

Connected Vehicle Reference Implementation Architecture
Connected Vehicle Applications

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The Connected Vehicle Reference Implementation Architecture is based on a set of Applications that have been defined by various connected vehicle programs. The source for the application descriptions ranges from Concepts of Operations (ConOps), Requirements Specifications, or existing Standards and Architectures. There are four types of Connected Vehicle Applications: Environmental, Mobility, Safety, and Support. Each type is comprised of groups of applications. Clicking on an Application Name from CVRIA Website (www.iteris.com/cvria/index.html) will open a screen with a description of the application, its source references, and the subset of the architecture that pertains to that application, including sub-tabs for each view (enterprise, functional, physical, and communications).

<u>Type</u>	<u>Group</u>	<u>Application Name</u>
Environmental	AERIS	Dynamic Eco-Lanes Management
		Dynamic Low Emissions Zone System
		Eco-Cooperative Cruise Control
		Eco-Lanes Multi-modal Traveler Information
		Eco-Ramp Metering
		Eco-Speed Harmonization
		Eco-Traffic Signal System
	Road Weather	Road Weather Information and Routing Support for Emergency Responders
		Road Weather Advisories and Warnings for Motorists
		Road Weather Information for Maintenance and Fleet Management System
		Road Weather Information for Freight Carriers
		Enhanced Maintenance Decision Support System
		Variable Speed Limits for Weather-Responsive Traffic Management Vehicle System
		Sustainable Travel
	Electric Charging Stations Management	
	Eco-Traveler Information: Dynamic Eco-Routing	
	Eco-Traveler Information: Multimodal Real-Time Traveler Information	
	Eco-Traveler Information: Smart Parking	
	Signal Movement at Intersections: Eco-Driving	

<u>Type</u>	<u>Group</u>	<u>Application Name</u>
Mobility	Border	Border Management Systems
	Commercial Vehicle & Freight	Vehicle Credentialing
		Freight Drayage Optimization
		Freight -Specific Dynamic Travel Planning and Performance
		Safety Screening
		Container Contents
		Container/Chassis Operating Data
		Smart Roadside Initiative
	Planning	Vehicle Data for Traffic Data Collection
	Public Safety	Advanced Automatic Crash Notification Relay
		Emergency Communications and Evacuation
		Incident Scene Work Zone Alerts for Drivers and Workers
		Incident Scene Pre-Arrival Staging Guidance for Emergency Responders
		Vehicle Data for Incident Detection
	Traffic Network	Cooperative Adaptive Cruise Control
		Queue Warning
		Speed Harmonization
	Traffic Signals	Pedestrian Mobility
		Emergency Vehicle Priority
		Freight Signal Priority
		Intelligent Traffic Signal System
		Intersection State Memory for Transit
		Transit Signal Priority
	Transit	Dynamic Ridesharing
		Intermittent Bus Lanes
		Integrated Multi-Modal Electronic Payment
		Route ID for the Visually Impaired
		Smart Park and Ride System
		Transit Connection Protection
		Dynamic Transit Operations
		Transit Stop Request
	Traveler Information	Ad Hoc Messages
		Advanced Traveler Information Systems
Receive Parking Space Availability and Service Information		

<u>Type</u>	<u>Group</u>	<u>Application Name</u>
Safety	Transit Safety	Transit Pedestrian Indication
		Transit Vehicle Crash Warning
		Transit Vehicle at Station/Stop Warnings
	V2I Safety	V2I Safety
		Curve Speed Warning
		Infrastructure Restriction Warnings
		Oversize Vehicle Warning
		Pedestrian and Turning Vehicle Crash Warning
		Railroad Crossing Violation Warning
		Roadway Hazards Information
		Red Light Violation Warning
		Restricted Lane Warnings
		Reduced Speed Zone Warning
		Stop Sign Gap Assist
		Stop Sign Violation Warning
		Spot Weather Impact Warning
		Warnings about Hazards in a Work Zone
		Warnings about Upcoming Work Zone
	V2V Safety	V2V Safety
		Vehicle Emergency Response
		Blind Spot Warning + Lane Change Warning
		Control Loss Warning
		Do Not Pass Warning
		Emergency Electronic Brake Light
		Emergency Vehicle Alert
		Forward Collision Warning
		Intersection Movement Assist
Pre-crash Actions		
Situational Awareness		
Tailgating Advisory		

<u>Type</u>	<u>Group</u>	<u>Application Name</u>
Support	Communications	Communications Support
		Session Management
	Core Services	Data Distribution
		Geographic Broadcast
		Core Authorization
	Security	Security and Credentials Management
	Signal Phase & Timing	Signal Phase and Timing