emergency Management	Planned
EM05	Transportation Infrastructure Protection	State Police District 1 Dispatch	Planned
EM06	Wide-Area Alert	ITA System	Planned
EM06	Wide-Area Alert	Municipal EOC	Planned
EM06	Wide-Area Alert	NMDOT District 5 TMC	Planned
EM06	Wide-Area Alert	Regional Emergency Communications Center (RECC)	Planned
EM06	Wide-Area Alert	Santa Fe City/County EOC	Planned
EM06	Wide-Area Alert	Santa Fe Control	Planned
EM06	Wide-Area Alert	State Police District 1 Administration	Planned
EM06	Wide-Area Alert	State Police District 1 Dispatch	Planned
EM06	Wide-Area Alert	Tribal Emergency Dispatch	Planned
EM06	Wide-Area Alert	Volunteer Fire Departments	Planned
EM08	Disaster Response and Recovery	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
EM08	Disaster Response and Recovery	City of Santa Fe Traffic Operations Section	Planned
EM08	Disaster Response and Recovery	Municipal EOC	Planned
EM08	Disaster Response and Recovery	Municipal Public Safety Dispatch	Planned

Market Package	Market Package Name	Element	Status
EM08	Disaster Response and Recovery	Municipal PWD	Planned
EM08	Disaster Response and Recovery	NMDOT District 5 Maintenance Dispatch	Planned
EM08	Disaster Response and Recovery	NMDOT District 5 TMC	Planned
EM08	Disaster Response and Recovery	Other County EOC	Planned
EM08	Disaster Response and Recovery	Other County Public Safety Dispatch and PSAP	Planned
EM08	Disaster Response and Recovery	Regional Emergency Communications Center (RECC)	Planned
EM08	Disaster Response and Recovery	Santa Fe City/County EOC	Planned
EM08	Disaster Response and Recovery	Santa Fe County Maintenance Dispatch	Planned
EM08	Disaster Response and Recovery	Santa Fe County Traffic Operations Center	Planned
EM08	Disaster Response and Recovery	State EOC	Planned
EM08	Disaster Response and Recovery	State Police District 1 Dispatch	Planned
EM09	Evacuation and Reentry Management	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
EM09	Evacuation and Reentry Management	City of Santa Fe Traffic Operations Section	Planned
EM09	Evacuation and Reentry Management	Independent School District Dispatch	Planned
EM09	Evacuation and Reentry Management	Municipal EOC	Planned
EM09	Evacuation and Reentry Management	Municipal Public Safety Dispatch	Planned
EM09	Evacuation and Reentry Management	Municipal PWD	Planned
EM09	Evacuation and Reentry Management	Municipal Traffic Operations Center	Planned
EM09	Evacuation and Reentry Management	NMDOT District 5 Maintenance Dispatch	Planned
EM09	Evacuation and Reentry Management	NMDOT District 5 TMC	Planned
EM09	Evacuation and Reentry Management	North Central Regional Transit Dispatch	Planned
EM09	Evacuation and Reentry Management	Other County Public Safety Dispatch and PSAP	Planned
EM09	Evacuation and Reentry Management	Regional Emergency Communications Center (RECC)	Planned
EM09	Evacuation and Reentry Management	Santa Fe City/County EOC	Planned

Market Package	Market Package Name	Element	Status
EM09	Evacuation and Reentry Management	Santa Fe County Maintenance Dispatch	Planned
EM09	Evacuation and Reentry Management	Santa Fe Trails Fixed Route Dispatch	Planned
EM09	Evacuation and Reentry Management	State EOC	Planned
EM09	Evacuation and Reentry Management	State Police District 1 Dispatch	Planned
EM10	Disaster Traveler Information	City of Santa Fe Public Information Office	Planned
EM10	Disaster Traveler Information	City of Santa Fe Public Works Public Information Office	Planned
EM10	Disaster Traveler Information	Independent School District Dispatch	Planned
EM10	Disaster Traveler Information	Local Print and Broadcast Media	Planned
EM10	Disaster Traveler Information	Municipal EOC	Planned
EM10	Disaster Traveler Information	Municipal Public Information Office	Planned
EM10	Disaster Traveler Information	Municipal Public Safety Dispatch	Planned
EM10	Disaster Traveler Information	NMDOT District 5 Public Information Office	Planned
EM10	Disaster Traveler Information	North Central Regional Transit Dispatch	Planned
EM10	Disaster Traveler Information	Northern New Mexico Park and Ride Dispatch	Planned
EM10	Disaster Traveler Information	Private Travelers Personal Computing Devices	Planned
EM10	Disaster Traveler Information	Regional Emergency Communications Center (RECC)	Planned
EM10	Disaster Traveler Information	Santa Fe City/County EOC	Planned
EM10	Disaster Traveler Information	Santa Fe County Public Information Office	Planned
EM10	Disaster Traveler Information	State EOC	Planned
MC01	Maintenance and Construction Vehicle and Equipment Tracking	City of Santa Fe Maintenance and Construction Vehicles	Planned
MC01	Maintenance and Construction Vehicle and Equipment Tracking	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC01	Maintenance and Construction Vehicle and Equipment Tracking	NMDOT District 5 Maintenance and Construction Vehicles	Planned
MC01	Maintenance and Construction Vehicle and Equipment Tracking	NMDOT District 5 Maintenance Dispatch	Planned
MC01	Maintenance and Construction Vehicle and Equipment Tracking	Santa Fe County Maintenance Dispatch	Planned
MC01	Maintenance and Construction Vehicle and Equipment Tracking	Santa Fe County Maintenance Vehicles	Planned

Market Package	Market Package Name	Element	Status
MC02	Maintenance and Construction Vehicle Maintenance	City of Santa Fe Equipment Repair Facility	Planned
MC02	Maintenance and Construction Vehicle Maintenance	City of Santa Fe Maintenance and Construction Vehicles	Planned
MC02	Maintenance and Construction Vehicle Maintenance	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC02	Maintenance and Construction Vehicle Maintenance	County Equipment Repair Facility	Planned
MC02	Maintenance and Construction Vehicle Maintenance	Municipal Equipment Repair Facility	Planned
MC02	Maintenance and Construction Vehicle Maintenance	Municipal PWD	Planned
MC02	Maintenance and Construction Vehicle Maintenance	Municipal PWD Vehicles	Planned
MC02	Maintenance and Construction Vehicle Maintenance	NMDOT District 5 Maintenance and Construction Vehicles	Planned
MC02	Maintenance and Construction Vehicle Maintenance	NMDOT District 5 Maintenance Dispatch	Planned
MC02	Maintenance and Construction Vehicle Maintenance	NMDOT District 5 Shop	Planned
MC02	Maintenance and Construction Vehicle Maintenance	Santa Fe County Maintenance Dispatch	Planned
MC02	Maintenance and Construction Vehicle Maintenance	Santa Fe County Maintenance Vehicles	Planned
MC03	Road Weather Data Collection	City of Santa Fe RWIS systems	Planned
MC03	Road Weather Data Collection	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC03	Road Weather Data Collection	City of Santa Fe Traffic Operations Section	Planned
MC03	Road Weather Data Collection	National Weather Service	Planned
MC03	Road Weather Data Collection	NMDOT CARS Server	Planned
MC03	Road Weather Data Collection	NMDOT District 5 RWIS	Planned
MC03	Road Weather Data Collection	NMDOT District 5 TMC	Planned
MC03	Road Weather Data Collection	Private Weather Service	Planned
MC03	Road Weather Data Collection	Santa Fe County Field Equipment	Planned
MC03	Road Weather Data Collection	Santa Fe County Traffic Operations Center	Planned
MC04	Weather Information Processing and Distribution	City of Santa Fe Senior Services Demand Response Dispatch	Planned
MC04	Weather Information Processing and Distribution	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC04	Weather Information Processing and Distribution	National Weather Service	Planned
MC04	Weather Information Processing and Distribution	NMDOT CARS Server	Planned
MC04	Weather Information Processing and Distribution	NMDOT District 5 Maintenance Dispatch	Planned

Market Package	Market Package Name	Element	Status
MC04	Weather Information Processing and Distribution	NMDOT District 5 TMC	Planned
MC04	Weather Information Processing and Distribution	North Central Regional Transit Dispatch	Planned
MC04	Weather Information Processing and Distribution	Northern New Mexico Park and Ride Dispatch	Planned
MC04	Weather Information Processing and Distribution	Other NMDOT District Maintenance Dispatch	Planned
MC04	Weather Information Processing and Distribution	Private Weather Service	Planned
MC04	Weather Information Processing and Distribution	Regional Emergency Communications Center (RECC)	Planned
MC04	Weather Information Processing and Distribution	Santa Fe Control	Planned
MC04	Weather Information Processing and Distribution	Santa Fe County Maintenance Dispatch	Planned
MC04	Weather Information Processing and Distribution	Santa Fe Trails Fixed Route Dispatch	Planned
MC04	Weather Information Processing and Distribution	Santa Fe Trails Paratransit Dispatch	Planned
MC04	Weather Information Processing and Distribution	State Police District 1 Dispatch	Planned
MC04	Weather Information Processing and Distribution	Statewide Advanced Traveler Information System Website	Planned
MC05	Roadway Automated Treatment	NMDOT District 5 Anti-icing Equipment	Planned
MC05	Roadway Automated Treatment	NMDOT District 5 Maintenance Dispatch	Planned
MC06	Winter Maintenance	City of Santa Fe Maintenance and Construction Vehicles	Planned
MC06	Winter Maintenance	City of Santa Fe Storage Yard	Planned
MC06	Winter Maintenance	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC06	Winter Maintenance	City of Santa Fe Traffic Operations Section	Planned
MC06	Winter Maintenance	National Weather Service	Planned
MC06	Winter Maintenance	NMDOT District 5 Maintenance and Construction Vehicles	Planned
MC06	Winter Maintenance	NMDOT District 5 Maintenance Dispatch	Planned
MC06	Winter Maintenance	NMDOT District 5 TMC	Planned
MC06	Winter Maintenance	NMDOT Patrol Yard	Planned
MC06	Winter Maintenance	Other NMDOT District Maintenance Dispatch	Planned
MC06	Winter Maintenance	Private Weather Service	Planned
MC06	Winter Maintenance	Santa Fe County Maintenance Dispatch	Planned
MC06	Winter Maintenance	Santa Fe County Maintenance Vehicles	Planned

Market Package	Market Package Name	Element	Status
MC06	Winter Maintenance	Santa Fe County Storage Yard	Planned
MC06	Winter Maintenance	Santa Fe County Traffic Operations Center	Planned
MC07	Roadway Maintenance and Construction	City of Santa Fe Maintenance and Construction Vehicles	Planned
MC07	Roadway Maintenance and Construction	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC07	Roadway Maintenance and Construction	City of Santa Fe Traffic Operations Section	Planned
MC07	Roadway Maintenance and Construction	National Weather Service	Planned
MC07	Roadway Maintenance and Construction	NMDOT District 5 Maintenance and Construction Vehicles	Planned
MC07	Roadway Maintenance and Construction	NMDOT District 5 Maintenance Dispatch	Planned
MC07	Roadway Maintenance and Construction	NMDOT District 5 Pavement Management System	Planned
MC07	Roadway Maintenance and Construction	NMDOT District 5 TMC	Planned
MC07	Roadway Maintenance and Construction	NMDOT Highway Maintenance Management System	Planned
MC07	Roadway Maintenance and Construction	Private Weather Service	Planned
MC07	Roadway Maintenance and Construction	Santa Fe County Maintenance Dispatch	Planned
MC07	Roadway Maintenance and Construction	Santa Fe County Maintenance Vehicles	Planned
MC07	Roadway Maintenance and Construction	Santa Fe County Traffic Operations Center	Planned
MC08	Work Zone Management	City of Santa Fe Maintenance and Construction Vehicles	Planned
MC08	Work Zone Management	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC08	Work Zone Management	City of Santa Fe Traffic Operations Section	Planned
MC08	Work Zone Management	City of Santa Fe Work Zone Equipment	Planned
MC08	Work Zone Management	Municipal ITS Field Equipment	Planned
MC08	Work Zone Management	Municipal PWD	Planned
MC08	Work Zone Management	Municipal PWD Vehicles	Planned
MC08	Work Zone Management	Municipal Traffic Operations Center	Planned
MC08	Work Zone Management	NMDOT District 5 Maintenance and Construction Vehicles	Planned
MC08	Work Zone Management	NMDOT District 5 Maintenance Dispatch	Planned
MC08	Work Zone Management	NMDOT District 5 TMC	Planned
MC08	Work Zone Management	NMDOT District 5 Work Zone Equipment	Planned

Market Package	Market Package Name	Element	Status
MC08	Work Zone Management	Other NMDOT District Maintenance Dispatch	Planned
MC08	Work Zone Management	Santa Fe County Field Equipment	Planned
MC08	Work Zone Management	Santa Fe County Maintenance Dispatch	Planned
MC08	Work Zone Management	Santa Fe County Maintenance Vehicles	Planned
MC08	Work Zone Management	Santa Fe County Traffic Operations Center	Planned
MC09	Work Zone Safety Monitoring	NMDOT District 5 Maintenance and Construction Vehicles	Planned
MC09	Work Zone Safety Monitoring	NMDOT District 5 Maintenance Dispatch	Planned
MC09	Work Zone Safety Monitoring	NMDOT District 5 Work Zone Equipment	Planned
MC10	Maintenance and Construction Activity Coordination	City of Santa Fe Public Works Public Information Office	Planned
MC10	Maintenance and Construction Activity Coordination	City of Santa Fe Streets, Drainage, and Fleet Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	City of Santa Fe Traffic Operations Section	Planned
MC10	Maintenance and Construction Activity Coordination	Independent School District Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Municipal EOC	Planned
MC10	Maintenance and Construction Activity Coordination	Municipal Public Safety Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Municipal PWD	Planned
MC10	Maintenance and Construction Activity Coordination	Municipal Traffic Operations Center	Planned
MC10	Maintenance and Construction Activity Coordination	Municipal Website	Planned
MC10	Maintenance and Construction Activity Coordination	NMDOT 511 System	Planned
MC10	Maintenance and Construction Activity Coordination	NMDOT CARS Server	Planned
MC10	Maintenance and Construction Activity Coordination	NMDOT District 5 Maintenance Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	NMDOT District 5 Public Information Office	Planned
MC10	Maintenance and Construction Activity Coordination	North Central Regional Transit Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Northern New Mexico Park and Ride Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Other County Public Safety Dispatch and PSAP	Planned
MC10	Maintenance and Construction Activity Coordination	Other NMDOT District Maintenance Dispatch	Planned

Market Package	Market Package Name	Element	Status
MC10	Maintenance and Construction Activity Coordination	Private Tow/Wrecker Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Santa Fe City/County EOC	Planned
MC10	Maintenance and Construction Activity Coordination	Santa Fe County Maintenance Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Santa Fe Trails Fixed Route Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Santa Fe Trails Paratransit Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	State Police District 1 Dispatch	Planned
MC10	Maintenance and Construction Activity Coordination	Statewide Advanced Traveler Information System Website	Planned
MC10	Maintenance and Construction Activity Coordination	Volunteer Fire Departments	Planned

