Chapter 4: Operational Concept

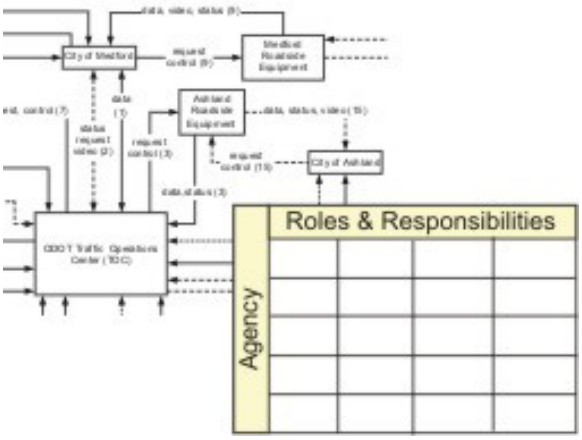
4.1 INTRODUCTION

The operational concept describes the current and future roles and responsibilities of regional transportation and emergency management agencies specifically related to the implementation and operation of intelligent transportation systems that require regional coordination such as incident management. The operational concept provides a high-level view of the way agencies and systems work together today and in the future to provide ITS services and will form the basis for future interagency agreements. The operational concept for the Rogue Valley metropolitan area includes:

- **High-Level Operational Concept Matrix.** This spreadsheet serves as a quick reference to high-level relationships between key and expanded stakeholder agencies and documents current and future relationships for ITS-related projects and the level of information-sharing.

- **Detailed Roles and Information Flows by Program Area.** For this project, seven program areas have been developed to group logical ITS projects as identified below. These program areas are consistent with the National ITS Architecture, but have been tailored to describe the program areas specifically identified for the Rogue Valley metropolitan area. For each program area, diagrams of current and future information flows between agencies and a responsibility matrix outlining current and future roles and responsibilities by agency are included.

  - Traffic Operations & Management
  - Traveler Information
  - Incident Management
  - Public Transportation Management
  - Emergency Management
  - Information Management
  - Maintenance & Construction Management



4.1.1 Approach

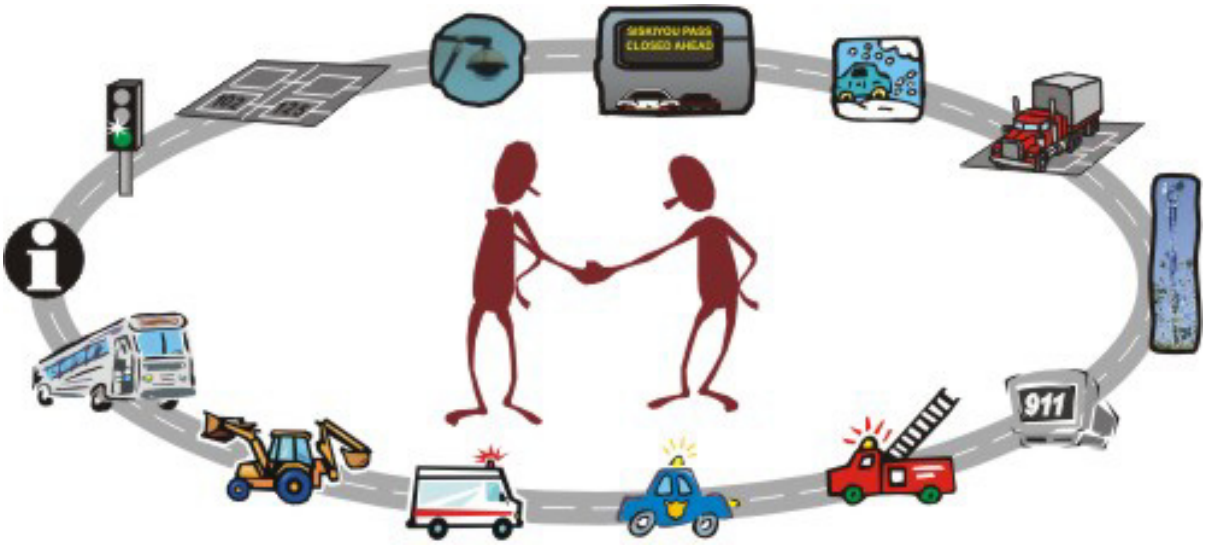
The information contained in the operational concept was garnered from in-person and telephone interviews with the key stakeholders and mail questionnaires from the extended stakeholders in the Rogue Valley metropolitan area described in Chapter 2. In addition, the market packages selected by the key stakeholders in Chapter 3 were used to help define current and future ITS program areas.

4.2 HIGH-LEVEL OPERATIONAL CONCEPT

ITS projects frequently require multi-jurisdictional coordination to implement and support ongoing operations. For example, a conventional design-build highway project will not include collaboration with emergency management agencies. However, the implementation of an incident management program including ITS deployments will likely involve a state department of transportation, local public works departments, regional emergency management agencies, and first responders. The operational concept identifies the key stakeholders responsible for a regional incident management program and defines each agency's roles and responsibilities.

4.2.1 Agency-to-Agency Relationships

To better conceptualize agency-to-agency relationships, eight broad categories of interactions have been defined. At one end of the spectrum there is no established relationship between agencies (Independent). In the middle, there is a level where agencies cooperate with each other but do not share data electronically (Cooperation). The level of highest coordination (Control Sharing), includes agencies that have established relationships beyond cooperation and have agreements in place that allow them to share control, operate or maintain field devices. Table 4-1 shows the relationship types, definitions, and relationship examples.



4.2.2 Information Flows

Information flows may refer to the exchange of information from one agency's central operation center to another (e.g., traffic management center). This type of exchange is known as a center-to-center information flow. If information is sent from a field device to a traffic management center, for example, this type of information flow is often referred to as center-to-field. More often than not, information is exchanged once it has been sent back to an agency's center. From there it is shared with one or more agencies. Aside from the actual information that is shared, information can be in the form of requests or control. Requests are basically inquiries sent to another agency for information. A control flow occurs when an agency has the authority to manipulate field devices such as changing messages on message signs. Table 4-2 summarizes the type of information flows between agencies that will be documented for each ITS program area.

Table 4-1. Relationships between Agencies

Relationship Category	Definition	Relationship Example
Independent	Agencies operate separately with no interaction.	The City of Ashland and the City of Central Point may not have any established relationship.
Consultation	An agency provides advice or services to another agency and vice versa. Information is exchanged and includes actions that may take place. No electronic information is shared.	RVCCOM will call the City of Medford to alert them of an incident that may require City personnel to close down a roadway. This information is shared verbally with no electronic means of sending data to and from these agencies.
Cooperation	Agencies work together to establish and achieve common goals. For example, agencies may work together in the planning, project development and operations phases of a project. No electronic sharing of information.	RVCOG participates with all regional agencies in planning and development of transportation operations.
Information Sharing	In addition to agencies working together at the "cooperation" level, they share electronic data and device status information.	RVCCOM and SORC have a linked CAD system. Information entered into either system is shared with both agencies.
Control Sharing	Through operational agreements agencies allow other agencies to control field devices. Note that "information sharing" level has been realized.	ODOT and the City of Medford work cooperatively to deploy traffic signals on major routes. While ODOT funds and owns some signals in Medford, the City of Medford is responsible for operating ODOT's signals.
Operational Responsibility	One agency operates the field equipment of a second agency on a full time basis but is not responsible for maintenance or repairs.	Traffic signals owned by ODOT within the City of Medford city limits are operated and maintained by the City of Medford.
Maintenance Responsibility	One agency maintains the field equipment of a second agency but is not responsible for operations.	ODOT contracts out to private companies to maintain their ITS equipment (message signs, CCTV, and HAR) while maintaining control.
Full O&M Responsibility	One agency has full responsibility for the field equipment of a second agency including operations and preventative and emergency maintenance.	ODOT maintains and operates the City of Central Point's traffic signals.

4.2.3 High-Level Operational Concept Relationship Matrix

The operational concept lays out the relationships between the various stakeholder agencies in the Rogue Valley region. Where possible, relationships with the expanded stakeholders have also been noted. These agency relationships were mapped out using the categories defined in the previous sections – relationship and data flow types. For each agency listed, the matrix also maps out the direction of data flow. That is, it notes which agency is the "from" and which agency is the "to". If the relationship has been verified with the agencies, this is also duly noted. Lastly, the matrix captures whether the relationships and data flows currently exist, are planned, or are being considered. The high-level operational concept matrix is included in Appendix M.

Table 4-2. Information Flow Definitions

Information Flows	Definition	Information Flow Example
Data	Data are information captured by field devices automatically or entered manually into a central repository. Examples of data include, but are not limited to, incident, traffic, weather, parking, and transit data.	SORC and RVCCOM share emergency data via their CAD system.
Video	Live video and/or still images captured by cameras.	Video images from cameras on I-5 are broadcast to TripCheck, ODOT's traveler information website.
Status	Status is information on the operational state of field devices. Examples include confirmation of message set postings to dynamic message signs, operational status of RWIS or cameras such as failed, on or off.	ODOT may receive operational status reports from dynamic message signs that indicate whether the device is working or not.
Request	The ability for an agency to solicit either a data or command change, such as DMS messaging or signal timings, from another party.	Many regional agencies request ODOT to display specific information for message signs.
Control	Control is the ability to manipulate the current setting of a field device. Control may include, but is not limited to, changing DMS messages, changing traffic signal timing plans, and camera control (e.g., pan, tilt, zoom).	OSP has limited control for some ITS equipment owned by ODOT, such as highway advisory radio (HAR).

