

Architecture Interconnects

While the Sausage diagram provides a high-level representation of the regional ITS architecture, it does not indicate the precise interconnectivity of the regional ITS elements. The interconnects depicted in this section are based on the identified existing and future regional inventory of elements and the anticipated ITS services (Market Packages). The existence of an interconnect between a pair of elements indicates that an electronic exchange of information between these elements is necessary to provide the desired ITS services. The figures below show the architecture interconnections for the various regional center elements (existing and planned). These include:

- C-Tran
- ODOT Internet Travel Advisor
- WSDOT Regional Web Site
- RTC Regional Data Warehouse
- Camas Traffic Management Center
- Vancouver Traffic Management Center
- WSDOT Regional Traffic Operations Center
- Clark County Traffic Management Center
- Traffic Management Operations Center for Portland Area State Highways

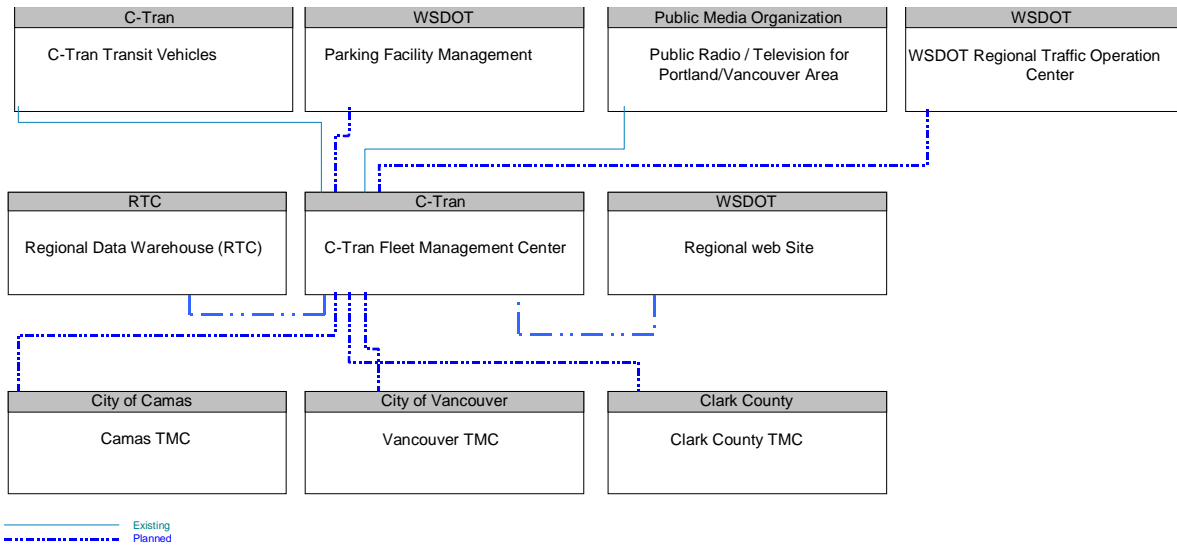


Figure C.1: Architecture Interconnects for C-Tran

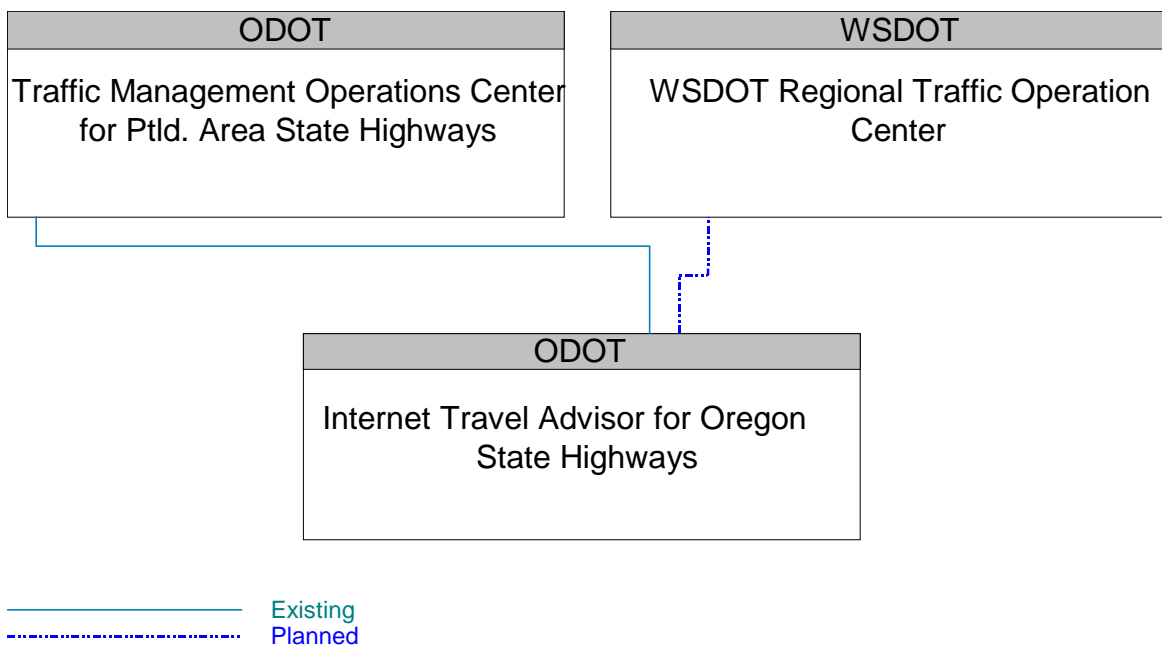
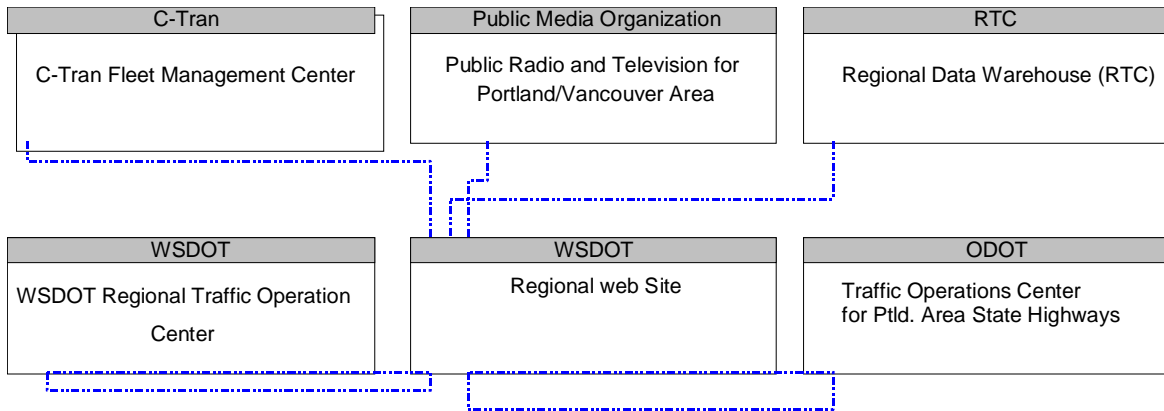
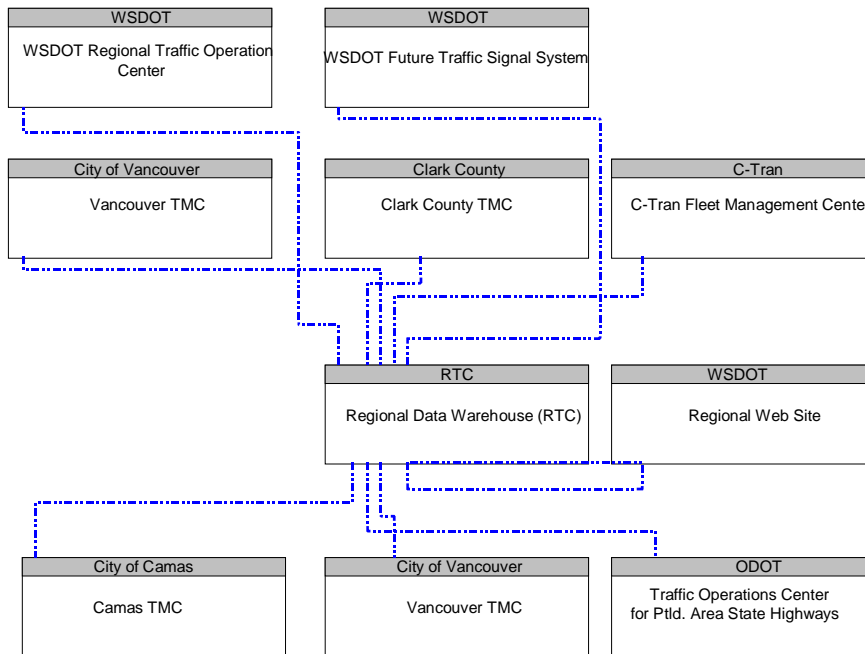


