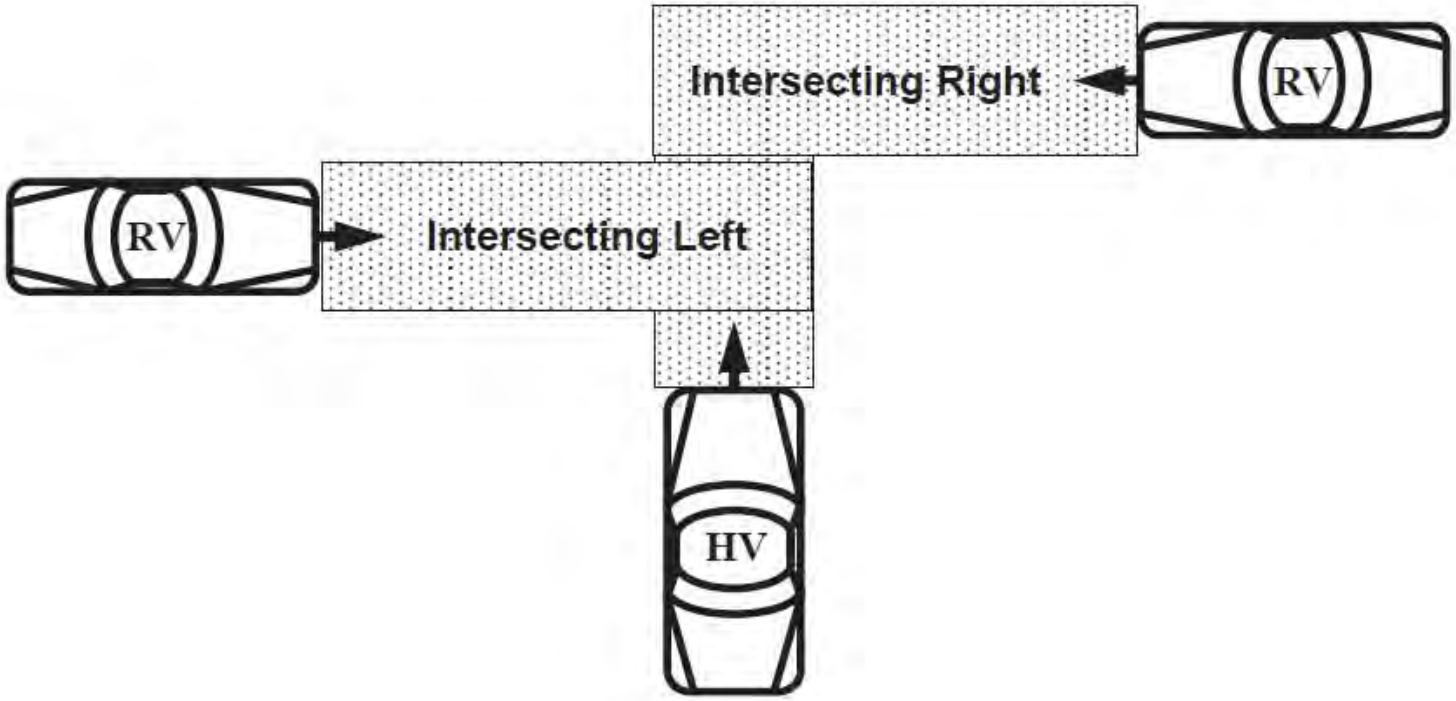
RITA Research and Innovative Technology Administration

Intelligent Transportation Systems (ITS) Joint Program Office (JPO)

CVRIA Breakout Group Discussions

Intersection Movement Assist

- The Intersection Movement Assist (IMA) application is intended to warn the driver of a vehicle when it is not safe to enter an intersection due to high collision probability with other vehicles. Initially, IMA is intended to help drivers avoid or mitigate vehicle collisions at stop sign-controlled and uncontrolled intersections. This application enables the vehicle to anticipate impacts where other vehicle paths cross and then perform crash prevention actions to reduce the likelihood of crashes at the intersections.

