

Automotive Telecoms

Celtic-Plus Event

Barcelona 18th May 2017

International Conventions Centre

Alessandro Coda
Chief Technology Officer



CLEPA
*European Association of
Automotive Suppliers*

CLEPA Vision & Mission

Our vision

is for the European automotive suppliers to be the leading providers of highly efficient and sustainable mobility worldwide

Our mission

is to increase the competitiveness of the European automotive suppliers' industry and to drive its smart growth while enhancing wealth and employment in Europe.

CLEPA Facts and Figures

122

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**Corporate
Members**

24

-

**Association
Members**

1959

-

**Active Partner with
EU and UN**

The European Automotive Suppliers represent



Brussels Office & Thematic Groups

Global Governmental Affairs	Technical Regulations
Trade & Legal Affairs	Research & Innovation
Aftermarket & Warranty	Business Development

The Automotive Industry in Europe

12.2 million direct and indirect jobs

€44.7 billion in R&D spending, largest private investor

€100.4 billion positive net trade contribution

€401.5 billion in tax revenues (EU15)

CLEPA R&I WG

CLEPA R&I WG Mission

**Strengthen the position of Automotive Suppliers
in the mobility research eco-system:**



Two big trends electrification and automated driving



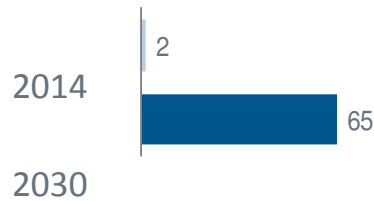
Electrification

Stronger regulations on CO2 emissions, rising consumer demand, and government incentive programs for electric vehicles will boost electrical powertrain sales

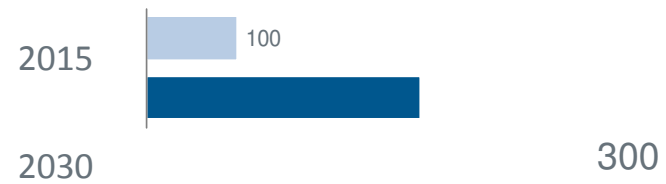


Automated Driving

The technological advances and growth pockets for autonomous vehicles will drive increasing levels of autonomous vehicle features, leading to new market entrants, e.g., Google, and mergers and acquisitions



Market share of electric vehicles¹ (incl. hybrids)
/ Percent of units produced



Lines of software code per vehicle³
Million units

Source: McKinsey

The impact of Key Trends on the Automotive Supply Chain

Level of disruptiveness of major automotive trends on suppliers by component group

Legend: Low (Green), Medium (Yellow), High (Red)






Component groups	Key disruptive trends				
	Electrification	Connectivity	Autonomous driving	Advanced manufacturing	Advanced materials
Interior	Low	High (2)	High (4)	High (6)	High (8)
Exterior	Low	Low	Medium	High (7)	
Chassis	Low	Low	Low	Medium	
Powertrain	High (1)	Low	Medium	Medium	
E&E	Medium	High (3)	High (5)	Medium	
Examples	1 Complete change of powertrain from mechanical clutch to gearless e-engines	2 Large screens for the interaction between user and car 3 New onboard architecture and cloud connectivity required	4 Complete change of interior design possible, e.g., turning seats 5 Computer will control all electric components of the car	6 3-D printing of complex new design elements 7 From classical punching and welding to backing and gluing	8 Lightweight materials, e.g., carbon will change shape of the car as well as composition and setup of chassis

Source: McKinsey

The impact of Key Trends on the Automotive Supply Chain

Level of disruptiveness of major automotive trends on suppliers by component group

Low Medium High


Component groups	Key disruptive trends				
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Interior	Low	High (2)	High (4)	High (6)	High (8)
Exterior	Low	Low	Medium	High (7)	High (8)
Chassis	Low	Low	Low	Medium	High (8)
Powertrain	High (1)	Low	Medium	Medium	Low
E&E	Medium	High (3)	High (5)	Medium	Low

<p>Examples</p> <p>1 Complete change of powertrain from mechanical clutch to gearless e-engines</p>	<p>Different communication technologies are enabling solutions for CAD</p>	<p>6 3-D printing of complex new design elements</p> <p>7 From classical punching and welding to backing and gluing</p>	<p>8 Lightweight materials, e.g., carbon will change shape of the car as well as composition and setup of chassis</p>
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Source: McKinsey