Figure C.2: Architecture Interconnects for ODOT Internet Travel Advisor



— Existing
 - - - - - Planned

Figure C.3: Architecture Interconnects for WSDOT Regional Web Site



— Existing
 - - - - - Planned

Figure C.4: Architecture Interconnects for RTC Regional Data Warehouse

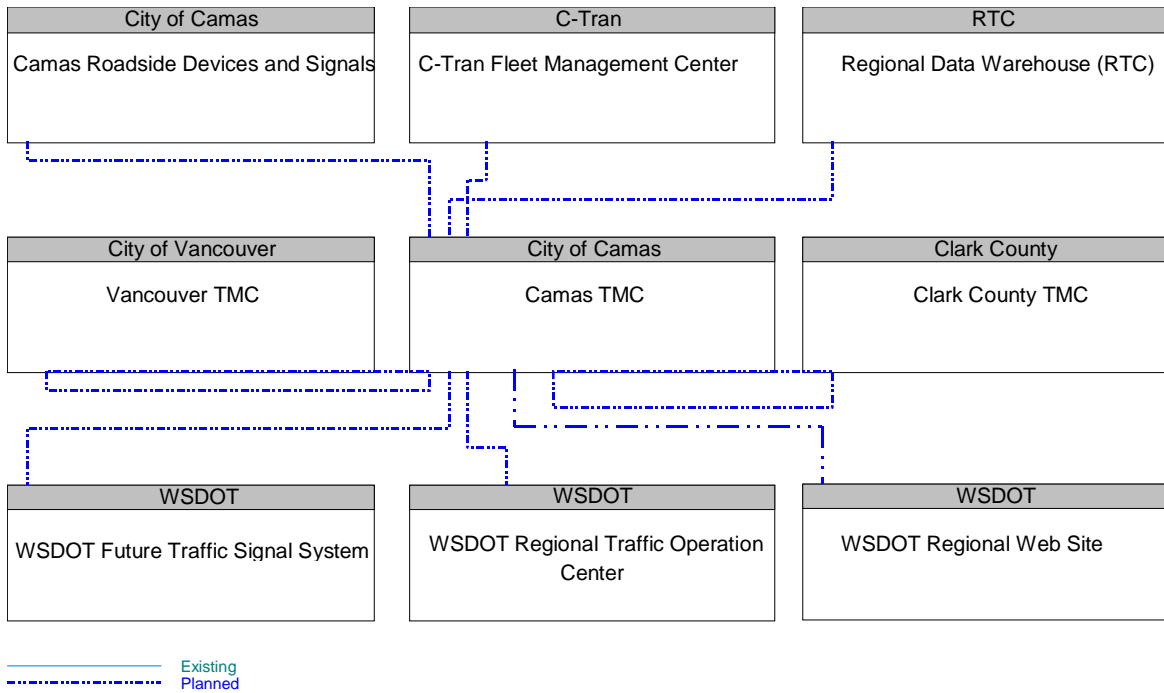


Figure C.5: Architecture Interconnects for Camas TMC

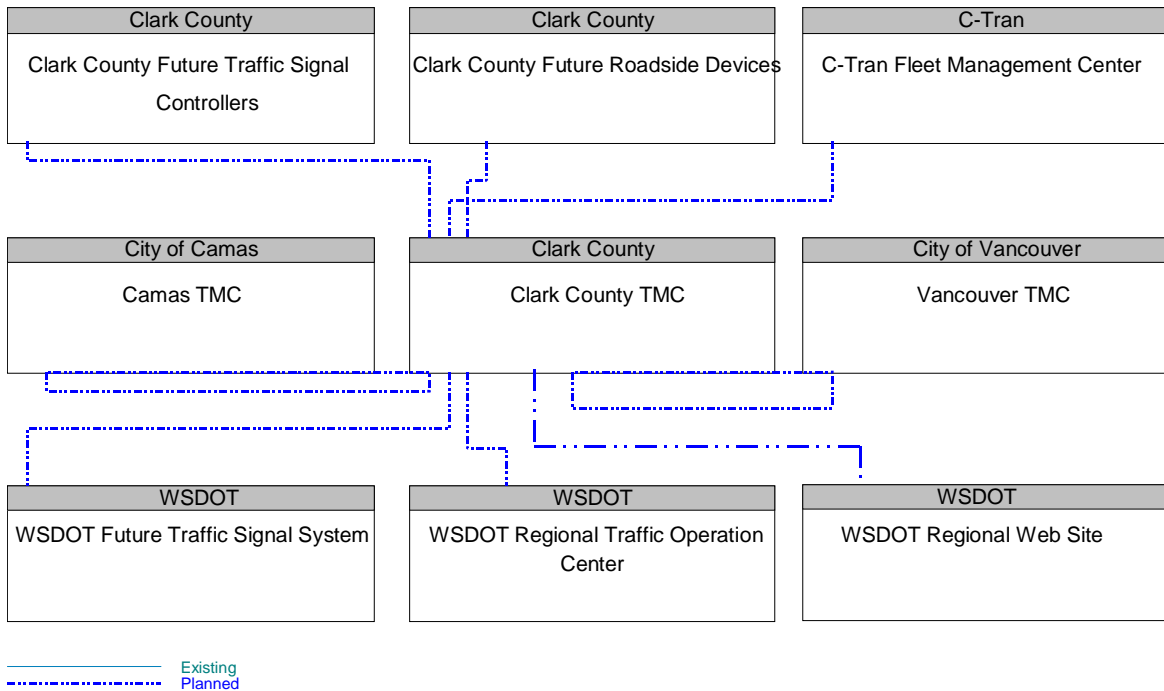
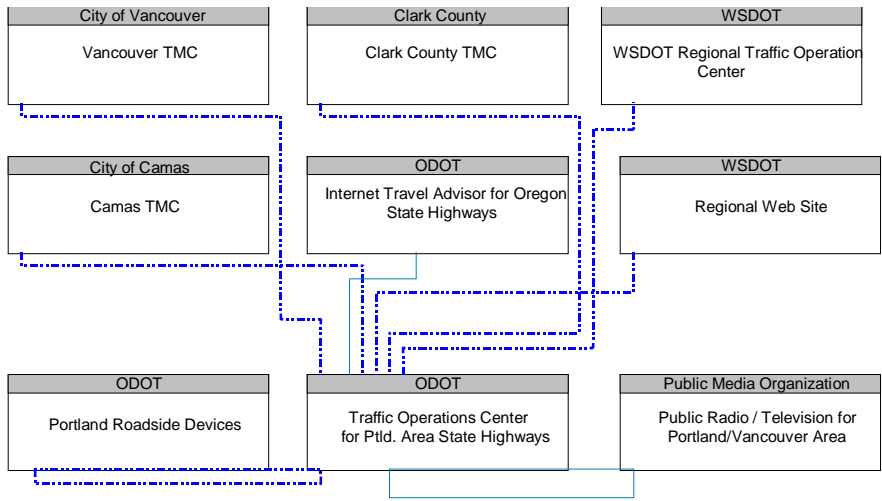
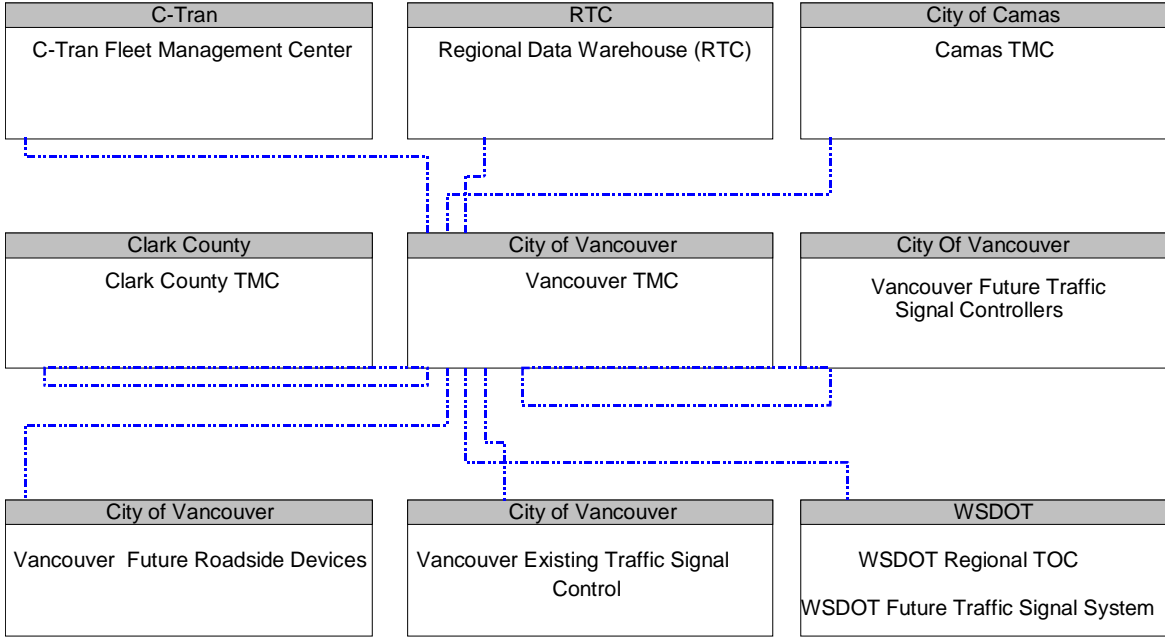