4.3 DETAILED ROLES, RESPONSIBILITIES AND INFORMATION FLOWS

This section provides explicit information on the general roles each agency may take in participating in ITS projects. Along with this, diagrams are provided capturing how information flows between the various agencies. The responsibility definition matrices and information flow diagrams are presented according to the ITS program areas.

While the structure of an ITS project may differ according to the type and complexity of the endeavor, a set of general steps that a project undergoes can be gleaned from experience. In order to present the roles an agency may have in an ITS project, it is helpful to define the roles and responsibilities according to these generalized phases of an ITS project, which include the following:

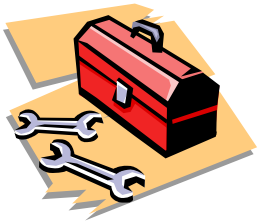
- **Design:** The design phase groups all efforts put forth to lay the framework for a project implementation. This includes the development of pertinent documents required for successful project execution. The types of documentation that may be required during the design phase of an ITS project include: an operational concept, high-level requirements, detailed requirements, high-level design, detailed design, and operations and maintenance plans. Basically, the documentation provides the structure and understanding for how the project will be implemented. For example, high-level requirements are important in documenting the general vision of a project such as

determining what facets and functions partners are interested in including in the design. Design-related documentation provides traceability to the initial goals and objectives of the project team, and further provides a point of reference in testing and validating the successful implementation of the final product. All aspects prior to the actual implementation of a project have been categorized into design.

- **Construction/Implementation:** The deliverables provided as part of the design process are used as the blueprint for construction and implementation. Implementation relating to ITS may include such tasks as construction; developing and installing equipment, hardware and software; and integration with existing systems. An example of implementation is installing RWIS equipment in the field. This includes all tasks necessary to install the hardware and software including tying into existing communications to pouring a new concrete pad to installing new servers in a central office. Implementation tasks are related to the actual execution of a project.

- **Operational Planning:** Operational planning involves developing processes and procedures to support ongoing operations and future expansion of ITS technologies. Upkeep may be performed by a combination of one or more project partners or contracting with a third party.

- **Operations:** Operations encompasses tasks related to operating ITS equipment after implementation. This may also include training technical or information technology staff and understanding any warranties, licenses or registration agreements with the vendor.



- **Maintenance:** System maintenance covers both hardware and software upkeep. Maintenance roles may include repairing equipment outages, routine testing of equipment to ensure it is functioning correctly, and replacement of equipment subcomponents.

4.3.1 Traffic Operations & Management

This section describes coordination between agencies to relieve congestion by operating and managing traffic control devices such as traffic signals, vehicle detection, automated traffic recorders, cameras, and other technologies. Figure 4-1 shows the flow of information between the agencies. Each line connecting the various agencies in Figure 4-1 is numbered and a short explanation is provided in Table 4-3. Solid lines indicate an existing relationship, such as ODOT maintaining control and maintenance responsibility for Ashland-owned traffic signals. Dashed lines indicate a proposed, planned or future relationship. For example, should ODOT install cameras on an ODOT facility within the City of Central Point, Central Point would like to have access to these video images. The responsibility matrix, Table 4-4 shows the current and future roles and responsibilities of the various key stakeholder agencies for the Rogue Valley specifically relating to Traffic Operations & Management.

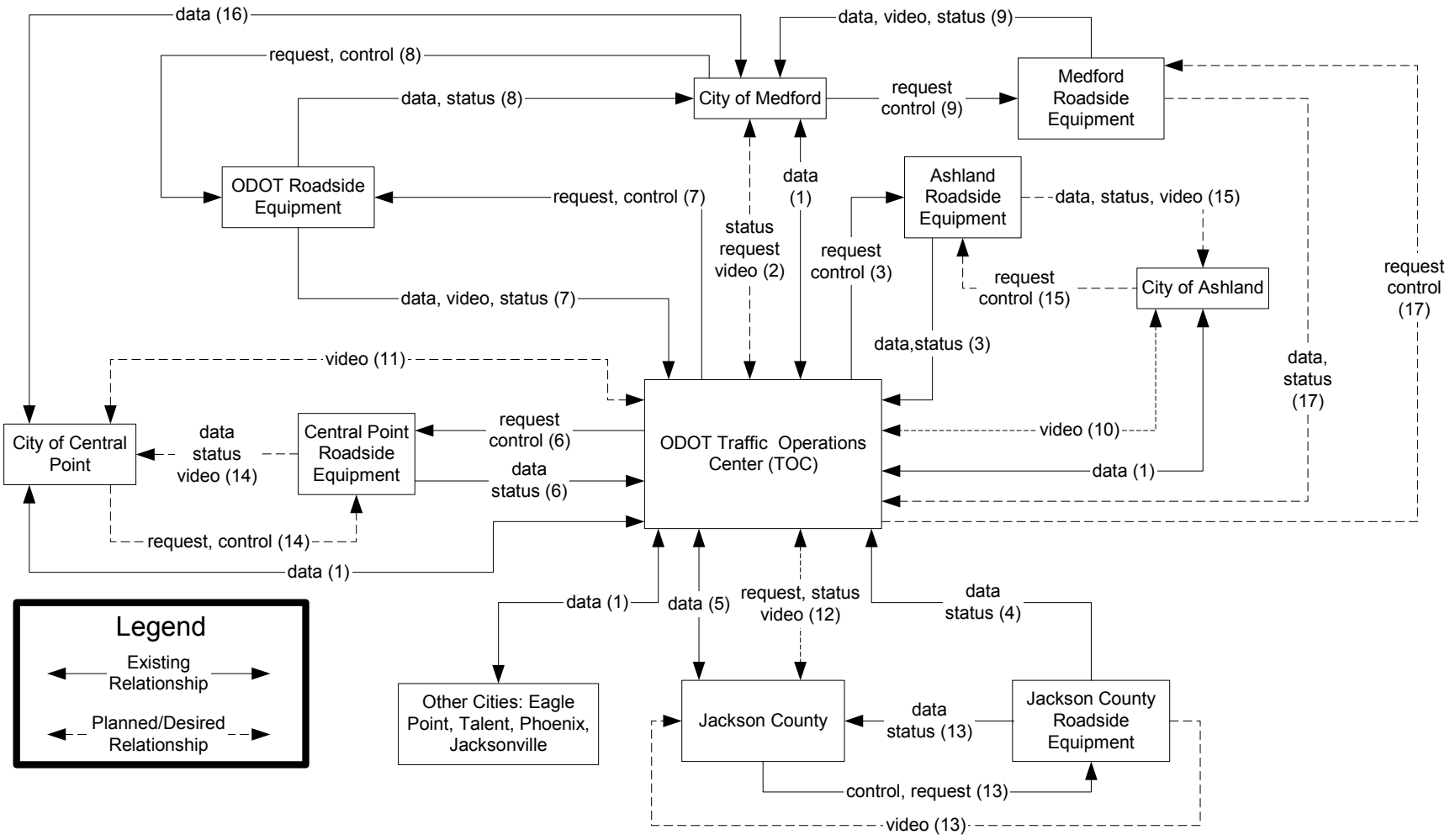
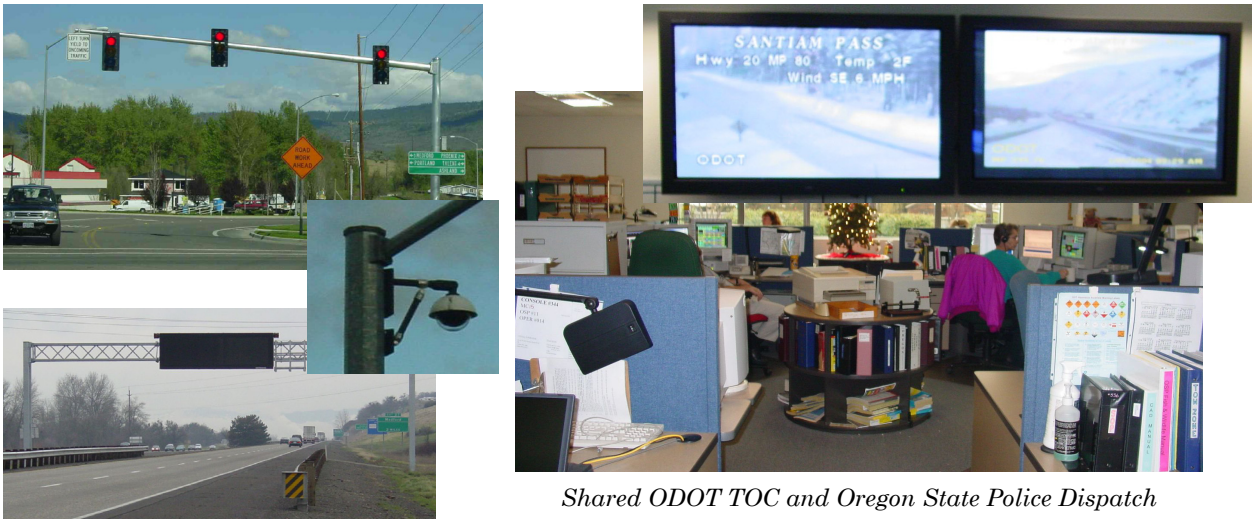


