

# 7 V2X

## APPLICATION SCENARIOS



### 1 Signal Phase and Timing

SPaT is a V2I service used at signalized traffic intersections. The RSU in the traffic signal controller sends a message indicating light colour and remaining time to the OBUs of inbound vehicles. The vehicles then use this information to determine whether to cruise through or decelerate to a stop.

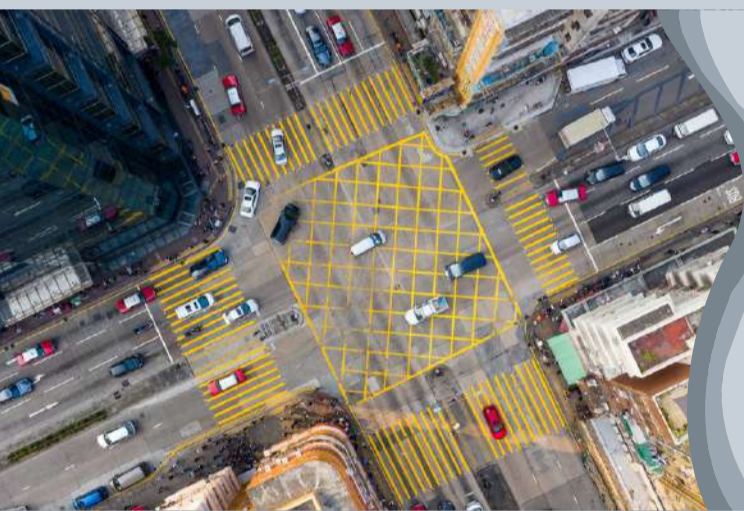
### 2 Emergency Vehicle Preemption

EVP is a V2I service that gives road priority to emergency vehicles. The OBU of a dispatched emergency vehicle sends a special message indicating its location and path to the RSUs of upcoming traffic lights. These traffic lights then work in favour of the emergency vehicle to ensure safety and speedy response.



### 3 Intersection Collision Avoidance

IVA is a V2V service that prevents collisions at traffic intersections. The RSU of the roadside camera monitors vehicles and moving objects in all directions and sends a warning message to inbound vehicles when it detects potential signal violators in the cross direction, preventing T-bone collisions.



### 4 Emergency Brake Warning

EBW is a V2V service that prevents rear-end collisions caused by sudden braking. The OBU of the braking vehicle sends a message indicating its intended behaviour to the OBU of every subsequent vehicle, so that they can all start braking at the same time, preventing collisions and overbraking.



### 5 Pedestrian Collision Avoidance

PCA is a V2P service used for pedestrian protection. Roadside cameras detect pedestrians on the roadway and send warning messages to nearby vehicles. Newer developments embed RSUs into smartphones so that such warnings can be sent directly from the pedestrian's devices.

### 6 Smart Parking

Smart parking is a V2I service used to match the supply and demand for parking space in real-time. The RSUs of the parking lot sensors send messages notifying parking availability to nearby vehicles, allowing vehicles to drive towards the nearest parking space seamlessly, easing traffic jams in high-density commercial zones.



### 7 Do Not Pass Warning

DNPW is a V2V service that is used to ensure safe overtaking on undivided highways. The OBU of the first vehicle in the lane sends messages to the vehicles behind, warning them not to pass when it sees vehicles traveling down from the opposite direction.