The impact of Key Trends on the Automotive Supply Chain

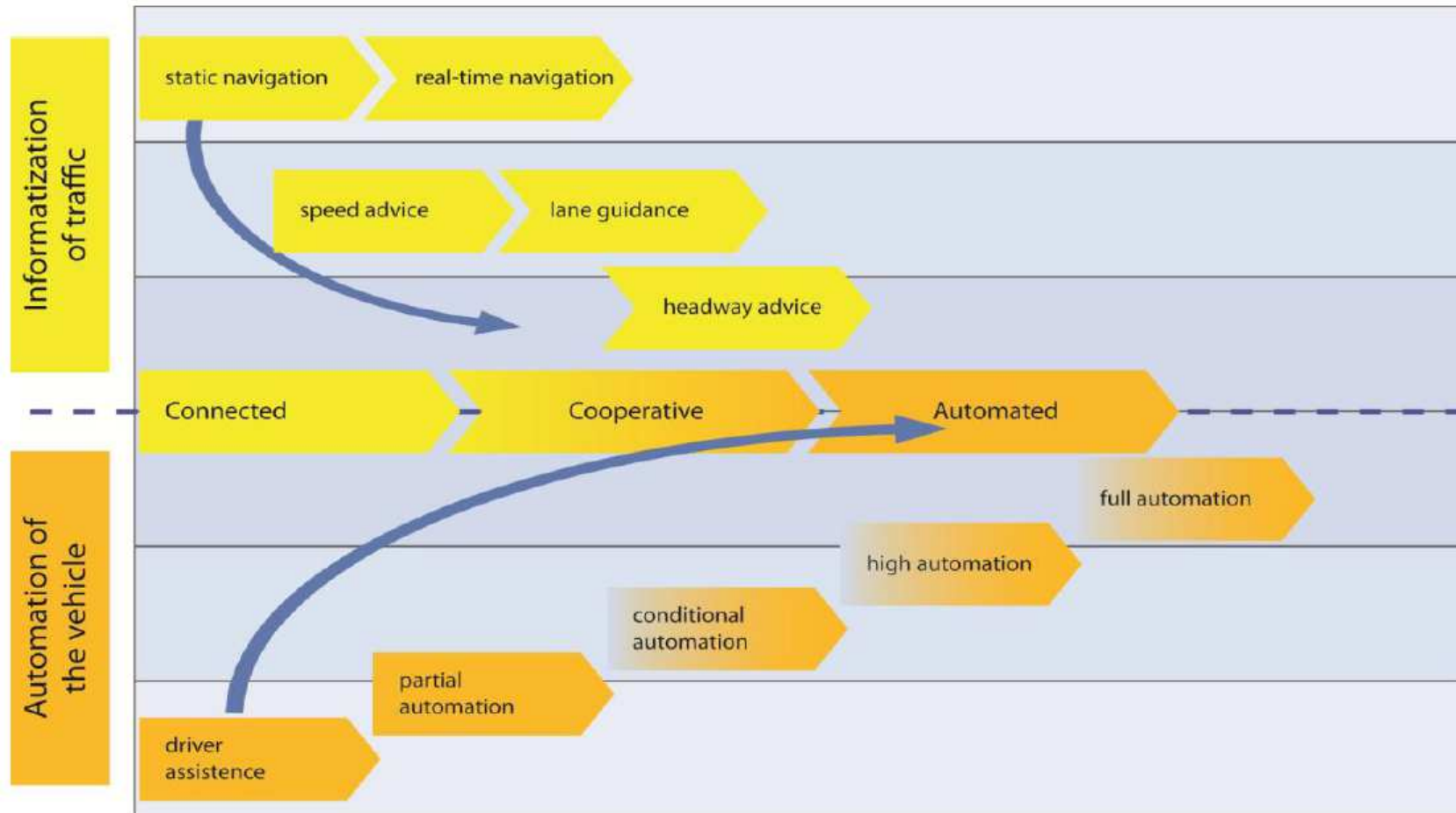
Key disruptive trends for suppliers

Impact dimensions	Electrification 	Connectivity 	Autonomous driving 	Advanced manufacturing 	Advanced materials 
Requirement of new capabilities	The battle for talent				
Resource reallocation	The portfolio optimization challenge				
Change in roles		The battle for new profit pools			
Competitive landscape	New players entering with lasting impact				
New business models			The shift in successful business building		
Shift of processes				Industry 4.0 entering the production process	
Acquisitions	The race for the attractive targets				