6. Interfaces and Information Exchanges

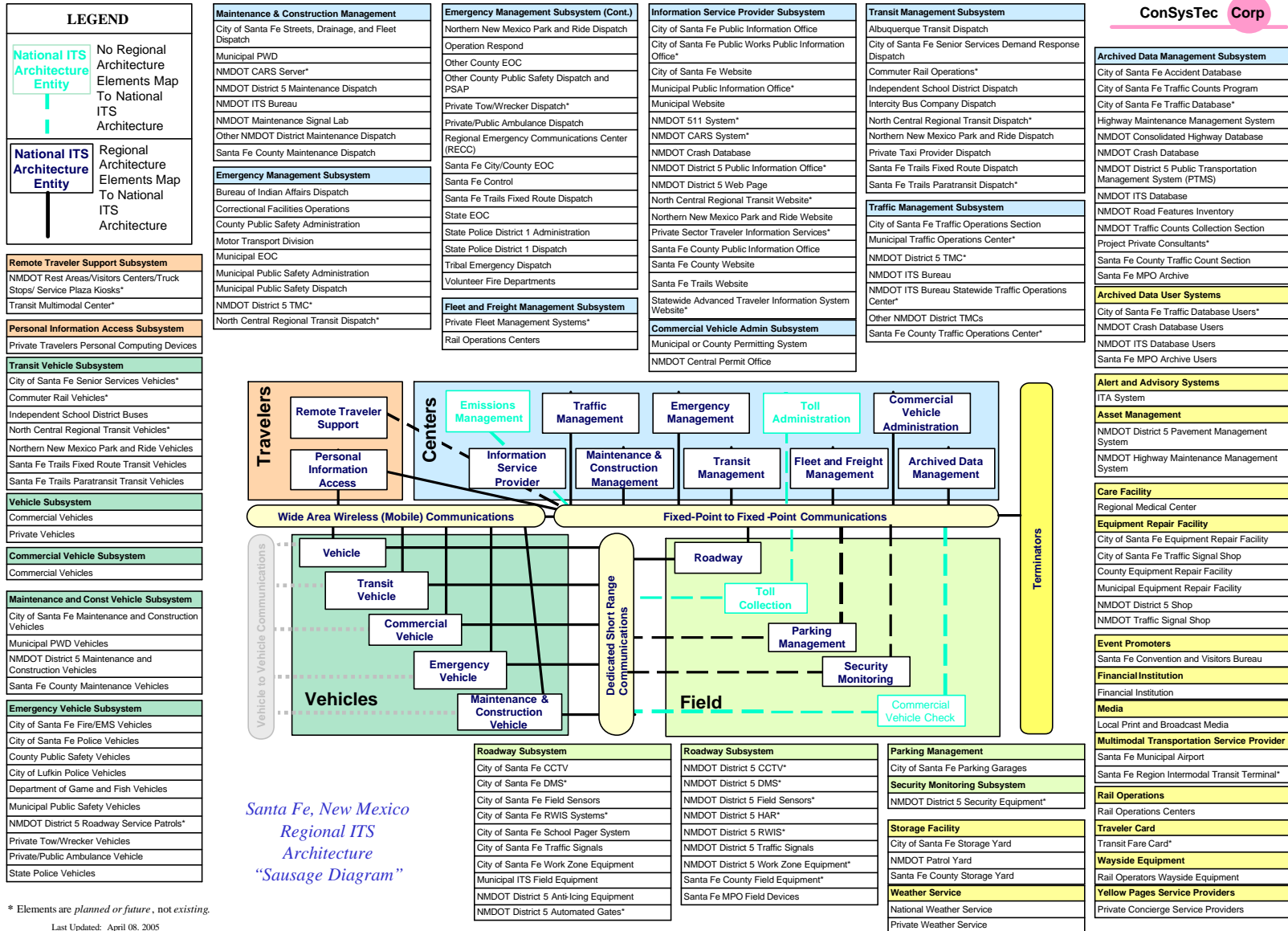
6.1. Top Level Regional System Interconnect Diagram

A system interconnect diagram, or sausage diagram, shows the systems and primary types of interconnections in the region. The National ITS Architecture interconnect diagram has been customized for Santa Fe based on the information gathered from the stakeholders and system inventory. Figure 1 on the following page summarizes the existing and planned ITS elements for the regions in the context of a physical interconnect. Elements (and their primary associated National ITS Architecture entity) are called out in the boxes surrounding the main interconnect diagram. In the center of the figure the rectangles represent the subsystems of the National ITS Architecture. The Santa Fe Regional ITS architecture has elements that map to 14 of the 21 subsystems of the National ITS Architecture. In addition, the regional ITS architecture has elements that map to 16 terminators of the National ITS Architecture. These terminators are shown on the right side of the diagram and include entities such as Care Facilities (which maps to Regional Hospitals).

The diagram also identifies the three basic types of communications used to interconnect the elements of the architecture. These communications types are defined as:

- **Wireline Communications:** A communications link serving stationary sources. It may be implemented using a variety of public or private communications networks that may physically include wireless (e.g., microwave) as well as wireline infrastructure. Both dedicated and shared communications resources may be used.
- **Wide Area Wireless Communications:** A communications link that provides communications via a wireless device between a user and an infrastructure-based system. Both broadcast (one-way) and interactive (two-way) communications services are grouped into wide-area wireless communications. These links support a range of services including real-time traveler information and various forms of fleet communications.
- **Dedicated Short Range Communications:** A wireless communications channel used for close-proximity communications between vehicles and the immediate infrastructure. It supports location-specific communications for ITS capabilities such as toll collection, transit vehicle management, driver information, and automated commercial vehicle operations.

Figure 1: Santa Fe Regional System Interconnect Diagram



6.2. Customized Market Packages

The market packages of the National ITS Architecture were customized to reflect the unique systems and connections of the state. Each market package is shown graphically, with the market package name, the entity from the National ITS Architecture, and the specific Santa Fe elements associated with the entity. In addition the market packages show the information flows that move between elements.

Figure 2 is an example of an ATMS market package for Surface Street Control that has been customized for the Santa Fe Region. This market package shows three subsystems, Maintenance and Construction Management, Traffic Management and Roadway, and the associated elements. Information flows (called “architecture flows” in the National ITS Architecture) between the subsystems indicate what information is being shared. The market packages that were customized for the Santa Fe can be found on the Santa Fe web page by selecting the “Market Packages” button. Market packages are grouped by stakeholder and by functional areas (e.g. Traffic Management, Maintenance and Construction, and Public Transportation) and each set of customized market packages can be viewed by clicking on the Market Package Diagram icon under each area heading. It is important to note that while the market package table on the web page shows all of the market packages from the National ITS Architecture, only those selected for the region are included in the diagrams. The selected market packages on the web page also are highlighted in the web page table with bold print and are indicated as existing or planned.

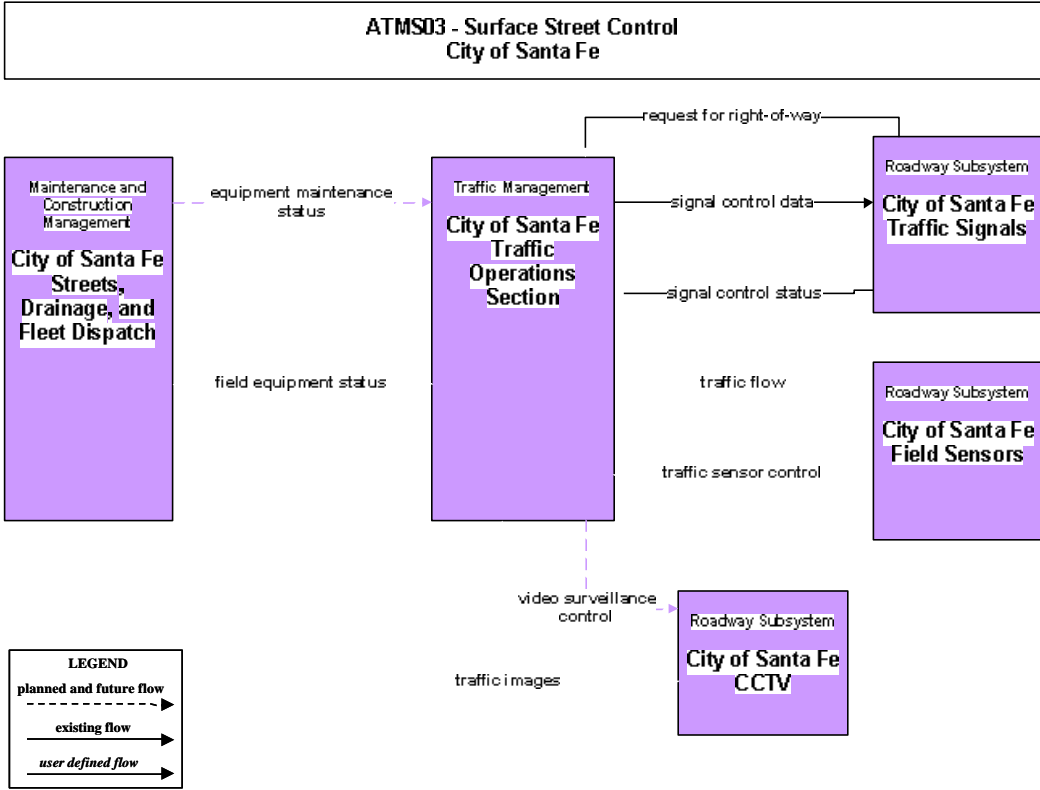


Figure 2: Example Customized Market Package

6.3. Regional Architecture Information Flows

While it is important to identify the various systems and stakeholders as part of a regional ITS architecture, a primary purpose of the architecture is to identify the *connectivity* between transportation systems in the region. The interconnect diagram shown previously in Figure 1 showed the high level relationships of the elements in the region. The customized market packages represent services that can be deployed as an integrated capability, and the market package diagrams show the information flows between the subsystems and terminators that are most important to the operation of the market packages. How these systems interface with each other is an integral part of the overall architecture.

There are 151 different elements identified as part of the Santa Fe Regional ITS Architecture. These elements include municipal and state traffic operations centers, transit centers, transit vehicles, public safety dispatch centers, media outlets, and others—essentially all of the existing and planned physical components that contribute to the region’s intelligent transportation system. Interfaces have been defined for each element in the architecture. For example, the City of Santa Fe Traffic Operations Section has planned interfaces with 29 other elements in the region ranging from field equipment to transit centers. Some of the interfaces are far less complex. For example the City of Santa Fe Equipment Repair Facility has interfaces with only two other elements in the architecture.

Elements and their interfaces are accessible via the Santa Fe Regional ITS Architecture web page by clicking on the “Inventory by Stakeholder” button. Selecting an element from the right hand column takes you to an element detail page that shows each interface to the element in the architecture.

Architecture flows between the elements define specific information that is exchanged by the elements. Each architecture flow has a direction, name and definition. Most of the architecture flows match ones from the National ITS Architecture (the mapping of elements to National ITS Architecture entities allowed the developers to match the architecture flows to the appropriate interfaces). In some cases new user defined flows have been created for interfaces or connectivities that are not expressed in the National ITS Architecture (Note these flows have a “_ud” at the end of the name to indicate they are user defined.). These architecture flows define the interface requirements between the various elements in the regional architecture.

An example of the architecture flows between two elements is shown in Figure 3. In this interface the flows that go between the City of Santa Fe Traffic Section and the RECC are shown. Although both of these elements exist, they do not currently have an electronic connection, so all the flows on this interface are shown as planned.

Each of the individual element interfaces can be accessed on the Santa Fe Regional ITS Architecture web page by clicking on the “Inventory by Stakeholder” or “Inventory by Entity” buttons. Selecting any of the elements from the column on the right will display the set of interfaces to that element similar to the diagram shown in Figure 3. Selecting any of the architecture flows will provide a definition, and any standards associated with that architecture flow are noted.

Figure 3: Example of Architecture Flows Between Elements.

Santa Fe Regional ITS Architecture

City of Santa Fe Streets, Drainage, and Fleet Dispatch and City of Santa Fe Traffic Operations Section		
Source	Architecture Flows	Destination
City of Santa Fe Streets, Drainage, and Fleet Dispatch	roadway maintenance status (P) road weather information (P) current asset restrictions (P) work zone information (P) maint and constr resource response (P) equipment maintenance status (P) maint and constr work plans (P)	City of Santa Fe Traffic Operations Section
City of Santa Fe Traffic Operations Section	work plan feedback (P) road network conditions (P) field equipment status (P) maint and constr resource request (P)	City of Santa Fe Streets, Drainage, and Fleet Dispatch

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7. Functional Requirements

Functional requirements are a description of the functions or activities that are currently performed by the ITS elements or that are planned to be performed in the future. For the Santa Fe Regional ITS Architecture, these functions have been developed by using the functional assignments underlying the National ITS Architecture and the mapping from transportation services to elements shown in Table 6: Regional Market Packages.

In the National ITS Architecture a market package is defined by subsystems, equipment packages, and architecture flows, all of which operate together to perform a particular transportation service. Equipment Packages represent pieces of a subsystem that perform a single function. (Note there are no equipment packages defined for the Terminators of the National ITS Architecture, since they represent systems on the boundary of the architecture and do not have functional descriptions within the architecture.). For example the Surface Street Control market package is composed of the two Traffic Management Subsystem equipment packages TMC Signal Control and Traffic Maintenance and the Roadway Subsystem with its two equipment packages Roadway Signal Control and Roadway Equipment Coordination. The definitions of these four equipment packages, copied from version 5.0 of the National ITS Architecture are:

- TMC Signal Control - This equipment package provides the capability for traffic managers to monitor and manage the traffic flow at signalized intersections. This capability includes analyzing and reducing the collected data from traffic surveillance equipment and developing and implementing control plans for signalized intersections. Control plans may be developed and implemented that coordinate signals at many intersections under the domain of a single traffic management subsystem. In advanced implementations, this package collects route planning information and integrates and uses this information in predicting future traffic conditions and optimizing the traffic control strategy for these conditions. These capabilities are achieved through real-time communication of logged routes from an Information Service Provider. The planned control strategies can be passed back to the Information Service Provider so that the intended strategies can be reflected in future route planning.
- Traffic Maintenance - This equipment package provides monitoring and remote diagnostics of field equipment to detect field equipment failures, issues problem reports, and tracks the repair or replacement of the failed equipment.
- Roadway Signal Controls - This equipment package provides the capabilities to control traffic signals at major intersections and on main highways for urban areas. This equipment package is generally constrained to a single jurisdiction.
- Roadway Equipment Coordination - This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).

The approach used in the Santa Fe Regional ITS Architecture is to begin with the mapping of equipment packages to elements (based on the market package mapping in Table 6) as an initial definition of the functions being performed by each element. Then this mapping is tailored in the Turbo Architecture tool to provide a more accurate picture of the functions performed by the element. The Turbo Architecture tool also contains a detailed mapping of functional requirements (written as “shall” statements) to each equipment package. This mapping to functional requirements has been customized for each element, selecting only those requirements that are appropriate given the definition and connectivity of the element. In some cases the functional requirement has been customized to better reflect the functions of the element. This detailed mapping of functional requirements to elements is contained in the Turbo Architecture database and is provided in tabular form in Appendix B (which due to its length is contained in a separate electronic file).

The mapping of elements to the basic functions (equipment packages) is provided on the hyperlinked web site version of the architecture. The detail page for each element (which is accessed through the Inventory by Stakeholder or Inventory by Entity tabs) has a list of the equipment packages assigned to the element.

