Vehicular Connectivity: C-V2X and 5G

Presentation Slides

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Chris Pearson, President, 5G Americas

"Enhanced standards and new spectrum dedicated to 5G cellular vehicle-to-everything technologies are providing new possibilities for connected vehicles.

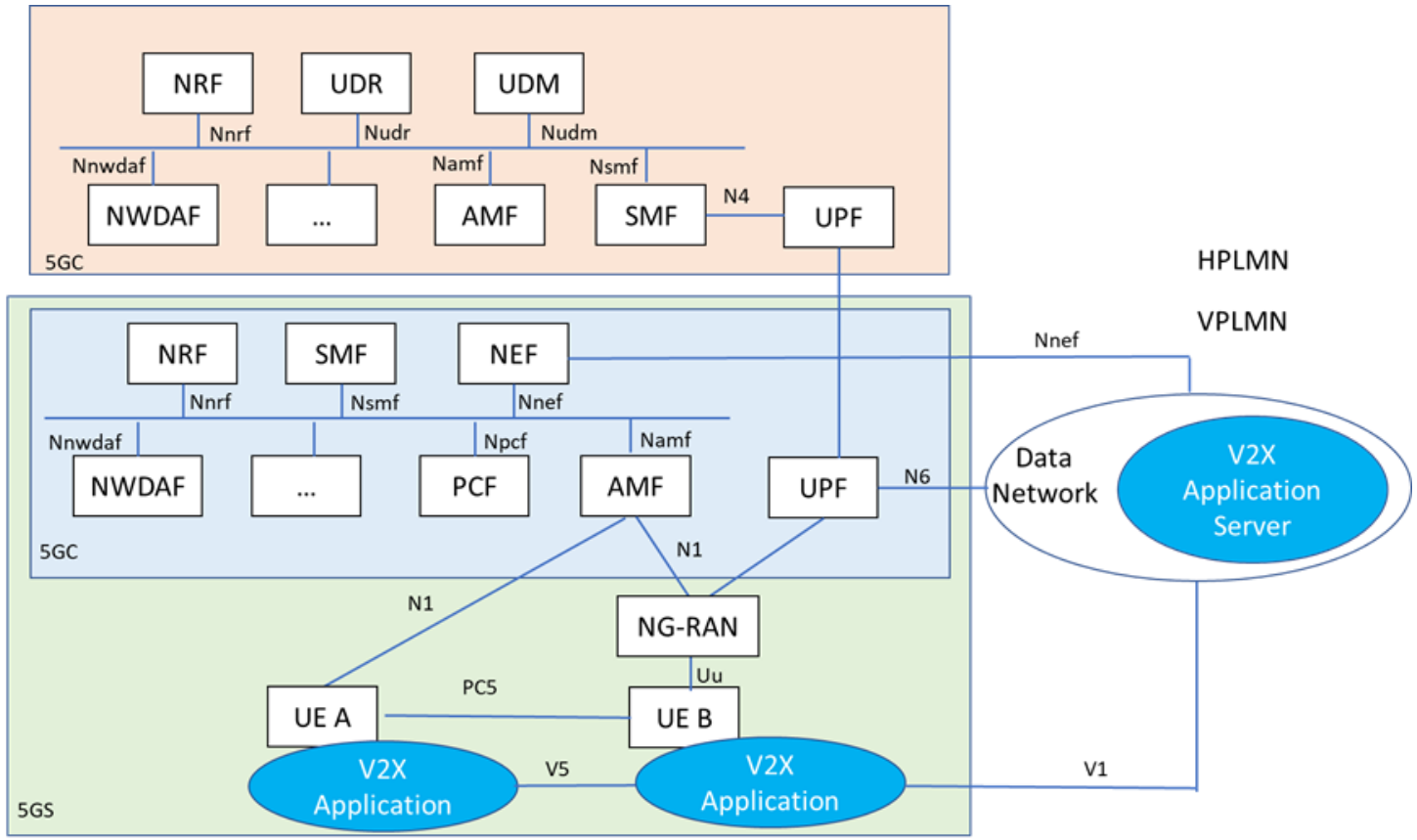
Stakeholders like automotive manufacturers, city transportation planners, mobile network operators, and app developers are looking at ways of harnessing this new connectivity to create entirely new business models."