Source: McKinsey

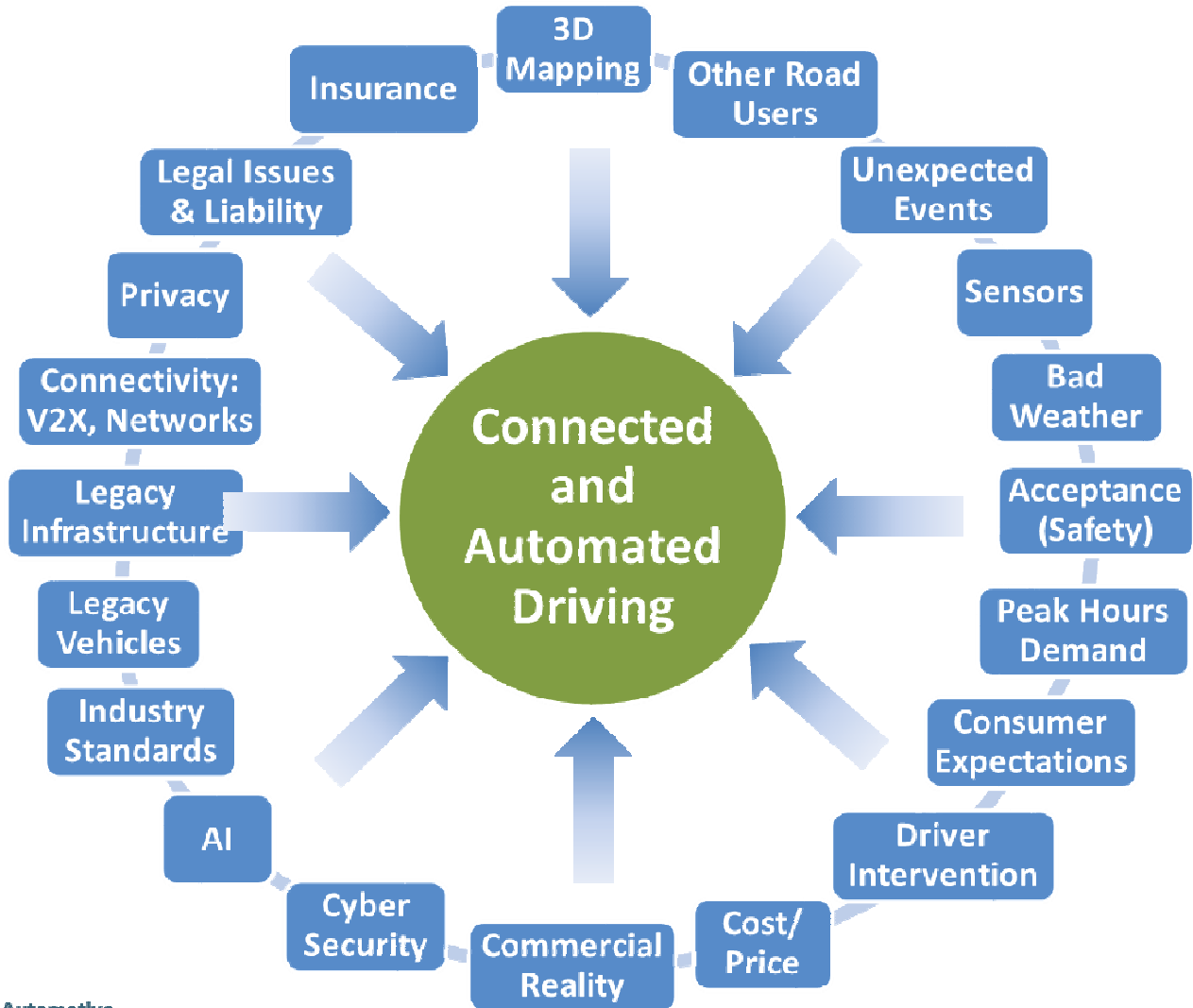
Declaration of Amsterdam 14 April 2016

Cooperation in the field of connected and automated driving



Connected, cooperative and automated driving developments should come together to harvest societal benefits.