Figure 4-1. Traffic Operations & Management Flow Diagram

Table 4-3. Traffic Operations & Management Flow Table

Line Number	Traffic Operations & Management: Existing and Planned Information Flows (Line Definitions)
1	ODOT TOC and the Cities of Medford, Ashland and Central Point, as well as Jackson County communicate on a regular basis regarding traffic operations and share information via phone, email, and face-to-face.
2	ODOT would like to receive information regarding Medford's roadside equipment.
3	ODOT maintains and operates the City of Ashland's signals.
4	ODOT maintains Jackson County signals. Jackson County operates their own signals.
5	Jackson County and ODOT work closely together. They share the same office building and much information is shared through conversations, meetings, fax, and email.
6	ODOT maintains and operates traffic signals within the city of Central Point.
7	ODOT maintains and operates all of their roadside equipment with the exception of the traffic signals in the Medford city limits (see line 8)
8	The City of Medford maintains and operates signals owned by ODOT within the city limits.
9	The City of Medford maintains and operates all signals within the city limits.
10	The City of Ashland would eventually like to access video images from ODOT.
11	Central Point plans on sharing camera images with ODOT.
12	Jackson County would like access to ODOT's signals and cameras within Jackson County.
13	Jackson County operates their signals but would like remote connection in the future.
14	The City of Central Point would eventually like to take control of their signals and any ITS equipment installed within their jurisdiction.
15	The City of Ashland would eventually like to take control of their signals and any ITS equipment installed within their jurisdiction.
16	During "after hours" emergencies, ODOT may have authorization to follow planned responses for operating the City of Medford's signals.



Shared ODOT TOC and Oregon State Police Dispatch

Table 4-4. Traffic Operations & Management Roles and Responsibilities Matrix

Agency	Design	Construction/ Implementation	Operational Planning	Operations	Maintenance
ODOT	• Manage ODOT-led projects • Participate in developing requirements for traffic operations such as dynamic message signs, curve and speed warning systems, and cameras • Lead design of field devices on Interstate and state highways	• Oversee implementation of field devices on Interstate and state highways • Lead construction of field devices on Interstate and state routes • Secondary role in construction and implementation of field devices	• Participate in regional congestion mitigation plan • Participate in development of traffic signal plans on roadways under own jurisdiction • Lead regional operational planning of field devices and communications network for ODOT devices	• Lead operations role for ODOT devices • Secondary role for operations of devices on local jurisdictions such as traffic signals, cameras, loops and video detection • Operate traffic control devices on Interstate and state highways • Operate field devices for the city of Medford after hours and in emergency situations	• Maintain ODOT and local agency field devices for local jurisdictions such as traffic signals, cameras, and loop detection except within the City of Medford • Maintain traffic control devices on Interstate and state highways
Jackson County	• Manage Jackson County-led projects • Participate in developing requirements for traffic operations	• Lead implementation of field devices on county roads • Participate in implementation of remote access to Jackson County traffic signals	• Participate in regional congestion mitigation plan • Participate in regional operational planning of field devices and communications network	• Operate field devices owned by Jackson County	• Maintain field devices owned by Jackson County
Other Cities: Eagle Point, Jacksonville, Phoenix, and Talent	• Manage city-led projects • Participate in developing requirements for traffic operations	• Oversee implementation of field devices on city roads	• Participate in regional congestion mitigation plan • Participate in regional operational planning of field devices and communications network		
City of Medford	• Manage City of Medford-led projects • Participate in developing requirements for traffic operations and improvements such as the north and south Medford interchanges • Participate in procurement of cameras and dynamic message signs for traffic operations on local roads	• Lead construction and implementation of field devices on roadways within the City of Medford	• Lead development of traffic signal plans within jurisdiction • Participate in regional congestion mitigation plan • Participate in regional operational planning of field devices and communications network	• Operate field equipment deployed within the Medford city limits, except for devices owned by Jackson County	• Maintain field equipment deployed within the Medford city limits, except for devices owned by Jackson County
City of Ashland	• Participate in developing requirements for traffic operations • Develop improvements to manage traffic due to seasonal events (i.e. Shakespeare Festival) • Participate in developing automated data gathering (i.e. vehicle counts) projects from field devices	• Provide input on field devices implemented within the City of Ashland's city limits	• Participate in regional congestion mitigation plan • Participate in regional operational planning of field devices and communications network	• Depending on city funding, potentially operate traffic devices owned by the City of Ashland in the future	
City of Central Point	• Participate in developing requirements for traffic operations • Participate in coordinating traffic signal operations within Central Point city limits	• Provide input on field devices implemented within the City of Central Point's city limits	• Participate in regional congestion mitigation plan • Participate in regional operational planning of field devices and communications network	• Control traffic devices such as dynamic message signs and cameras within Central Point city limits	

4.3.2 Traveler Information

The purpose of this program area is to disseminate traffic condition related information such as congestion, incidents, construction, road closures, diverted routes, and general awareness. There are several traveler information sources in the Rogue Valley. ODOT is the main source of traveler information using radio (HAR), internet (TripCheck), phone (511 system), dynamic message signs and video (camera images) to disseminate information to the traveling public. These systems contain information relating to I-5 and state highways. Local construction information is provided on various websites hosted by some regional agencies. Figure 4-2 shows existing (solid line) information flows between the agencies, as well as planned (dashed line) information flows and relationships. Explanations for the type of relationship and information shared are found Table 4-5. The responsibility matrix in Table 4-6 shows the current and future roles and responsibilities of the various key stakeholder agencies for the Rogue Valley ITS implementation plan specifically relating to Traveler Information.