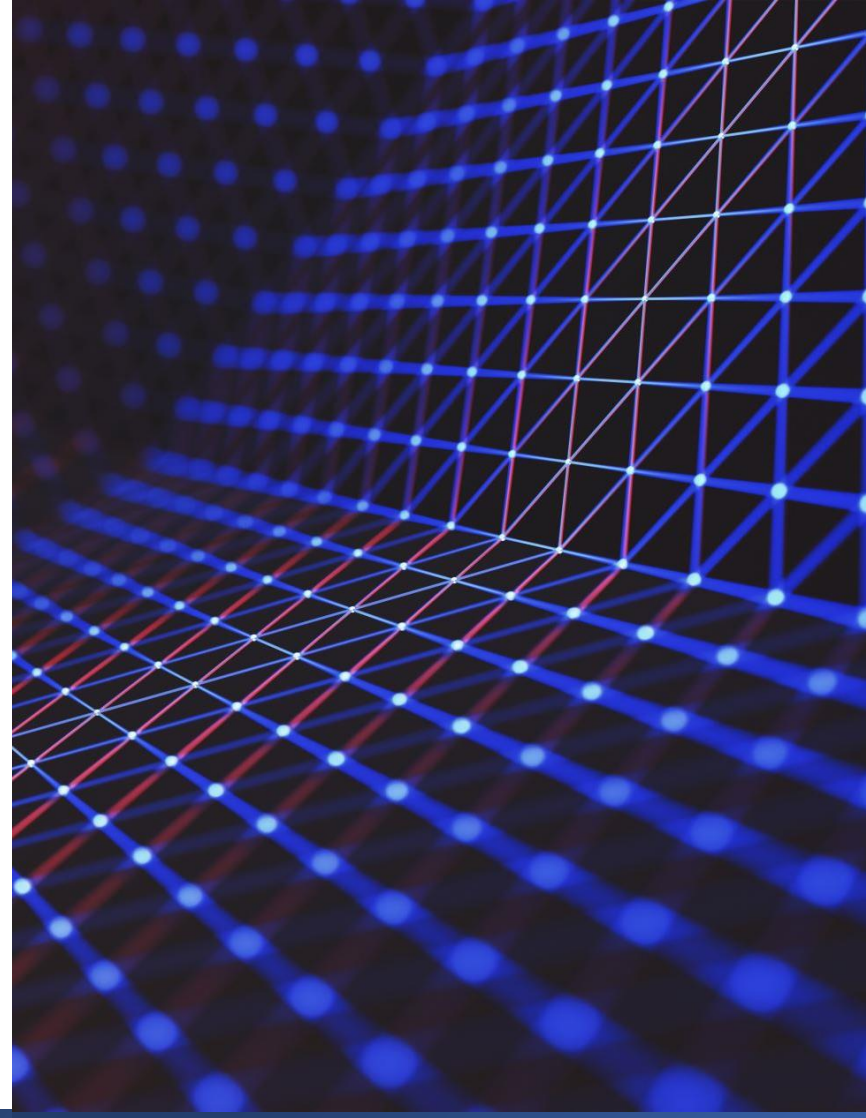
Qualcomm

Hong Cheng, Principal Engineer at Qualcomm Technologies Inc.

"The combination of C-V2X and 5G provides tools that allow road operators to transform transportation safety and efficiency.