For example, the Municipal Traffic Operations Center element has the following equipment packages assigned to it:

- Collect Traffic Surveillance
- HRI Traffic Management
- TMC Incident Detection
- TMC Incident Dispatch Coordination/Communication
- TMC Signal Control
- TMC Evacuation Support
- TMC Workzone Traffic Management
- Traffic Maintenance

This represents a first level of detail that can be obtained in the hyperlinked web site in connection with functionality. An additional level of detailed functional requirements is contained in a separate electronic file as Appendix B.

8. Standards

8.1. Discussion of Key Standards For the Region

ITS standards establish a common way in which devices connect and communicate with one another. This allows transportation agencies to implement systems that cost-effectively exchange pertinent data and accommodate equipment replacement, system upgrades, and system expansion. Standards benefit the traveling public by providing products that will function consistently and reliably throughout the region. ITS standards contribute to a safer and more efficient transportation system, facilitate regional interoperability, and promote an innovative and competitive market for transportation products and services.

- Use of ITS standards is very important to project development in the Santa Fe region. Table 7 identifies the ITS standards that are potentially applicable to the regions. This table was created by taking the standards information available in the Turbo Architecture database (which identifies standards applicable to each architecture flow) and taking the total set of standards that result from all of the selected flows. The table provides the status of the standards effort as of December 2003 (the most recent update of the information).

The following section explains how to identify the specific applicable standards for an individual interface. The table lists the name of the standard in the first column and the Standards Development Organization (SDO) and number of the standard in the second column. Regular updates of SDO activities will help ensure that the latest standards are utilized. The SDOs listed above include:

- American Association of State Highway and Transportation Officials (AASHTO)
- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- Institute of Electrical and Electronics Engineers (IEEE)
- Institute of Transportation Engineers (ITE)
- National Equipment Manufacturers Association (NEMA)
- Society of Automotive Engineers (SAE)

Table 7: Applicable ITS Standards

SDO	Standard Title	Standard Doc ID
AASHTO/ITE/NEMA	Global Object Definitions	NTCIP 1201
AASHTO/ITE/NEMA	Object Definitions for Actuated Traffic Signal Controller Units	NTCIP 1202
AASHTO/ITE/NEMA	Object Definitions for Dynamic Message Signs	NTCIP 1203
AASHTO/ITE/NEMA	Object Definitions for Environmental Sensor Stations & Roadside Weather Information System	NTCIP 1204
AASHTO/ITE/NEMA	Data Dictionary for Closed Circuit Television (CCTV)	NTCIP 1205
AASHTO/ITE/NEMA	Data Collection & Monitoring Devices	NTCIP 1206
AASHTO/ITE/NEMA	Ramp Meter Controller Objects	NTCIP 1207
AASHTO/ITE/NEMA	Object Definitions for Video Switches	NTCIP 1208

SDO	Standard Title	Standard Doc ID
AASHTO/ITE/NEMA	Transportation System Sensor Objects	NTCIP 1209
AASHTO/ITE/NEMA	Objects for Signal Systems Master	NTCIP 1210
AASHTO/ITE/NEMA	Objects for Signal Control Priority	NTCIP 1211
AASHTO/ITE/NEMA	Message Set for Weather Reports (Future Standard)	NTCIP 1301
AASHTO/ITE/NEMA	Message Set for Weather Reports	NTCIP 1301
AASHTO/ITE/NEMA	TCIP - Common Public Transportation (CPT) Business Area Standard	NTCIP 1401
AASHTO/ITE/NEMA	TCIP - Incident Management (IM) Business Area Standard	NTCIP 1402
AASHTO/ITE/NEMA	TCIP - Passenger Information (PI) Business Area Standard	NTCIP 1403
AASHTO/ITE/NEMA	TCIP - Scheduling/Runcutting (SCH) Business Area Standard	NTCIP 1404
AASHTO/ITE/NEMA	TCIP - Spatial Representation (SP) Business Area Standard	NTCIP 1405
AASHTO/ITE/NEMA	TCIP - Onboard (OB) Business Area Standard	NTCIP 1406
AASHTO/ITE/NEMA	TCIP - Control Center (CC) Business Area Standard	NTCIP 1407
AASHTO/ITE/NEMA	TCIP - Fare Collection (FC) Business Area Standard	NTCIP 1408
AASHTO/ITE/NEMA	NTCIP Center-to-Center Standards Group	See Footnotes
AASHTO/ITE/NEMA	NTCIP Center-to-Field Standards Group	See Footnotes
ASTM	Standard Specification for 5.9 GHz Data Link Layer	ASTM 5 GHz Data Link
ASTM	Standard Specification for 5.9 GHz Physical Layer	ASTM 5 GHz Phys
ASTM	ADMS Data Dictionary Specifications	ASTM DD 17.54.00.2
ASTM	Standard Specification for Dedicated Short Range Communication (DSRC) Physical Layer using Microwave in the 902-928 MHz Band	ASTM E2158-01
ASTM	Standard Provisional Specification for Dedicated Short Range Communication (DSRC) Data Link Layer	ASTM PS 105-99
ASTM	Specification for Dedicated Short Range Communication (DSRC) Data Link Layer: Medium Access and Logical Link Control	ASTM PS 105-99
ASTM	Specification for Dedicated Short Range Communication (DSRC) Physical Layer using Microwave in the 902-928 MHz	ASTM PS 111-98
EIA/CEA	Data Radio Channel (DARC) System	CEA/EIA-794
EIA/CEA	Subcarrier Traffic Information Channel (STIC) System	CEA/EIA-795
IEEE	Standard for Traffic Incident Management Message Sets for Use by EMCs	IEEE 1512.1-2003
IEEE	Standard for Hazardous Material IMMS for use by EMCs	IEEE 1512.3-2002

SDO	Standard Title	Standard Doc ID
IEEE	Standard for Common Incident Management Message Sets (IMMS) for use by EMCs	IEEE 1512-2000
IEEE	Standard for Interface Between the Rail Subsystem and the Highway Subsystem at a Highway Rail Intersection	IEEE 1570-2002
IEEE	Standard for Public Safety IMMS for use by EMCs	IEEE P1512.2
IEEE	Standard for Emergency Management Data Dictionary	IEEE P1512.a
IEEE	Security/Privacy of Vehicle/RS Communications including Smart Card Communications	IEEE P1556
IEEE	Standard for Message Sets for Vehicle/Roadside Communications	IEEE Std 1455-1999
ITE	Standard for Functional Level Traffic Management Data Dictionary (TMDD)	ITE TM 1.03
ITE	Message Sets for External TMC Communication (MS/ETMCC)	ITE TM 2.01
ITE	TCIP - Traffic Management (TM) Business Area Standard	ITE TS 3.TM
SAE	ISP-Vehicle Location Referencing Standard	SAE J1746
SAE	On-Board Land Vehicle Mayday Reporting Interface	SAE J2313
SAE	Data Dictionary for Advanced Traveler Information System (ATIS)	SAE J2353
SAE	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354
SAE	Standard for ATIS Message Sets Delivered Over Bandwidth Restricted Media	SAE J2369
SAE	Rules for Standardizing Street Names and Route IDs	SAE J2529
SAE	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540

NTCIP C2F: NTCIP Center-to-Field Standards Group

The table above specifies the NTCIP Center-to-Field Standards Group, which addresses the communications protocols between a center and the ITS field devices it manages. The family includes the communications profiles that cover the interfaces between a traffic management center and dynamic message signs, ramp meters, environmental sensors, or CCTVs under its control. These protocols are common across all Center-to-Field interfaces in the National ITS Architecture, and rather than repeat the entire list for each architecture flow, we have created this summary entry – the NTCIP C2F Group of communications standards.

The “vocabulary” (objects) is specific to the actual architecture flow in the National ITS Architecture and is therefore mapped to the corresponding Data Object standard. (In the example above, the “Object Definitions for Dynamic Message Signs” standard would be mapped to the

specific control and data flows between the Traffic Management Subsystem and the Roadway DMS equipment).

In order to satisfy a wide spectrum of system and regional communications requirements, Center-to-Field ITS deployments should each implement the combinations of the following NTCIP C2F communications protocols that best meet their needs.

This Group includes the following Standards Activities:

NTCIP 1101: Simple Transportation Management Framework (STMF)
NTCIP 1102: Base Standard: Octet Encoding Rules (OER)
NTCIP 1103: Simple Transportation Management Protocol (STMP)
NTCIP 2101: Point to Multi-Point Protocol Using RS-232 Subnetwork Profile
NTCIP 2102: Subnet Profile for PMPP Over FSK modems
NTCIP 2103: Subnet Profile for Point-to-Point Protocol using RS 232
NTCIP 2104: Subnet Profile for Ethernet
NTCIP 2201: Transportation Transport Profile
NTCIP 2202: Internet (TCP/IP and UDP/IP) Transport Profile
NTCIP 2301: Application Profile for Simple Transportation Management Framework (STMF)
NTCIP 2302: Application Profile for Trivial File Transfer Protocol
NTCIP 2303: Application Profile for File Transfer Protocol (FTP)

NTCIP C2C: NTCIP Center-to-Center Standards Group

The table above specifies the NTCIP Center-to-Center (NTCIP C2C) Group of Standards, which address the communications protocols between two centers (e.g. two traffic management centers exchanging information to facilitate regional coordination of traffic signals). Some of the communication protocols covered by this family are CORBA, DATEX-ASN and FTP. These protocols are common across all Center-to-Center interfaces in the National ITS Architecture, and rather than repeat the entire list for each architecture flow, we have created this summary entry – the NTCIP C2C Group of communications standards.

The standards that describe the “vocabulary” (data elements and messages) are mapped to specific architecture flows rather than the entire set of NTCIP C2C interfaces. In the regional traffic coordination example above, the “Traffic Management Data Dictionary” and the “Message Set for External TMC Communications” standards would be mapped to the specific flows between two Traffic Management Subsystems.

In order to satisfy a wide spectrum of system and regional communications requirements, Center-to-Center ITS deployments should each implement the combinations of the following NTCIP C2C communications protocols that best meet their needs.

This Group includes the following Standards Activities:

NTCIP 1102: Base Standard: Octet Encoding Rules (OER)

- NTCIP 1104: CORBA Naming Convention
- NTCIP 1105: CORBA Security Service
- NTCIP 1106: CORBA Near-Real Time Data Service
- NTCIP 2104: Subnet Profile for Ethernet
- NTCIP 2202: Internet (TCP/IP and UDP/IP) Transport Profile
- NTCIP 2303: Application Profile for File Transfer Protocol (FTP)
- NTCIP 2304: Application Profile for Data Exchange ASN.1 (DATEX)
- NTCIP 2305: Application Profile for Common Object Request Broker Architecture (CORBA)
- NTCIP 2501: Information Profile for DATEX
- NTCIP 2502: Information Profile for CORBA

8.2. Reference to the Detailed Standards information on the Web Site

The previous section provides a general discussion of the standards environment in the region. However the architecture does contain a far more detailed standards view, one that maps applicable standards to the individual information flow that goes from one element to another. This detailed information is contained in the hyperlinked web site and can be accessed through the links to the architecture flows shown as part of each interface. Each element description page has a set of links that describe the information flowing to and from the element to other elements of the architecture. Selecting any of these interface links brings the user an interface page. For example, the interface between the City of Santa Fe Traffic Section and the City of Santa Fe DMS (dynamic message signs) is shown in Figure 4. There are two information flows going to the DMS element and one coming back from it. Selecting one of the flows provides information regarding the flow and gives a list of ITS standards that are applicable to the flow. An example, for the roadway information system data flow, is shown in Figure 5.

DRAFT Santa Fe Regional ITS Architecture			
City of Santa Fe Traffic Operations Section and City of Santa Fe DMS			
Menu	Source	Architecture Flows	Destination
Region Home	City of Santa Fe Traffic Operations Section	parking information upd (P)	City of Santa Fe DMS
Stakeholders		roadway information system data (P)	
Inventory by Stakeholder			
Inventory by Entity			
Sausage Diagram	City of Santa Fe DMS	roadway information system status (P)	City of Santa Fe Traffic Operations Section
Market Packages by Functional Area			
Market Packages by Stakeholder			
Market Package Descriptions			
Equipment Package Descriptions			
Architecture Flow Descriptions			
Project Documents			
Send Your Comments			

Figure 4: Example of Interface

Architecture Flow: roadway information system data

Description:			
Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.			
Communications Standards:			
NTCIP C2F	AASHTO-17	Application Profile for File Transfer Protocol (FTP)	NTCIP 2303
NTCIP C2F	AASHTO-18	Application Profile for Trivial File Transfer Protocol	NTCIP 2302
NTCIP C2F	AASHTO-21	Base Standard: Octet Encoding Rules (OER)	NTCIP 1102
NTCIP C2F	AASHTO-28	Subnet Profile for Ethernet	NTCIP 2104
NTCIP C2F	AASHTO-30	Subnet Profile for Point-to-Point Protocol using RS 232	NTCIP 2103
NTCIP C2F	AASHTO-31	Transportation Transport Profile	NTCIP 2201
NTCIP C2F	AASHTO-38	Simple Transportation Management Protocol (STMP)	NTCIP 1103
NTCIP C2F	AASHTO-47	Subnet Profile for PMPP Over FSK modems	NTCIP 2102
NTCIP C2F	NEMA TS3.2	Simple Transportation Management Framework (STMF)	NTCIP 1101
NTCIP C2F	NEMA-TS3.p	Point to Multi-Point Protocol Using RS-232 Subnetwork Profile	NTCIP 2101
NTCIP C2F	S-85	Application Profile for Simple Transportation Management Framework (STMF)	NTCIP 2301
NTCIP C2F	S-88	Internet (TCP/IP and UDP/IP) Transport Profile	NTCIP 2202
Message Standards:			
NEMA TS3.4	NEMA TS3.4	Global Object Definitions	NTCIP 1201

Figure 5: Example of standards mapping page

9. Project Sequencing

The incorporation of the ITS architecture in the planning process will ultimately yield projects that are linked to the ITS Architecture. Through the deployment of projects produced from the planning process, the services supported in the ITS Architecture will be implemented and made a reality in the transportation system. Project implementation completes the evolution from transportation needs to services, to functional descriptions in the ITS Architecture, to project identification in the planning process, and to project definition and deployment. The overarching goal of the ITS Architecture development process is that this evolution takes place with the maximum amount of integration knowledge possible so as to efficiently and economically implement the systems required to serve the transportation community and users.

Key to this process or evolution is to understand what dependencies or relationships exist between systems and projects so that an order can be identified for deployment. Given the importance of integration of ITS, the dependencies of one system on another or one project on another, it is critical to view the entire transportation system at a high, functional level. The ITS Architecture provides this view point and makes possible the understanding of the relationships between the ITS systems in the region.

Project sequencing defines the order in which ITS projects should be implemented. A good sequence is based on a combination of transportation planning factors that are used to prioritize projects and the project dependencies that show how successive ITS projects can build on one another. In most cases, the first projects in the project sequence will already be programmed and will simply be extracted from existing transportation plans. Successive projects will then be added to the sequence based on the project dependencies and other planning factors.

A majority of this process was accomplished through a stakeholder workshop held on March 10, 2005. At this workshop, a draft list of projects was presented and input from the stakeholders was incorporated into the material. During the workshop, comments were received from stakeholders regarding ITS project names, timeframes, funding sources, responsible agencies, and programmed projects.

The results of the workshop, various stakeholder inputs after the workshop, and the project sequencing analysis are provided in Table 7. The information included in each of the project functional areas is:

- **ID.** The ID number associated with this project.
- **Project Name and Location.** The name and location of the proposed ITS project.
- **Source.** The ITS related document or input from which the project was identified.
- **Description.** The description of the project or services to be provided.
- **Costs (Thousands).** The total cost (planning, engineering and construction) associated with the proposed project.
- **Lead Agency.**
- **Funding Agency.** The primary agency responsible for funding the associated project. More funding information may be found in the comments section.