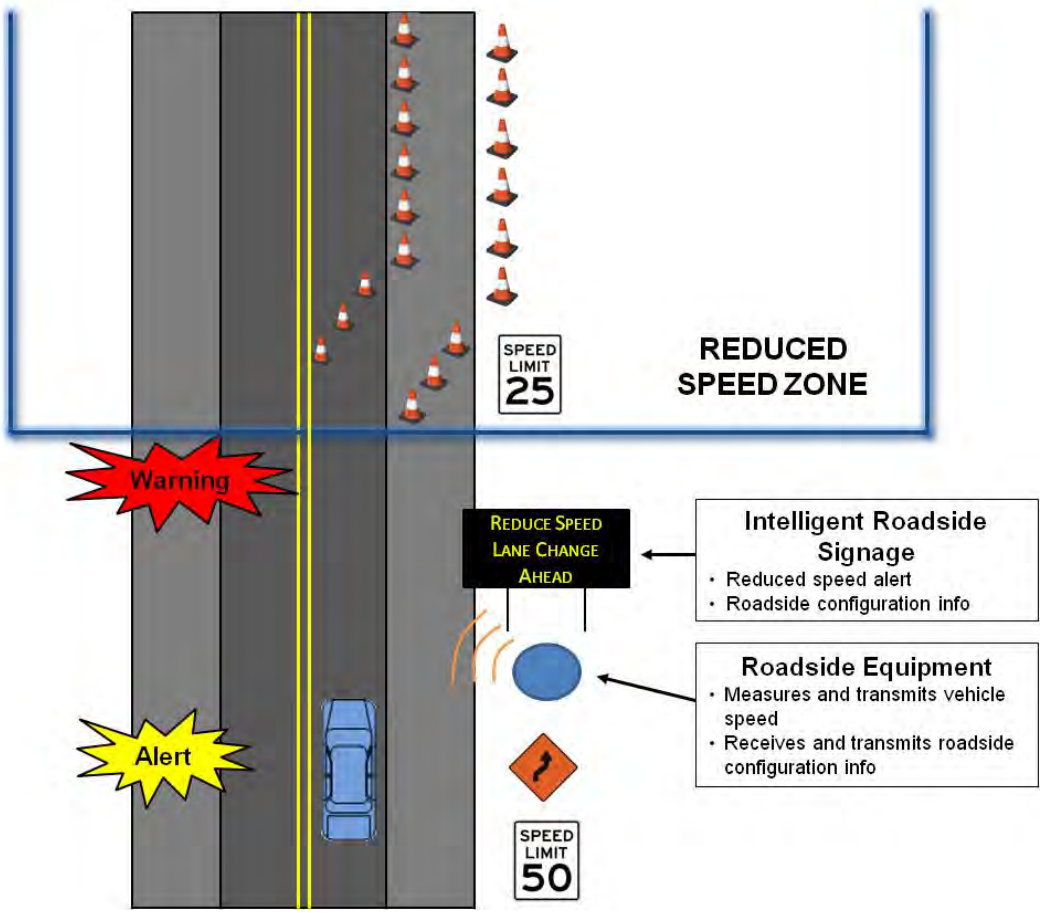


Intersection Movement Assist (IMA)

- From here we'll go look the Architecture View diagrams using the draft website and the handouts of the diagrams.
- Physical View
  - Physical Objects
  - Application Objects
  - Flows
- Enterprise View
  - Enterprise Objects
  - Facilities
  - Resources
  - Roles & Relationships
- Functional View
  - Processes / High Level interfaces

Reduced Speed Zone Warning (RSZW)

- The Reduced Speed Zone Warning (RSZW) application alerts or warns drivers of equipped and non-equipped vehicles who are approaching a reduced speed zone if they are operating at a speed higher than the zone's posted speed limit and/or if the configuration of the roadway is altered (e.g., lane closures, lane shifts).
- Includes:
  - Construction/work zones
  - School zones
  - Incorporated zones (e.g., rural towns)
- May vary by:
  - Time of Day
  - Season of year
  - Current activity/situation



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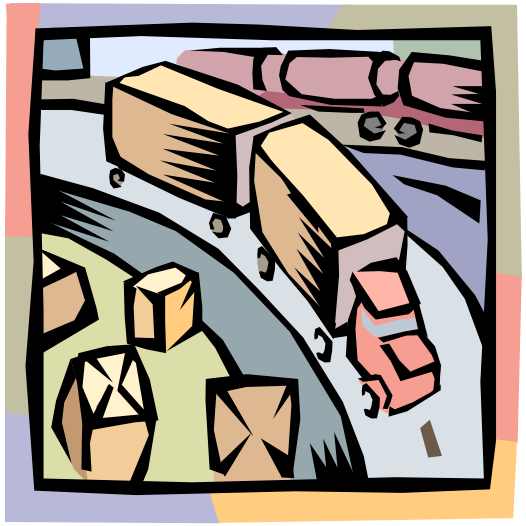
Freight Drayage Optimization (DR-OPT)

- The Freight Drayage Optimization application bundle covers the information exchanges between all intermodal parties to provide current drayage truck load matching and container availability and appointment scheduling at railroad and steamship line terminals. The application bundle includes a link from drivers and freight management systems dispatchers to an intermodal terminal reservation system and integrates an appointment function with Terminal Queue Status and Load Matching.