High complexity



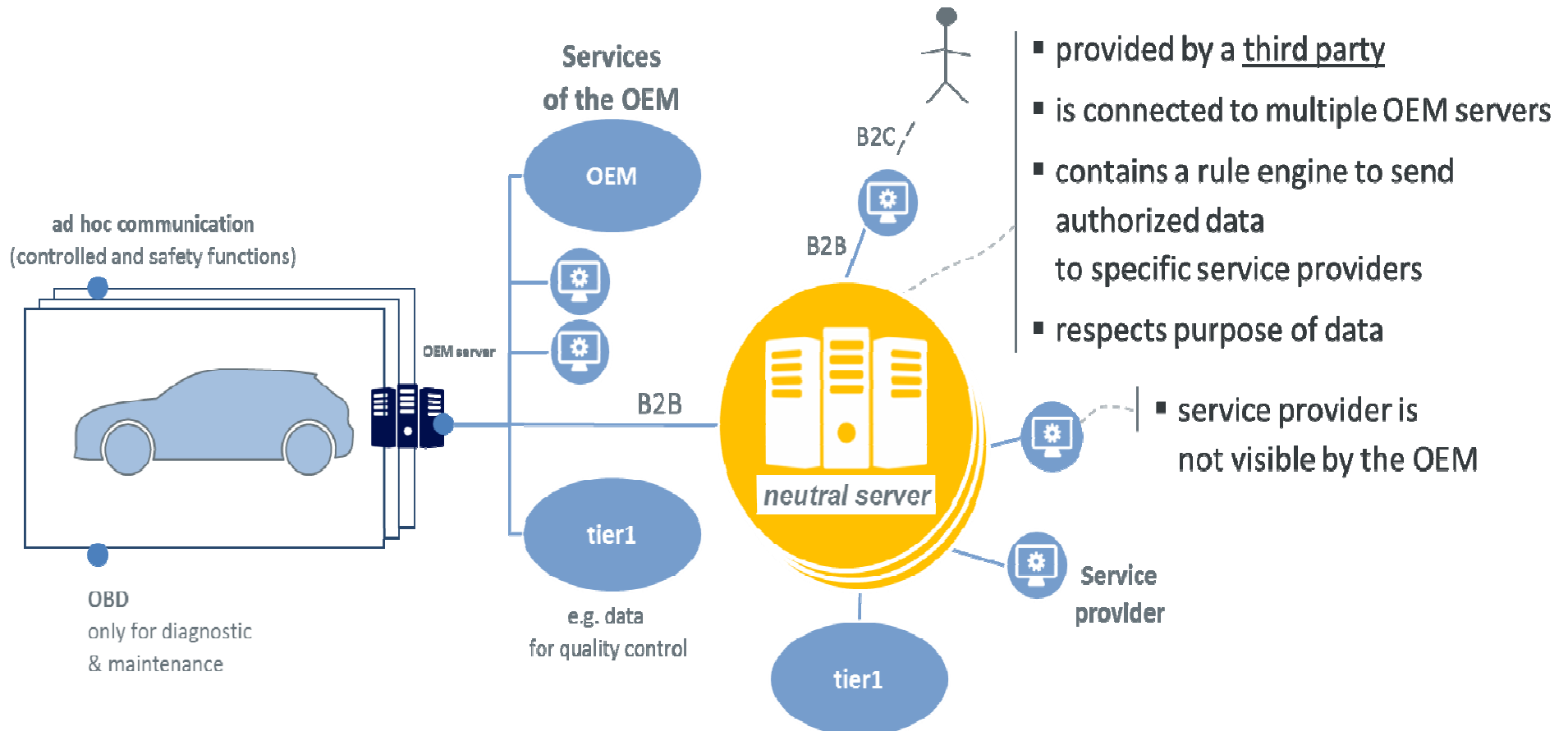
Source: LMC Automotive

High complexity



Source: LMC Automotive

Access to Data – Proposal



European Automotive and Telecom Alliance

- Founded by six associations:



European
Automobile
Manufacturers
Association



CLEPA
European Association of
Automotive Suppliers

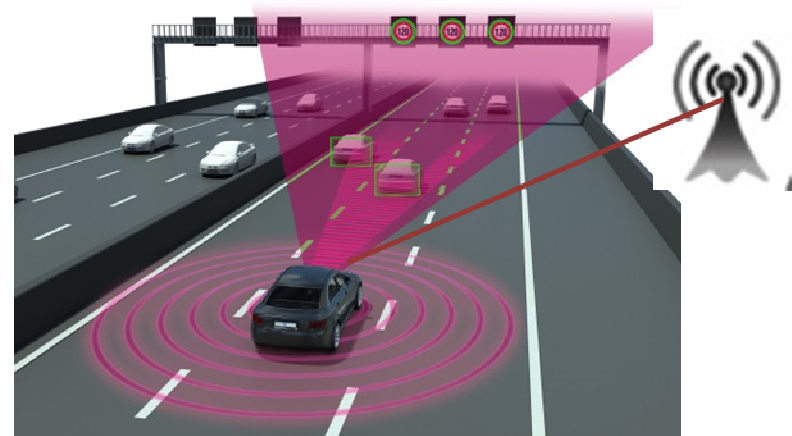


- Operational roll-out through companies: 38 members
- Telco network operators: Deutsche Telekom, Eurofiber, KPN, Orange, Play, Post Luxembourg, Proximus, Vodafone, Telefonica, Telecom Italia, Telenor
- Telco suppliers: Nokia, Huawei, Ericsson
- Automotive OEMs: BMW, DAF, Daimler, Fiat Chrysler, Ford, Hyundai, Iveco, Jaguar Land Rover, Opel, PSA, Renault, Toyota, Volkswagen Group, Volvo Cars, and Volvo Group
- Automotive suppliers: Autoliv, Bosch, Continental, Denso, Delphi, Hella, Valeo
- Project management: ERTICO

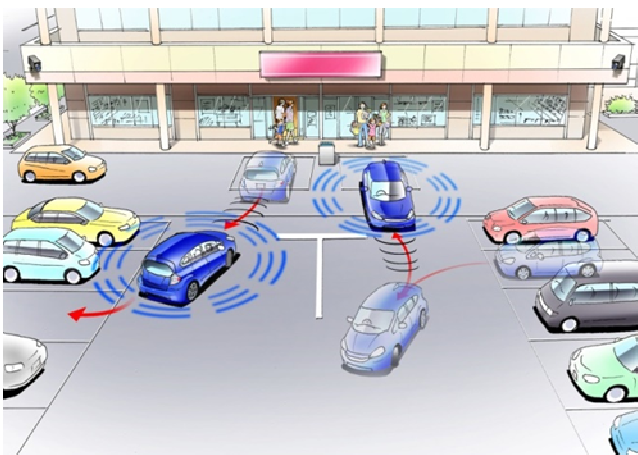
European Automotive and Telecom Alliance

Connected Automated Driving

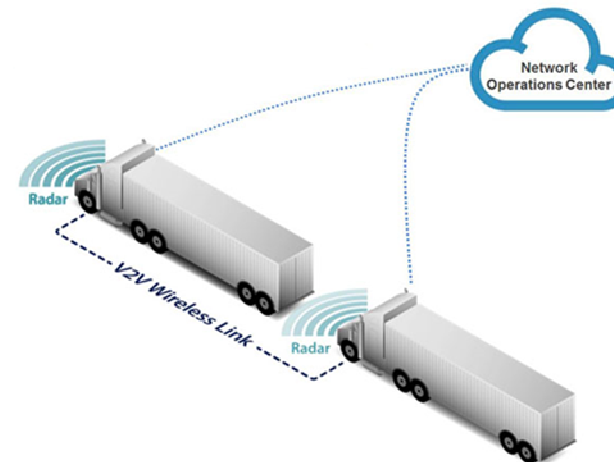
High way chauffeur L3 & L4



Automated Valet parking

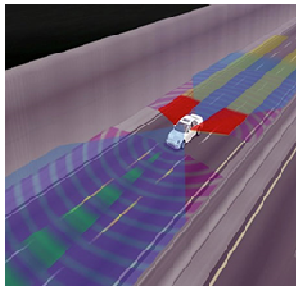


High Density truck platooning

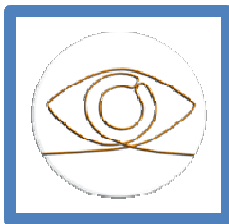
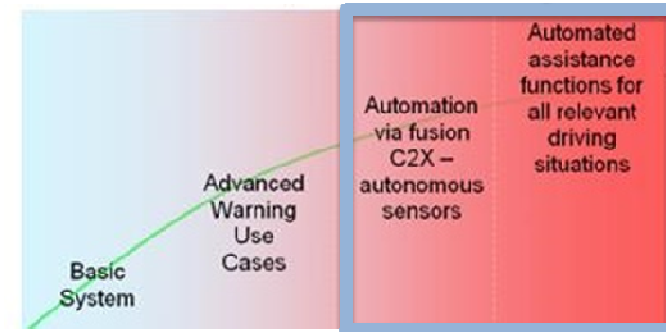