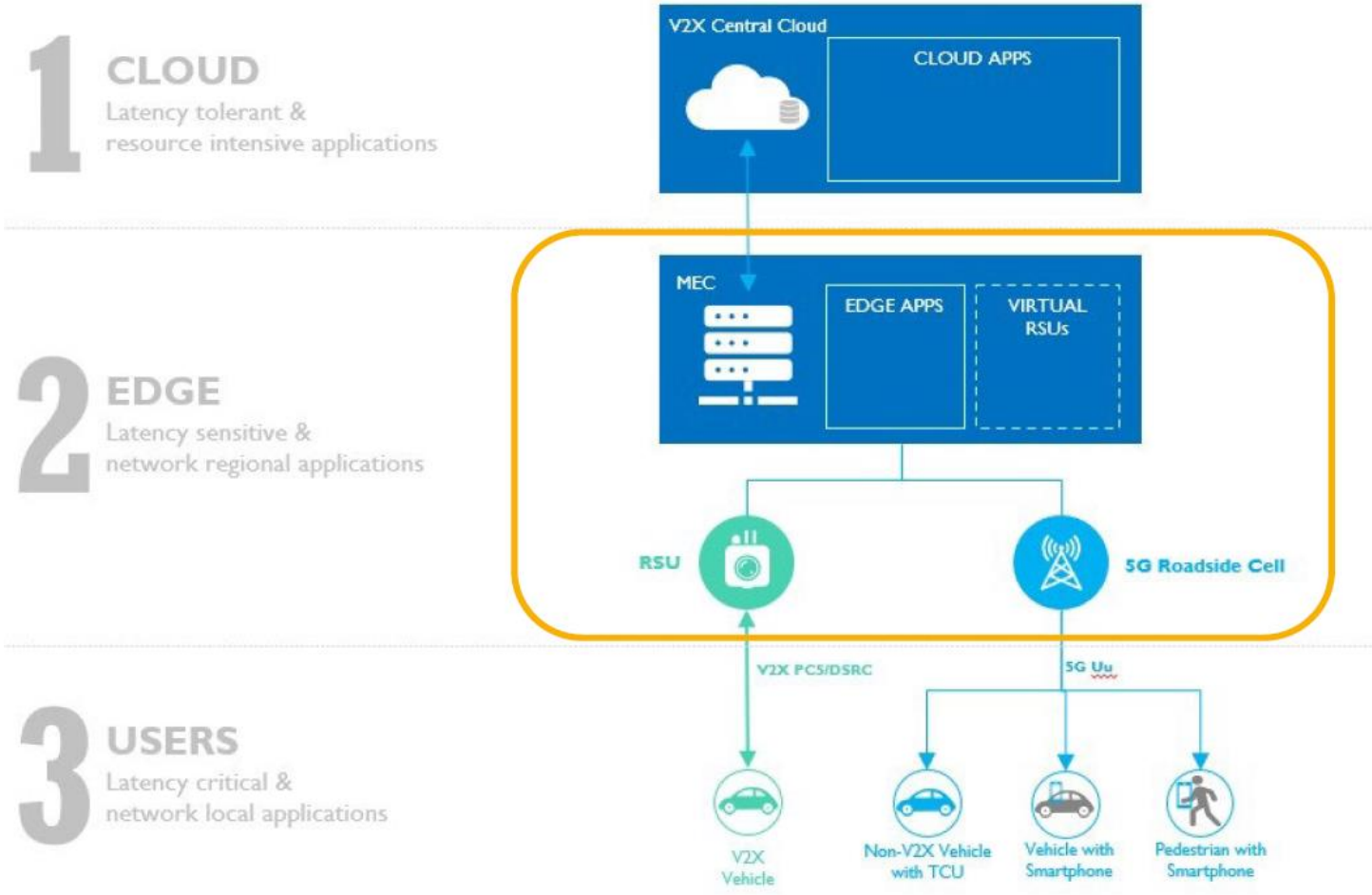
The opportunities and capabilities unlocked by these technologies are indeed significant."