- **Market Packages.** Maps the proposed ITS project to a transportation service identified in the Santa Fe Statewide ITS Architecture and reflects traceability.
- **Priority.** Indicates the estimated timeframe for an ITS project to be deployed. It is estimated that short-term projects will be implemented in 0-5 years; medium-term projects will be implemented in 5-10 years; and long-term projects will be implemented in over 10 years.
- **Comments.** Associated comments about the ITS project from various sources.

Table 8: Project List

ID	PROJECT NAME & LOCATION	DESCRIPTION	COSTS (Thousands)	LEAD AGENCY	FUNDING AGENCY	MARKET PACKAGES	PRIORITY	COMMENTS
I. TRAFFIC MANAGEMENT & MAINTENANCE OPERATIONS								
1	I-25 @ St. Francis in Santa Fe	Interchange Reconstruction- will have ITS- signals, video monitoring, data collection management system, DMS	\$20,000	NMDOT		ATMS01-2, ATMS03-2, ATMS03-3, ATMS06-2	Short	2008 - 2009 Timeframe
2	I-25 @ Cerrillos Road in Santa Fe	Interchange Reconstruction- ditto	\$15,000	NMDOT		ATMS01-2, ATMS03-2, ATMS03-3, ATMS06-2	Short	2006 - 2012 Timeframe
3	I-25, Santa Fe, Richards Ave	New Interchange- DMS- arterial plus interstate	\$15,000	MPO, NMDOT		ATMS06-2	Short	2006 - 2012 Timeframe
4	US 84/285, St Francis Drive to Rabbit Road in Santa Fe (mp 160.4-163.9)	Rehab & add 2 lanes, 3.5 miles- South of interchange-new signalization	\$12,600	NMDOT		ATMS03-2	Short	2006 - 2012 Timeframe
5	US 84/285, Espanola Area	New Construction— Relief Route, 8 miles. Fiberoptics, CCTV, and DMS.	\$32,000	NMDOT		ATMS03-2, ATMS06-2	Short	2006 - 2012 Timeframe
6	Cerrillos Road Reconstruction Project-- Richards Ave to St Francis Drive	Includes signalization, video monitoring, data collection	\$30,000	City of SF	FHWA/State/ City	ATMS01-1, ATMS03-1	Short-Medium	First phase short. 80/16/4 funding Other Phases medium
7	NM 14, @ Saint Michaels Intersection in Santa Fe	Intersection Improvements- signalization, video monitoring, data collection	\$475	STIP		ATMS01-1, ATMS03-1	Short	Subset of the one above.
8	NM 30, Espanola to NM 502 (mp 0.0 to mp 8.512)	Rehab & add two lanes, 8.512 miles. Signalization, RWIS, and DMS.	\$27,240	NMDOT		ATMS03-2, ATMS06-2, MC03-1	Short	2006 - 2012 Timeframe

ID	PROJECT NAME & LOCATION	DESCRIPTION	COSTS (Thousands)	LEAD AGENCY	FUNDING AGENCY	MARKET PACKAGES	PRIORITY	COMMENTS
9	I-25, St. Francis Dr. in Santa Fe (mp 263.2 to mp 282)	Add 2 lanes, 18.8 miles, Deicer, RWIS, and DMS and signalization on ramps	\$67,680	NMDOT		ATMS03-2, ATMS06-2, MC03-1	Medium	2013 - 2019 Timeframe
10	US 285, mp 397 to mp 398	Reconstruct. Add fiberoptic lines.	\$1,000	CNR			Medium	2013 - 2019 Timeframe
11	NM 14, from Santa Fe County Public Safety Facility N. to Cerrillos Int.	Reconstruct and add 2 lanes, 6 miles. Signalization and DMS	\$12,000	NMDOT		ATMS03-2, ATMS06-2	Medium	2013 - 2019 Timeframe
12	NM 599, Intersection/ Interchange developments	ITS aspects include signalization for ramps, DMS, fiberoptics, CCTV, vehicle detection systems		NMDOT		ATMS01-2, ATMS03-2, ATMS03-3, ATMS06-2	Medium	2013 - 2019 Timeframe
13	US 84, in Santa Fe (St. Francis Drive)	Reconstruct. Add fiberoptic lines, DMS. Signalization upgrades, CCTV.	\$15,000	NMDOT		ATMS01-2, ATMS03-2, ATMS03-3, ATMS06-2	Long	2020 - 2025 Timeframe
14	City of Santa Fe	Traffic Signals/ roundabout. Fiberoptics, DMS, CCTV,	\$2,000	City of SF	City of SF	ATMS01-1, ATMS03-1, ATMS06-1	Short	2005 - 2010 Timeframe
15	Cerrillos/St. Fran./Alarid	RR Crossing Improvements. Adding Highway Rail interface, fiberoptics	\$230	NMDOT	Safety	ATMS13-1	Short	2003 - 2005 Timeframe
16	Old Pecos Trail/Cordova Intersection	Intersection safety improvements. Intersection signalization, CCTV, fiber, DMS.	\$800	City of SF	10-State (MAP)	ATMS01-1, ATMS03-1, ATMS06-1	Short	2004 - 2005 Timeframe
17	Camino Alire Bridge and Intersection Rehab	Intersection Improvements- signalization. Considering pedestrian improvements				ATMS03-1		
18	Grant Street Traffic Signal Improvements	Pedestrian controlled signals and activated crosswalk.	\$500	City of SF	City of SF	ATMS03-1	Short	

ID	PROJECT NAME & LOCATION	DESCRIPTION	COSTS (Thousands)	LEAD AGENCY	FUNDING AGENCY	MARKET PACKAGES	PRIORITY	COMMENTS
19	Fiberoptics expansion on I-25	Extension to Santa Fe		NMDOT			Short	
20	Signal Interconnect Projects	Various, include fiberoptics.		NMDOT		ATMS03-2	Short-Medium	
21	NMDOT District 5 Traffic Ops Center/ County TOC	Colocation of county and state TOC		NMDOT		Various	Medium	
22	Guadalupe Connection	Interchange into US 84/285 from downtown.	\$10,000	City of SF			Long	
23	RWIS	Various RWIS stations throughout the region				MC03-1, MC03-2, MC03-3		
24	DMS Projects	Fixed (Trailblazer and full size)				Various		
II. EMERGENCY & INCIDENT MANAGEMENT PROJECTS								
25	Mobile Data Terminals for City of Santa Fe Fire/ Police	Mobile data terminals, including AVL		SF Fire/Police		EM01-2, EM02-1, EM02-2	Short	
26	Mobile Data Terminals for Santa Fe County Fire/ Sheriff	Mobile data terminals, including AVL		SF County		EM01-2, EM02-5	Short	Piggyback off of City experience and projects
27	Police vehicle wireless video	Add to Police Vehicles				Various	Medium	
28	Santa Fe Police Pilot Project	Add mobile data terminals and mag strip license readers		State DPS	City and State funding	EM01-2	Short	hopefully in 2005
29	Wireless Phase 1	RECC upgrade to access wireless 911 calls		State Dept Finance and Admin		EM01-2	Short	16-May-05
30	Wireless Phase 2	Mapping of wireless calls				EM01 (Various)	Short	within 5 years
31	Service Patrol	For I-25 and state roads		NMDOT		EM04-1	Short	

ID	PROJECT NAME & LOCATION	DESCRIPTION	COSTS (Thousands)	LEAD AGENCY	FUNDING AGENCY	MARKET PACKAGES	PRIORITY	COMMENTS
III. TRANSIT/TRANSIT MANAGEMENT PROJECTS								
32	Commuter Rail Service I-25 Belen to Santa Fe	Commuter Rail Service	\$249,000	NMDOT	State	APTS2-5	Short	2008 Timeframe
33	Transit Service improvements- I-25, US 285, NM 300 La Bajada to Pecos;Eldorado/Lamy to Santa Fe; Mora to Las Vegas; Las Vegas to Santa Fe	Park & Ride/ Vanpool Service, Transit Services. For park and ride- information displays.	\$5,000	City of SF		APTS2-2, APTS8-3	Short	2006 - 2013 Timeframe, RLRP, MMS. Medium timeframe for ITS improvements.
34	I-25, US-84/285, NM 68, Albuquerque to Taos	Improved Transit Services	\$3,200 / Yr	MMS		Various	Short	2006 - 2013 Timeframe
35	US 84/285, Santa Fe,Pojoaque, Los Alamos, Espanola	RTD: Park & Ride, Transit Service Areawide	\$3,200 / Yr	MPO, RLRP, PI		APTS2-2	Short	2006 - 2012 Timeframe
36	NM 14, I-40 to I-25	Park & Ride/ Vanpool Service	\$3,200 / Yr	RLRP		APTS2-2	Short	2006 - 2012 Timeframe
37	I-25, Santa Fe Area	Commuter Rail Service to Eldorado Area	\$165,000	MMS		APTS2-5	Medium	2013 - 2019 Timeframe
38	I-25, Santa Fe Area	Transit Service from Outlying Areas with Bicycle Accommodation	\$3,000	MMS		TBD	Medium	2013 - 2019 Timeframe
39	I-25, Santa Fe to Raton	New Transit Service	\$3,200	MMS		TBD	Medium	2013 - 2020 Timeframe
40	US 84/285 in Santa Fe	Intermodal Facility at Rail Yard	\$3,000	MPO		APTS7-1	Long	2020 - 2025 Timeframe
41	City of Santa Fe	Downtown Transit Center	\$2,000	Santa Fe General Plan		APTS7-1	Short	2005 - 2010 Timeframe
42	Downtown Transit Center, Santa Fe	Design and Construction Multimodal	\$197 \$49	City of SF	20-Sec 5309 2-City	APTS7-1	Short	2003 - 2004 Timeframe
43	Downtown Transit Center, Santa Fe	Design and Construction Multimodal	\$1,004 \$251	City of SF	20-Sec 5309 2-City	APTS7-1	Short	2004 - 2005 Timeframe

ID	PROJECT NAME & LOCATION	DESCRIPTION	COSTS (Thousands)	LEAD AGENCY	FUNDING AGENCY	MARKET PACKAGES	PRIORITY	COMMENTS
44	City of Santa Fe	Transit Fleet Replacement/Expansion	\$8,700	Santa Fe General Plan		APTS2	Short	2005 - 2010 Timeframe
45	City of Santa Fe	Transit Computer Dispatch hardware	\$200	Santa Fe General Plan		APTS2, APTS3	Short	2005 - 2010 Timeframe
46	City of Santa Fe	Paratransit Vans Replace	\$300	Santa Fe General Plan		APTS2	Short	2005 - 2010 Timeframe
47	City of Santa Fe	Transit Expand Bus Stop Amenities	\$300	Santa Fe General Plan		APTS8	Short	2005 - 2010 Timeframe
48	North Central New Mexico Park and Ride (#7694)	Express Bus Service 84/285 and NM 502, Santa Fe/Espanola/Los Alamos	\$2,661	NMDOT	23 USC Sec 164	APTS2-2	Short	2003 - 2005 Timeframe
49	Santa Fe Trails	Operating System for Fixed Route Transit Vehicles	\$591 \$591	FTA City of SF	21-Sec 5307 City	APTS2-1	Short	2003 - 2005 Timeframe
50	Santa Fe Ride	Operating System for Paratransit Transit Vehicles	\$215 \$215	FTA City of SF	21-Sec 5307	APTS3-1	Short	2003 - 2005 Timeframe
51	Santa Fe Trails (Operating)	Ongoing Operations, Fixed Route (future years)	\$4,200 / Yr Fed and City	City of SF	2-City 21-Sec 5307	APTS2-1	Short	2004 - 2009 Timeframe
52	Santa Fe Trails (Operating)	Ongoing Operations, Paratransit (future years)	\$925 / Yr Fed and City	City of SF	2-City 21-Sec 5307	APTS3-1	Short	2004 - 2009 Timeframe
53	Santa Fe Trails (Operating)	Capital Equipment/Improvements Bus Fleet replacement and expansion	\$2,160 \$240	City of SF	20-Sec 5309 2-City	APTS (Various)	Short	2003 (Complete?)
54	Transit Facility Expansion Rufina Street	Design and Construction Multimodal	\$747 \$2,990	City of SF	2-City 21-Sec 5309	APTS8-1		
55	Downtown Shuttle Trolleys Downtown Santa Fe	Transit - New Start Program	\$1,152 \$288	City of SF	20-Sec 5309 2-City	APTS (not specified)		

ID	PROJECT NAME & LOCATION	DESCRIPTION	COSTS (Thousands)	LEAD AGENCY	FUNDING AGENCY	MARKET PACKAGES	PRIORITY	COMMENTS
IV. ATIS PROJECTS								
56	CARS 511 Project	Deployment of CARS server capability - clearinghouse for traffic information, road network information, etc...that drives the NMDOT 511 system, NMDOT website, etc...	\$350 initial+ \$100K/year for 2 years	NMDOT	FHWA Initially	ATIS1-1, ATIS1-2	Short	
V. CVO/CVISN (Commercial Vehicle Information Systems & Networks) PROJECTS								
57	I-25, Santa Fe Area	Air/Freight Hub; Airport Upgrade	N/A	MMS		TBD	Medium	2013 - 2019 Timeframe
VI. MISCELLANEOUS PROJECTS - ARCHIVED DATA, PLANNING, DEMO & RESEARCH PROJECTS, VII (Vehicle Infrastructure Initiatives)								
58	Commuter Rail Station. City of Santa Fe	Railyard Enhancements (may be two projects- one for area enhancement for pedestrians and one for Commuter station facility). Monitoring trains for arrival times- putting on DMS, or on web. Trip planning- Kiosks	\$1,000	City of SF		APTS7-1	Short	2005 - 2010 Timeframe
59	Downtown Parking Structures, City of Santa Fe	Downtown Parking Structure- one at railyard property and one at CVB. With ATMS16 aspects	\$9,800	City of SF		ATMS16-1	Short	2005 - 2010 Timeframe

ID	PROJECT NAME & LOCATION	DESCRIPTION	COSTS (Thousands)	LEAD AGENCY	FUNDING AGENCY	MARKET PACKAGES	PRIORITY	COMMENTS
60	Convention Center	State of the art development to include parking structures, revision of signalization, possibly traveler information devices (e.g. kiosks)	TBD	City of SF	Local	ATMS01-1, ATIS1-1, ATMS16-1	Short	
61	City Fiberoptic network	Extend city owned fiberoptic network	\$1,000 per mile	City of SF Information Technology and Telecom	Local		Short	

The recommended ITS project sequencing (Table 8 above) should be used as an input for the Long Range Transportation Plan of the state or MPO participating in the project and the Strategic/Long Range Plan for other planning organizations (as described in Section 3). The planning process allocates ITS projects funding in coordination with other transportation projects.

As displayed in Table 8, projects are classified as short/medium/long-term timeframes. These projects should be represented in the Long Range Plans. As these sequenced projects go through the planning process, the ones identified as short-term would be transitioned in the TIP and Capital Plan/Budget. Since the table defines a short-term project as being deployed in 0-5 years and the TIP and Capital Plan/Budget defines a project as being deployed in 1-3 years, stakeholders are required to further examine the short-term projects and determine which should be represented in the TIP and Capital Plan/Budget.

