

# V2X Applications Overview

## Vehicle-to-Vehicle (V2V) Communications

Savari's hardware product families and software stack enable a range of V2X applications, which are displayed on the vehicle's infotainment platform or on the drivers tablet or smartphone.



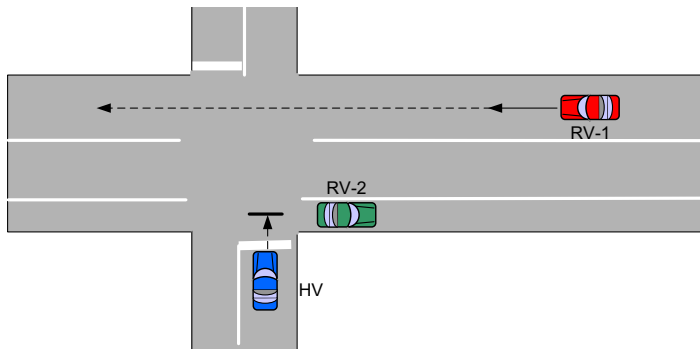
V2X applications include Vehicle-to-Vehicle (V2V), Vehicle-to-Infrastructure (V2I) and Vehicle-to-Phone (V2P) applications, all aimed at increasing traffic safety and efficiency. The goal is to eliminate traffic-related fatalities by deploying life-saving V2X applications in all cars.

Savari's V2V applications feature graphical representations of the traffic scenario, using host vehicles (HVs) and remote vehicles (RVs), and displaying alerts through the app to the driver in the host vehicle. All apps are tested and approved by Volpe and the U.S. Department of Transportation (USDOT). Many

scenarios can only be achieved through radio-based sensors, which do not require line of sight. A rich feature set makes Savari's offering unique:

- Radio agnostic solutions supporting leading radio vendors
- Numerous applications
- Trial bed and market experience
- Built-in IP for positioning, map matching, target filtering and tracking at multiple levels
- Built-in IP for accurate situational awareness

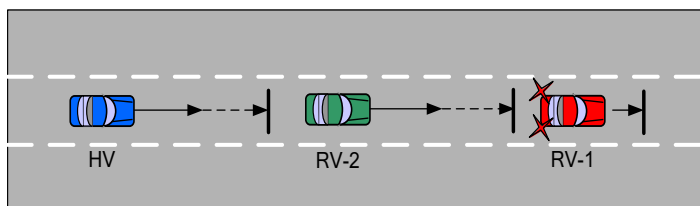
### Intersection Movement Assist (IMA)



**What is it?** IMA warns drivers when it's unsafe to enter an intersection due to high collision probability with other vehicles at intersections.

**How it works:** Location information from the "cross traffic" vehicle (RV-1) enables the vehicle attempting to cross the intersection (HV) to avoid danger, even if the view is blocked (RV-2).

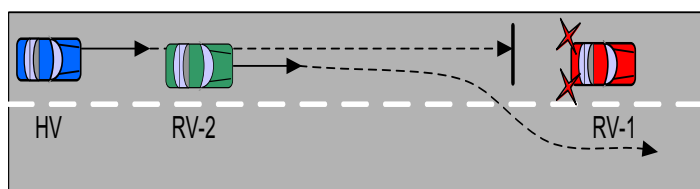
### Electronic Emergency Brake Light (EEBL)



**What is it?** EEBL enables a vehicle to broadcast a self-generated emergency brake event to surrounding vehicles.

**How it works:** Upon receiving the event information, the receiving vehicle determines the relevance of the event and, if appropriate, provides a warning to the driver, helping to prevent a crash.

### Forward Collision Warning (FCW)



**What is it?** FCW warns drivers of an impending rear-end collision with another vehicle ahead in traffic, in the same lane and moving in the same direction.

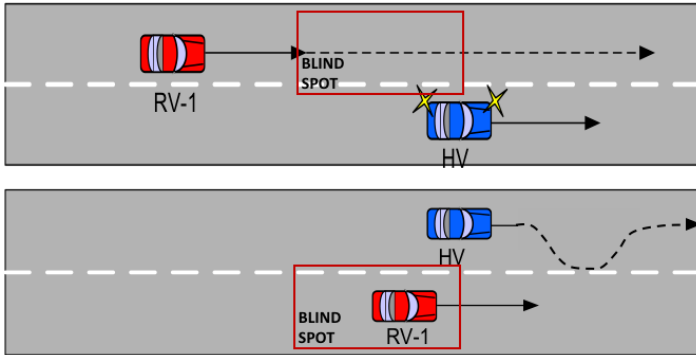
**How it works:** The app uses data received from other vehicles to determine if a forward collision is imminent and to warn drivers to avoid rear-end vehicle collisions.

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### Blind Spot Warning (BSW) and Lane Change Warning (LCW)

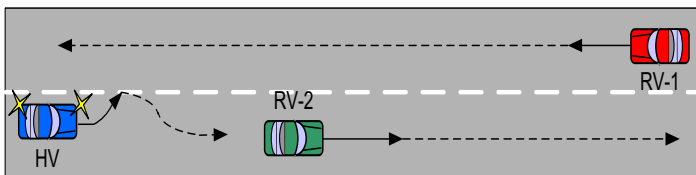


**What is it?** BSW and LCW features warn drivers during a lane change attempt if the blind-spot zone into which the vehicle intends to switch is, or will soon be, occupied by another vehicle traveling in the same direction.

**How it works:** The HV displays an advisory message indicating a vehicle in the blind spot zone. When attempting to merge into the same lane as the RV, the app sends a warning to the HV's driver.

At the left, the top image displays BSW and the bottom image displays LCW.

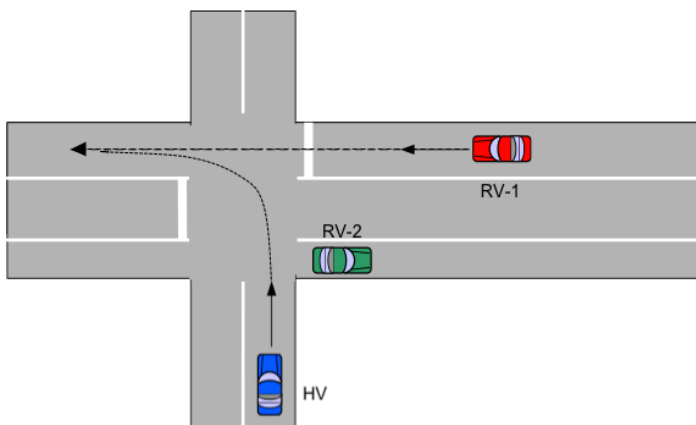
### Do Not Pass Warning (DNPW)



**What it is?** DNPW warns drivers during a passing maneuver attempt when a slower-moving vehicle ahead cannot be passed safely using a passing zone, because the passing zone is occupied by vehicles moving in the opposite direction.

**How it works:** Provides advisory information that the passing zone is occupied when a vehicle is ahead and in the same lane, even if a passing maneuver is not being attempted.

### Left Turn Assist (LTA)



**What it is?** LTA warns drivers during a left turn attempt when it is not safe to enter an intersection or continue in the left turn attempt, due to a car approaching the same path with no intent of stopping.

**How it works:** This application can provide collision warning information to the vehicle operational systems, which may perform actions to reduce the likelihood of crashes at intersections and left turns.

According to the German Federal Statistical Office, inattentiveness when turning off a road or performing a U-turn is one of the leading causes of accidents on the country's roads.