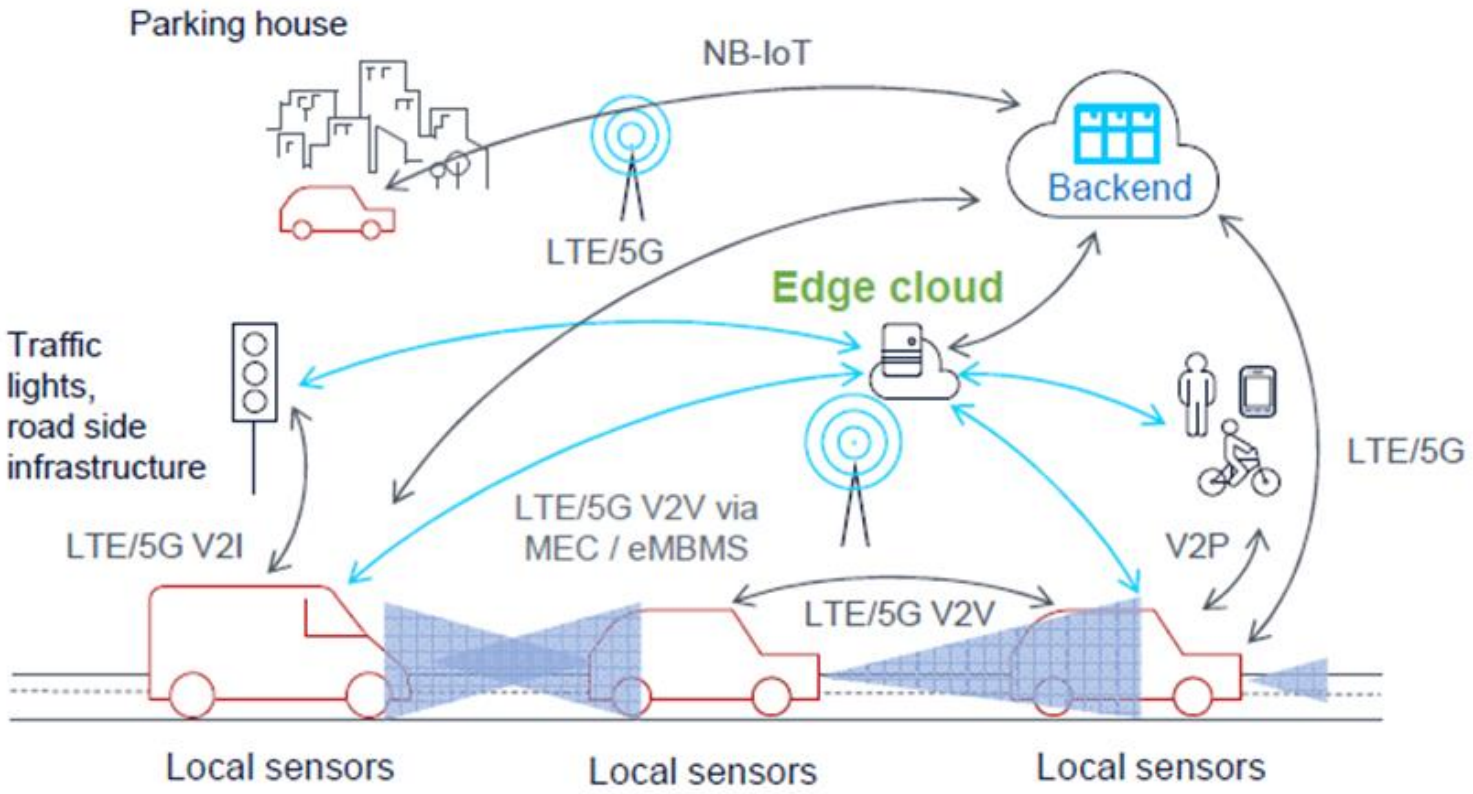


Direct connectivity to vehicle via 5G PLMN

Hierarchical architecture of MEC for C-V2X service

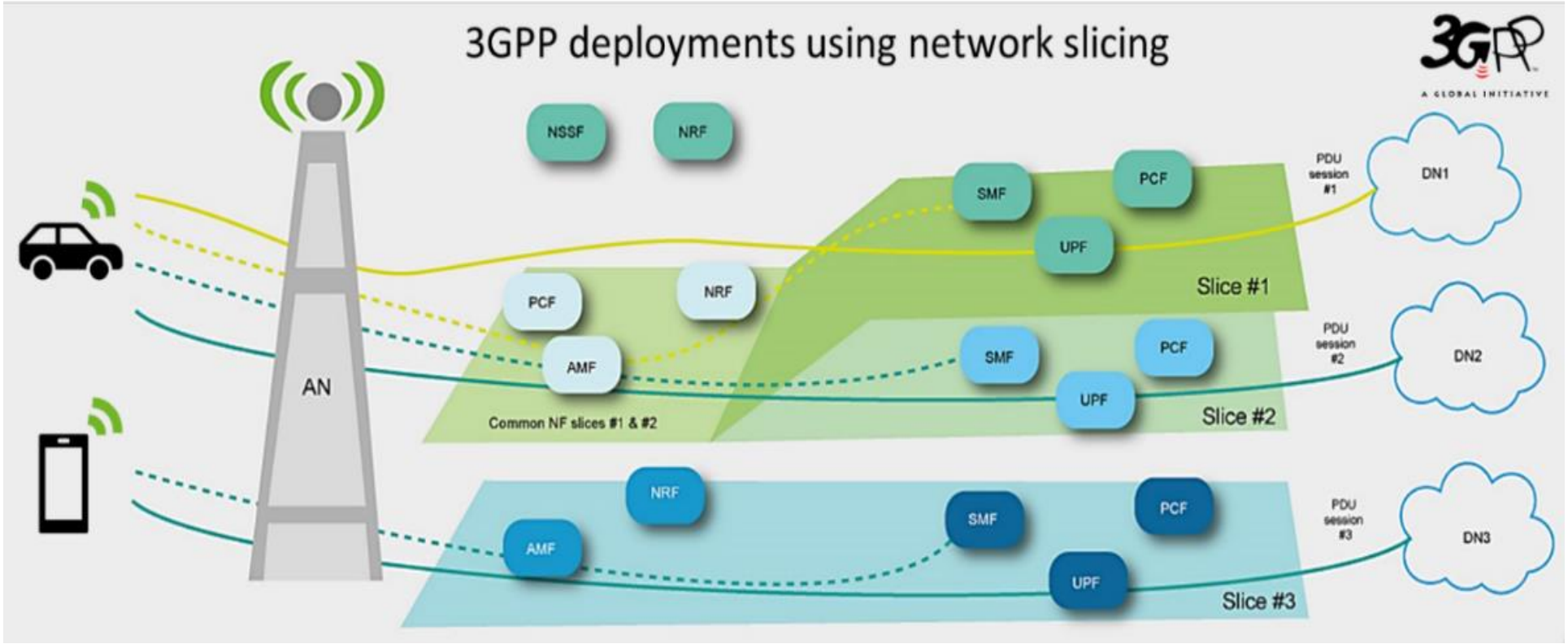


Applicability of Edge Cloud for C-V2X services

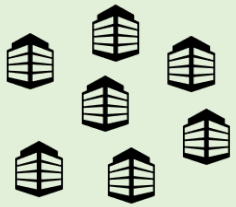
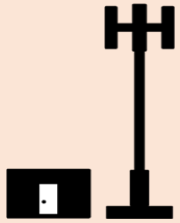
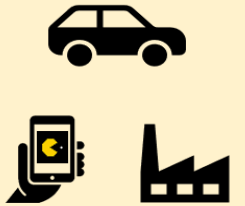


