

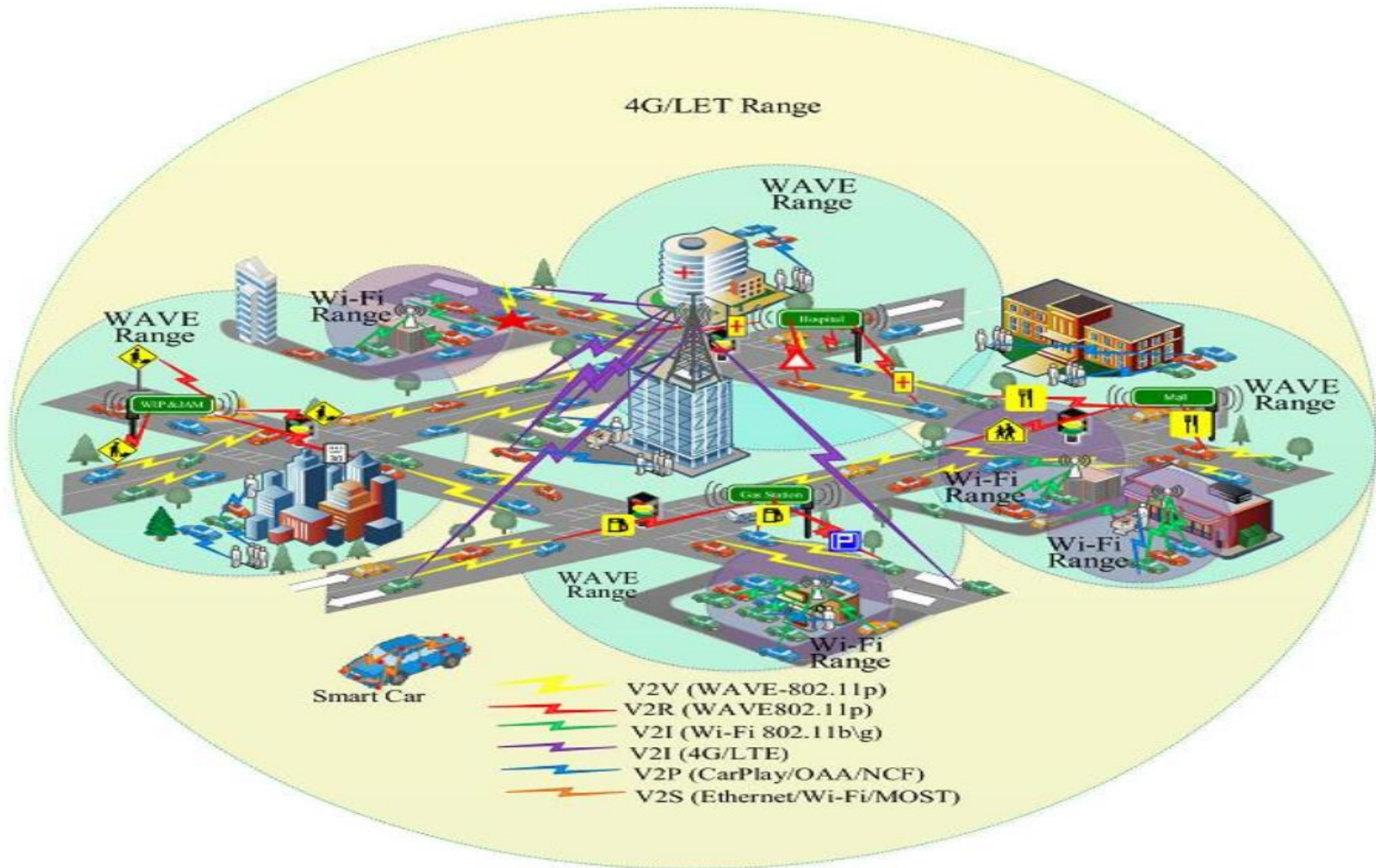
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# NOVEL INTERNET OF VEHICLES FOR SMART CITIES

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# Motivations

- Smart cities are systems of systems that face challenges, especially in transport, energy and communications aspects and necessitates digital and physical infrastructures that are resilient to changes. Providing efficient mobility solutions requires Internet of Things (IoT) and Internet of Vehicles (IoV) technologies.
- The IoV technology as part of IoT, foresees all future vehicles to be connected, sharing information to improve traffic safety and mobility. The IoV include many devices such as on boards unit on vehicles, a Road Side Unit (RSU), magnetic and induction loop sensors, WSNs, magnetometer and infrared sensors.
- Therefore, IoV is very important part for the Intelligent Transportation Systems (ITSs) because it helps to monitor road traffic saturation which plays an essential role in reducing the travel time, fuel consumption and improve the road transport safety.
- Vehicle to vehicle communication is made possible due to the Internet of Things (IoT) devices like GPS receivers, which let vehicles communicate their location through the vehicle to vehicle system, and road sensors, which send data about road conditions through the vehicle to infrastructure system.



# User Benefits

- Prevents crashes
- Improves traffic management and reduces congestion
- Improves fuel efficiency via truck platooning
- Optimizes routes by suggesting the optimal route of the drivers.
- Driver assistance puts drivers in better control of their vehicles. Simple warnings, like the height of an upcoming bridge, can be invaluable to a driver in a large fleet vehicle.