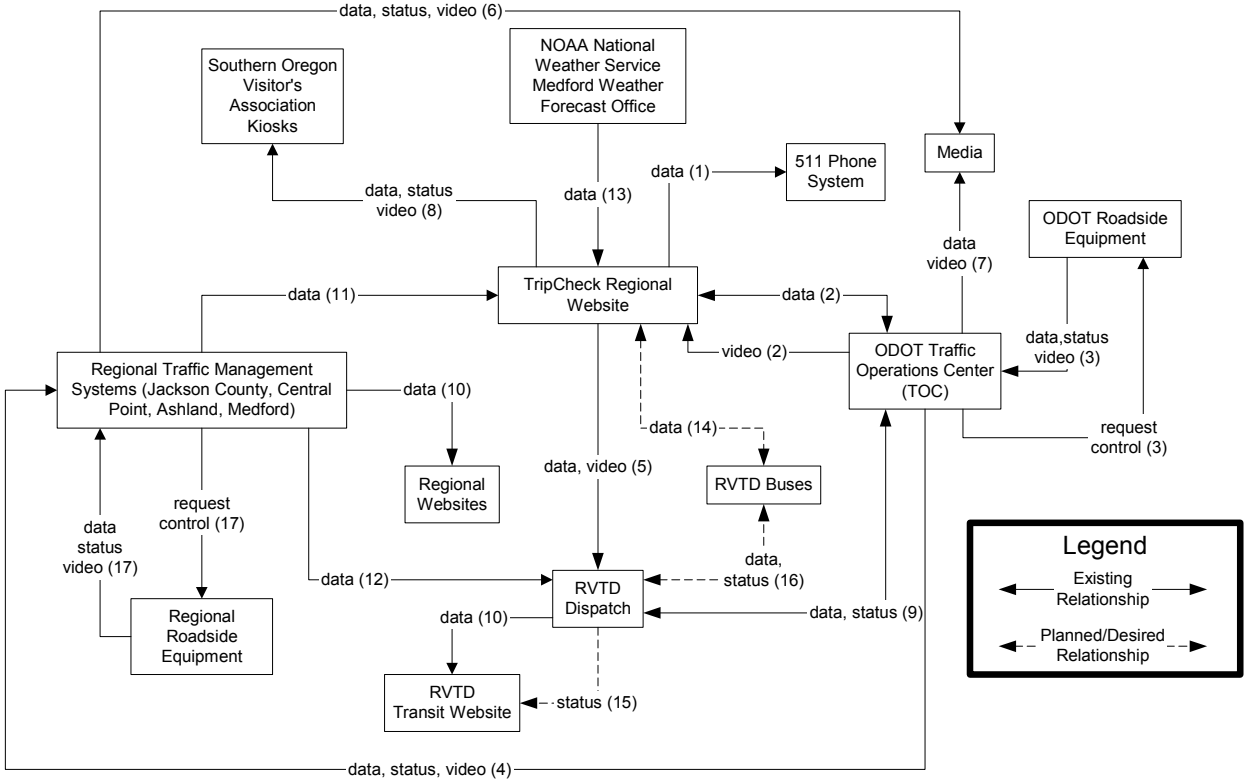


Figure 4-2. Traveler Information Flow Diagram

Table 4-5. Traveler Information Flow Table

Line Number	Traveler Information Systems Management: Existing and Planned Information Flows (Line Definitions)
1	TripCheck disseminates traveler information to the 511 phone system.
2	The ODOT Traffic Operations Center (TOC) creates/updates situations and construction information using the statewide condition reporting system.
3	ODOT may change the DMS messages to relay traveler information. They also use the highway advisory radio, RWIS and cameras to relay information to the traveling public.
4	Regional agencies (including Jackson County and the Cities of Medford, Ashland, and Central Point) share information with the ODOT TOC via phone, face-to-face, e-mail, and fax.
5	RVTD provides data to TripCheck as applicable.
6	Regional agencies prepare press releases for information that may affect the traveling public, such as construction projects, road closures, and utility work.
7	ODOT prepares press releases for planned construction projects and road closures. They also allow the media to use images from the traffic monitoring cameras.
8	Southern Oregon Visitor's Association kiosks link to TripCheck to provide travelers with information.
9	ODOT notifies RVTD via fax and phone of planned construction projects and road closures.
10	Many regional agencies operate and maintain a public website with traffic information (i.e. construction, road closures) available for the traveling public.
11	Regional agencies would like to see a single website combining traveler information for the Rogue Valley, instead of several different websites hosted by different agencies. Future data and video images will be fed directly into the TripCheck website.
12	Regional agencies inform RVTD of situations and events that may affect bus routes.
13	ODOT receives weather information from the NOAA (National Oceanic and Atmospheric Administration) National Weather Service Medford Weather Forecast Office.
14	Regional agencies control and receive data from their roadside equipment.
15	RVTD plans to provide real-time traveler information on their website.
16	RVTD plans to gather real-time information from buses.

Table 4-6. Traveler Information Roles and Responsibilities Matrix

Agency	Design	Construction/ Implementation	Operational Planning	Operations	Maintenance
ODOT	• Manage ODOT-led traveler information projects • Participate in standardizing message sets for DMS messages • Provide input on regional ATIS projects such as developing a congestion flow map • Design expansion of TripCheck for Rogue Valley regional information	• Lead expansion and upgrade of the highway advisory radio (HAR) system • Participate in live broadcasting of camera images to local television • Provide data for regional implementation of traveler information projects (i.e. provide traffic data for the congestion flow website) • Oversee procurement and installation of additional ITS equipment on Interstate and state highways such as cameras and dynamic message signs	• Lead development of operational plan and interagency agreements for providing traveler information in the Rogue Valley	• Lead operation of current and future traveler information devices on Interstate and state highways except within the City of Medford • Ensure current messages are posted to traveler information dissemination systems such as 511 and highway advisory radio (HAR) • Keep information on traveler information systems current	• Maintain ITS equipment on Interstate and state highways except within the City of Medford • Maintain TripCheck Regional website
Jackson County	• Participate in regional ATIS planning and development	• Provide input on regional implementation of traveler information projects	• Participate in development of operational plan and interagency agreements for providing traveler information in the Rogue Valley	• Post current traveler information such as construction information on regional websites	• Support maintenance of Jackson County website
Regional Traffic Management Agencies: Ashland, Central Point and Medford	• Participate in regional ATIS planning and development	• Provide input on regional implementation of traveler information projects • Provide data for regional implementation of traveler information projects (i.e. provide traffic data for the congestion flow website)	• Participate in the development of operational plan and interagency agreements for providing traveler information in the Rogue Valley	• Post current traveler information such as construction information on regional websites or ITS devices	• Maintain city-owned ITS equipment • Support maintenance of local traveler information websites
RVCOG	• Lead facilitation of regional traveler information planning projects • Participate in regional traveler information design and planning projects	• Provide input on regional implementation of traveler information projects • Provide data for regional implementation of traveler information projects	• Participate in development of operational plan and interagency agreements for providing traveler information in the Rogue Valley		
RVTD	• Manage RVTD-led projects such as automated passenger counts, GPS location and tracking for improved traveler information • Manage RVTD-led projects to provide schedule and real-time transit information to passengers online and at bus stops	• Oversee implementation of transit related ATIS projects • Manage procurement of ITS equipment for transit service	• Participate in development of operational plan and interagency agreements for providing traveler information in the Rogue Valley	• Operate RVTD website • Operate devices to provide real-time transit-related traveler information • Provide information to ODOT's planned Regional Trip Planner website	• Maintain ITS equipment • Maintain RVTD website • Maintain information flow to ODOT's planned Regional Trip Planner website

4.3.3 Incident Management

No formal incident management program exists in the Rogue Valley, but Chapter 6 includes a project to develop an incident management program as part of the deployment plan. Currently, several local agencies own equipment such as portable dynamic message signs that are deployed in the event of an incident or major emergency (i.e. flooding). The flow diagram shown in Figure 4-3 indicates the planned agreements for incident management and explanations of each flow are detailed in Table 4-7. The responsibility matrix in Table 4-8 discusses current and future roles and responsibilities.

Table 4-7. Incident Management Flow Table

Line Number	Incident Management: Existing and Planned Information Flows (Line Definitions)
1	The ODOT Traffic Operations Center (TOC) will dispatch incident response vehicles in the future once vehicles have been deployed. Vehicles will report status via radio.
2	The TOC has the ability to control roadside equipment (e.g. dynamic message signs, cameras, highway advisory radio) remotely.
3	OSP Dispatch and ODOT TOC are co-located allowing OSP to receive real-time video images.
4	OSP Dispatch directs OSP response vehicles.
5	The ODOT TOC tries to inform RVTD of incidents that may impact transit service.
6	The City of Medford plans to share video images from their cameras to SORC and RVCCOM.
7	Not used.
8	SORC has a direct phone line to OSP Dispatch for incident information.
9	Not used.
10	RVCCOM calls OSP Dispatch to relay information on incidents.
11	Jackson County Roads, Parks, & Planning sends and receives data from RVCCOM and SORC. If they procure cameras in the future, they will send the images to RVCCOM and SORC.
12	Emergency response vehicles correspond with the various emergency responders.
13	SORC and RVCCOM operate different CAD systems, but automatically share information through a fiber optic connection.
14	SORC dispatches for several emergency responders in the Rogue Valley.
15	Not used.
16	Traffic signals within the City of Medford are pre-emption enabled for fire vehicles only.
17	The majority of Jackson County traffic signals are outfitted with pre-emption for fire vehicles only.
18	SORC and RVCCOM would like to receive real-time data (i.e. video images, congestion information) directly from ODOT's roadside equipment.
19	RVTD would like to share future camera images from buses with SORC and RVCCOM to aid in traffic/incident monitoring.
20	Medford Fire and Rescue vehicles have the ability to pre-empt signals owned by Jackson County.

Line Number	Incident Management: Existing and Planned Information Flows (Line Definitions)
21	RVTD Dispatch corresponds with fleet via cell phone and radio to inform drivers of incidents affecting route/transit service. Future video images from coaches will be transmitted to the RVTD Dispatch center.
22	Emergency response vehicles equipped with cameras will be able to feed images directly to the 911 and/or Dispatch Centers to aid in incident response.
23	The City of Medford and ODOT may pursue an agreement for ODOT to implement pre-programmed signal timing "after hours" when needed for incident management.
24	The majority of ODOT traffic signals are outfitted with pre-emption for fire vehicles only.
25	SORC and RVCCOM would like to receive video images from Mercy Flights Dispatch once it is available.
26	SORC and RVCCOM work closely with Mercy Flights Dispatch.
27	Jackson County will control and operate the pre-emption equipped traffic signals that they own.
28	Medford Public Works control and operate their ITS equipment such as pre-emption equipped traffic signals and future dynamic message signs.
29	Other emergency response vehicles plan on sending video images to SORC.