Figure C.6: Architecture Interconnects for Clark County TMC



Existing
Planned

Figure C.7: Architecture Interconnects for Portland Area TM Operations Center



Existing
Planned

Figure C.8: Architecture Interconnects for Vancouver TMC

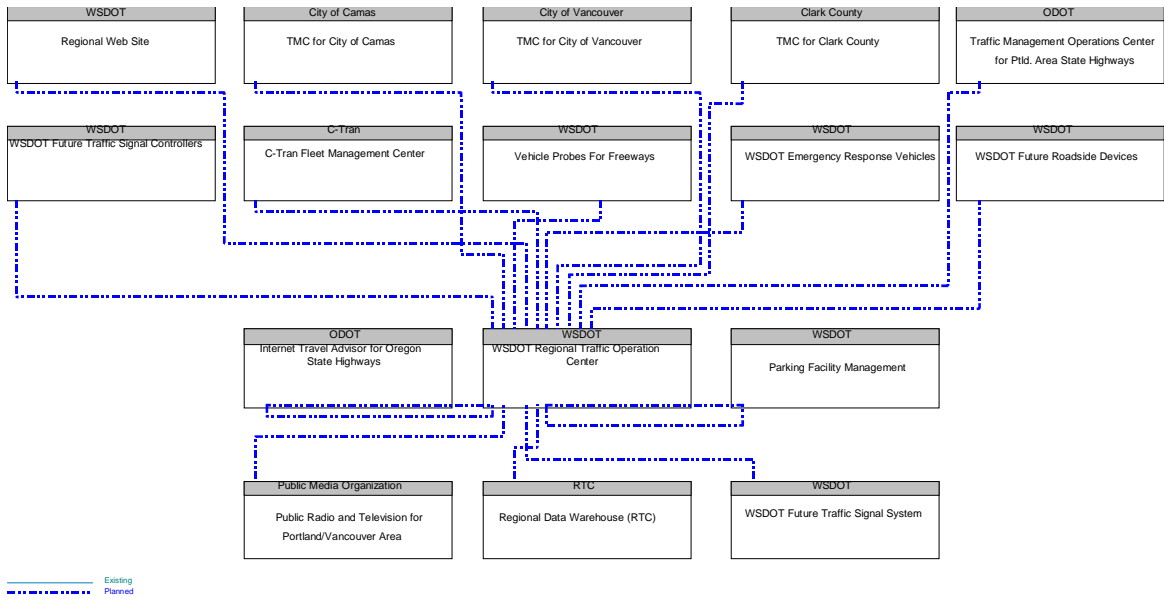


Figure C.9: Architecture Interconnects for WSDOT Regional Traffic Operations Center

Architecture Flows

After identifying the regional element interconnects, the next step in refining the regional ITS architecture is to determine the specific exchanges of information that will comprise the interconnects. These information exchanges between elements are called "architecture flows". Table 7-2 shows the all of the architecture flows between the all the pairs of Vancouver ITS elements that currently exist or are planned as components of future ITS service delivery. The stakeholders can use this information to help determine the institutional agreements that need to be established. Also, since architecture flows are closely affiliated with the various ITS standards, they can be used to point stakeholders to the appropriate standards.

Table 7-2 - Future Architecture Flows

source	destination	data flow
C-Tran Fleet Management Center	Camas TMC	traffic control priority request
	Camas TMC	transit demand management response
	Camas TMC	transit emergency data
	Camas TMC	transit system data
	Vancouver TMC	traffic control priority request
	Vancouver TMC	transit demand management response
	Vancouver TMC	transit emergency data
	Vancouver TMC	transit system data
	Clark County TMC	traffic control priority request
	Clark County TMC	transit demand management response
	Clark County TMC	transit emergency data
	Clark County TMC	transit system data
	C-Tran Transit Vehicles	driver instructions
	C-Tran Transit Vehicles	emergency acknowledge
	C-Tran Transit Vehicles	fare management information
	C-Tran Transit Vehicles	request for bad tag list
	C-Tran Transit Vehicles	request for vehicle measures
	C-Tran Transit Vehicles	transit schedule information
	Public Radio and Television for Portland/Vancouver Area	transit incidents for media

source	destination	data flow
	Public Radio and Television for Portland/Vancouver Area	transit request confirmation
	Regional Data Warehouse (RTC)	transit archive data
	Parking Facility Management	transit parking lot response
	Regional Web Site	transit request confirmation
	WSDOT Regional Traffic Operation Center	demand responsive transit plan
	WSDOT Regional Traffic Operation Center	traffic control priority request
	WSDOT Regional Traffic Operation Center	transit and fare schedules
	WSDOT Regional Traffic Operation Center	transit demand management response
	WSDOT Regional Traffic Operation Center	transit emergency data
	WSDOT Regional Traffic Operation Center	transit incident information
	WSDOT Regional Traffic Operation Center	transit request confirmation
	WSDOT Regional Traffic Operation Center	transit system data
C-Tran Transit Vehicles	Camas Roadside Devices	local signal priority request
	Vancouver Area Future Traffic Signal Devices	local signal priority request
	Clark County Future Traffic Signal Controllers	local signal priority request
	C-Tran Fleet Management Center	bad tag list
	C-Tran Fleet Management Center	emergency notification
	C-Tran Fleet Management Center	fare and payment status
	C-Tran Fleet Management Center	transit vehicle conditions
	C-Tran Fleet Management Center	transit vehicle location data
	C-Tran Fleet Management Center	transit vehicle passenger and use data
C-Tran Fleet Management Center	transit vehicle schedule performance	
Camas Roadside Devices	Camas TMC	fault reports
	Camas TMC	incident data
	Camas TMC	roadway information system status
	Camas TMC	traffic images
	Regional Data Warehouse (RTC)	roadside archive data