The key question stakeholders may ask is, “Now that we have a comprehensive list of ITS projects separated by timeframes, how do I use the projects? To answer this question, stakeholders should focus on the following concepts:

- **Why is this Important.** Stakeholders should remember the reasons for going through the process of creating sequenced ITS projects. Ultimately they want to deploy projects that support the needs expressed in their ITS Architecture.
- **Who’s in Charge.** Stakeholders should consider identifying a person or group that is responsible for managing how ITS Projects get deployed. This person or group would be aware of the big picture by familiarizing themselves with all of the planned activities and ensure integration opportunities are maximized in project deployments.
- **Systematic Process.** Stakeholders should ensure that projects are managed in a systematic manner.
- **Funding Allocation.** Stakeholders should ensure funding is allocated appropriately to support projects that have dependencies or synergies to be utilized. This is important if there are future projects that will depend on a short term or current project. The short term or current project must be funded appropriately to support the accommodation of known future project features or interfaces, thus avoiding redesign for future project accommodation.
- **Project List Management.** Stakeholders should prioritize projects within their common timeframes based on the aforementioned concepts. It is important for short-term projects to be reviewed by stakeholders prior to being transitioned into the TIP. A person or group designated as a list manager should be responsible for removing projects from the regional list once implemented. Although project lists may reflect a single project, projects are typically broken into multiple phases and are implemented in an incremental manner. For example, many ITS projects are partially deployed as part of larger construction projects. A project’s scope might involve interfacing with ten agencies and funding constraints may require agencies to be interconnected one at a time. In this situation, a project might be implemented in five years, if two agencies are being interconnected per year. If a project is partially implemented due to unforeseen circumstances (e.g. limited funding received), then the list manager should update the project to reflect the remaining components that need to be implemented. The key point

for project list management is projects will be implemented in an incremental manner, therefore the list manager should keep accurate records of the incremental process and meet with stakeholders to determine how funding should be reallocated.

- **Desired Outcome** . Stakeholders should remember the desired outcome which is to deploy projects to maximize integration opportunities throughout the state. Therefore, when projects are transitioned into the project development phase, stakeholders should always be aware of other project deployment activities (even if the other activities require a project to be deployed at a different time). This mindset will require stakeholders to be flexible in developing interfaces what will allow for future expansion based on overall regional needs.

An important issue to remember is when a project it to be implemented, stakeholders should convene to determine the specific details for deploying a project (e.g. how many phases will be required for this project and which components of market packages are allocated to a particular phase?). Table 8 should be used as a guide to which agencies/systems and interfaces should be considered during the discussion and design phase for project implementation.

10. Agreements

There are several types of arrangements associated with the interfaces included with the projects discussed previously. Data exchanges between systems require agreements on the transmission protocol and data formats to ensure compatibility. Coordinating field device operations owned by different agencies requires defined procedures for submitting message requests and rules governing when such requests can be honored. Such coordination can be done with informal arrangements such as a Memorandum of Understanding (MOU). Sharing control of field devices operated by different agencies involves more liability issues, which requires more formal agreements. Coordinated incident response may also require formal agreements, but also requires group training of personnel from various agencies. While all interfaces involve agreements for data compatibility, agreements for procedure and operation as well as training can also be critical elements to optimizing the benefits of the architecture.

Table 9 identifies types of potential agreements that could be used by agencies in the region.

Table 9: Types of Agreements

Type of Agreement	Description
Handshake Agreement	<ul style="list-style-type: none"> • Early agreement between one or more partners • Not recommended for long term operations.
Memorandum of Understanding	<ul style="list-style-type: none"> • Initial agreement used to provide minimal detail and usually demonstrating a general consensus. • Used to expand a more detailed agreement like an Interagency Agreement which may be broad in scope but contains all of the standard contract clauses required by a specific agency. • May serve as a means to modify a much broader Master Funding Agreement, allowing the master agreement to cover various ITS projects throughout the region and the MOUs to specify the scope and differences between the projects.
Interagency Agreement	<ul style="list-style-type: none"> • Between public agencies (e.g., transit authorities, cities, counties, etc.) for operations, services or funding • Documents responsibility, functions and liability, at a minimum.
Intergovernmental Agreement	<ul style="list-style-type: none"> • Between governmental agencies (<i>e.g., Agreements between universities and State DOT, MPOs and State DOT, etc.</i>)
Operational Agreement	<ul style="list-style-type: none"> • Between any agency involved in funding, operating, maintaining or using the right-of-way of another public or private agency. • Identifies respective responsibilities for all activities associated with shared systems being operated and/or maintained.
Funding Agreement	<ul style="list-style-type: none"> • Documents the funding arrangements for ITS projects (<i>and other projects</i>) • Includes at a minimum standard funding clauses, detailed scope, services to be performed, detailed project budgets, etc.

Type of Agreement	Description
Master Agreements	<ul style="list-style-type: none"> • Standard contract and/or legal verbiage for a specific agency and serving as a master agreement by which all business is done. These agreements can be found in the legal department of many public agencies. • Allows states, cities, transit agencies, and other public agencies that do business with the same agencies over and over (e.g., cities and counties) to have one <i>Master Agreement</i> that uses smaller agreements (e.g., <i>MOUs</i>, <i>Scope-of-Work</i> and <i>Budget Modifications</i>, <i>Funding Agreements</i>, <i>Project Agreements</i>, etc.) to modify or expand the boundaries of the larger agreement to include more specific language.

In discussing existing agreements, the only ones identified were those regarding maintenance of traffic signals.

The Regional ITS Architecture can be used to determine a set of agreements that may need to be put into place in order to implement the interconnections described by the architecture. Table 10 identifies agreements that may be needed between pairs of stakeholders described in the Santa Fe Regional ITS Architecture. The table was created by identifying element interfaces where the elements are owned, operated, or maintained by different stakeholders. This large list of potential interfaces was then reviewed to remove many of the interfaces between different stakeholders of the same agency, and to remove interfaces that won't need agreements (such as the interface between web sites and the private users that access them).

Table 10: Needs for Future Agreements

Stakeholder A	Stakeholder B	Reason for Agreement
City of Santa Fe	Local Media	Providing emergency and general traveler information.
City of Santa Fe	NMDOT	Requesting archived data.
City of Santa Fe	Private Travelers	Providing broadcast information, emergency traveler information, and a tag update. In addition, requesting tag data.
City of Santa Fe	Santa Fe County Public Works	Requesting archived data.
City of Santa Fe Department of Planning and Land Use	City of Santa Fe	Providing roadside archive data. Requesting archive data.
City of Santa Fe Department of Planning and Land Use	City of Santa Fe Police Department	Requesting archived data.
City of Santa Fe Fire Department	RECC Joint Powers Agreement	Providing emergency dispatch response, emergency vehicle tracking data and incident status.
City of Santa Fe Fire Department	Regional Medical Center	Providing patient status. Requesting care facility status.
City of Santa Fe Police Department	City of Santa Fe Department of Planning and Land Use	Providing archive data products.

Stakeholder A	Stakeholder B	Reason for Agreement
City of Santa Fe Police Department	City of Santa Fe Public Works Department	Providing archive data products.
City of Santa Fe Police Department	NMDOT	Providing archive data products.
City of Santa Fe Police Department	RECC Joint Powers Agreement	Providing emergency dispatch response and incident status.
City of Santa Fe Public Works Department	City of Santa Fe	Providing ISP coordination, parking lot inputs, road network conditions, and traffic archive data. Requesting parking lot data.
City of Santa Fe Public Works Department	City of Santa Fe Police Department	Requesting archived data.
City of Santa Fe Public Works Department	City of Santa Fe Senior Services	Providing current asset restrictions, road network conditions, road weather information and work zone information.
City of Santa Fe Public Works Department	City/County of Santa Fe	Providing current asset restrictions, emergency plan coordination, emergency traffic control information maintenance and construction resource response, maintenance and construction work plans, resource deployment status, and road network status assessment.
City of Santa Fe Public Works Department	County Public Safety Agencies	Providing current asset restrictions and maintenance and construction work plans.
City of Santa Fe Public Works Department	Independent School Districts	Providing current asset restrictions, maintenance and construction work plans, road network conditions, roadway maintenance status, and work zone information.
City of Santa Fe Public Works Department	Local Media	Providing emergency traveler information, road network conditions, and traveler information for media.
City of Santa Fe Public Works Department	New Mexico DPS	Providing current asset restrictions, incident information, maintenance and construction work plans, road network conditions, and threat information.
City of Santa Fe Public Works Department	New Mexico General Services Department	Providing road weather information.
City of Santa Fe Public Works Department	NMDOT	Providing maintenance and construction resource coordination, road network conditions, road weather information, roadway maintenance status, and work zone information. In addition, coordinating traffic information and work plans.
City of Santa Fe Public Works Department	NOAA	Providing road weather information.
City of Santa Fe Public Works Department	North Central Regional Transit District	Providing current asset restrictions, maintenance and construction work plans, multimodal service data, road network conditions, and road weather information.
City of Santa Fe Public Works Department	Northern New Mexico Park and Ride Service	Providing road weather information. Coordinating of transit service data.
City of Santa Fe Public Works Department	Private Tow/Wrecker Providers	Providing incident information and road network conditions.

Stakeholder A	Stakeholder B	Reason for Agreement
City of Santa Fe Public Works Department	Private Travelers	Providing emergency traveler information.
City of Santa Fe Public Works Department	Private Weather Service Providers	Providing road weather information.
City of Santa Fe Public Works Department	Private/Public Ambulance Providers	Providing incident information and road network conditions.
City of Santa Fe Public Works Department	Rail Operators	Providing the status of highway rail intersections.
City of Santa Fe Public Works Department	RECC Joint Powers Agreement	Providing emergency traffic control information, incident information, a maintenance and construction response, resource deployment status, road network conditions, road weather information and traffic images.
City of Santa Fe Public Works Department	Santa Fe County Public Works	Providing road weather information, roadway maintenance status, and work zone information. In addition, coordination of maintenance and construction resources, traffic information, and work plans.
City of Santa Fe Public Works Department	Santa Fe Trails	Providing current asset restrictions, maintenance and construction work plans, road network conditions, road weather information, roadway maintenance status, and work zone information. In addition, coordination of transit services.
City of Santa Fe Public Works Department	Volunteer Fire Departments	Providing current asset restrictions and maintenance and construction work plans.
City of Santa Fe Senior Services	City of Santa Fe	Providing demand responsive transit plans and transit and fare schedules.
City of Santa Fe Senior Services	NMDOT	Providing transit and fare schedules, transit archive data, and transit incident information.
City of Santa Fe Senior Services	Private Information Service Providers	Providing transit and fare schedules.
City of Santa Fe Senior Services	Santa Fe Trails	Coordinating transit services.
City/County of Santa Fe	City of Santa Fe	Providing evacuation information, incident information, and transportation system status.
City/County of Santa Fe	City of Santa Fe Public Works Department	Providing evacuation information, incident information, incident response status, and transportation system status. Requesting emergency traffic control and a maintenance and construction resource. And, coordinating of emergency plans.
City/County of Santa Fe	County Emergency Management Agencies	Providing transportation system status. Coordinating emergency plans, incident command information, incident responses and resources.
City/County of Santa Fe	County Public Safety Agencies	Providing transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
City/County of Santa Fe	DPS Office of Emergency Management	Providing transportation system status and incident reports. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.

Stakeholder A	Stakeholder B	Reason for Agreement
City/County of Santa Fe	Independent School Districts	Providing evacuation information. Requesting emergency transit services. Coordinating emergency plans.
City/County of Santa Fe	Local Media	Providing incident information for the media.
City/County of Santa Fe	Municipal Government	Providing evacuation information. Requesting emergency transit services. Coordinating emergency plans.
City/County of Santa Fe	Municipal Public Safety	Providing transportation system status and incident reports. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
City/County of Santa Fe	Municipal Public Works Department	Providing evacuation information, incident information, and transportation system status. Requesting maintenance and construction resources. Coordinating emergency plans.
City/County of Santa Fe	New Mexico DPS	Providing transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
City/County of Santa Fe	New Mexico General Services Department	Providing amber alert confirmation.
City/County of Santa Fe	NMDOT	Providing evacuation information, incident information, traffic images, and transportation system status. Requesting emergency traffic control. In addition, coordinating emergency plans.
City/County of Santa Fe	North Central Regional Transit District	Providing evacuation information. Requesting emergency transit services. Coordinating emergency plans.
City/County of Santa Fe	RECC Joint Powers Agreement	Providing transportation system status and incident reports. Coordinating emergency plans, incident command information, incident responses and resources.
City/County of Santa Fe	Regional Public Safety Agencies	Providing incident reports. Coordinating incident responses.
City/County of Santa Fe	Santa Fe County Public Works	Providing evacuation information, incident information, incident response status and transportation system status. Requesting maintenance and construction resources and resources. Coordinating emergency plans.
City/County of Santa Fe	Santa Fe Trails	Providing evacuation information. Requesting emergency transit services. Coordinating emergency plans.
County Emergency Management Agencies	City/County of Santa Fe	Providing transportation system status. Coordinating emergency plans, incident command information, incident responses and resources.
County Emergency Management Agencies	NMDOT	Providing traffic images.
County Emergency Management Agencies	Regional Public Safety Agencies	Providing incident reports. Coordinating incident responses.
County Public Safety Agencies	City/County of Santa Fe	Providing transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
County Public Safety	Municipal Government	Providing incident information and incident response

Stakeholder A	Stakeholder B	Reason for Agreement
Agencies		status.
County Public Safety Agencies	NMDOT	Providing emergency archive data and incident reports. Coordinating threat information.
County Public Safety Agencies	Private/Public Ambulance Providers	Providing incident reports. Coordinating incident responses.
County Public Safety Agencies	RECC Joint Powers Agreement	Providing incident reports and incident status. Coordinating incident responses.
County Public Safety Agencies	Regional Public Safety Agencies	Providing incident reports. Coordinating incident responses.
DPS Office of Emergency Management	City/County of Santa Fe	Providing transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
DPS Office of Emergency Management	Local Media	Providing incident information for the media.
DPS Office of Emergency Management	Municipal Public Safety	Providing transportation system status. Coordinating emergency plans, incident command information, incident responses and resources.
DPS Office of Emergency Management	New Mexico DPS	Providing incident reports and transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
DPS Office of Emergency Management	New Mexico General Services Department	Providing incident reports. Coordinating incident responses.
DPS Office of Emergency Management	NMDOT	Providing evacuation information, incident information, incident response status, traffic images and transportation system status. Requesting emergency traffic control, maintenance and construction resources, and other resources. Coordinating emergency plans.
DPS Office of Emergency Management	Regional Public Safety Agencies	Providing incident reports. Coordinating incident responses.
Municipal Government	City of Santa Fe Public Works Department	Providing permit information.
Municipal Government	City/County of Santa Fe	Providing emergency traffic control information. Coordinating emergency plans.
Municipal Government	Commercial Vehicle Operators	Providing commercial vehicle permits and route restrictions.
Municipal Government	County Public Safety Agencies	Providing current asset restrictions, incident information, maintenance and construction work plans, permit information and road network conditions.
Municipal Government	Independent School Districts	Providing current asset restrictions, evacuation information, maintenance and construction work plans and road network conditions.
Municipal Government	Local Media	Providing emergency traveler information.
Municipal Government	Municipal Public Safety	Providing current asset restrictions, incident information, maintenance and construction work plans, permit information, resource deployment status, road network conditions, and traffic images. Coordinating emergency plans.