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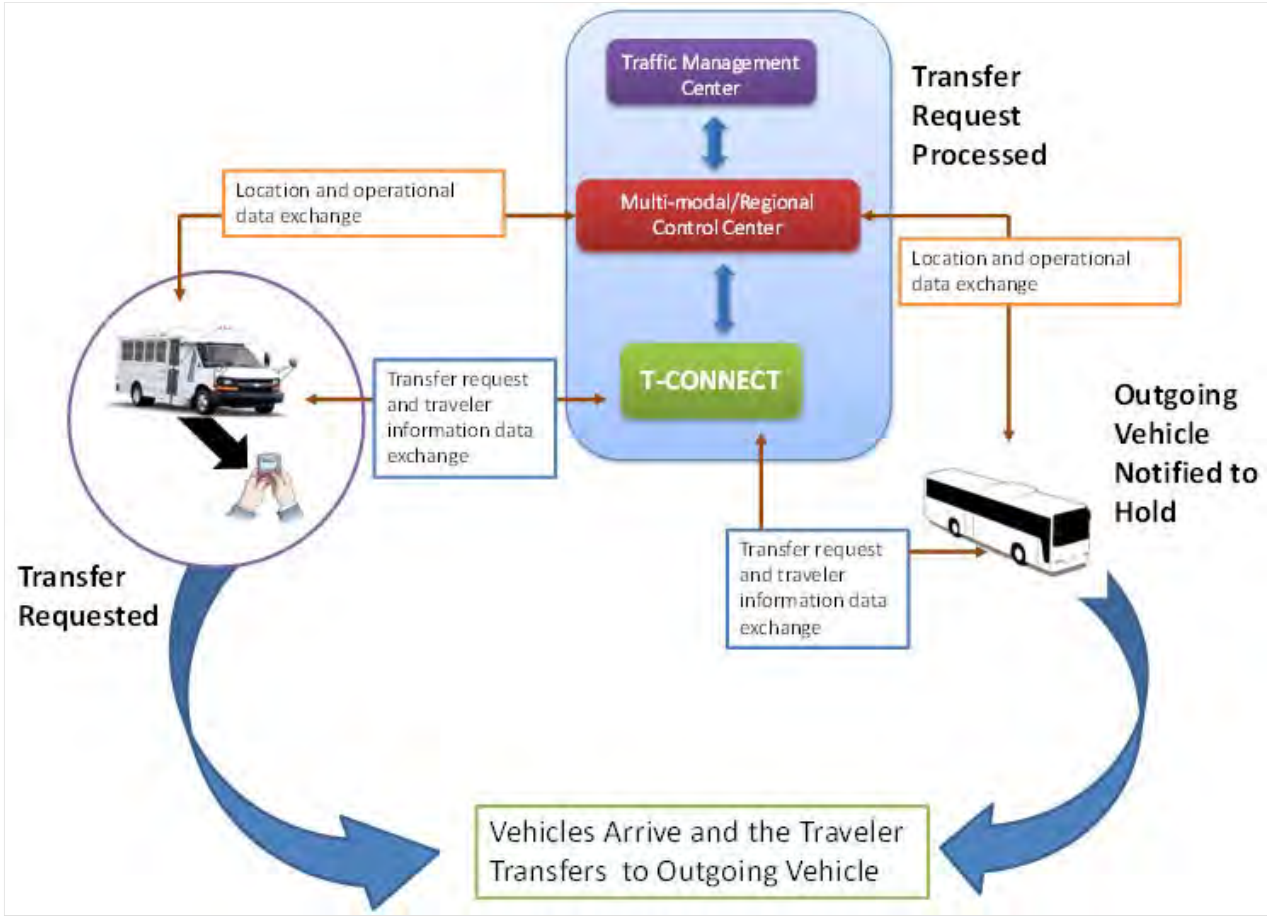
Transit Connection Protection (T-CONNECT)

- The Transit Connection Protection application allows travelers to initiate a request for connection protection. Connection protection examines the arrival status of a transit vehicle and to transmit a hold message to a vehicle or other mode (e.g. rail) to make a successful transfer from one vehicle to another.
- Can be performed within a single agency, across multiple agencies, and across multiple modes.



