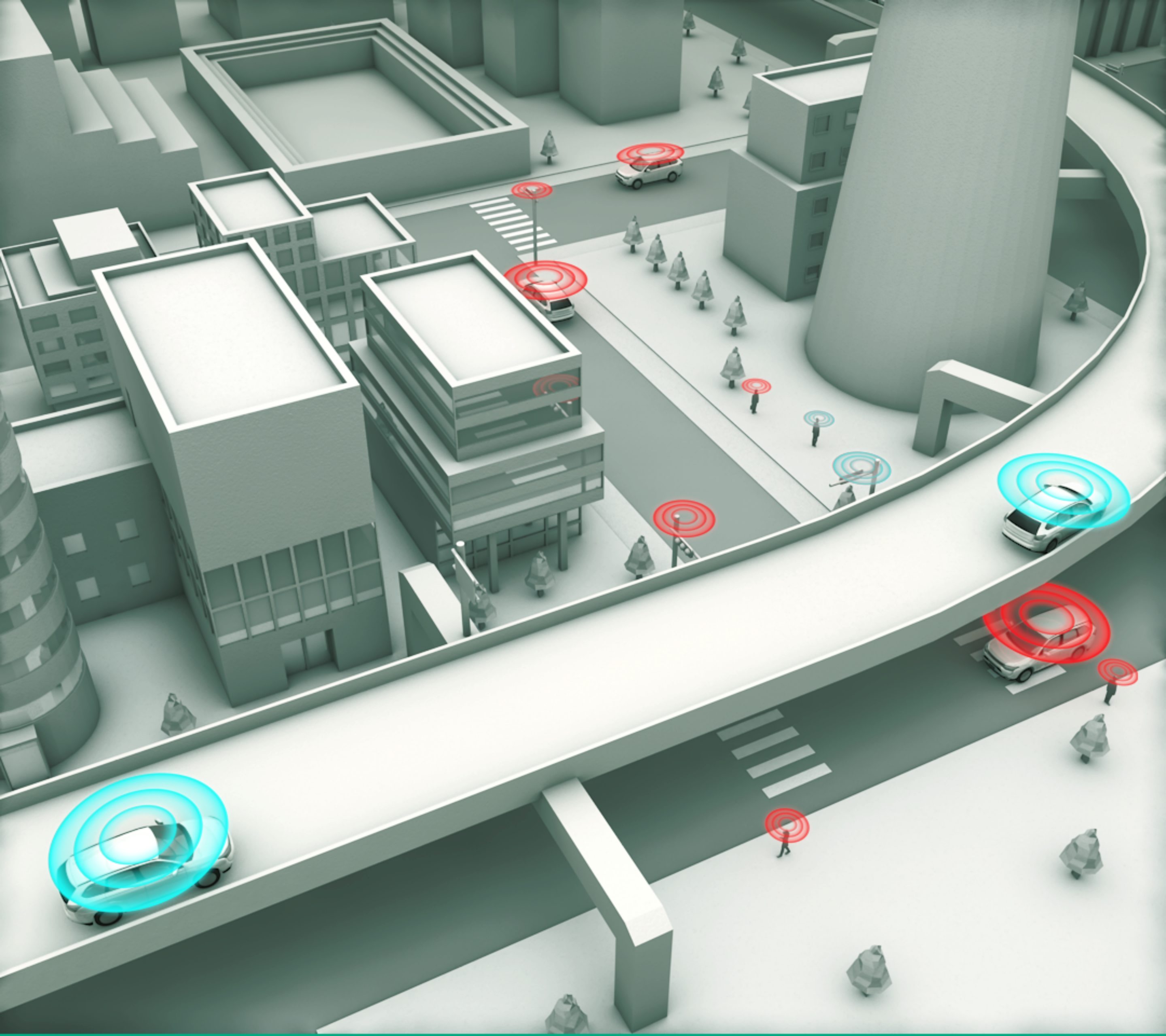




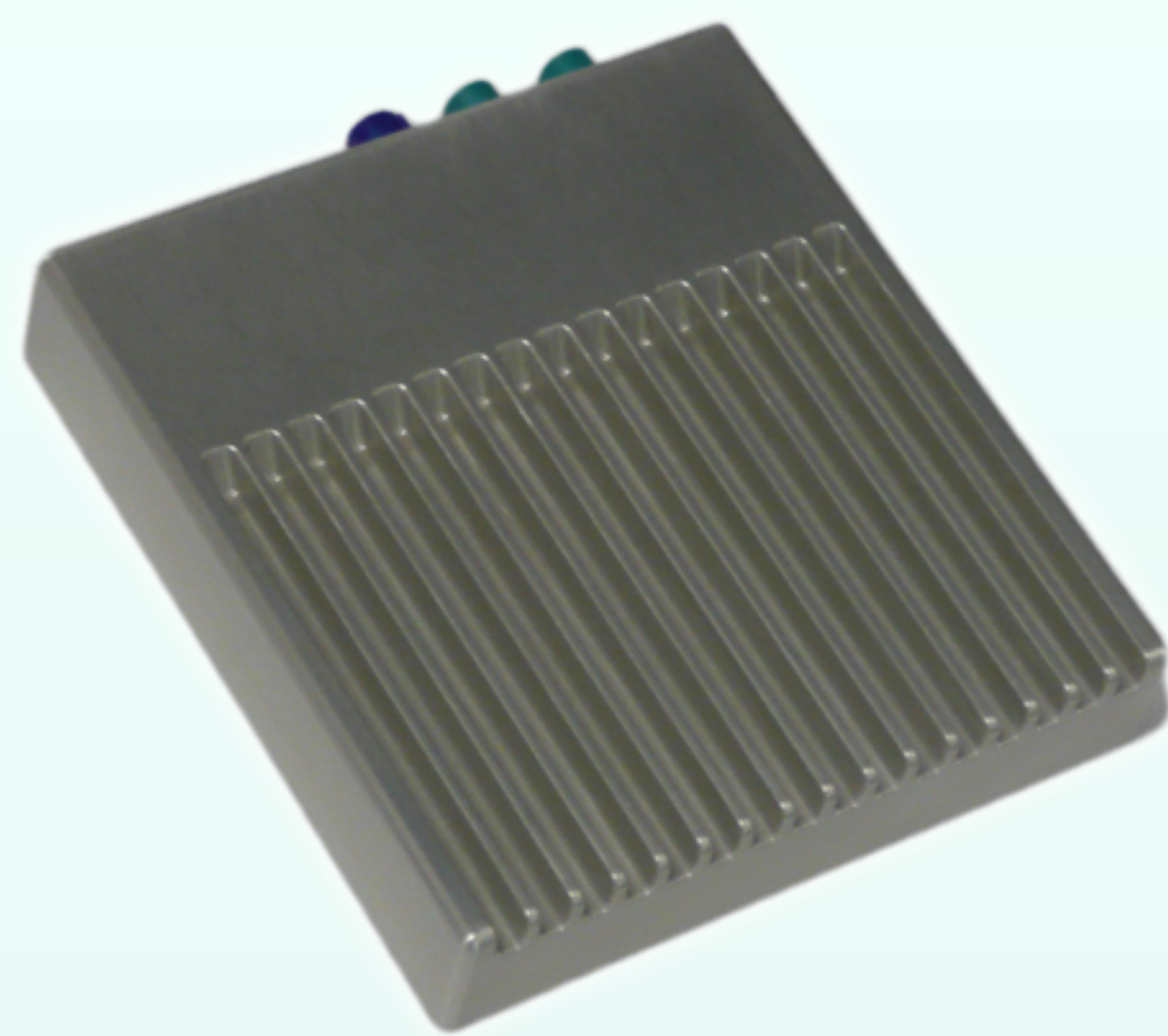
# V2X Communication System

New Driving Support System utilizing V2V (Vehicle-to-Vehicle), V2I (Vehicle-to-Infrastructure), and V2P (Vehicle-to-Pedestrian) wireless communication technology.



# V2X Communication System

## V2X Communication Unit



### V2X Standards in US, EU and Japan

|                     | US                              | EU                             | Japan                         |
|---------------------|---------------------------------|--------------------------------|-------------------------------|
| Frequency [Channel] | 5.850 to 5.925 GHz (7 channels) | 5.855 – 5.925 GHz (7 channels) | 755.5 – 764.5 MHz (1 channel) |
| Standards           | IEEE 802.11p, 1609.x            | ETSI EN 302 663                | ARIB STD T109                 |
| Modulation          | OFDM                            |                                |                               |
| Data rate           | 3 to 27 Mbps                    |                                | 3 to 18 Mbps                  |