Stakeholder A	Stakeholder B	Reason for Agreement
Municipal Government	Municipal Public Works Department	Providing field equipment status, road network conditions, roadway information system status, traffic images, and work plan feedback. Requesting maintenance and construction resources.
Municipal Government	New Mexico DPS	Providing current asset restrictions, maintenance and construction work plans, and threat information.
Municipal Government	NMDOT	Providing road network conditions.
Municipal Government	North Central Regional Transit District	Providing current asset restrictions, evacuation information, maintenance and construction work plans and road network conditions.
Municipal Government	Northern New Mexico Park and Ride Service	Providing current asset restrictions, evacuation information, maintenance and construction work plans and road network conditions.
Municipal Government	Private Travelers	Providing emergency traveler information.
Municipal Government	Rail Operators	Providing for the status of highway rail intersections.
Municipal Government	RECC Joint Powers Agreement	Providing incident information and road network conditions.
Municipal Government	Volunteer Fire Departments	Providing current asset restrictions and maintenance and construction work plans.
Municipal Public Safety	City/County of Santa Fe	Providing incident reports and transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
Municipal Public Safety	Commercial Vehicle Operators	Requesting hazmat information.
Municipal Public Safety	DPS Office of Emergency Management	Providing transportation system status. Coordinating emergency plans, incident command information, incident responses and resources.
Municipal Public Safety	Independent School Districts	Providing evacuation information and incident response status. Requesting emergency transit service. Coordinating emergency plans.
Municipal Public Safety	Local Media	Providing incident information for the media.
Municipal Public Safety	Municipal Government	Providing evacuation information, incident information, incident response status, remote surveillance control, and transportation system status. Requesting a resource. Coordinating emergency plans.
Municipal Public Safety	Municipal Public Works Department	Providing evacuation information, incident information, and incident response status. Requesting a maintenance and construction resource. Coordinating emergency plans.
Municipal Public Safety	New Mexico DPS	Providing hazmat information, incident reports. Coordinating incident responses.
Municipal Public Safety	New Mexico General Services Department	Providing amber alert confirmation.
Municipal Public Safety	NMDOT	Providing emergency archive data, incident information, incident response status, and traffic images. Requesting emergency traffic control and a resource.
Municipal Public Safety	North Central Regional Transit District	Providing evacuation information. Requesting emergency transit services. Coordinating emergency plans.

Stakeholder A	Stakeholder B	Reason for Agreement
Municipal Public Safety	Northern New Mexico Park and Ride Service	Providing incident response status.
Municipal Public Safety	Operation Respond Institute	Requesting hazmat information.
Municipal Public Safety	Private Tow/Wrecker Providers	Providing incident reports. Coordinating incident responses.
Municipal Public Safety	Private/Public Ambulance Providers	Providing incident reports. Coordinating incident responses.
Municipal Public Safety	RECC Joint Powers Agreement	Providing an emergency dispatch response, incident report, and incident status. Coordinating emergency plans, evacuations, and incident responses.
Municipal Public Safety	Regional Medical Center	Providing patient status. Requesting care facility status.
Municipal Public Safety	Regional Public Safety Agencies	Providing incident reports. Coordinating incident responses.
Municipal Public Safety	Santa Fe County Public Works	Providing incident information, incident response status, and remote surveillance control. Requesting resources.
Municipal Public Works Department	City/County of Santa Fe	Providing maintenance and construction resource response and road network status assessment. Coordination emergency plans.
Municipal Public Works Department	Independent School Districts	Providing current asset restrictions, maintenance and construction work plans, roadway maintenance status, and work zone information.
Municipal Public Works Department	Municipal Government	Providing current asset restrictions, equipment maintenance status, maintenance and construction resource response, maintenance and construction work plans, roadway information system data, roadway maintenance status, video surveillance control, and work zone information.
Municipal Public Works Department	Municipal Public Safety	Providing incident information and maintenance and construction response. Coordinating emergency plans.
Municipal Public Works Department	NMDOT	Providing work zone information. Coordinating maintenance and construction resources and work plans.
Municipal Public Works Department	North Central Regional Transit District	Providing current asset restrictions, maintenance and construction work plans, and work zone information.
Municipal Public Works Department	Northern New Mexico Park and Ride Service	Providing current asset restrictions, maintenance and construction work plans, roadway information system status, and work zone information.
Municipal Public Works Department	RECC Joint Powers Agreement	Providing incident information. Coordinating maintenance and construction resources.
Municipal Public Works Department	Santa Fe County Public Works	Providing work zone information. Coordinating maintenance and construction resources and work plans.
New Mexico DPS	Bureau of Indian Affairs	Providing incident reports. Coordinating incident responses.
New Mexico DPS	City of Santa Fe Public Works Department	Providing incident information and incident response status.

Stakeholder A	Stakeholder B	Reason for Agreement
New Mexico DPS	City/County of Santa Fe	Providing transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
New Mexico DPS	Commercial Vehicle Operators	Requesting hazmat information.
New Mexico DPS	Correctional Facilities	Providing incident reports. Coordinating incident responses.
New Mexico DPS	DPS Office of Emergency Management	Providing incident reports and transportation system status. Coordinating emergency plans, evacuations, incident command information, incident responses and resources.
New Mexico DPS	Municipal Public Safety	Providing incident reports. Requesting hazmat information. Coordinating incident responses.
New Mexico DPS	New Mexico General Services Department	Providing amber alerts and incident reports. Coordinating incident responses.
New Mexico DPS	NMDOT	Providing emergency archive data, incident information, incident reports, incident response status, remote surveillance control and traffic images. Requesting archive data products, maintenance and construction resources, and other resources. Coordinating threat information.
New Mexico DPS	Northern New Mexico Park and Ride Service	Providing incident response status.
New Mexico DPS	Operation Respond Institute	Requesting hazmat information.
New Mexico DPS	Private Tow/Wrecker Providers	Providing incident reports. Coordinating incident responses.
New Mexico DPS	Private/Public Ambulance Providers	Providing incident reports. Coordinating incident responses.
New Mexico DPS	Rail Operators	Providing incident information and incident response status.
New Mexico DPS	RECC Joint Powers Agreement	Providing incident reports. Requesting hazmat information. Coordinating incident responses.
New Mexico DPS	Regional Medical Center	Providing patient status. Requesting care facility status.
New Mexico DPS	Regional Public Safety Agencies	Providing incident reports. Coordinating incident responses.
New Mexico DPS	Santa Fe County Public Works	Providing incident information, incident response status, and remote surveillance control. Requesting resources.
New Mexico DPS	Tribal Councils	Providing incident reports. Coordinating incident responses.
New Mexico General Services Department	City/County of Santa Fe	Providing amber alerts.
New Mexico General Services Department	Correctional Facilities	Providing incident reports. Coordinating incident responses.
New Mexico General Services Department	Department of Game and Fish	Request emergency dispatch.
New Mexico General Services Department	DPS Office of Emergency Management	Providing incident reports. Coordinating incident responses.

Stakeholder A	Stakeholder B	Reason for Agreement
New Mexico General Services Department	Municipal Public Safety	Providing amber alerts.
New Mexico General Services Department	New Mexico DPS	Providing amber alert confirmation and incident reports. Coordinating incident responses.
New Mexico General Services Department	NMDOT	Providing incident information, incident response status, remote surveillance control and traffic images. Requesting resources.
New Mexico General Services Department	Private/Public Ambulance Providers	Providing incident reports. Request emergency dispatch. Coordinating incident responses.
New Mexico General Services Department	RECC Joint Powers Agreement	Providing amber alert and incident reports. Coordinating incident responses.
New Mexico General Services Department	Tribal Councils	Provide amber alerts.
New Mexico General Services Department	Volunteer Fire Departments	Provide amber alerts.
NMDOT	City of Santa Fe	Providing archive data products.
NMDOT	City of Santa Fe Public Works Department	Providing maintenance and construction work plans, road network conditions, road weather information, roadway maintenance status, threat information, transportation system, and work zone information. Coordination of maintenance and constructions resources, traffic information, and work plans.
NMDOT	City of Santa Fe Senior Services	Providing archive status. Requesting archives and transit information.
NMDOT	City/County of Santa Fe	Providing emergency traffic control information and video surveillance control. Coordinating emergency plans.
NMDOT	Commercial Vehicle Operators	Providing commercial vehicle permits and route restrictions. Requesting tag data.
NMDOT	County Emergency Management Agencies	Provide video surveillance.
NMDOT	County Public Safety Agencies	Providing archive status, incident reports, maintenance and construction work plans, and road network conditions. Requesting archives. Coordinating threat information.
NMDOT	DPS Office of Emergency Management	Providing emergency traffic control coordination, incident information, maintenance and construction response, resource deployment status, road network conditions, road network status assessment, and video surveillance control. Coordinating emergency plans.
NMDOT	Independent School Districts	Providing maintenance and control works as well as road network conditions.
NMDOT	Local Media	Providing emergency traveler information, road network conditions, and traveler information for media.
NMDOT	Municipal Government	Providing maintenance and construction work plans, threat information, and transportation system status.

Stakeholder A	Stakeholder B	Reason for Agreement
NMDOT	Municipal Public Safety	Providing archive status, emergency traffic control information, incident information, maintenance and construction work plans, resource deployment status, road network conditions, and video surveillance control. Requesting archives.
NMDOT	Municipal Public Works Department	Providing road network conditions and work zone information. Coordinating maintenance and construction resources and work plans.
NMDOT	New Mexico DPS	Providing archive status, archived data products, incident information, incident reports, maintenance and construction resource response, maintenance and construction work plans, permit information, resource deployment status, road network conditions, road weather information, traffic images, and video surveillance control. Requesting archives. Coordinating threat information.
NMDOT	New Mexico General Services Department	Providing incident information, resource deployment status, road network conditions, road weather information, traffic images, and video surveillance control.
NMDOT	NOAA	Providing environmental conditions data and road weather information.
NMDOT	North Central Regional Transit District	Providing archive status, current asset restrictions, maintenance and construction work plans, road network conditions, road weather information and work zone information. Requesting archives, transit information and traveler information..
NMDOT	Northern New Mexico Park and Ride Service	Providing current asset restrictions, maintenance and construction work plans, road network conditions, road weather information, roadway maintenance status, and work zone information. Requesting transit information and traveler information. In addition, coordination of transit services.
NMDOT	Private Concierge Service Providers	Requesting road network probe information.
NMDOT	Private Information Service Providers	Providing roadside information system data.
NMDOT	Private Tow/Wrecker Providers	Providing maintenance and construction work plans.
NMDOT	Private Travelers	Providing broadcast information, emergency traveler information, and traveler information. In addition, requesting tag data.
NMDOT	Private Weather Service Providers	Providing environmental conditions data and road weather information.
NMDOT	Rail Operators	Providing highway rail intersection advisories and their operational status.
NMDOT	RECC Joint Powers Agreement	Providing emergency traffic control information, road network conditions, and road weather information.
NMDOT	Santa Fe County Public Works	Providing road network conditions, road weather information, roadway maintenance status, threat information, transportation system status, and work zone information. Coordinating maintenance and

Stakeholder A	Stakeholder B	Reason for Agreement
		construction resources, traffic information, and work plans.
NMDOT	Santa Fe Trails	Providing archive status, current asset restrictions, maintenance and construction work plans, road network conditions, road weather information and work zone information. Requesting archives and transit information. Coordinating transit services.
NMDOT	Tribal Councils	Providing road network conditions.
NMDOT	Volunteer Fire Departments	Providing video surveillance control.
North Central Regional Transit District	City of Santa Fe Public Works Department	Providing multimodal information.
North Central Regional Transit District	City/County of Santa Fe	Providing emergency transit schedule information and emergency transit service responses. Coordinating emergency plans.
North Central Regional Transit District	Municipal Government	Providing emergency transit schedule information.
North Central Regional Transit District	Municipal Public Safety	Providing emergency transit schedule information and emergency transit service responses. Coordinating emergency plans.
North Central Regional Transit District	NMDOT	Providing transit fare schedules, transit archive data, transit incident information, and emergency transit service response.
North Central Regional Transit District	Northern New Mexico Park and Ride Service	Providing emergency notifications. Coordinating transit services.
North Central Regional Transit District	Private Information Service Providers	Providing transit and fare schedules.
North Central Regional Transit District	Private Taxi Providers	Coordinating transit services.
North Central Regional Transit District	Private Transportation Providers	Coordinating transit services.
North Central Regional Transit District	Private Travelers	Providing broadcast information, traveler information, and trip plans.
North Central Regional Transit District	Santa Fe Trails	Coordinating transit services.
RECC Joint Powers Agreement	Bureau of Indian Affairs	Providing incident reports. Coordinating incident responses.
RECC Joint Powers Agreement	City of Santa Fe	Providing evacuation information, incident information, and transportation system status.
RECC Joint Powers Agreement	City of Santa Fe Fire Department	Providing suggest routes. Requesting emergency dispatches.
RECC Joint Powers Agreement	City of Santa Fe Police Department	Requesting emergency dispatches.
RECC Joint Powers Agreement	City of Santa Fe Public Works Department	Providing evacuation information, incident information, incident response status, remote surveillance control, and transportation system status. Requesting emergency traffic control, maintenance and construction resource and a general resource.

Stakeholder A	Stakeholder B	Reason for Agreement
RECC Joint Powers Agreement	City/County of Santa Fe	Providing incident reports and transportation system status. Coordinating emergency plans, incident command information, incident responses and resources.
RECC Joint Powers Agreement	Commercial Vehicle Operators	Requesting hazmat information.
RECC Joint Powers Agreement	Correctional Facilities	Providing incident reports. Coordinating incident responses.
RECC Joint Powers Agreement	County Public Safety Agencies	Providing incident reports. Requesting emergency dispatch. Coordinating incident responses.
RECC Joint Powers Agreement	Independent School Districts	Providing incident response status.
RECC Joint Powers Agreement	Local Media	Providing incident information for the media.
RECC Joint Powers Agreement	Municipal Government	Providing incident information and incident response status.
RECC Joint Powers Agreement	Municipal Public Safety	Providing incident reports. Requesting emergency dispatch. Coordinating emergency plans, evacuations, and incident responses.
RECC Joint Powers Agreement	Municipal Public Works Department	Providing incident information and incident response status. Requesting a maintenance and construction resource.
RECC Joint Powers Agreement	New Mexico DPS	Providing hazmat information and incident reports. Coordinating incident responses.
RECC Joint Powers Agreement	New Mexico General Services Department	Providing amber alert confirmation and incident reports. Coordinating incident responses.
RECC Joint Powers Agreement	NMDOT	Requesting emergency traffic control.
RECC Joint Powers Agreement	Northern New Mexico Park and Ride Service	Providing incident response status.
RECC Joint Powers Agreement	Operation Respond Institute	Requesting hazmat information.
RECC Joint Powers Agreement	Private Tow/Wrecker Providers	Providing incident reports. Coordinating incident responses.
RECC Joint Powers Agreement	Private/Public Ambulance Providers	Providing incident reports. Coordinating incident responses.
RECC Joint Powers Agreement	Rail Operators	Providing incident information and incident response status.
RECC Joint Powers Agreement	Regional Medical Center	Requesting care facility status.
RECC Joint Powers Agreement	Regional Public Safety Agencies	Providing incident reports. Coordinating incident responses.
RECC Joint Powers Agreement	Santa Fe County Public Works	Providing evacuation information, incident information, incident response status, and transportation system status. Requesting a maintenance and construction resource.
RECC Joint Powers Agreement	Santa Fe Trails	Providing incident response status.
RECC Joint Powers Agreement	Volunteer Fire Departments	Providing incident reports. Coordinating incident responses.
Regional Public Safety Agencies	City/County of Santa Fe	Providing incident reports. Coordinating incident responses.