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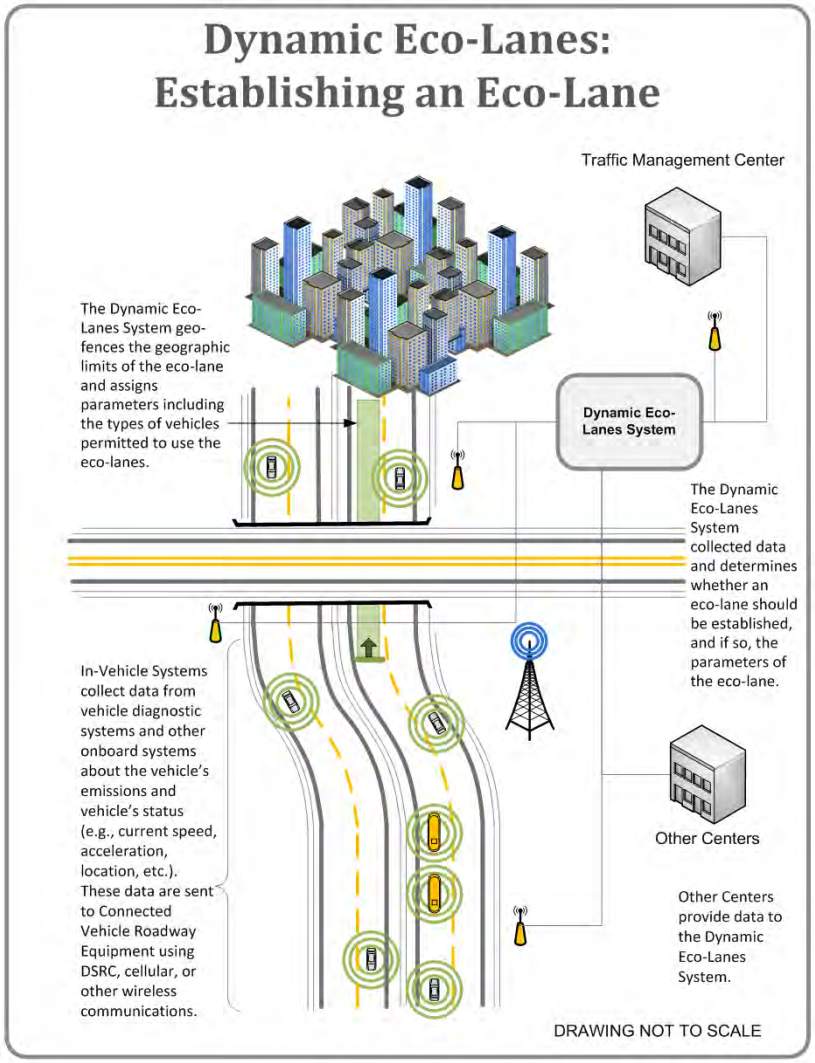
Dynamic Eco-Lanes Management

- Dynamic Eco-Lanes Management gathers traffic and environmental information from multiple sources. The system then processes these data and determines whether an eco-lane should be created or decommissioned along a roadway. The application manages the eco-lanes with the objective of reducing fuel consumption and overall emissions along the roadway segment. Data considered in the creation or decommissioning of an eco-lane includes real-time and predicted traffic and environmental conditions, location and duration of special events, or other data. The Dynamic Eco-Lanes System evaluates traffic and environmental parameters for a roadway in real-time and adapts environmental applications to meet the real-time needs of the roadway. The system also predicts future traffic and environmental conditions using historical data and real-time data, which allows the system to predict future problem areas.



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Road Weather Advisories and Warnings for Motorists

- Using data road-weather information gathered from connected vehicles, including information on deteriorating road and weather conditions on specific roadway segments, this application will send alerts and advisories to travelers through a variety of means within a few minutes. In combination with observations and forecasts from other sources and with additional processing, medium-term advisories of the next two to twelve hours to long-term advisories for more than twelve hours into the future can also be provided.