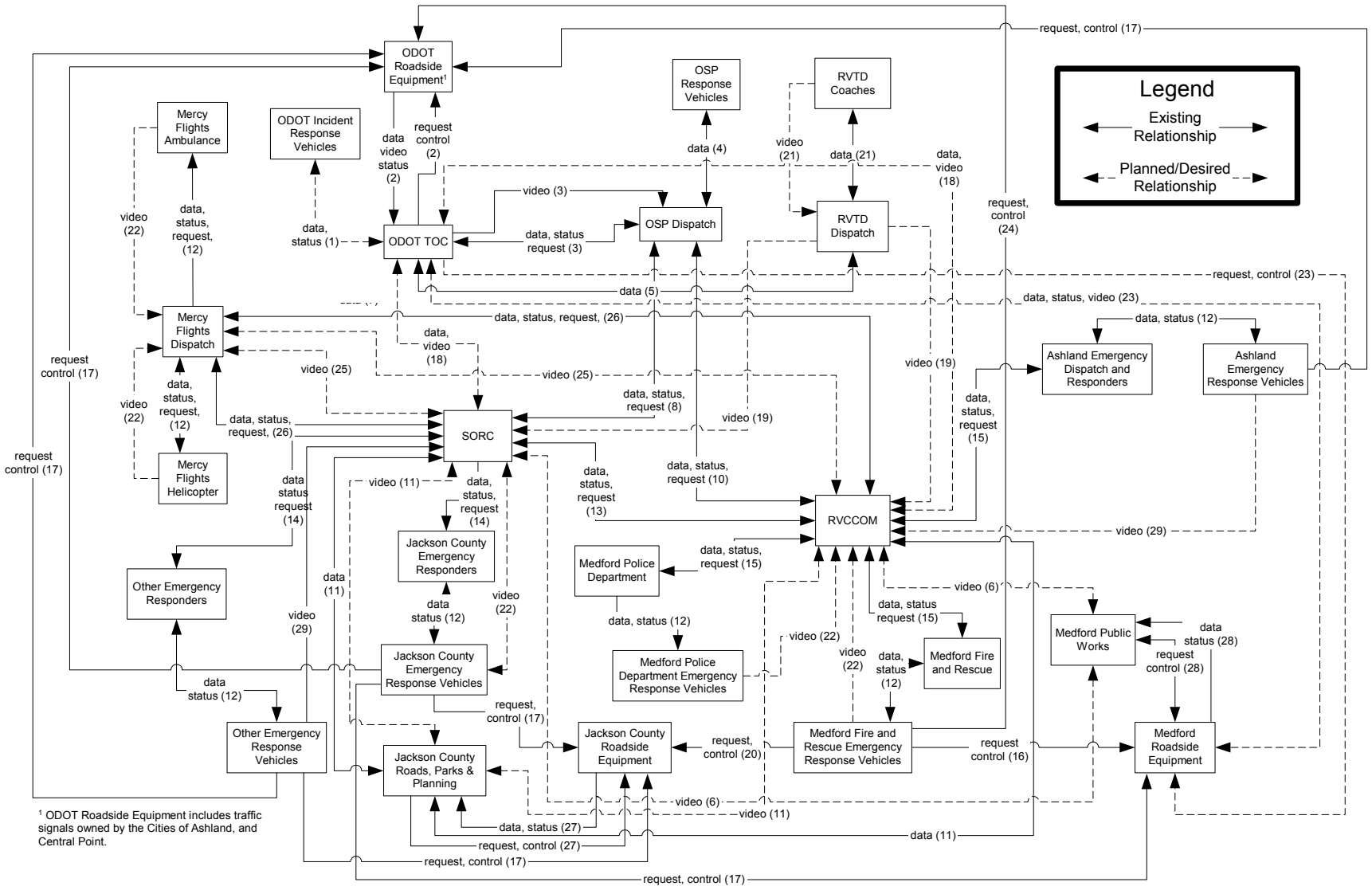


Figure 4-3. Incident Management Flow Diagram

Table 4-8. Incident Management Roles and Responsibilities Matrix

Agency	Design	Construction/ Implementation	Operational Planning	Operations	Maintenance
ODOT	• Manage development of incident response plan on Interstate and state highways • Manage design of incident response technology on Interstate and state highways	• Provide input on implementation of incident management projects • Lead construction of field devices on Interstate and state highways	• Participate in developing inter-agency agreements for incident management • Participate in defining ODOT's role in regional incident management response	• Operate equipment (such as cameras and dynamic message signs) in incident response situations on Interstate and state highways • Lead operation role for ODOT devices • Secondary role for operations of local agency devices on alternate routes	• Maintain ODOT field equipment on Interstate and state highways
OSP	• Participate in developing incident response plan on interstates and state highways	• Provide input on implementation of incident management projects on interstate and state highways	• Participate in developing inter-agency agreements for incident management • Participate in defining OSP's role in regional incident management response		• Maintain OSP equipment used in incident response
RVTD	• Participate in developing regional incident response plan	• Provide input on implementation of incident management projects	• Participate in developing inter-agency agreements for incident management • Participate in defining RVTD's role in regional incident management response	• Operate vehicle-mounted cameras in the future which may be used to assist in incident response	• Maintain vehicle-mounted cameras in the future which may be used to assist in incident response
RVCOG	• Participate in developing incident response plans such as the I-5 viaduct	• Provide input on implementation of incident management projects	• Provide input in developing inter-agency agreements for incident management		
SORC	• Participate in developing regional incident response plan • Coordinate design with RVCCOM in developing shared interface for CAD	• Provide input on implementation of incident management projects	• Participate in developing inter-agency agreements for incident management • Participate in defining SORC's role in regional incident management response • Coordinate with RVCCOM and ODOT to receive camera images	• Operate SORC CAD equipment • Possibly operate dynamic message signs for the City of Medford in the future	• Maintain SORC CAD equipment
RVCCOM	• Participate in developing regional incident response plan • Coordinate design with SORC in developing shared interface for CAD	• Provide input on implementation of incident management projects	• Participate in developing inter-agency agreements for incident management • Participate in defining RVCCOM's role in regional incident management response • Coordinate with SORC and ODOT to receive camera images	• Operate RVCCOM CAD equipment • Possibly operate dynamic message signs for the City of Medford in the future	• Maintain RVCCOM CAD equipment
Regional Traffic Management Agencies: Jackson Co., Medford, Central Point, and Ashland	• Participate in developing regional incident response plan • Manage design of incident response technology within local jurisdictions	• Provide input on implementation of incident management projects	• Participate in developing inter-agency agreements for incident management	• Coordinate with emergency responders in clearing incidents • Operate equipment to alert travelers of detours or incidents	• Maintain city- and county-owned signal pre-emption equipment
Medford Police Department	• Participate in developing regional incident response plan for the City of Medford	• Provide input on implementation of incident management projects	• Participate in developing inter-agency agreements for incident management	• Operate Medford Police Department emergency response vehicles	• Maintain Medford Police Department equipment used in incident response
Medford Fire and Rescue	• Participate in developing regional incident response plan for the City of Medford	• Provide input on implementation of incident management projects	• Participate in developing inter-agency agreements for incident management • Provide input into the development of signal pre-emption use and policies	• Operate Medford Fire and Rescue vehicles	• Maintain Medford Fire and Rescue equipment used in incident response • Maintain traffic signal pre-emption devices installed on emergency response vehicles
Ashland, Jackson Co., and Other Emergency Responders	• Participate in developing regional incident response plan	• Provide input on implementation of incident management projects	• Participate in developing inter-agency agreements for incident management	• Operate emergency response vehicles within local jurisdictions • Operate technology to assist in incident response	• Maintain equipment used in incident response within local jurisdictions

4.3.4 Public Transportation Management

The Rogue Valley Transportation District (RVTD) provides bus service within the Rogue Valley metropolitan area. The agency also provides bus service during special events such as the County Fair. RVTD plans on updating the fleet, and is acquiring 10 new vehicles. They plan on moving towards more automated systems (i.e. vehicle location, passenger counting) and to deploy real-time customer information displays at transit facilities. A transit signal priority project is planned with the City of Medford and ODOT in the near future and RVTD would like to expand transit signal priority system wide. The flow diagram in Figure 4-4 shows the various relationships for Public Transportation Management, with corresponding flows provided in Table 4-9. The responsibility matrix in Table 4-10 shows the current and future roles and responsibilities of all the interacting agencies.