source	destination	data flow
Clark County Future Roadside Devices	Clark County TMC	fault reports
	Clark County TMC	incident data
	Clark County TMC	roadway information system status
	Clark County TMC	traffic images
	Regional Data Warehouse (RTC)	roadside archive data
Clark County Existing Traffic Signal System	Clark County TMC	fault reports
	Clark County TMC	request for right-of-way
	Clark County TMC	signal control status
	Clark County TMC	traffic flow
WSDOT Emergency Response Vehicles	Camas Roadside Devices	local signal preemption request
	Vancouver Future Traffic Signal Controllers	local signal preemption request
	Clark County Future Traffic Signal Controllers	local signal preemption request
	WSDOT Future Traffic Signal Controllers	local signal preemption request
Internet Travel Advisor for Oregon State Highways	Traffic Management Operations Center for Ptld. Area State Highways	request for traffic information
	WSDOT Regional Traffic Operation Center	incident information request
	WSDOT Regional Traffic Operation Center	request for traffic information
Parking Facility Management	C-Tran Fleet Management Center	transit parking coordination
	Traffic Management Operations Center for Ptld. Area State Highways	parking archive data
	Traffic Management Operations Center for Ptld. Area State Highways	parking availability
	Traffic Management Operations Center for Ptld. Area State Highways	parking demand management response
	Traffic Management Operations Center for Ptld. Area State Highways	parking information
	Traffic Management Operations Center for Ptld. Area State Highways	parking lot reservation confirmation
	Regional Data Warehouse (RTC)	parking archive data
	WSDOT Regional Traffic Operation Center	parking archive data
	WSDOT Regional Traffic Operation Center	parking availability
	WSDOT Regional Traffic Operation Center	parking information

source	destination	data flow
	WSDOT Regional Traffic Operation Center	parking lot reservation confirmation
Portland Roadside Devices	Traffic Management Operations Center for Ptl. Area State Highways	fault reports
	Traffic Management Operations Center for Ptl. Area State Highways	freeway control status
	Traffic Management Operations Center for Ptl. Area State Highways	incident data
	Traffic Management Operations Center for Ptl. Area State Highways	roadway information system status
	Traffic Management Operations Center for Ptl. Area State Highways	traffic control coordination
	Traffic Management Operations Center for Ptl. Area State Highways	traffic images
	Regional Data Warehouse (RTC)	roadside archive data
Public Radio / Television for Portland/Vancouver Area	C-Tran Fleet Management Center	transit information request
	Traffic Management Operations Center for Ptl. Area State Highways	incident information request
	Traffic Management Operations Center for Ptl. Area State Highways	ISP coordination
	Traffic Management Operations Center for Ptl. Area State Highways	media information request
	Traffic Management Operations Center for Ptl. Area State Highways	request for traffic information
	Regional Web Site	ISP coordination
	WSDOT Regional Traffic Operation Center	incident information request
	WSDOT Regional Traffic Operation Center	ISP coordination
	WSDOT Regional Traffic Operation Center	media information request
	WSDOT Regional Traffic Operation Center	request for traffic information
Regional Data Warehouse (RTC)	Camas TMC	sensor and surveillance control
	Clark County TMC	sensor and surveillance control
	Vancouver TMC	sensor and surveillance control
	C-Tran Fleet Management Center	archive requests
	WSDOT Regional Traffic Operation Center	archive requests
	WSDOT Traffic Signal System	sensor and surveillance control

source	destination	data flow
Regional Web Site	C-Tran Fleet Management Center	transit information request
	Traffic Management Operations Center for Ptl. Area State Highways	incident information request
	Traffic Management Operations Center for Ptl. Area State Highways	ISP coordination
	Traffic Management Operations Center for Ptl. Area State Highways	request for traffic information
	Public Radio / Television for Portland/Vancouver Area	ISP coordination
	Regional Data Warehouse (RTC)	traveler archive data
	Regional Kiosks	ISP coordination
	WSDOT Regional Traffic Operation Center	incident information request
	WSDOT Regional Traffic Operation Center	ISP coordination
	WSDOT Regional Traffic Operation Center	request for traffic information
	Camas TMC	Camas Roadside Devices
Camas Roadside Devices		roadway information system data
Camas Roadside Devices		sensor and surveillance control
Camas Roadside Devices		signal control data
Vancouver TMC		request for traffic information
Vancouver TMC		traffic control coordination
Vancouver TMC		traffic information coordination
Clark County TMC		request for traffic information
Clark County TMC		traffic control coordination
Clark County TMC		traffic information coordination
C-Tran Fleet Management Center		traffic control priority status
C-Tran Fleet Management Center		traffic information for transit
C-Tran Fleet Management Center		transit demand management request
C-Tran Fleet Management Center		transit emergency coordination data
Traffic Management Operations Center for Ptl. Area State Highways		local signal preemption request

source	destination	data flow
	Traffic Management Operations Center for Ptlld. Area State Highways	request for traffic information
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic control coordination
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic information
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic information coordination
	Regional Data Warehouse (RTC)	traffic archive data
	WSDOT Regional Traffic Operation Center	current network conditions
	WSDOT Regional Traffic Operation Center	emergency traffic control response
	WSDOT Regional Traffic Operation Center	incident information
	WSDOT Regional Traffic Operation Center	incident response coordination
	WSDOT Regional Traffic Operation Center	incident response status
	WSDOT Regional Traffic Operation Center	local signal preemption request
	WSDOT Regional Traffic Operation Center	request for traffic information
	WSDOT Regional Traffic Operation Center	resource deployment status
	WSDOT Regional Traffic Operation Center	resource request
	WSDOT Regional Traffic Operation Center	traffic control coordination
	WSDOT Regional Traffic Operation Center	traffic information
	WSDOT Regional Traffic Operation Center	traffic information coordination
Vancouver TMC	Camas TMC	request for traffic information
	Camas TMC	traffic control coordination
	Camas TMC	traffic information coordination
	Vancouver Future Roadside Devices	remote surveillance control
	Vancouver Future Roadside Devices	roadway information system data
	Vancouver Future Traffic Signal Controllers	signal control data

