5G C-V2X Evolution
NR C-V2X builds on LTE C-V2X
with advanced use cases

Safety use cases

NR C-V2X Rel 16/17+ sidelink
Multicast messages

Advanced use cases

Upper layers
Mapping use cases to transport profile

C-V2X
Rel 14/15 sidelink
Broadcast messages

5G C-V2X sidelink
5G C-V2X is shaping the future of automotive and smart transportation.
Higher throughput
High spectral efficiency to achieve higher throughput

Lower latency
Due to shorter slots and resources allocation enhancements

Reliable multicast
Retransmissions based on efficient feedback from receivers

NR C-V2X builds on LTE C-V2X
Benefits

Rich sensor sharing
Enables perception and intent sharing among vehicles

On-the-fly connectionless groups
Enabled by distance-based reliability

Benefits in addition to safety
Coordinated driving brings reduced congestion, shorter trip time, and energy savings

NR C-V2X
NR C-V2X builds on LTE C-V2X
Groups can reliably connect based on distance.

Vehicles within a certain distance and interested in same services form an ‘on-the-fly’ group.
Rich sensor sharing

C-V2X vehicle detects non-C-V2X vehicle

1. Inform other C-V2X vehicles with the presence of non-C-V2X vehicles

With proxy forwarding, these benefits can be realized even with limited deployment.
Working with regional standards to define applications globally

SAE for North America, ETSI ITS for Europe, and C-SAE/C-ITS for China

Supporting emerging use cases

Providing interoperability

Specifying minimum requirements

Standardizing messages for new use cases (e.g., sensor data sharing among vehicles)

Allowing vehicles from different automakers to benefit from new use cases

Defining application layer-specific minimum requirements for new messages