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Car sensors



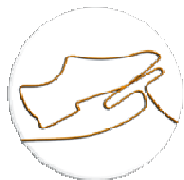
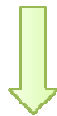
Connected data (road sensors and cooperative car data)



SENSE



PLAN



ACT

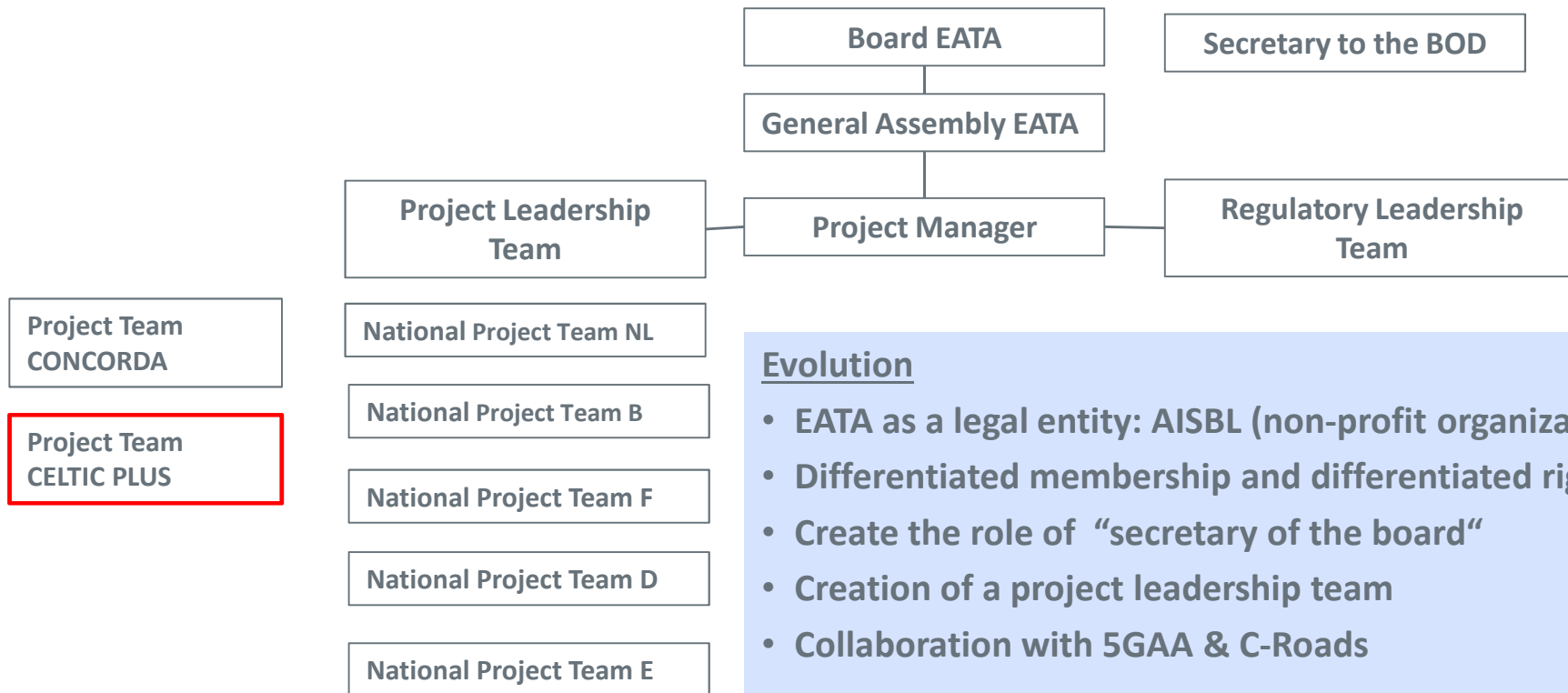
The connected data as additional car sensor:

- **New messages and attributes to messages** (e.g. trust, confidence levels)
- **Safety relevant applications need redundancy via the hybrid communication channels.**
- **Network slicing, priority for AD vital messages**
- **Application of safety rules on digital infrastructure (tbc)**
- **More accurate and safety relevant localization : GNSS correction**

