



5G IN THE DRIVING SEAT

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AGENDA



1. MEGATREND: TELECOMMUNICATION AND AUTOMOTIVE
2. ADDRESSABLE MARKET: DRIVE BY WIRE CARS
3. TECHNOLOGY IN THE CARS OF FUTURE
- 4. AUTOMOTIVE AND 5G INTERSECTION**
5. MAKING COMMUTES SAFER
6. HARMAN'S ROLE

TELECOMMUNICATION EMBRACES MEGATRENDS

Computers

Desk/
Laptops

Internet

Smart
Phone

Drive
Autonomy



1960s
T-GRAM
REMOTE
COMM.



1980s
FIXED
DISTANCE CALLING



1990
GSM
INTERNET
ON MOVE



2000
3G
INTERNET
ON MOVE



2010
4G
CLOUD ON
MOVE



2020
5G
MAINSTREAM

DRIVE BY ELECTRIC WIRE CARS

Future cars will be differentiated by the intelligence embedded inside.

2
Million
TODAY

65
Million
2025

TECHNOLOGY IN THE CAR OF THE FUTURE



6



Experience

2



Autonomous Drive

3



Multifunctional Cockpit

4



Control & Management

5



Energy & Propulsion

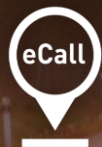
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Backbone

Connectivity

EXPONENTIAL GROWTH OF CONNECTIVITY NEEDS IN THE CAR



Safety and
Location Data
0.50Mbps
2015



Vehicle
Diagnostics
10 Mbps
2017



Camera
LIDAR
1 Gbps
2020



Autonomous
Compute
5 Gbps
2025

TELEMATICS

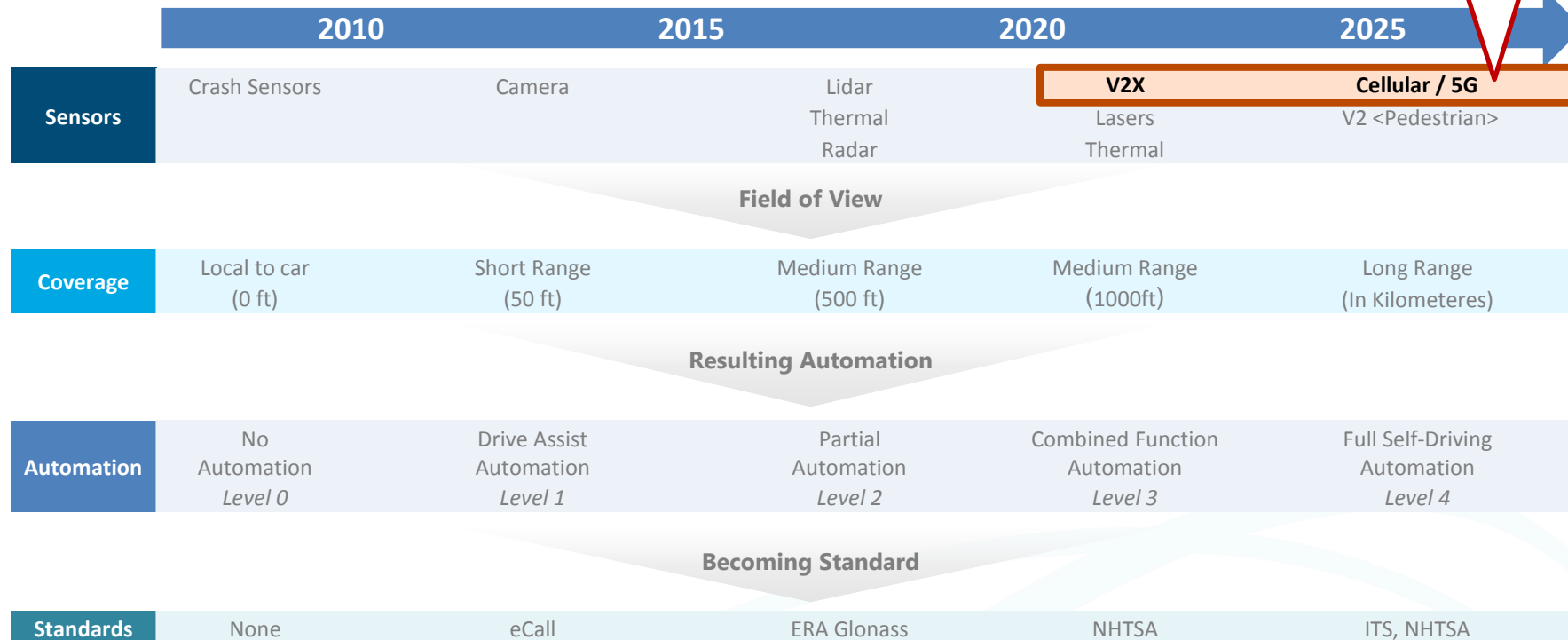
AUTOMOTIVE AND 5G INTERSECTION

Use-cases (Underserved - Current - Future)	Control	VR Gadgets	Remote Computing
		Road Infra Devices	Fog Computing
	Pedestrian Safety	Connected Accessories	Video Remoting
	Safety Messaging	Toll Applications	Infotainment
	1ms Latency	1M Devices/Cell nB IoT	10Gbps Bandwidth

5G Technology Elements

MAKING COMMUTES SAFER

5G will play a key part



REALITY IN THE MAKING



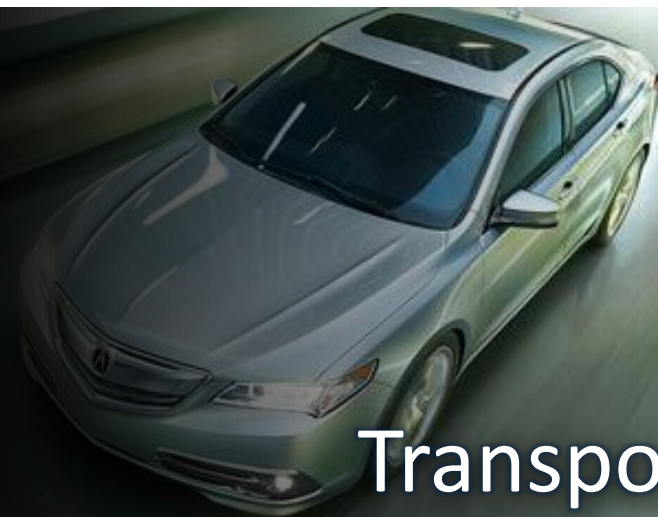
Strong Industry Support

- Technology Developers
- Academic Organizations
- Mobile Operators
- Internet Giants

Market Investment

Clear Cooperation

- Technology Alliances
- Government Support



Transportation
revolution
is here to stay



HARMAN'S ROLE

First 5G (based on NSA) plug-in test schedule by 2018

Samsung support in \$300m fund to invest in autonomous driving technologies

Key participation in 5GAA in the board, treasury, marketing

C-V2X Framework and Application Development

Products in the roadmap to address unconnected and under connected cars



THANK YOU

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