source	destination	data flow
	Clark County TMC	request for traffic information
	Clark County TMC	traffic control coordination
	Clark County TMC	traffic information coordination
	C-Tran Fleet Management Center	traffic control priority status
	C-Tran Fleet Management Center	traffic information for transit
	C-Tran Fleet Management Center	transit demand management request
	C-Tran Fleet Management Center	transit emergency coordination data
	Traffic Management Operations Center for Ptlld. Area State Highways	request for traffic information
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic control coordination
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic information
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic information coordination
	Regional Data Warehouse (RTC)	traffic archive data
	WSDOT Regional Traffic Operation Center	current network conditions
	WSDOT Regional Traffic Operation Center	emergency traffic control response
	WSDOT Regional Traffic Operation Center	incident response coordination
	WSDOT Regional Traffic Operation Center	request for traffic information
	WSDOT Regional Traffic Operation Center	resource deployment status
	WSDOT Regional Traffic Operation Center	resource request
	WSDOT Regional Traffic Operation Center	traffic control coordination
	WSDOT Regional Traffic Operation Center	traffic information
	WSDOT Regional Traffic Operation Center	traffic information coordination
Clark County TMC	Camas TMC	request for traffic information
	Camas TMC	traffic control coordination

source	destination	data flow
	Camas TMC	traffic information coordination
	Vancouver TMC	traffic control coordination
	Vancouver TMC	traffic information coordination
	Clark County Future Roadside Devices	remote surveillance control
	Clark County Future Roadside Devices	roadway information system data
	Clark County Future Traffic Signal Controllers	signal control data
	C-Tran Fleet Management Center	traffic control priority status
	C-Tran Fleet Management Center	traffic information for transit
	C-Tran Fleet Management Center	transit demand management request
	C-Tran Fleet Management Center	transit emergency coordination data
	Traffic Management Operations Center for Ptl'd. Area State Highways	traffic control coordination
	Traffic Management Operations Center for Ptl'd. Area State Highways	traffic information
	Traffic Management Operations Center for Ptl'd. Area State Highways	traffic information coordination
	WSDOT Regional Traffic Operation Center	current network conditions
	WSDOT Regional Traffic Operation Center	incident information
	WSDOT Regional Traffic Operation Center	resource deployment status
	WSDOT Regional Traffic Operation Center	resource request
	WSDOT Regional Traffic Operation Center	traffic control coordination
	WSDOT Regional Traffic Operation Center	traffic information
	WSDOT Regional Traffic Operation Center	traffic information coordination
Traffic Management Operations Center for Ptl'd. Area State Highways	Camas TMC	request for traffic information
	Camas TMC	traffic control coordination
	Camas TMC	traffic information coordination

source	destination	data flow
	Vancouver TMC	request for traffic information
	Vancouver TMC	traffic control coordination
	Vancouver TMC	traffic information coordination
	Clark County TMC	request for traffic information
	Clark County TMC	traffic control coordination
	Clark County TMC	traffic information coordination
	Internet Travel Advisor for Oregon State Highways	traffic information
	Portland Roadside Devices	freeway control data
	Portland Roadside Devices	remote surveillance control
	Portland Roadside Devices	roadway information system data
	Public Radio / Television for Portland/Vancouver Area	incident information for media
	Public Radio / Television for Portland/Vancouver Area	traffic information for media
	Public Radio / Television for Portland/Vancouver Area	traveler information for media
	Regional Data Warehouse (RTC)	emergency archive data
	Regional Data Warehouse (RTC)	traffic archive data
	WSDOT Emergency Response Vehicles	suggested route
	Parking Facility Management	parking demand management request
	Parking Facility Management	parking instructions
	Parking Facility Management	parking lot data request
	Parking Facility Management	parking reservations request
	Regional Web Site	traffic information
	WSDOT Regional Traffic Operation Center	current network conditions
	WSDOT Regional Traffic Operation Center	incident information
	WSDOT Regional Traffic Operation Center	incident report
	WSDOT Regional Traffic Operation Center	incident response coordination
	WSDOT Regional Traffic Operation Center	incident response status

source	destination	data flow
	WSDOT Regional Traffic Operation Center	request for traffic information
	WSDOT Regional Traffic Operation Center	resource deployment status
	WSDOT Regional Traffic Operation Center	resource request
	WSDOT Regional Traffic Operation Center	traffic control coordination
	WSDOT Regional Traffic Operation Center	traffic information
	WSDOT Regional Traffic Operation Center	traffic information coordination
Vancouver Future Roadside Devices	Vancouver TMC	incident data
	Vancouver TMC	roadway information system status
	Vancouver TMC	traffic images
	Regional Data Warehouse (RTC)	roadside archive data
Vancouver Future Traffic Signal Controllers	Vancouver TMC	request for right-of-way
	Vancouver TMC	signal control status
	Vancouver TMC	traffic flow
WSDOT Future Traffic Signal Controllers	WSDOT Regional Traffic Operation Center	fault reports
	WSDOT Regional Traffic Operation Center	freeway control status
	WSDOT Regional Traffic Operation Center	request for right-of-way
	WSDOT Regional Traffic Operation Center	signal control status
	WSDOT Regional Traffic Operation Center	traffic flow
WSDOT Regional Traffic Operation Center	Camas TMC	emergency traffic control request
	Camas TMC	incident response coordination
	Camas TMC	request for traffic information
	Camas TMC	resource request
	Camas TMC	traffic control coordination
	Camas TMC	traffic information coordination
	Vancouver TMC	emergency traffic control request

source	destination	data flow
	Vancouver TMC	incident response coordination
	Vancouver TMC	request for traffic information
	Vancouver TMC	resource request
	Vancouver TMC	traffic control coordination
	Vancouver TMC	traffic information coordination
	Clark County TMC	incident response coordination
	Clark County TMC	resource request
	Clark County TMC	traffic control coordination
	Clark County TMC	traffic information coordination
	C-Tran Fleet Management Center	demand responsive transit request
	C-Tran Fleet Management Center	request transit information
	C-Tran Fleet Management Center	traffic control priority status
	C-Tran Fleet Management Center	traffic information for transit
	C-Tran Fleet Management Center	transit demand management request
	C-Tran Fleet Management Center	transit emergency coordination data
	C-Tran Fleet Management Center	transit information request
	Internet Travel Advisor for Oregon State Highways	broadcast information
	Internet Travel Advisor for Oregon State Highways	parking information
	Internet Travel Advisor for Oregon State Highways	traffic information
	Internet Travel Advisor for Oregon State Highways	traveler information
	Traffic Management Operations Center for Ptl'd. Area State Highways	archive status
	Traffic Management Operations Center for Ptl'd. Area State Highways	emergency traffic control request
	Traffic Management Operations Center for Ptl'd. Area State Highways	incident report
	Traffic Management Operations Center for Ptl'd. Area State Highways	incident response coordination
	Traffic Management Operations Center for Ptl'd. Area State Highways	request for traffic information