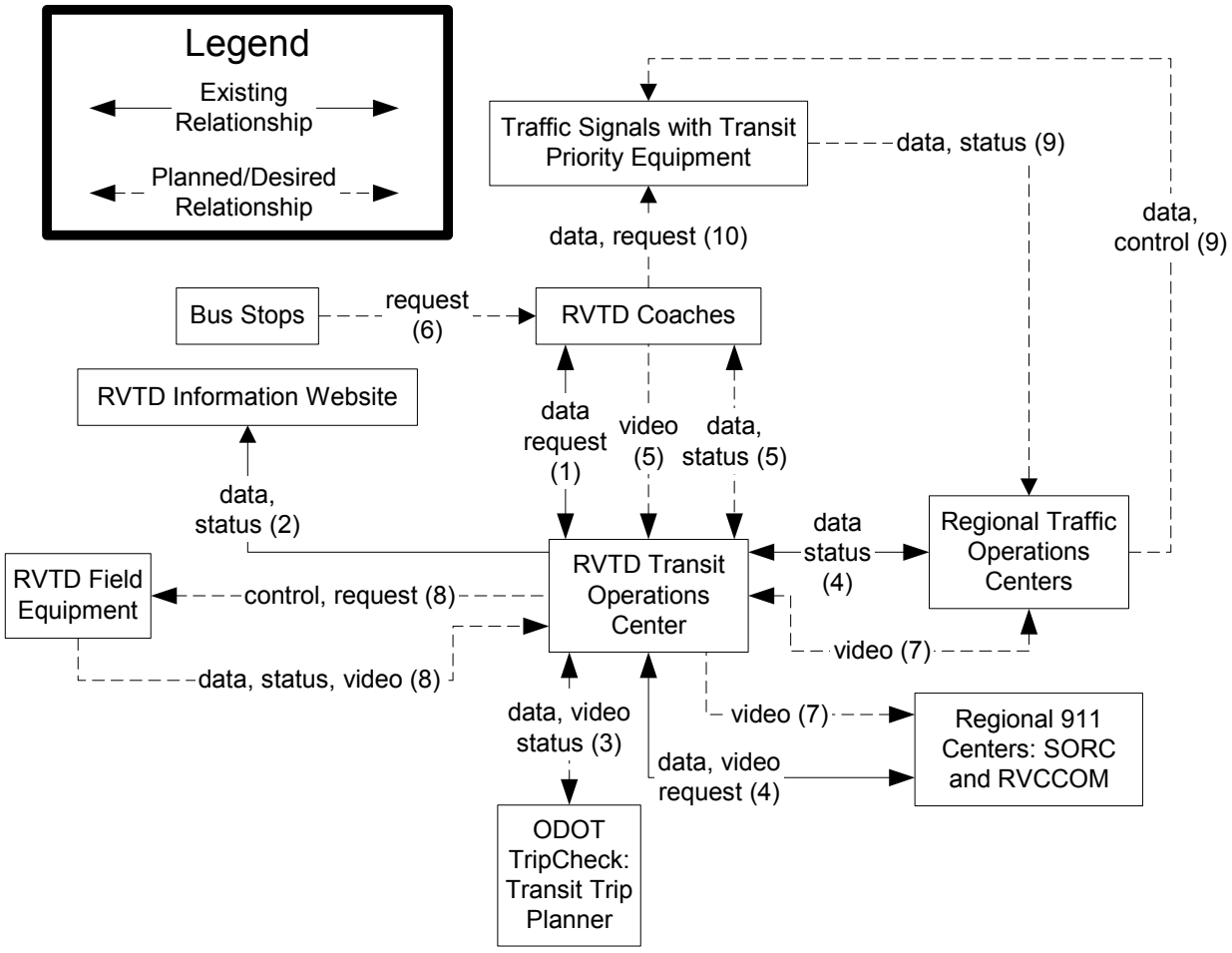


Figure 4-4. Public Transportation Management Flow Diagram

Table 4-9. Public Transportation Management Flow Table

Line Number	Public Transportation Management: Existing and Planned Information Flows (Line Definitions)
1	RVTD Transit Operations Center relays information to buses via phone. Passenger counts are done using the fare box, and download at the end of each day.
2	RVTD operates a traveler information website listing bus schedules. RVTD plans to transmit real-time information from buses to their traveler information website.
3	RVTD plans to transmit real-time information to ODOT's future Transit Trip Planner website.
4	Planned construction projects are faxed to RVTD by regional agencies. Occasionally emergency responders will request RVTD to assist them (i.e. air-conditioned buses for firefighters).
5	RVTD will update its fleet this year and the new coaches will include security monitoring cameras and updated fare boxes. RVTD plans to add other components such as GPS, transit signal priority equipment, and automated passenger counting in the future.
6	RVTD is considering installing "Transit Requested" push buttons at infrequently used bus stops.
7	RVTD may share video images obtained from vehicle-mounted cameras with RVCCOM, SORC and other local agencies.
8	RVTD will maintain and operate their field devices.
9	Regional agencies owning signals equipped with transit priority will control, operate and maintain the traffic signals.
10	RVTD coaches equipped with transit priority equipment will be able to request priority at traffic signals equipped with transit priority devices.

Table 4-10. Public Transportation Management Roles and Responsibilities Matrix

Agency	Design	Construction/ Implementation	Operational Planning	Operations	Maintenance
RVTD	• Participate in expanding transit service to key congested areas • Design automated systems technology for vehicle tracking, automated passenger counting and automated stop announcements • Manage real-time transit information dissemination projects (feeding transit arrival times to bus shelters) • Manage acquisition of AVL/APC/GPS systems • Coordinate with emergency responders to develop a formalized agreement to assist emergency responders	• Participate in acquiring real-time traveler information from ATIS equipment (cameras) • Manage implementation of express service to Southern Oregon University (SOU) • Manage schedule changes to increase frequency, and timeliness of transit • Manage construction of new bus stops and/or transit centers	• Lead development of operational and management for transit • Lead development of transit signal priority operational rules including priority schemes and bus driver responsibilities • Develop transit signal priority operational agreements with agencies who own traffic signals (ODOT, Jackson County, Medford, Central Point, and Ashland)	• Operate AVL/APC/GPS systems • Operate transit signal priority equipped buses • Maintain new bus stops and/or transit centers • Maintain automated passenger counting systems and automated stop announcements • Operate real-time transit dissemination systems	• Maintain AVL/APC/GPS systems • Maintain transit signal priority equipped buses • Maintain new bus stops and/or transit centers • Maintain automated passenger counting systems and automated stop announcements • Maintain real-time transit dissemination systems
Regional Traffic Operations Centers	• Participate in design of multi-modal coordination projects • Participate in expanding mesh network for RVTD use • Participate in expanding transit service to key congested areas	• Manage construction of field devices within municipal jurisdiction	• Participate in the development of transit signal priority rules of operations	• Operate traffic control signals providing transit signal priority	• Maintain transit signal priority equipment within jurisdiction
Emergency Responders			• Participate in developing a formalized agreement for RVTD to assist emergency responders		

4.3.5 Emergency Management

The local 911-dispatch centers, SORC and RVCCOM, provide dispatch services for all of the Rogue Valley. Eventually the region would like to integrate all emergency response vehicles' communication systems in order to coordinate dispatch and emergency management. The City of Medford is deploying a wireless mesh communications network to link Medford Fire and Rescue and the Medford Police Department. Each city within the Rogue Valley metropolitan area activates an Emergency Operations Center (EOC) during major emergencies within their city. For larger emergencies, Jackson County activates the Jackson County EOC, which is co-located with SORC. Figure 4-5 illustrates the information flows related to emergency management.

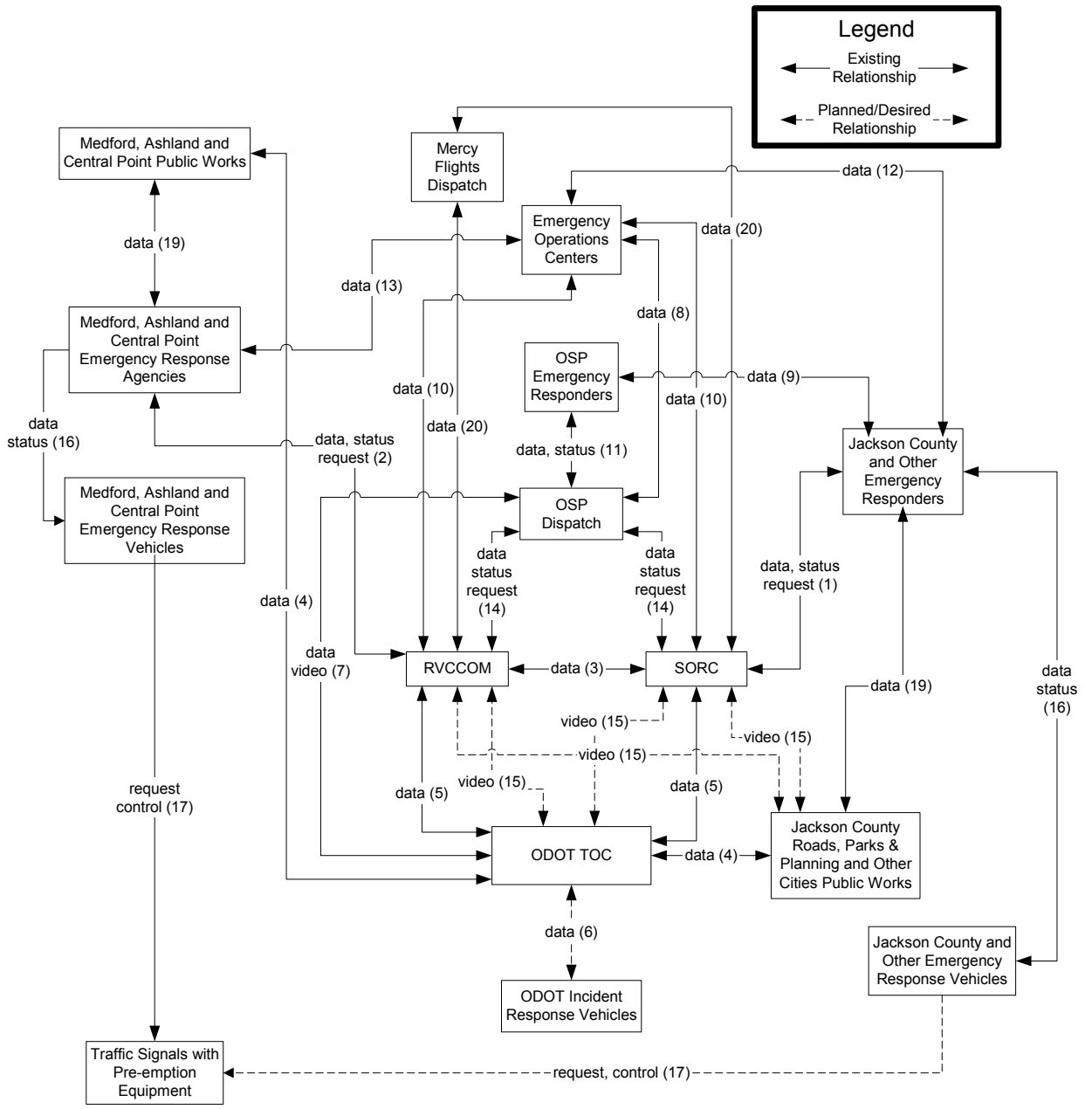


Figure 4-5. Emergency Management Flow Diagram

Table 4-11 includes descriptions of each information flow and Table 4-12 provides details about the roles and responsibilities associated with emergency management.