New challenges for automated driving

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Structure

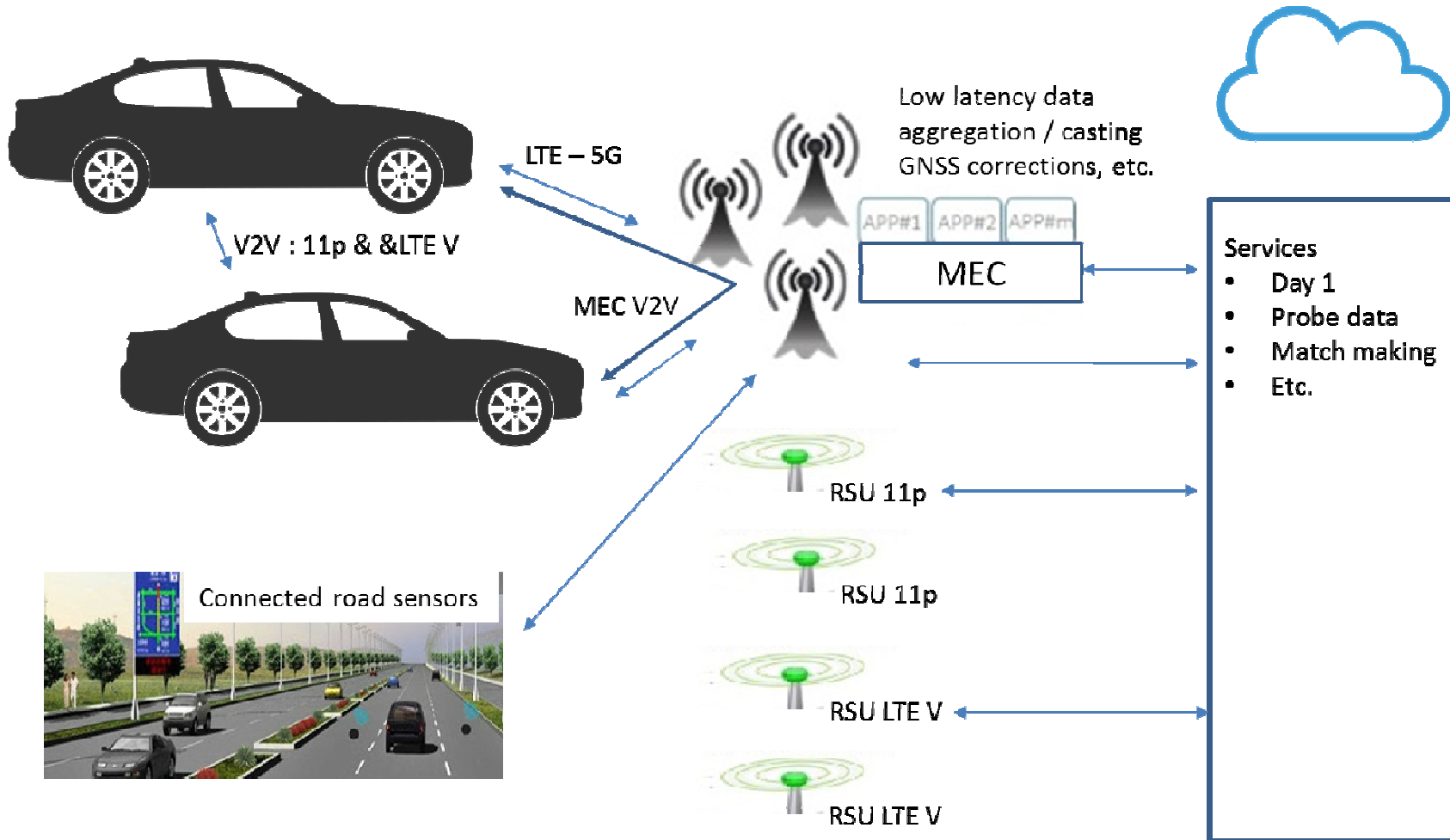


Evolution

- EATA as a legal entity: AISBL (non-profit organization)
- Differentiated membership and differentiated rights
- Create the role of “secretary of the board”
- Creation of a project leadership team
- Collaboration with 5GAA & C-Roads

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Concorda system overview



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Concorda test sites



MS	Test site	enabling technologies for Use cases	OEMs	MNOs
DE	A9 30km Nürnberg	Highway chauffeur	BMW, Daimler, Ford, Hyundai, VW	T-Mobile, Vodafone
		High density Truck platooning	Bosch with truck OEM	
FR	Versailles Iffstar	Highway chauffeur	Renault, PSA	Orange
	Lyon Transpolis	Highway chauffeur	Renault, PSA	
NL	Amsterdam	Highway chauffeur - collision avoidance	FCA (Ford, Toyota)	KPN
	Noord Brabant			KPN
	Rotterdam den Haag	High density Truck platooning	logistic companies with local prototyping companies	Eurofiber
ES	SISCOGA @ Vigo	Highway chauffeur	PSA	Telefonica
BE	E311 @ Antwerpen	Highway chauffeur	Toyota (Ford)	TBD