source	destination	data flow
	Traffic Management Operations Center for Ptlld. Area State Highways	resource request
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic control coordination
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic information
	Traffic Management Operations Center for Ptlld. Area State Highways	traffic information coordination
	Public Radio / Television for Portland/Vancouver Area	traffic information for media
	Public Radio / Television for Portland/Vancouver Area	transit incident information
	Public Radio / Television for Portland/Vancouver Area	traveler information for media
	Regional Data Warehouse (RTC)	emergency archive data
	Regional Data Warehouse (RTC)	parking archive data
	Regional Data Warehouse (RTC)	traffic archive data
	Regional Data Warehouse (RTC)	traveler archive data
	WSDOT Emergency Response Vehicles	suggested route
	Parking Facility Management	parking demand management request
	Parking Facility Management	parking instructions
	Parking Facility Management	parking lot data request
	Parking Facility Management	parking reservations request
	Regional Web Site	broadcast information
	Regional Web Site	parking information
	Regional Web Site	traffic information
	Regional Web Site	transit incident information
	Regional Web Site	traveler information
	Vehicle Probe	fault reports
	Vehicle Probe	remote surveillance control
	Vehicle Probe	resource request
	Vehicle Probe	traffic information coordination
	WSDOT Future Traffic Signal Controllers	freeway control data
	WSDOT Future Traffic Signal Controllers	signal control data
	WSDOT Roadside Devices	freeway control data
	WSDOT Roadside Devices	roadway information system data
WSDOT Roadside Devices	Regional Data Warehouse (RTC)	roadside archive data
	WSDOT Regional Traffic Operation Center	fault reports

source	destination	data flow
	WSDOT Regional Traffic Operation Center	freeway control status
	WSDOT Regional Traffic Operation Center	incident data
	WSDOT Regional Traffic Operation Center	traffic images

National Architecture Entities

National ITS Architecture Subsystems			
Center	Roadside	Vehicle	Traveler
<ul style="list-style-type: none"> • Archived Data Management • Commercial Vehicle Administration • Emergency Management • Emissions Management • Fleet and Freight Management • Information Service Provider • Toll Administration • Traffic Management • Transit Management 	<ul style="list-style-type: none"> • Commercial Vehicle Check • Parking Management • Roadway • Toll Collection 	<ul style="list-style-type: none"> • Commercial Vehicle Subsystem • Emergency Vehicle Subsystem • Transit Vehicle Subsystem • Vehicle 	<ul style="list-style-type: none"> • Personal Information Access • Remote Traveler Support

National ITS Architecture Terminators			
Environment	Human	Other System	System
<ul style="list-style-type: none"> • Environment • Potential Obstacles • Roadway • Roadway Environment • Secure Area Environment • Traffic • Vehicle Characteristics 	<ul style="list-style-type: none"> • Archived Data Administrator • Commercial Vehicle Driver • Commercial Vehicle Manager • CVO Inspector • Driver • Emergency Personnel • Emergency System Operator • ISP Operator • Parking Operator • Pedestrians • Toll Administrator 	<ul style="list-style-type: none"> • Other Archives • Other CVAS • Other EM • Other ISP • Other Parking • Other TM • Other TRM • Other Vehicle 	<ul style="list-style-type: none"> • Archived Data User Systems (x69) • Basic Vehicle (x03) • Commercial Vehicle (x08) • Construction and Maintenance (x09) • CVO Information Requestor (x65) • DMV (x64) • Emergency Telecommunications System (x13)

National ITS Architecture Terminators			
Environment	Human	Other System	System
	<ul style="list-style-type: none"> • Toll Operator • Traffic Operations Personnel • Transit Driver • Transit Fleet Manager • Transit Maintenance Personnel • Transit System Operators • Transit User • Traveler 		<ul style="list-style-type: none"> • Enforcement Agency (x62) • Event Promoters (x19) • Financial Institution (x21) • Government Administrators (x22) • Government Reporting Systems • Intermodal Freight Depot • Intermodal Freight Shipper • Location Data Source • Map Update Provider • Media • Multimodal Crossings • Multimodal Transportation Service Provider • Other Data Sources • Payment Instrument • Rail Operations • Transit Vehicle • Wayside Equipment • Weather Service • Yellow Pages Service Providers

National ITS Architecture Market Packages	
Market Package	Description
Advanced Data	
ITS Data Mart	A focused archive that houses data.
ITS Data Warehouse	Data Mart plus ability that allows collection of data from multiple agencies and data sources spanning across modal and jurisdictional boundaries.
ITS Virtual Data Warehouse	ITS Data Warehouse Market Package, but provides this access using enhanced interoperability between physically distributed ITS archives.
Advanced Public Transportation System	
Transit Vehicle Tracking	Automated Vehicle Location System to track the transit vehicle's real time schedule adherence and updates the transit system's schedule in real-time.
Transit Fixed-Route Operations	Performs automatic driver assignment and monitoring, as well as vehicle routing and scheduling for fixed-route services.
Demand Response Transit Operations	Transit Fixed-Route Operations with demand response transit services.
Transit Passenger and Fare Management	Allows for the management of passenger loading and fare payments on-board vehicles using electronic means.
Transit Security	Provides for the physical security of transit passengers.
Transit Maintenance	Automatic maintenance scheduling and monitoring through on-board sensors.
Multi-modal Coordination	Establishes two way communications between multiple transit and traffic agencies to improve service coordination.
Transit Traveler Information	Provides transit users at transit stops and on-board transit vehicles with ready access to transit information
Advanced Traveler Information Systems	
Broadcast Traveler Information	Provides the user with a basic set of ATIS services; its objective is early acceptance.
Interactive Traveler Information	Provides tailored information in response to a traveler request.
Autonomous Route Guidance	In-vehicle sensory and interactive driver interface equipment to enable route planning and detailed route guidance based on static, stored information.
Dynamic Route Guidance	Offers user advanced route planning and guidance, responsive to current conditions.
ISP Based Route Guidance	Different than the Dynamic Route Guidance Market Package, moves the route planning function from the user device to the information service provider.
Integrated Transportation Management/Route Guidance	Continuously optimize the traffic control strategy based on near-real time information on intended routes for a proportion of the vehicles.