# IoV Vision

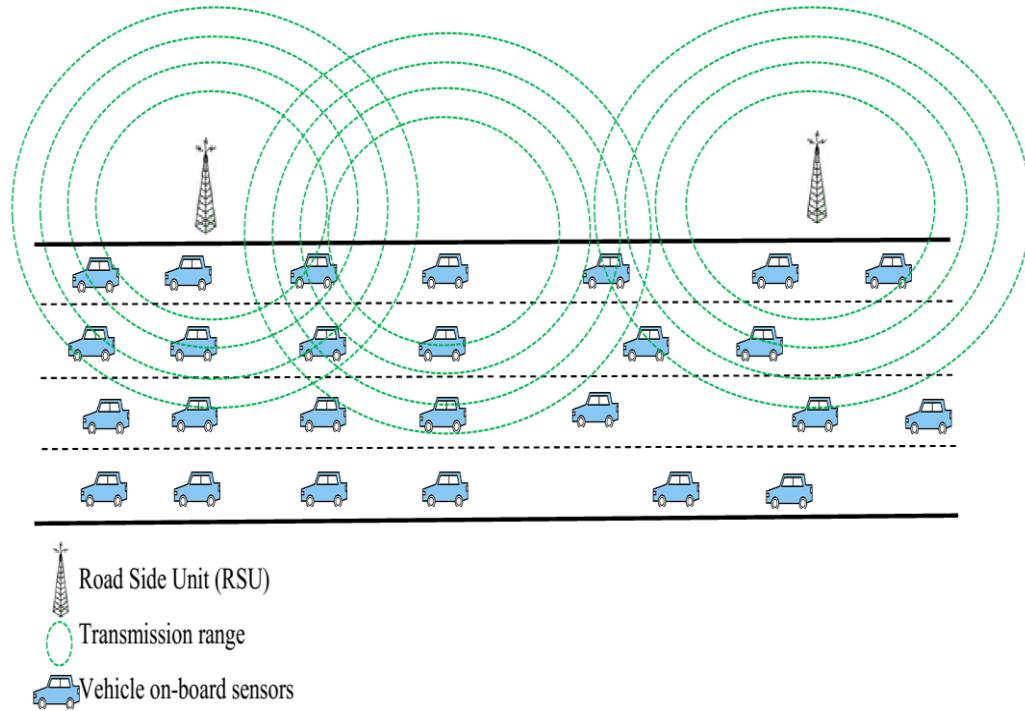


Fig. 8: Highway scenario

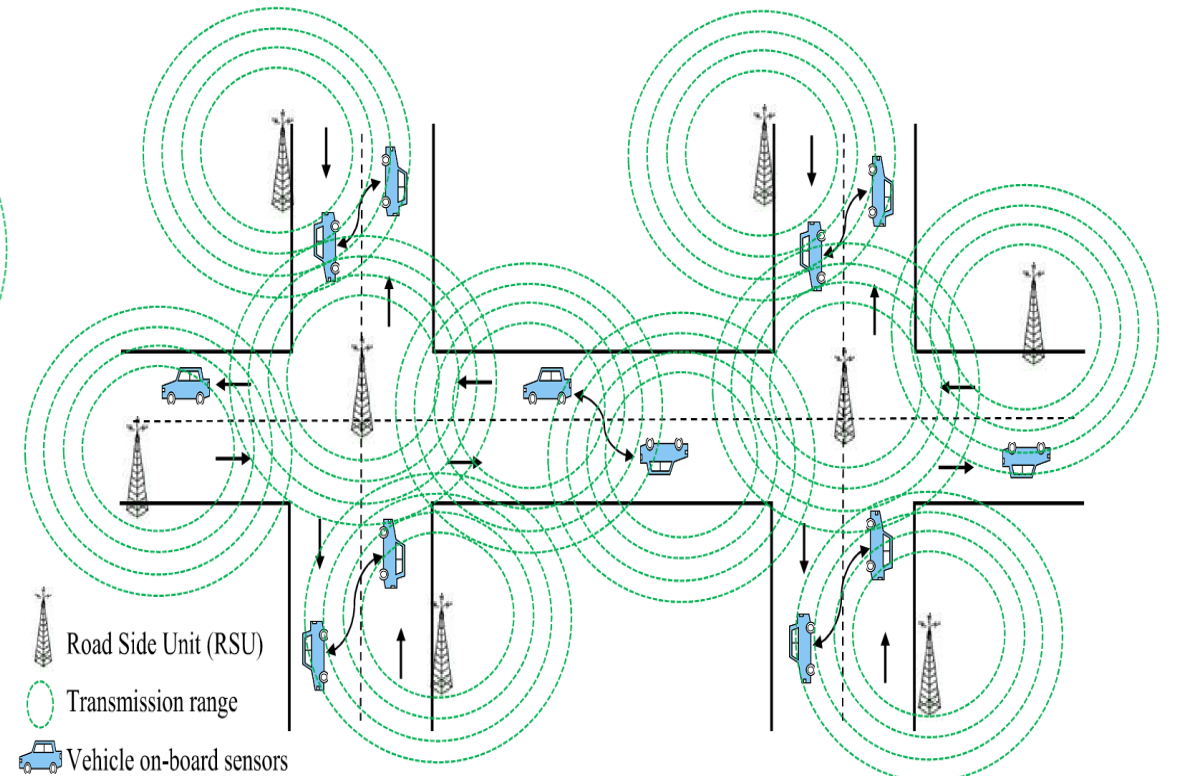


Fig. 9: Urban scenario

# Future Vision

- Design Novel approaches for IoV:
- Develop Novel traffic congestion avoidance approach based on IoT.
- Develop novel approaches for the wireless congestion control in IoT.
- Develop new traffic state estimation approach based on IoT.