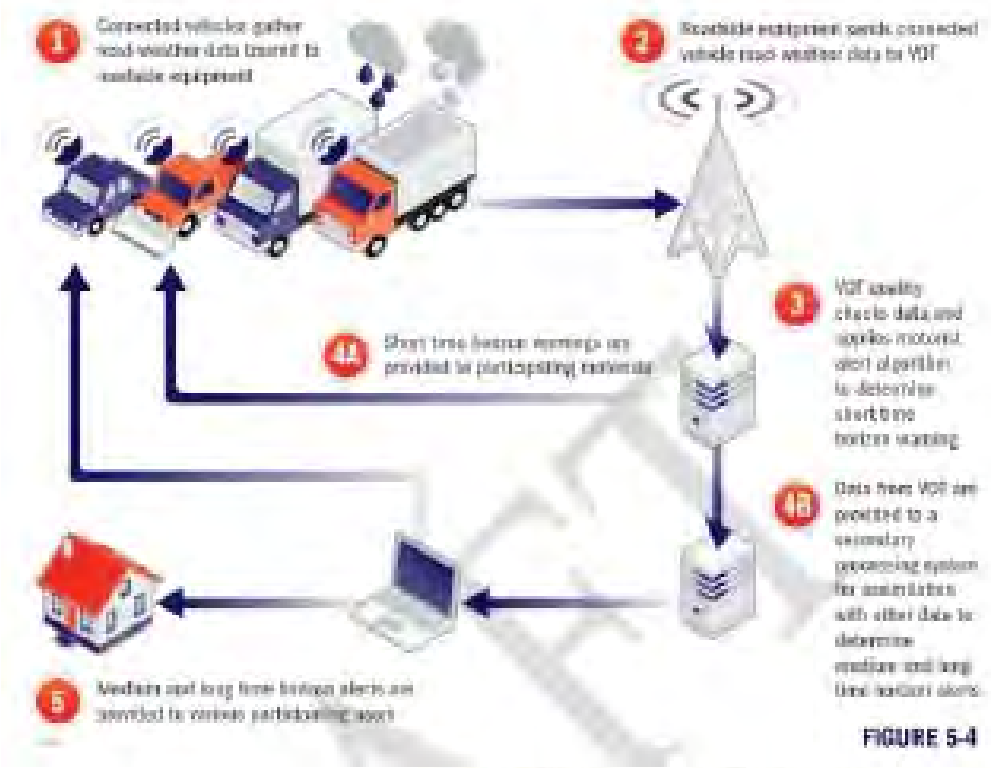

FIGURE 5-4

Road Weather Advisories and Warnings for Motorists

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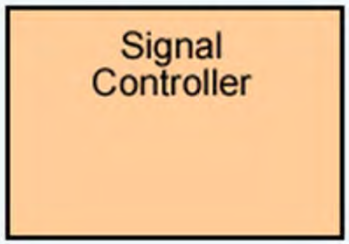
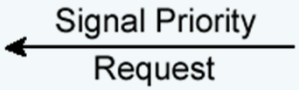
Physical View Components



Physical objects: rectangle drawn with solid lines, with the name of the object at the top of the rectangle. Named according to their commonly known hardware device type or hosting system. They are colored according to the four National ITS Architecture subsystem classes of which they are a part:

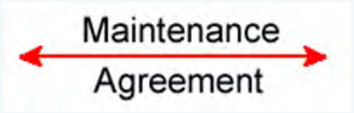
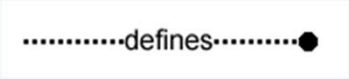
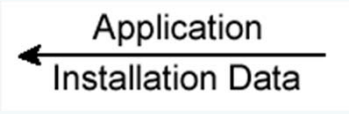
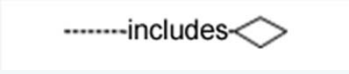


Flows or **Links**: A Link between physical objects is shown as a straight solid line with an arrow indicating directionality. The link will be tagged with a name that identifies it.

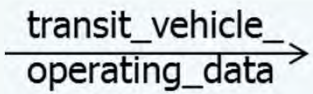
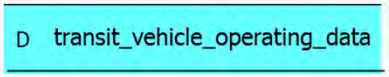
Application Objects: white boxes, placed within a physical object box.

External Physical Objects (do not contain any physical objects): Rectangles colored by the class of physical object to which they are connected.

Enterprise View Components

	**Enterprise Objects:** rectangles with solid lines. Objects are named with regard to the role they play in the View.
	**Resources:** rectangles with dotted lines. Objects are named with regard to the role they play in the View.
	Coordination **Relationships** between Enterprise Objects: red double-headed arrow solid lines. The type of coordination is defined by the label.
	**Roles** between Objects and between Objects and Resources: dotted lines, with the type of relationship defined by the label and the order of the relationship ending with the filled circle.
	**Data** exchanged between Resources: black line, arrow indicating directionality of data flow.
	**Include** relationships: dotted line terminating at the included object with an open diamond.

Functional View Components

	**Processes** are drawn as green circles. At the lowest level of the functional decomposition a **P-Spec** is written to describe the functionality. For each process circle, text inside the circle identifies the Process name and unique identifier. The Process may be connected to Terminators, other Processes, or Data Stores by Data Flows.
	**Data Flows:** labeled arrows, with the arrowhead indicated the direction of data. May connect a process to a process, a process to a Terminator, or a process to a Data Store.
	**Data Stores:** open-ended blue rectangles. Connected to Processes by Data Flows.
	**Terminators (same as External Physical Objects)**: Shown on the top level Data Flow Diagram (DFD) as yellow rectangles.