### Specification of V2X Communication Unit

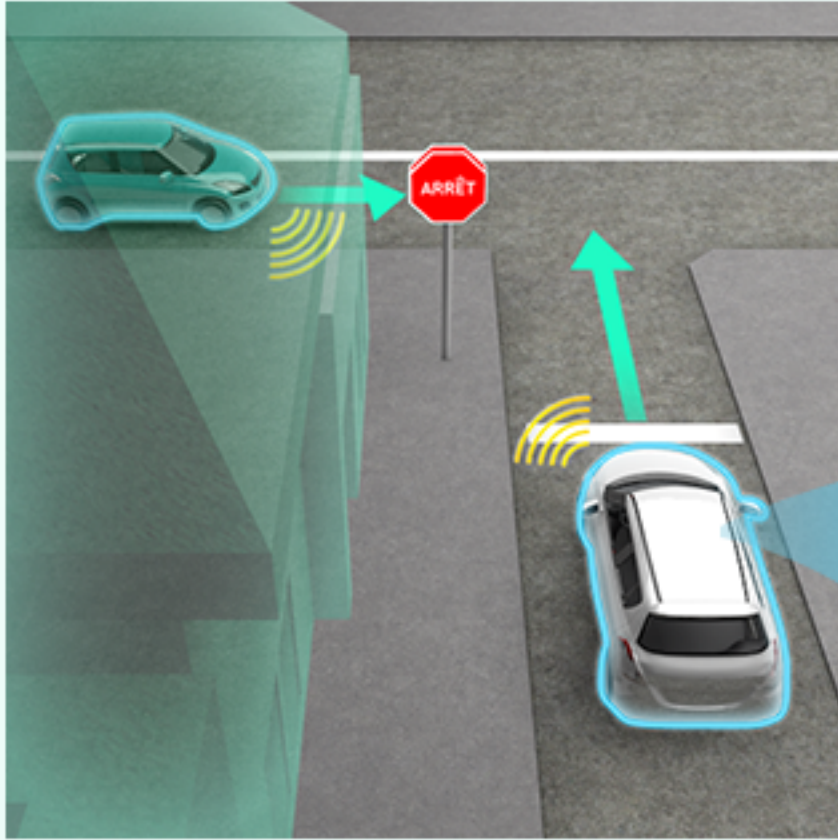
|                 |                                             |
|-----------------|---------------------------------------------|
| Size            | W 98x D 105 x H 20 mm                       |
| Antenna port    | V2X x 2 [US and EU] / x 1 [Japan], GNSS x 1 |
| Other interface | CAN bus, Power                              |
| Transmit power  | 23 dBm [US, EU] / 19.2 dBm [Japan]          |
| Input voltage   | DC 12 V                                     |