Stakeholder A	Stakeholder B	Reason for Agreement
Regional Public Safety Agencies	Correctional Facilities	Providing incident reports. Coordinating incident responses.
Regional Public Safety Agencies	County Emergency Management Agencies	Providing incident reports. Coordinating incident responses.
Regional Public Safety Agencies	County Public Safety Agencies	Providing incident reports. Coordinating incident responses.
Regional Public Safety Agencies	DPS Office of Emergency Management	Providing incident reports. Coordinating incident responses.
Regional Public Safety Agencies	Municipal Public Safety	Providing incident reports. Coordinating incident responses.
Regional Public Safety Agencies	New Mexico DPS	Providing incident reports. Coordinating incident responses.
Regional Public Safety Agencies	RECC Joint Powers Agreement	Providing incident reports. Coordinating incident responses.
Santa Fe Convention and Visitors Bureau	City of Santa Fe Public Works Department	Providing event plans.
Santa Fe County Public Works	City of Santa Fe	Providing archive data products.
Santa Fe County Public Works	City of Santa Fe Public Works Department	Providing road weather information, roadway maintenance status, and work zone information. In addition, coordination of maintenance and construction resources, traffic information, and work plans.
Santa Fe County Public Works	City of Santa Fe Senior Services	Providing current asset restrictions, road network conditions and work zone information.
Santa Fe County Public Works	City/County of Santa Fe	Providing maintenance and construction resource response, resource deployment status, and road network status assessment. Coordinating emergency plans.
Santa Fe County Public Works	Independent School Districts	Providing current asset restrictions, roadway maintenance status and work zone information.
Santa Fe County Public Works	Local Media	Providing emergency traveler information.
Santa Fe County Public Works	Municipal Public Safety	Providing incident information, resource deployment status, road network conditions, and traffic images.
Santa Fe County Public Works	Municipal Public Works Department	Providing work zone information. Coordinating maintenance and construction resources and work plans.
Santa Fe County Public Works	New Mexico DPS	Providing incident information, resource deployment status, road network conditions, road weather information, threat information and traffic images.
Santa Fe County Public Works	NMDOT	Provide road network conditions, road weather information and roadway maintenance status. Coordinating maintenance and construction resources, traffic information, work plans, and work zones.
Santa Fe County Public Works	NOAA	Providing environmental conditions data and road weather information.
Santa Fe County Public Works	North Central Regional Transit District	Providing current asset restrictions, road weather information, and work zone information.

Stakeholder A	Stakeholder B	Reason for Agreement
Santa Fe County Public Works	Northern New Mexico Park and Ride Service	Providing current asset restrictions, road weather information, roadway maintenance status and work zone information.
Santa Fe County Public Works	Private Equipment Repair Providers	Providing field equipment status, maintenance and construction equipment repair status, and maintenance and construction fleet information.
Santa Fe County Public Works	Private Travelers	Providing emergency traveler information.
Santa Fe County Public Works	Private Weather Service Providers	Providing environmental conditions data and road weather information.
Santa Fe County Public Works	Rail Operators	Providing status information about highway rail intersections.
Santa Fe County Public Works	RECC Joint Powers Agreement	Providing incident information, maintenance and construction resource response, road network conditions, and road weather information.
Santa Fe County Public Works	Santa Fe Trails	Providing road weather information.
Santa Fe Trails	Albuquerque Transit	Coordinating transit services.
Santa Fe Trails	City of Santa Fe Public Works Department	Coordinating transit services.
Santa Fe Trails	City of Santa Fe Senior Services	Coordinating transit services.
Santa Fe Trails	City/County of Santa Fe	Providing emergency transit schedule information and emergency transit service responses. Coordinating emergency plans.
Santa Fe Trails	Financial Institution	Requesting payment.
Santa Fe Trails	Local Transit Operators	Coordinating transit services.
Santa Fe Trails	NMDOT	Providing transit and fare schedules, transit archive data, and transit incident information. Coordinating transit services.
Santa Fe Trails	North Central Regional Transit District	Coordinating transit services.
Santa Fe Trails	Northern New Mexico Park and Ride Service	Providing emergency notifications. Coordinating transit services.
Santa Fe Trails	Private Information Service Providers	Providing transit and fare schedules.
Santa Fe Trails	Private Taxi Providers	Coordinating transit services.
Santa Fe Trails	Private Travelers	Providing broadcast information, traveler information, and trip plans.
Santa Fe Trails	RECC Joint Powers Agreement	Providing transit emergency information.
Santa Fe Trails	Transit Partnership	Providing payment, transit fare information, and traveler information.
Transit Partnership	Santa Fe Trails	Providing transit fare and scheduling. Requesting payment and travelers.

11. Using the Regional ITS Architecture

Once a regional ITS architecture has been created, it's important that it be used as a key reference in the transportation planning process. This will ensure all proposed ITS projects are consistent with the regional ITS architecture and additional integration opportunities are considered, leading to more efficient implementations.

For the Santa Fe Regional ITS Architecture the primary planning document is the Santa Fe Long Range Transportation Plan, last updated in 2002. It is the long-range guide for major investments in Santa Fe's multimodal ground transportation system. The LRTP recommends major projects, systems, policies and strategies designed to maintain the existing transportation system and serve the region's future travel needs.

The Santa Fe Regional ITS Architecture should also be considered for support in ITS project development cycle. This begins with project definition, followed by procurement, leading to implementation. Information in the regional ITS architecture can assist in all three of these areas of project development.

Project Definition may occur at several levels of detail. Early in the planning process a project may be defined only in terms of the transportation services it will provide, or by the major system pieces it contains. At some point prior to the beginning of implementation the details of the project must be developed. This could include further system definition and interface definition including exactly what systems or parts of systems will make up the project, what interconnections the project entails, and what information needs to flow across the system interconnections. Requirements definition may go through similar levels of detail, starting with very high-level description of project functions and moving toward system specifications. By identifying the portions of the regional ITS architecture that define the project, the regional ITS architecture outputs can be used to create key aspects of the project definition.

The areas that a regional ITS architecture can assist in project definition are:

- The identification of agency roles and responsibilities (including any inter-agency cooperation) can come from the operational concept developed as part of the regional ITS architecture. This operational concept can either serve as a starting point for a more detailed definition, or possibly provide all the needed information.
- Requirements definition can be completely or partly defined by using the regional ITS architecture functional requirements applicable to the project.
- The regional ITS architecture includes a map to ITS standards and the project mapping to the regional ITS architecture can extract the applicable ITS standards for the project.

Once a project is defined, and funding for it is committed, the implementation process can commence with the generation of a Request For Proposal (RFP), which is the common governmental practice for initiating a contract with the private sector to implement the project.

Once a contract is in place, project implementation begins and moves through design, development, integration, and testing.

The regional ITS architecture, and the products produced during its development, can support this RFP generation. First the project definition described above forms the basis for what is being procured. Mapping the project to the regional ITS architecture allows bidders to have a clear understanding of the scope of the project and of the interfaces that need to be developed. The functional requirements created as part of the regional ITS architecture can be used to describe the functional requirements for the project. In addition a subset of the ITS Standards identified as part of the regional ITS architecture development can be specified in the RFP. Because ITS projects involve systems and their interconnections, it is very important to follow a system engineering approach to designing and implementing the project. While the exact process followed is at the discretion of the local agency, the ITS Architecture and Standards Rule/Policy lay out a set of required system engineering analyses for ITS projects funded through the highway trust fund.

The required system engineering analysis steps are:

- Identification of portions of the regional ITS architecture being implemented (or if a regional ITS architecture does not exist, the applicable portions of the *National ITS Architecture*)- in this case the regional ITS architecture;
- Identification of participating agencies’ roles and responsibilities;
- Requirements definitions;
- Analysis of alternative system configurations and technology options to meet requirements;
- Procurement options;
- Identification of applicable ITS standards and testing procedures; and
- Procedures and resources necessary for operations and management of the system.

The regional ITS architecture can provide inputs to a number of these steps as shown in Table 11:

Table 11: System Engineering Requirements supported by Regional ITS Architecture

System Engineering Requirements	Regional ITS Architecture output
Identification of portions of the regional ITS architecture being implemented	Mapping project to the elements and interfaces of the regional ITS architecture
Identification of participating agencies’ roles and responsibilities	Use Operational Concept as a starting point
Requirements definitions	Use Functional Requirements as a starting point.
Identification of applicable ITS standards and testing procedures	Use regional architecture standards outputs as a starting point for the standards definition.

In summary, the regional ITS architecture represents a detailed plan for the evolution of the ITS systems in the region and can be used to support regional transportation planning efforts and project development efforts.

12. Maintaining the Regional ITS Architecture

The Santa Fe Regional ITS architecture is not a static set of outputs. It must change as plans change, ITS projects are implemented, and the ITS needs and services evolve in the region. This section describes a proposed plan for the maintenance of the architecture. The plan covers the following four key areas:

- Who will be involved in the maintenance of the architecture?
- When will the architecture be updated?
- What will be maintained?
- How it will be maintained (i.e. what configuration control process will be used)?

The regional ITS architecture is created as a consensus view of what ITS systems the stakeholders in the region have currently implemented and what systems they plan to implement in the future. The regional ITS architecture will need to be updated to reflect changes resulting from project implementation or resulting from the planning process itself.

- **Changes for Project Definition.** When actually defined, a project may add, subtract or modify elements, interfaces, or information flows from the regional ITS architecture. Because the 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.
- **Changes for Project Addition/Deletion.** Occasionally a project will be added or deleted through the planning process and some aspects of the regional ITS architecture that are associated with the project may be expanded, changed or removed.
- **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 the priority of other projects that are dependent upon it.
- **Changes in Regional Needs.** Transportation planning is done to address 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.

In addition, new stakeholders may come to the table and the regional ITS architecture should be updated to reflect their place in the regional view of ITS elements, interfaces, and information flows.

Finally, the National ITS Architecture may be expanded and updated from time to time to include new user services or better define how existing elements satisfy the user services. These changes should also be considered as the regional ITS architecture is updated. The National ITS Architecture may have expanded to include a user service that has been discussed in a region, but not been included in the regional ITS architecture, or been included in only a very cursory manner.

12.1. Roles and Responsibilities for Maintenance

Responsibility for maintenance of the Santa Fe Regional ITS Architecture should lie with Santa Fe MPO, since they are the primary planning organization for the region, and will be one of the primary users of the architecture. While it is recommended that they assume responsibility for maintenance, it is further recommended that a group of core stakeholders act as an “institutional framework” to review proposed changes to the architecture. The regional ITS architecture is a consensus framework for integrating ITS systems. As it was a consensus driven product in its initial creation, so it should remain a consensus driven product as it is maintained. An institutional framework is needed for maintaining the products. This section defines the stakeholders and their roles and responsibilities for the maintenance of the Santa Fe Regional ITS Architecture.

Definitions

The following stakeholder groups will have a role in the maintenance of the architecture:

- Stakeholders – Any government agency or private organization that has a role in providing transportation services in the region.
- Maintenance Working Group – A group of stakeholder representatives who are responsible for the technical review of updates/changes to the Santa Fe Regional ITS Architecture, and for approving changes to go into the architecture.
- Responsible Agency – The stakeholder agency with primary responsibility for maintenance of the architecture.
- Maintenance Manager – A person responsible for overseeing and guiding the maintenance efforts.

Stakeholders

Stakeholders are any government agency or private organization that is involved with or has an interest in providing transportation services in the state. Each stakeholder owns, operates, and/or maintains one or more ITS elements in the architecture.

The success of the change management process outlined in this Maintenance Plan is highly dependent on the participation of the stakeholders identified in the architecture. Without stakeholders participation in tracking the development of they're ITS systems, and properly updating the architecture, the change management process will not succeed and the usefulness of the architecture will diminish over time.

The primary responsibilities of the stakeholder agencies are submitting the changes in plans or projects to the Maintenance Working Group.

Each Stakeholder will designate an Authorized Representative who may make policy decisions for that agency. The Authorized Representative must endorse all changes to the architecture that directly affects his/her agency. The Authorized Representative may appoint a point-of-contact for all other correspondence

If stakeholders desire more involvement, they can get involved through voluntary representation on the Maintenance Working Group.

Maintenance Working Group

The Santa Fe Regional ITS Architecture Maintenance Working Group, or the Maintenance Working Group has the following responsibilities:

- Collecting and compiling proposed changes and updates to the architecture from stakeholder agencies.
- Evaluating each proposed change from a technical standpoint, and reaching a consensus on the proposed change.
- Approving changes to the architecture.
- Making any institutional or policy related decisions that arise in the maintenance of the architecture

The logical composition of the maintenance working group for the region is the Technical Advisory Committee (TAC). Since the TAC may from time to time have to vote on issues relating to the architecture, each agency represented on the TAC should have one vote.

The Maintenance Working Group should elect a Chairperson to conduct the meetings. The Chairperson will be responsible for calling meetings and leading the meetings. It is suggested that the Chairperson be elected for a two-year term by a majority vote of the eligible representatives present.

Responsible Agency

The Responsible Agency is the government agency that will formally maintain the architecture. The Responsible Agency will assign resources for making the physical changes to the architecture baseline, and for coordinating the maintenance of the architecture. For the maintenance of the Santa Fe Regional ITS Architecture, the Responsible Agency will be the Santa Fe MPO, since they are the transportation planning organization for the region, and will be primary users of the architecture.

Maintenance Manager

The Responsible Agency should appoint a person to the role of Maintenance Manager to coordinate the maintenance activities of the Santa Fe Regional ITS Architecture. The Maintenance Manager will be the coordinator and main point of contact for all maintenance activities, including receiving Change Requests forms, tracking Change Requests, and distributing documentation. The Maintenance Manager is ideally an employee of the Responsible Agency who is formally tasked with the described efforts, but it is not a requirement.

The Maintenance Manager has the following responsibilities:

- Coordinate the activities of the Maintenance Working Group
- Receive Change Request forms and requests for documentation from stakeholders
- Distribute the baseline documents and outputs of the architectures to stakeholders.

- Maintain the “official” records of the Santa Fe Regional ITS Architecture, including the baseline documents, meeting minutes, the Change Request Database, and the list of Points of Contacts for the Stakeholder
- Ensures the status of each Change Request are properly updated in the Change Request Database

Some of these responsibilities will likely be delegated to staff or consultants.

12.2. Timetable for Maintenance

How often will the regional ITS architecture be modified or updated? What events or timetable will be used for making updates or changes to the architecture?

The timetable will depend on the basic approach chosen for maintaining the architecture. There are several options that could be considered:

- **Periodic Maintenance.** This approach ties the maintenance of the architecture to one of the recurring activities of the transportation planning process. For example, it’s natural that the ITS architecture would be updated at the same frequency as the regional transportation plan is updated (every three to five years) or the Transportation Improvement Program is updated (at least every two years). The update of the architecture should occur several months prior to the transportation planning document update, so that the revised architecture could serve as an input to the planning update. Publication and versioning costs are minimized for the periodic maintenance approach since there is a new version only once in the maintenance cycle.
- **Exception Maintenance.** This approach considers and makes changes to the regional ITS architecture in a process that is initiated as needed. Publication and versioning costs are dependent on the frequency of changes made to the regional ITS architecture.