National ITS Architecture Market Packages	
Market Package	Description
Integrated Transportation Management/Route Guidance	Continuously optimize the traffic control strategy based on near-real time information on intended routes for a proportion of the vehicles.
Yellow Pages and Reservation	Enhances the Interactive Traveler Information package by making infrastructure provided yellow pages and reservation services available to the user.
Dynamic Ridesharing	Enhances the Interactive Traveler Information package by adding an infrastructure provided dynamic ridesharing/ride matching capability.
In Vehicle Signing	Distribution of traffic/travel advisory info. to drivers through in-vehicle devices.
Advanced Traffic Management Systems	
Network Surveillance	Includes traffic detectors, other surveillance equipment, the supporting field equipment, and wire line communications to transmit the collected data to a TMC.
Probe Surveillance	Wireless communications between the vehicle and Information Service Provider or TMC to communicate current vehicle location and status (e.g. travel time, location)
Surface Street Control	Provides the central control and monitoring equipment, communication links, and the signal control equipment that support local surface street control.
Freeway Control	Provides the communications and roadside equipment to support ramp control, lane controls, and interchange control for freeways.
HOV Lane Management	Manages HOV lanes by coordinating freeway ramp meters and connector signals with HOV lane usage signals.
Traffic Information Dissemination	Dissemination of traffic information to drivers and vehicles using DMSs or HAR.
Regional Traffic Control	Integrated Interjurisdictional traffic control.
Incident Management System	Manages both predicted and unexpected incidents so that the impact to the transportation network and traveler safety is minimized.
Traffic Forecast and Demand Management	Includes advanced algorithms and storage capabilities to support historical evaluation, real-time assessment, and forecast of roadway network performance.
Electronic Toll Collection	Ability to collect tolls electronically and detect and process violators.
Emissions Monitoring and Management	Monitors individual vehicle emissions and provides general air quality monitoring using distributed sensors to collect the data.
Virtual TMC and Smart Probe Data	Rural road systems. Instead of a central TMC, the traffic management is distributed over a very wide area.

National ITS Architecture Market Packages	
Market Package	Description
Standard Railroad Grade Crossing	Manages highway traffic at highway-rail intersections (HRIs) where operational requirements do not dictate more advanced features (e.g., rail speeds < 80 mph).
Advanced Railroad Grade Crossing	Manages highway traffic at highway-rail intersections (HRIs) where operational requirements demand advanced features (e.g. where rail speeds > 80 mph).
Railroad Operations Coordination	Used to develop forecast HRI closure times and durations which may be used in advanced traffic control strategies or to enhance the quality of traveler information.
Parking Facility Management	Provides enhanced monitoring and management of parking facilities.
Reversible Lane Management	Provides for the management of reversible lane facilities.
Road Weather Information System	Monitors current and forecast road and weather conditions using a combination of weather service information and data collected from environmental sensors.
Regional Parking Management	Coordination between parking facilities to enable regional parking management.
Advanced Vehicle Safety Systems	
Vehicle Safety Monitoring	Diagnose critical components of vehicle and warn the driver of potential dangers.
Driver Safety Monitoring	Determine the driver's condition, and warn the driver of potential dangers.
Longitudinal Safety Warning	Allows for longitudinal warning. It utilizes safety sensors and collision sensors.
Lateral Safety Warning	Allows for lateral warning. It utilizes safety sensors and collision sensors.
Intersection Safety Warning	Determine the probability of a collision in an equipped intersection and provide timely warnings to drivers in response to hazardous conditions.
Pre-Crash Restraint Deployment	Provides in-vehicle sensors to monitor the vehicle's local environment, determine collision probability and deploy a pre-crash safety system.
Driver Visibility Improvement	Enhance driver visibility using on-board display hardware.
Emissions Monitoring and Management	Monitors individual vehicle emissions and provides general air quality monitoring using distributed sensors to collect the data.
Virtual TMC and Smart Probe Data	Rural road systems. Instead of a central TMC, the traffic management is distributed over a very wide area.
Emissions Monitoring and Management	Monitors individual vehicle emissions and provides general air quality monitoring using distributed sensors to collect the data.
Virtual TMC and Smart Probe Data	Rural road systems. Instead of a central TMC, the traffic management is distributed over a very wide area.

National ITS Architecture Market Packages	
Market Package	Description
Freight Administration	Tracks cargo and the cargo condition.
Electronic Clearance	Provides for automated clearance at roadside check facilities.
CV Administrative Processes	Provides for electronic application, processing, fee collection, issuance, and distribution of CVO credential and tax filing.
International Border Electronic Clearance	Provides for automated clearance specific to international border crossings.
Weigh-In-Motion	Provides for high speed weigh-in-motion with or without AVI attachment.
Roadside CVO Safety	Provides for automated roadside safety monitoring and reporting.
On-board CVO Safety	On-board commercial vehicle safety monitoring and reporting.
CVO Fleet Maintenance	Supports maintenance of CVO fleet vehicles through close interface with on-board monitoring equipment and AVLS capabilities within Fleet Management System.
HAZMAT Management	Integrates incident management capabilities with commercial vehicle tracking to assure effective treatment of HAZMAT material and incidents.
Emergency Management	
Emergency Response	Provides the computer-aided dispatch systems, emergency vehicle equipment, and wireless communications that enable safe and rapid deployment of appropriate resources to an emergency.
Emergency Routing	Supports dynamic routing of emergency vehicles and coordination with the Traffic Management Subsystem for special priority on the selected route(s).
Mayday Support	Allows the user to initiate a request for emergency assistance and enables Emergency Management System to locate user and determine appropriate response.

For additional information, see the market package descriptions on the Internet at <http://www.odetics.com/itsarch/web/deploy.htm>