1st tier suppliers for OEMs and MNO are on all test sites

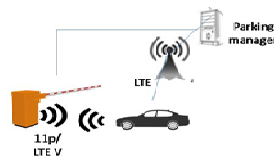
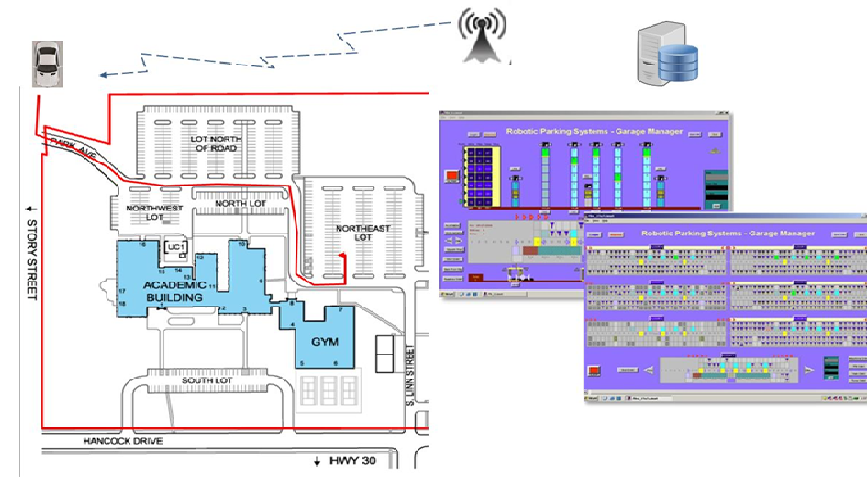
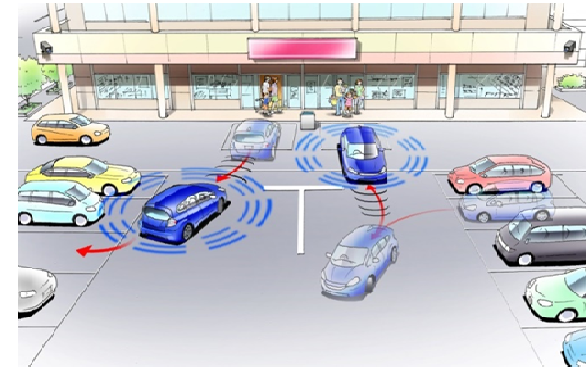
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Valet parking proposal

Content:

- Parking management/ control system
- HD map
- Communication with infrastructure
- Sensor fusion
 - Using car sensors
 - Register leaving cars
 - P-slot sensors
 - Cameras
- Communication : NB IoT , Broadband (100% coverage)
- Localization, Slam (Simultaneous Localisation And Mapping)
- Security
- Inter parking connection

Current partners: Autoliv, Bosch, CEA, Continental, DT, Huawei, Orange, RISE, MDH



Celtic-Plus - Scope and Research Areas 2016/2017



*Vertical industries
will trigger the
development of
new products and
services*

7. TAXONOMY OF CELTIC-PLUS RESEARCH TOPICS

B	SERVICES AND APPLICATIONS
B1	Voice Services
B2	Data Services
B3	Multimedia and content Services
B4	Audio/ Video Services (incl. image processing)
B5	Mobile Services
B6	Cloud Services
B7	Security, Privacy related services
B8	IoT related services

B12	Smart enterprise / transport related services and applications
B13	Smart traffic / car related services and applications

B19	Location related services (incl. navigation)
B20	Business related services and applications (incl. ePayment)

E	FUTURE USAGE AREAS AND MULTI-DISCIPLINARY APPROACH
E1	Smart Cities (incl. smart grids, water management, etc.)
E3	Digital Enterprise including Industry 4.0
E4	Personal Mobility / Transport / Logistics / Food
E6	Smart Car / Smart Traffic

C	FUTURE SERVICE ENABLERS
C1	Future Service Platforms
C2	Future interfaces
C3	Multimedia enablers
C4	Security/ safety, trust and identity
C5	Big Data, Data Mining, Reality Mining
C6	Business and societal issues
C7	Future Displays / Enhanced reality