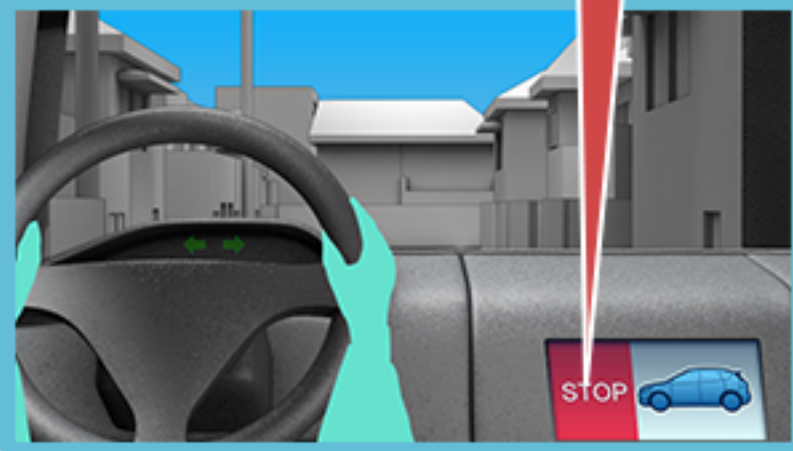


# V2X Communication System

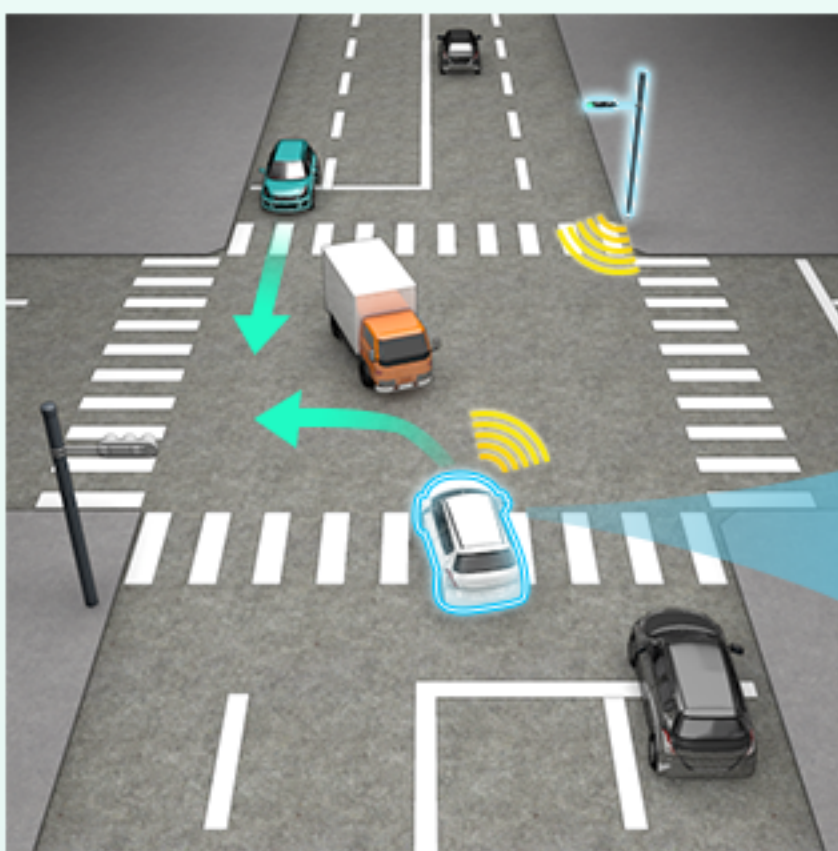
## Example Application



A Vehicle is approaching



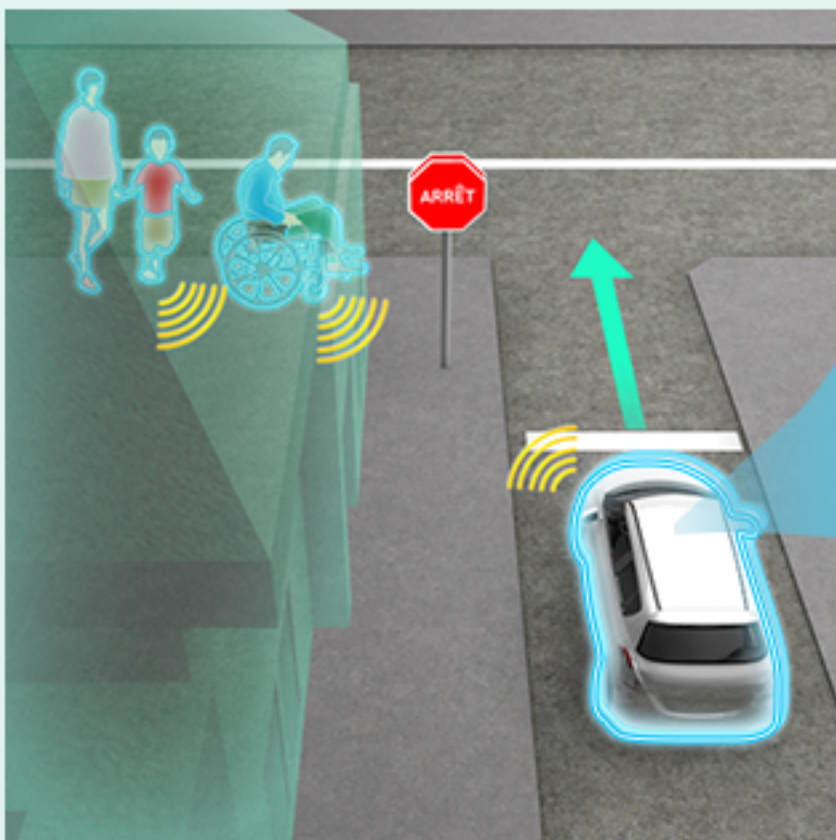
V2V : Crash avoidance



Attention to oncoming vehicle



V2I : Crash avoidance



A pedestrian is approaching



V2P : Alerting drivers



Blind spot