Table 4-11. Emergency Management Flow Table

Line Number	Emergency Management: Existing and Planned Information Flows (Line Definitions)
1	SORC dispatches emergency responders for Jackson County and numerous other agencies. (See Table 1-5 for a list of the agencies in the metropolitan area.)
2	RVCCOM dispatches for Medford and Ashland emergency responders.
3	RVCCOM and SORC CAD systems interface through a fiber optic connection.
4	Regional transportation management agencies coordinate with the ODOT TOC.
5	RVCCOM and SORC notify the ODOT TOC of emergency events.
6	The ODOT TOC will dispatch planned incident response vehicles.
7	The ODOT TOC and OSP Dispatch are co-located; sharing video and data on much of ODOT's ITS equipment.
8	OSP dispatch coordinates with emergency operations centers to follow protocol during major emergencies or disasters.
9	OSP and Jackson County/Other emergency responders work well together coordinating dispatch for increased efficiency.
10	RVCCOM and SORC communicate with the emergency operations centers to coordinate efforts during a major emergency or disaster. The Jackson County EOC is located at SORC.
11	OSP dispatch relays information to OSP emergency responders.
12	Jackson County/Other emergency responders work with emergency operations centers during major emergencies.
13	Medford and Ashland emergency responders work with emergency operations centers during major emergencies.
14	RVCCOM and SORC communicate with OSP dispatch using a direct phone line to relay information.
15	The ODOT TOC will eventually send real-time video feeds to RVCCOM and SORC and vice versa.
16	Data and communication is relayed between all emergency response vehicles and the emergency response agencies.
17	Numerous fire and rescue vehicles throughout the metropolitan area are equipped with emergency pre-emption devices.
18	Not used.
19	Regional transportation management departments correspond with their respective emergency responders.
20	Mercy Flights coordinates with RVCCOM and SORC.

Table 4-12. Emergency Management Roles and Responsibilities Matrix

Agency	Design	Construction/ Implementation	Operational Planning	Operations	Maintenance
ODOT	• Manage design of real-time video monitoring systems on state highways and Interstate • Participate in sending real-time information to emergency vehicles • Participate in automated exchange of real-time information during major emergencies • Participate in developing/coordinating alternative routes during emergency situations	• Acquire, construct and implement real-time road condition information equipment (HAR, DMS, and RWIS) on Interstates and state highways	• Participate in developing a regional Emergency Response Plan	• Operate ODOT equipment used in emergency response situations such as detour and/or road closure signs on Interstate and state highways • Work with local jurisdictions in implementing alternative routes from Interstate and state highways during emergency situations	• Maintain ODOT equipment used in emergency response situations
Emergency Operations Centers	• Participate in design of automated, real-time data exchange interfaces for use during major emergencies	• Implement technology to receive real-time information	• Participate in developing a regional Emergency Response Plan	• Operate real-time information systems	• Maintain real-time information systems
OSP	• Participate in emergency response related projects • Lead Amber Alert projects	• Assist as needed in the implementation of road condition information equipment (HAR, DMS, 511, and TripCheck) on Interstates and state highways	• Participate in developing a regional Emergency Response Plan	• Assist in operating equipment used in emergency response situations such as detour / road closure signs on the Interstate • Assist in coordinating alternative routes during emergency situations	
Regional Traffic Management Agencies: Jackson County, Medford, Central Point, and Ashland	• Participate in design of projects for use in emergency management situations on major roadways within the local jurisdiction • Participate in the design of real-time data exchange interfaces for use in emergency situations.	• Participate in updating emergency pre-emption signals • Manage acquisition of real-time video monitoring systems on city and county roads	• Participate in developing a regional Emergency Response Plan	• Operate city- or county-owned equipment used in emergency response situations such as detour and/or road closure signs	• Maintain city- or county-owned equipment used in emergency response situations such as detour and/or road closure signs
SORC	• Provide input into the design of regional emergency management projects • Coordinate design of CAD-related projects	• Implement SORC-owned emergency management technology	• Participate in developing a regional Emergency Response Plan • Participate in developing a working relationship with Mercy Flights	• Operate dispatch equipment and coordinate with local responders in emergency situations	• Maintain SORC-owned emergency management equipment
RVCCOM	• Provide input into the design of regional emergency management projects • Coordinate design of CAD-related projects	• Implement RVCCOM-owned emergency management technology	• Participate in developing a regional Emergency Response Plan • Participate in developing a working relationship with Mercy Flights	• Operate dispatch equipment and coordinate with local responders in emergency situations	• Maintain RVCCOM-owned emergency management equipment
Emergency Responders	• Manage design of MDT's in all emergency response vehicles • Participate in the design of regional emergency management projects	• Implement technology to receive real-time information and disseminate to emergency response vehicles	• Participate in developing a regional Emergency Response Plan	• Participate in developing/coordinating alternative routes during emergency situations	• Maintain real-time information systems

4.3.6 Information Management

Many agencies in the Rogue Valley currently share and archive traffic and transportation related data. This data is not readily accessible electronically. The main desire of the region is to create a regional data repository that will centralize access and information sharing. The flow diagram (Figure 4-6) shows agencies sending and receiving data stored in a regional repository and Table 4-13 describes these flows. Ideally this would mean information collected from each agency is stored in a primary location (RVCOG) for all other agencies to receive, or an organized virtual data warehouse. Eventually all data archived in the regional repository will comply to the National ITS Architecture standards. Table 4-14 provides a summary of the information management roles and responsibilities.

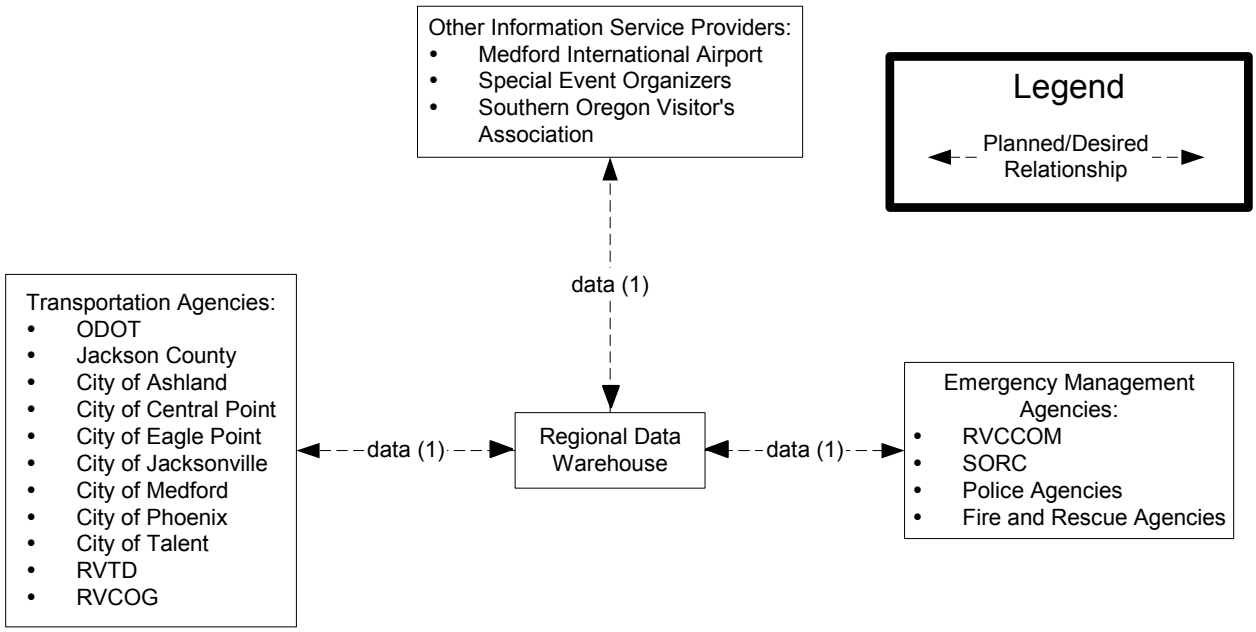


Figure 4-6. Information Management Flow Diagram

Table 4-13. Information Management Flow Table

Line Number	Information Management: Existing and Planned Information Flows (Line Definitions)
1	Agencies within the Rogue Valley will provide data to the future regional data warehouse and will have the ability to retrieve data from the warehouse.