The following approach to maintenance will be used:

A comprehensive architecture update will be performed every three years, concurrent with the formal update of the TIP. This is a natural result of the Santa Fe Regional ITS Architecture being a component of the regional transportation planning process. The update is necessary to ensure that the architecture continues to accurately represent the regional view of ITS Systems. The comprehensive update may include adding new stakeholders, reviewing transportation needs and services for the region, updating the status of projects, and reflecting new goals and strategies, as appropriate. Operational concepts, system functional requirements, project sequencing, ITS standards, and list of agency agreements may also be updated at this time.

Between major updates of the architecture, the following interim update actions should be performed:

- Accept comments as they come in and make *minor updates every 6 months if needed*. Defer any major changes to the yearly update.

- **Actively solicit changes on an annual basis** from each key stakeholder a set of needed updates. **Perform minor or major updates as needed** based upon the inputs and any other change requests received.

The Maintenance Plan will also be reviewed at the previously discussed times for required changes. Use of the Regional ITS Architecture and modifications to it may differ from what was anticipated during the initial development of the Maintenance Plan. Revising the Maintenance Plan may ensure that the change management process defined is effective.

12.3. Architecture Baseline

Establishing an architecture baseline requires clear identification of the architecture products that will be maintained, including specific format and version information. For the Santa Fe Regional ITS Architecture the following outputs are recommended as the architecture baseline:

- Architecture Document (this document)
- Customized Market Package Diagrams
- Turbo Architecture Database
- Regional ITS Architecture Web pages
- Change Request Database

Regarding the Architecture document, the source document, in Microsoft Word format, should be held by Santa Fe MPO, while a PDF version of the documents can be created for general distribution. In addition, a version number and date should be included inside the cover page.

Regarding the Turbo Architecture Database, Santa Fe MPO will maintain a zipped version of the final delivered Santa Fe Regional ITS Architecture database. The name, date, and size of the database file inside the zipped file should be entered into an architecture log as version 1.0 of the architecture.

Regarding the web site, a CD-ROM version of the final web site should be maintained by Santa Fe MPO. It is further recommended that the version number of the architecture be entered somewhere on the home page of the web site so that the version being viewed is immediately identifiable.

12.4. Change Management Process

Once the baseline is defined, the process for making changes to this baseline must be established. The change management process specifies how changes are identified, how often they will be made, and how the changes will be reviewed, implemented, and released. The basic process for change management is shown in Figure 6.

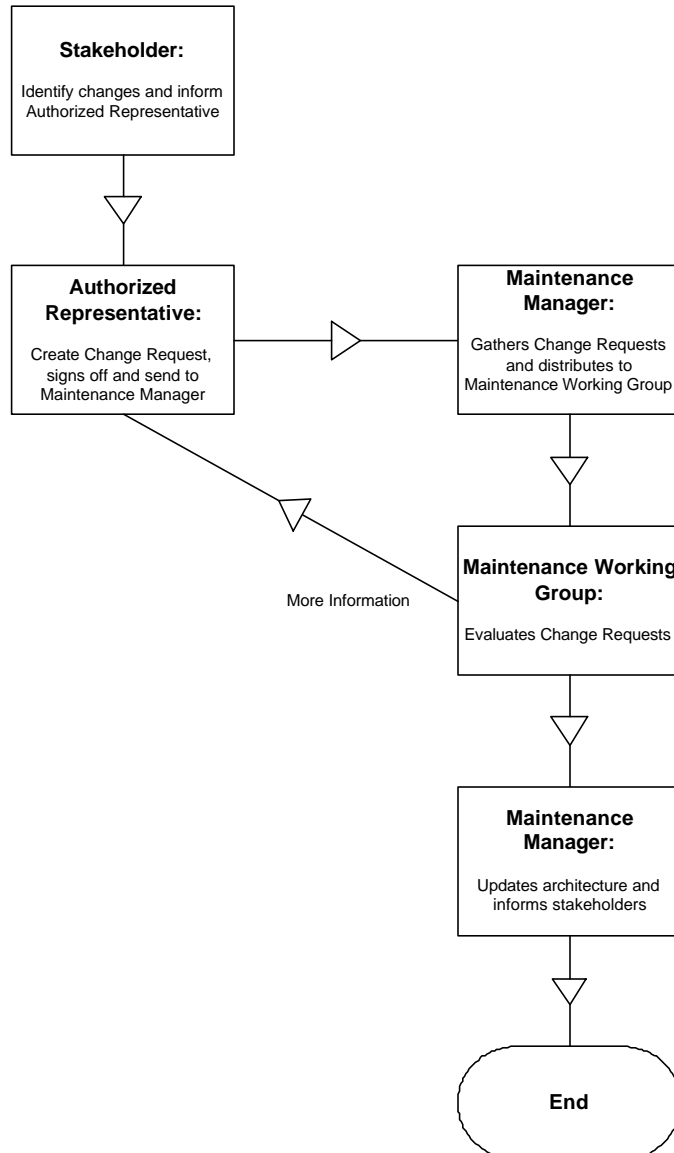


Figure 6: Change Management Process

Identify Change

This involves two issues-

- who can identify a change to the architecture and
- how will the change request be documented.

The question of who can make change requests is an important one. If literally anyone can input requests the region runs the risk of being overrun by requests that will tax scarce resources to review and decide upon. On the other end of the spectrum, if too much formality or paperwork is added to the process then many valid or needed changes may go unexpressed. The recommendation is that all changes should come through a voting member of the Maintenance Working Group. This effectively means that any change suggested has the approval of a member of the working group. This has the added benefit of spreading the resources needed to generate or evaluate changes among the group. The Authorized Representative of a stakeholder (or their staff) should document the change (see below).

As to how the change request should be documented—it is recommended that a simple change request form be created that contains at least the following information:

- Name of change
- Description of change
- Part of baseline affected (could be check boxes for document, database, web site, and not known)
- Rationale for change
- Originator name or agency
- Date of origination

This information will ultimately be added to a change database (recommended to be maintained by MPO personnel) that will add the following additional fields of information:

- Change number (some unique identifier)
- Change disposition (accepted, rejected, deferred)
- Change type (minor or significant)
- Disposition comment
- Disposition date

An example change request form is shown in Figure 7.

Santa Fe ITS Architecture Change Request (CR) Form

Originator Name:		Date Submitted
Originator Telephone:	Originator Fax:	Originator E-Mail:
Originator Agency:		Revision Type: ____ Major ____ Minor
Agency Authorized Signature:		Signature Date:

Sponsoring Agency (if applicable):	
Agency Authorized Signature:	Signature Date:

Description of Proposed Change:		
Rationale for Proposed Change:		
Affected Agency:	Authorized Signature:	Signature Date:
Affected Agency:	Authorized Signature:	Signature Date:
List Attachments:		
Baseline Documents Affected:		
____ Website ____ Turbo Architecture ____ Customized MPs ____ Document ____ Other (describe)		

To Be Completed By Maintenance Manager		
Change Request Number:	Date CR Received:	Date CR Logged:
Date Initially Discussed:	Disposition: <input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> More Info	Disposition Comments
Date Discussed:	Disposition: <input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> More Info	Disposition Comments
Date Discussed:	Disposition: <input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> More Info	Disposition Comments
Date Approved by Steering Committee:		
Baseline Documents Affected/Version implemented		
<input type="checkbox"/> Turbo Architecture Date: _____ Version: _____ <input type="checkbox"/> Website Date: _____ Version: _____ <input type="checkbox"/> Customized MPs Date: _____ Version: _____ <input type="checkbox"/> _____ Date: _____ Version: _____		

Figure 7: Change Request Form

Evaluate Change

Upon receiving a Change Request by the Maintenance Manager, an initial evaluation of the Change Request is to be made for the impact to the overall architecture or the affected document. The purpose of the evaluation is two-fold:

- Verify that the Change Request form and supporting materials is complete and correct
- Compare with other Change Request forms and determine if there are any conflicts

If the proposal for architecture modification has an impact on other stakeholders, the evaluator(s) should contact the Stakeholders to confirm their agreement with the modification. All Stakeholders directly affected by the proposed change(s) must approve and sign-off the Change Request before the Maintenance Working Group considers the Change Request.

There are several options as to who performs the initial assessment, including:

- The Maintenance Manager
- Maintenance Working Group
- The person submitting the change
- A consultant, hired to support the maintenance activities of the architecture

Each of the above options has positive and negative implications, but the evaluator must have working knowledge of the architecture to evaluate the proposed changes.

Reviewing the Change Request

Upon completing the initial assessment, the Change Request form should be reviewed by the Maintenance Working Group (either at a Maintenance Working Group meeting or via some electronic means). Maintenance Working Group meetings are called by the Chairperson (or their designated representative).

Maintenance Working Group meetings called by the Chairperson will occur at least on an annual basis. On an annual basis, the Maintenance Manager will send a reminder to all Stakeholders to update their ITS Elements and Interfaces in the architecture, if necessary. If sufficient Change Request Forms are submitted, the Chairperson may call a Maintenance Working Group meeting at more frequent intervals to review the Change Request forms. The Maintenance Manager will distribute the Change Request forms and all supporting materials to all Stakeholders prior to the meeting for their review and assemble an agenda.

Maintenance Working Group meetings can also be requested by one of the stakeholders if there is an urgent need to update the architecture quickly.

The Maintenance Working Group should have sufficient time to review the Change Requests before the meeting. During the meeting, the Maintenance Working Group shall review the proposed changes and offer any comments.

After each Change Request is reviewed, if no further comments are offered by the Maintenance Working Group, the Change Request will be considered approved, and the Chairperson shall sign off on the Change Request.

If additional comments are made that require action, those comments should be noted on the Change Request form. Where comments (or changes required) are minor in nature they can be made by the submitter of the Change Request form, or by resources designated by the Maintenance Manager and the change considered approved. In the case of major comments or changes to the Change Request, the approval of the change may be deferred until the next meeting of the Maintenance Working Group.

If a Change Request is to be withdrawn from consideration, the Chairperson or the Maintenance Manager must sign-off on the Change Request Form to close out the Change Request. At the end of the meeting, the Maintenance Working Group shall agree if all the approved changes to the architecture necessitate a minor revision of the appropriate baseline documents or a major revision. The decision will be based on the number of Change Requests approved and the nature of the approved changes.

Minutes should be kept for all Maintenance Working Group meetings. Minutes should include, at a minimum, an attendance list, comments made on each Change Request, and the disposition of each Change Request Form (Approved/Withdrawn/Deferred/Request More Information). Minutes are to be distributed to all members of the Maintenance Working Group meeting no less than 5 working days after the meeting. Comments are due within 10 working days to the Maintenance Manager. Approved minutes shall be signed by the Chairperson and will be distributed to all Stakeholders and posted on the website. The minutes provide a recording process for the change management process and provide traceability.

One additional procedure the region may want to consider is to streamline the review and approval process for minor Change Requests, handling via email rather than through face to face meetings.

Update Baseline

If the decision is to accept the change, then the appropriate portions of the architecture baseline are updated and an updated architecture baseline is defined. In addition to updating the baseline documents, databases, or other outputs, the configuration status should be updated. In the discipline of Configuration Management this is known as Configuration Status Accounting. This accounting is performed by having a document that defines the following information for each separate output of the architecture baseline:

- Output name;
- Output revision number;
- Date of latest revision;
- File Name; and
- Location/Point of Contact.

Periodically, the information in the various outputs of the architecture baseline should be audited to assure that the different representations of the architecture information (e.g. the database and document) are in sync. This configuration auditing should be performed by someone independent of the staff or resources used to actually enter the changes.

Notify Stakeholders:

Point of Contacts for each stakeholder should be notified by e-mail from the Maintenance Manager when baseline documents have been updated. All baseline documents shall also be available to stakeholders from a website or other electronic location, such as an ftp site. It is the responsibility of the Maintenance Manager to ensure the most recent document is available from the website. The Configuration Status Document should be one of those outputs that are available.

Request for copies or access to the baseline documents should be made to the Maintenance Manager.

After major revisions to the architecture or the baseline documents, the Maintenance Working Group may elect to also provide all baseline documents to members on CD-ROMs.

Appendix A: Comments and Disposition

No.	Comment	Generated By/ Response By	Date of Comment/Response	Response	Status	Comments
1	NMDOT District 5 Web Page - would the CARS Server drive the web page in addition to the 511 system and the Statewide ATIS Website?	Bruce Eisenhart/ Wei Zhang	3/17/05 3/18/05	There will be a statewide CARS server, will all six districts mapped. District 5 will be responsible for entering maintenance and incident information into the statewide system. Weather information will be fetched from weather stations. The information may be entered via the Web site or cell phone. Information only need to be entered once through one media, and the CARS 511 system will convert it to other media.	Done	Answer: yes. Add subsequent flows from CARS server to District 5 Web page - include interface with Personal Computing Devices. See ATIS1-1 and ATIS1-3.
2	Private Tow/Wrecker Vehicles - probably don't need this interface to private tow/wreckers.	Bruce Eisenhart/ Wei Zhang	3/17/05 3/18/05	I think we can just define a place holder for the private Tow/Wrecker Vehicles. Involvement of the private tow industry will be part of the incident management practice.	Done	Keep element, ensure tow/wrecker interfaces are provided in incident management market package diagrams. Added dispatch function to ATMS08-17
3	NMDOT District 5 Pavement Management System Archive Users - we did not create a Pavement Management System Archive page- so don't need to worry about users of it. Should we create a page that shows a District 5 Pavement Management System Archive?	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Proceed without the archive page.	Done	Remove element.
4	Army Corps of Engineers Field Office - probably don't need this element - didn't seem to be any important interfaces to	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Proceed without this element.	Done	Remove element.

No.	Comment	Generated By/ Response By	Date of Comment/Response	Response	Status	Comments
	region.					
5	NMDOT District 5 Flood Sensors - not connected now- would you like it to be?	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Proceed without this element.	Done	Remove element.
6	City of Santa Fe Traffic Database - this is probably a hold over from before discussions and can be removed.	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Defered to City of Santa Fe	N/A	No action taken as this time.
7	NMDOT Highway Maintenance Management System - The Highway Maintenance Management System contains a record of the maintenance activities carried out by NMDOT.	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Accurate	Done	Proceed with architecture as it currently stands.
8	NMDOT ITS Database - Database of ITS assets owned by NMDOT. Also includes service patrol dispatch archives.	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Accurate	Done	Proceed with architecture as it currently stands.
9	NMDOT Consolidated Highway Database - NMDOT database of highway information.	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Comprehensive database of NMDOT roadway information including basic identification, dimensional data, roadway condition, historical references, legal descriptions, roadway construction data, location information, presence of structures and railroads, safety and accident history,	Done	Revise definition.

No.	Comment	Generated By/ Response By	Date of Comment/Response	Response	Status	Comments
				traffic control devices, functional classification and traffic data.		
10	NMDOT Road Features Inventory - Road features inventory for signs, roadside hardware (e.g guardrails). Legacy system.	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Accurate	Done	Proceed with architecture as it currently stands.
11	Santa Fe MPO Archive - Archive management system for the Metropolitan Planning Organization for the City of Santa Fe. Potentially includes traffic counts and crash data.	Bruce Eisenhart/ Charles Remkes	3/17/05 3/31/05	Defered to City of Santa Fe	N/A	No action taken as this time.

Appendix B: Functional Requirements

(Contained in Separate Document)