V2X use cases and the relevance for MEC

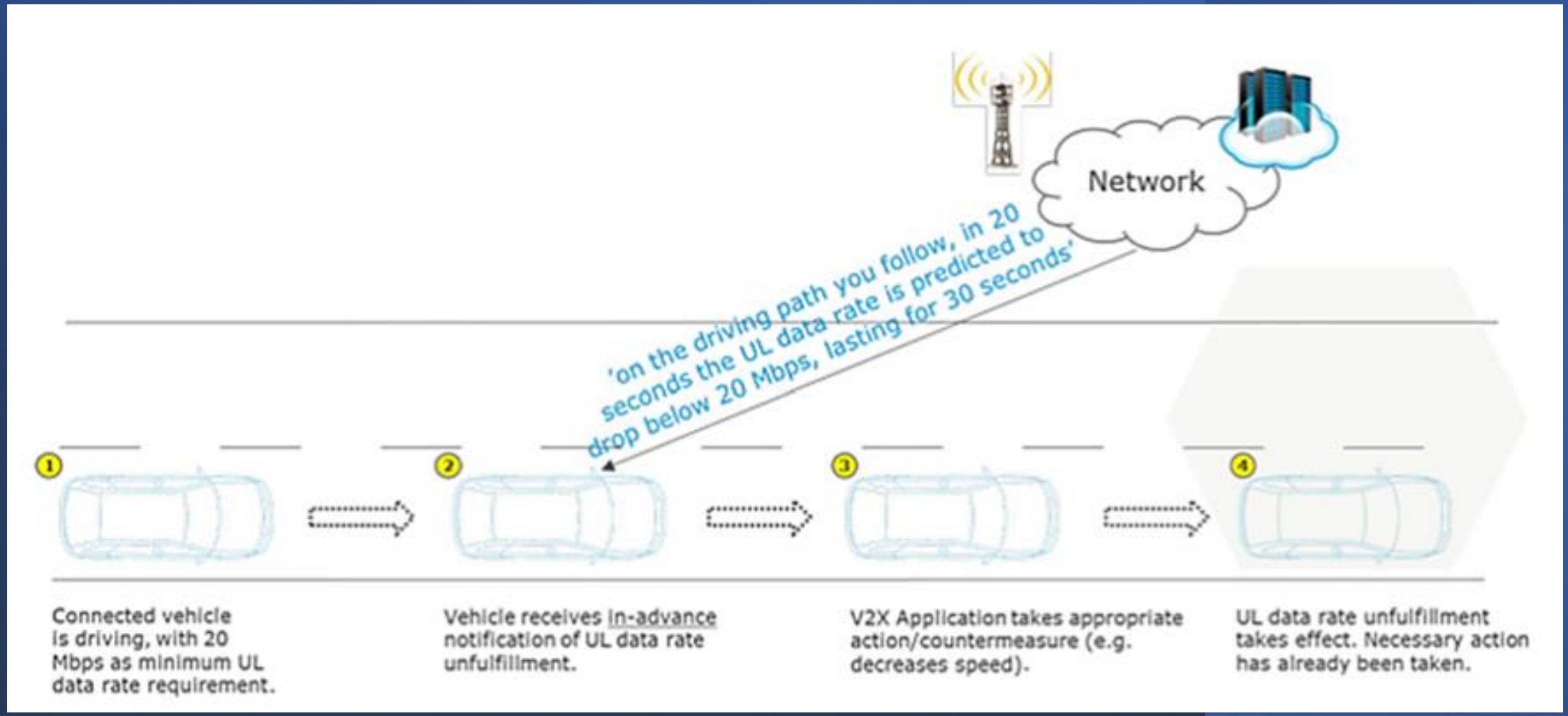
Group	Use cases	Description	Relevance for MEC
Safety	Intersection Movement Assist	Warn driver of collision risk through an intersection.	High
Convenience	Software Updates	Deliver and Manage Automotive Software Updates and vehicle telemetrics	Mid
Advanced Driving Assistance	Real-Time Situational Awareness & High-Definition Maps	Alert driver of Host Vehicle (HV) moving forward of hazard (icy) road conditions in front.	High
	See-Through	Driver of Host Vehicle that signals an intention to pass a Remote Vehicle (RV) using the oncoming traffic lane is provided a video stream showing the view in front of the RV.	High
	Cooperative Lane Change (CLC) of Automated Vehicles	Driver of Host Vehicle (HV) signals an intention to change the lane with at least one Remote Vehicle (RV) in the target lane in the vicinity of the HV.	High
VRU	Vulnerable Road User Discovery	Detects and Warns drivers of VRUs in the vicinity.	High



High-level view of potential network slicing deployments

	Cloud	Core Edge		Radio Edge	User Edge
					
Scale:	1 – 10	10 – 100	100 – 1000's	10,000's	1,000,000's
Type:	**Data Centers**	**Regional Switching Centers**	**Central Switching Offices**	**Cell Sites**	**On-premise / User Device**

Different layers of edge computing from possible points of presence provide unique benefits but are implemented at different scales and costs



Example of a C-V2X application supported by predictive QoS.