Table 4-14. Information Management Roles and Responsibilities Matrix

Agency	Design	Construction/ Implementation	Operational Planning	Operations	Maintenance
Transportation Agencies: Jackson County, Cities of Ashland, Central Point, Eagle Point, Jacksonville, Medford, Phoenix, and Talent	• Manage design and acquisition of automated data collection devices within jurisdiction • Participate in developing regional data warehouse • Manage National ITS standards compliance within agency	• Manage implementation of National ITS standards within each agency • Manage implementation of agency ITS equipment	• Participate in developing operational plan for collection and retrieval of data	• Operate agency-owned ITS equipment for automated data collection	• Maintain agency-owned ITS equipment for automated data collection
ODOT	• Participate in developing regional data warehouse • Manage National ITS standards compliance within ODOT	• Manage implementation of National ITS standards within ODOT	• Participate in developing operational plan for collection and retrieval of data • Manage coordination between ODOT and CalTrans	• Operate ODOT-owned ITS equipment for automated data collection	• Maintain ODOT-owned ITS equipment for automated data collection
RVTD	• Manage National ITS standards compliance within RVTD • Participate in developing regional data warehouse	• Manage implementation of National ITS standards within RVTD	• Participate in developing operational plan for collection and retrieval of data	• Operate RVTD-owned ITS equipment for automated data collection	• Maintain RVTD-owned ITS equipment for automated data collection
Emergency Management Agencies	• Manage National ITS standards compliance within OSP • Participate in integration of CAD Systems • Participate in developing regional data warehouse	• Manage implementation of National ITS standards within each agency	• Participate in developing operational plan for collection and retrieval of data	•	•
RVCOG	• Lead design of regional data warehouse • Manage National ITS standards compliance within region • Manage web based archive of current and historical transportation data and regional documentation	• Lead the implementation and development of regional data warehouse	• Lead develop of operational plan for collection and retrieval of data from regional data warehouse	• Operate regional data warehouse • Operate web-based archiving • Participate in archiving data	• Maintain web-based archiving • Maintain regional data warehouse

4.3.7 Maintenance & Construction Management

This program area focuses on the deployment of ITS to assist with maintenance and construction activities in the Rogue Valley. For example, RWIS is implemented by transportation agencies to gather point specific weather and pavement data. This data is used by public works personnel for planning and scheduling plowing, paving or construction tasks. Many agencies within the Rogue Valley send press releases, and fax construction schedules to the media and various agencies (i.e. RVTD, SORC, and RVCCOM) as well as hosting a website containing current construction and maintenance information. The flow diagram depicted in Figure 4-7 shows the various relationships for maintenance and construction management, with associated flows described in Table 4-15. Future or planned relationships are shown by a dotted line, and current relationships are shown with a solid line. The responsibility matrix in Table 4-16 shows the current and planned roles and responsibilities of all the interacting agencies.

Table 4-15. Maintenance & Construction Management Flow Table

Line Number	Maintenance & Construction Management: Existing and Planned Information Flows (Line Definitions)
1	ODOT and Jackson County share construction and maintenance schedules and services (i.e. Jackson County and ODOT share a sign crew).
2	Regional transportation management agencies inform RVTD of construction and maintenance plans.
3	ODOT and the Cities of Central Point and Ashland share construction and maintenance information.
4	Regional Transportation and Public Works Agencies prepare press releases for the media.
5	ODOT uses ITS equipment to improve work zone safety and reduce speeds.
6	Emergency responders would like to use ODOT ITS equipment to coordinate enforcement through work zones to improve safety and reduce speed violations.
7	Regional transportation management agencies inform emergency responders of construction plans.
8	The City of Medford uses their roadside equipment to improve work zone safety and reduce speeds.

Inside a Walk-In DMS

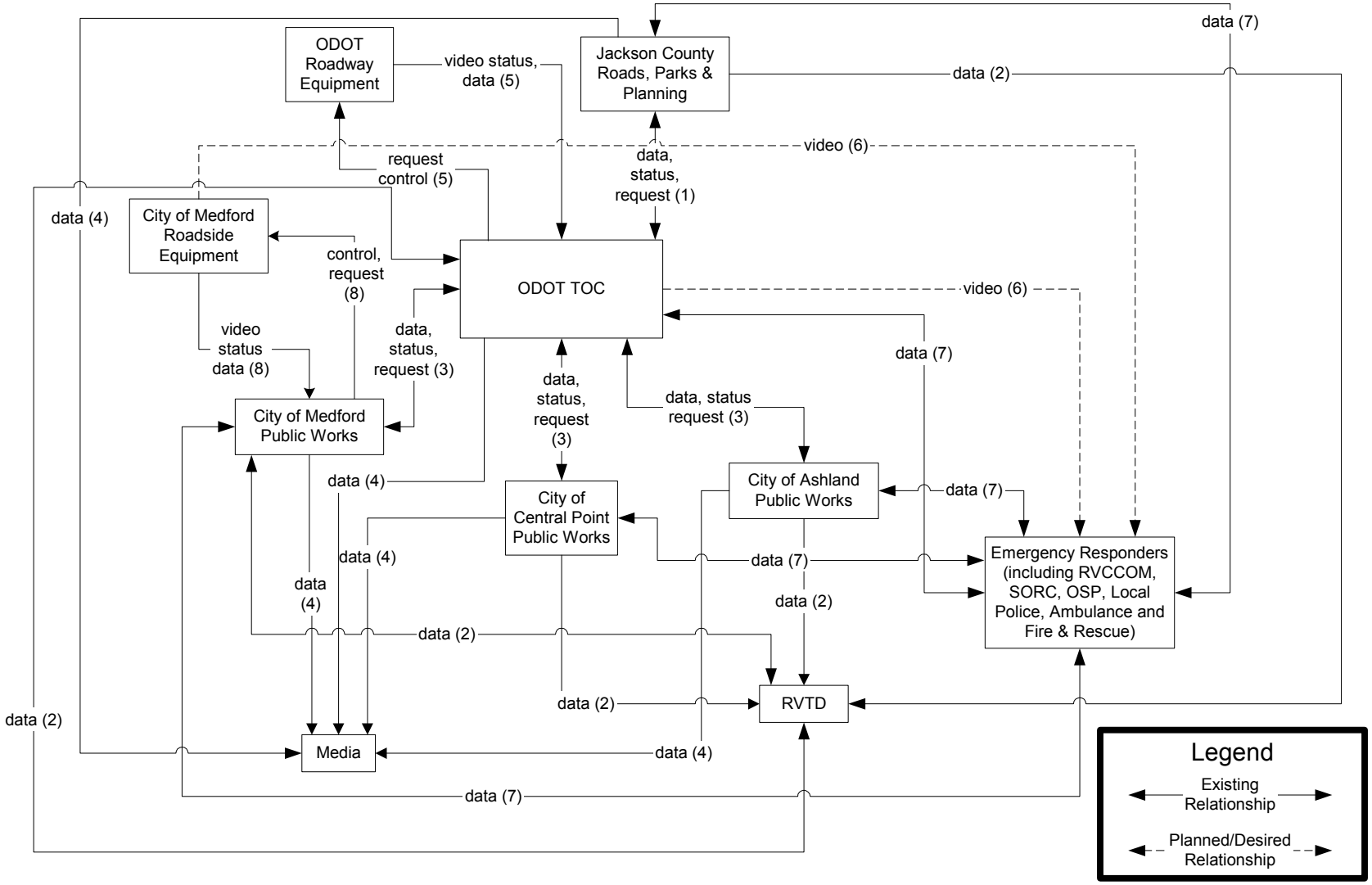


Figure 4-7. Maintenance & Construction Management Flow Diagram

Table 4-16. Maintenance & Construction Management Roles and Responsibilities Matrix

Agency	Design	Construction/ Implementation	Operational Planning	Operations	Maintenance
ODOT	• Lead design of construction and maintenance projects on Interstate and state highways	• Implement ITS equipment to improve safety within work zones • Implement ITS equipment (i.e. dynamic message signs, and speed trailers) to reduce speed in work zones	• Participate in coordination of construction and maintenance plans • Inform other agencies of construction and maintenance plans	• Operate portable and fixed equipment on Interstate and state routes	• Maintain portable and fixed equipment on Interstate and state routes
Transportation Management Agencies: Medford, Ashland, Central Point and Jackson County	• Lead design of construction and/or maintenance projects within the city and county limits	• Implement ITS equipment to improve safety within work zones • Manage acquisition of ITS equipment to improve safety in work zones	• Participate in coordination of construction and maintenance plans • Inform other agencies of construction and maintenance plans	• Operate portable and fixed ITS equipment on city and county routes	• Maintain portable and fixed ITS equipment on city and county routes
RVTD	• Participate in meetings for large scale construction and maintenance within the region		• Participate in coordination of construction and maintenance plans • Manage transit detours around work zones		
Emergency Responders	• Participate in meetings for large scale construction and maintenance within the region	• Continue enforcement of speed limits within work zones • Manage acquisition of ITS equipment to enforce speeds within work zones	• Participate in coordination of construction and maintenance plans • Work with transportation agencies to develop strategies for monitoring safety and speed enforcement within work zones	• Assist in operating ITS equipment with local agencies	