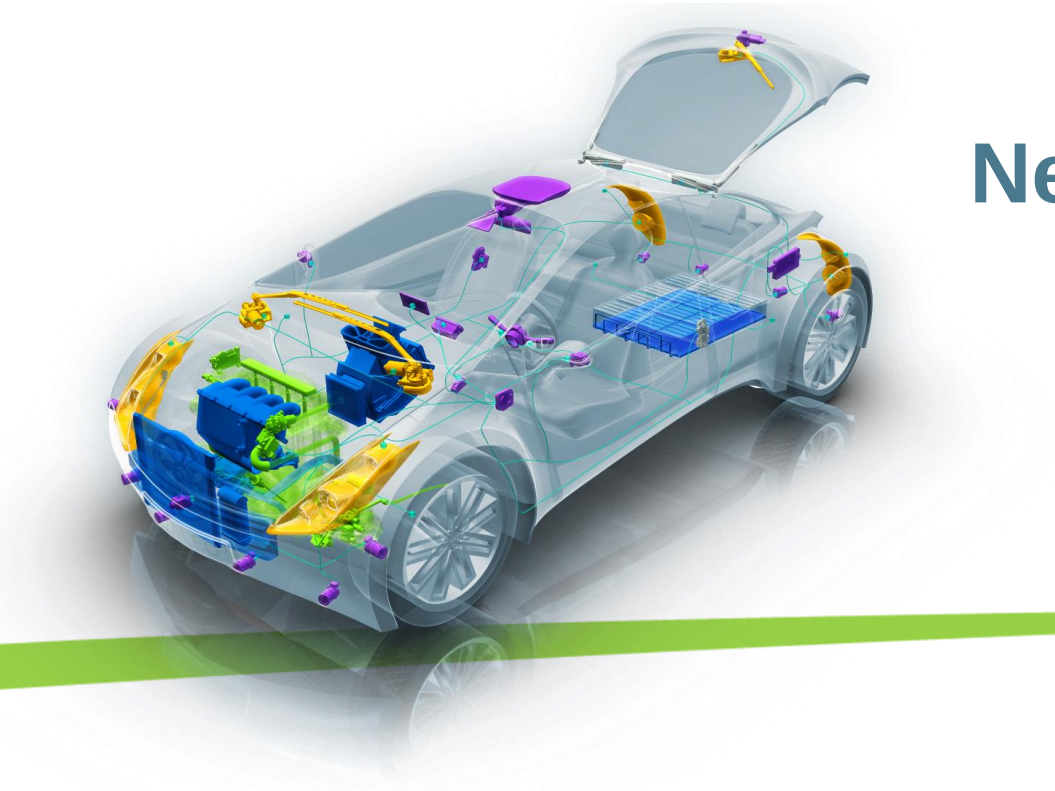

New challenges for the Aftermarket: The connected car towards Autonomous driving

Guillaume Devauchelle

Brussels, November 27, 2014

1957 vision: Connected Mobility

DYNAMIC GROWTH, 90 YEARS OF INNOVATION

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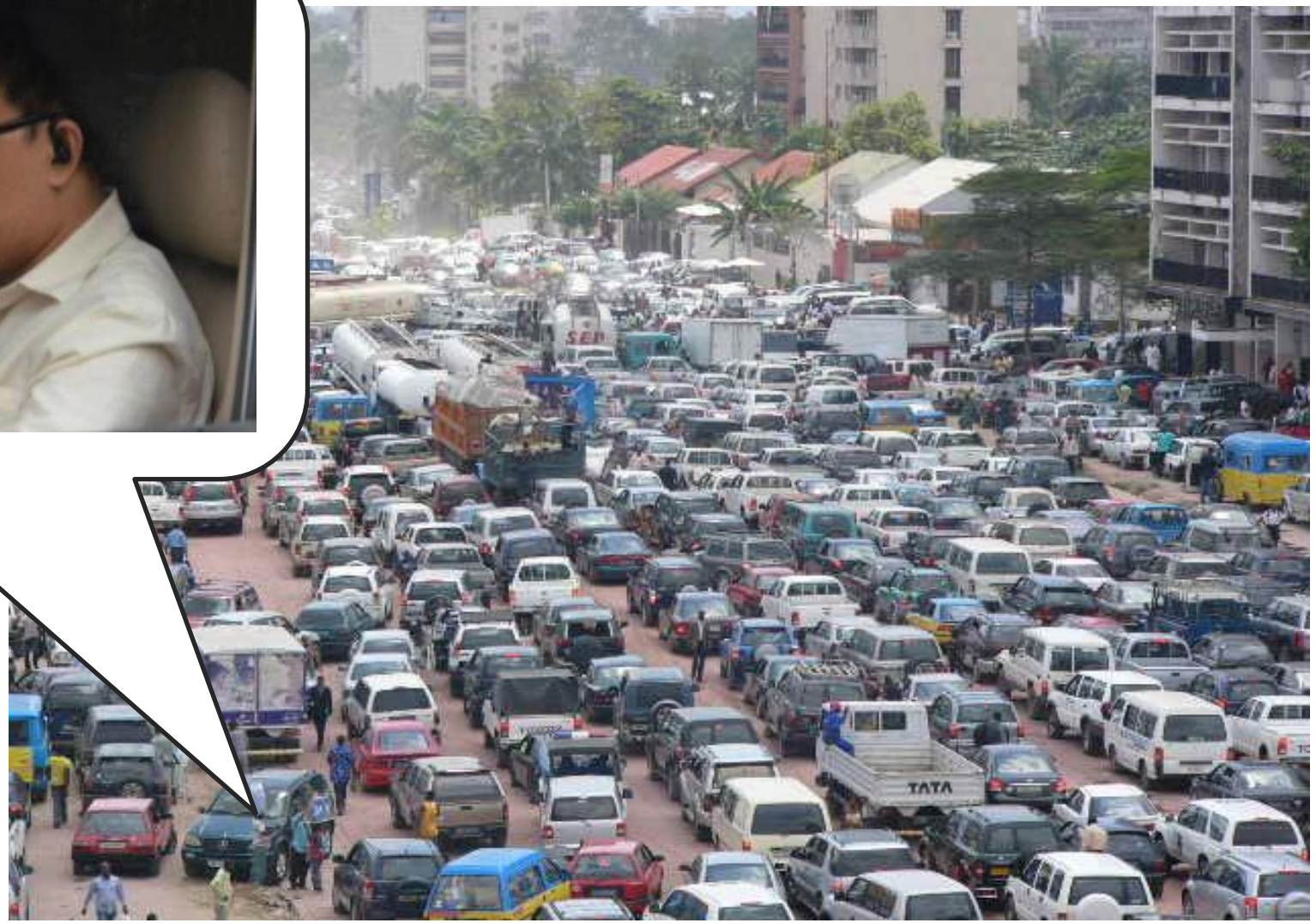
2014 Mobility

2014 Mobility… and Connectivity



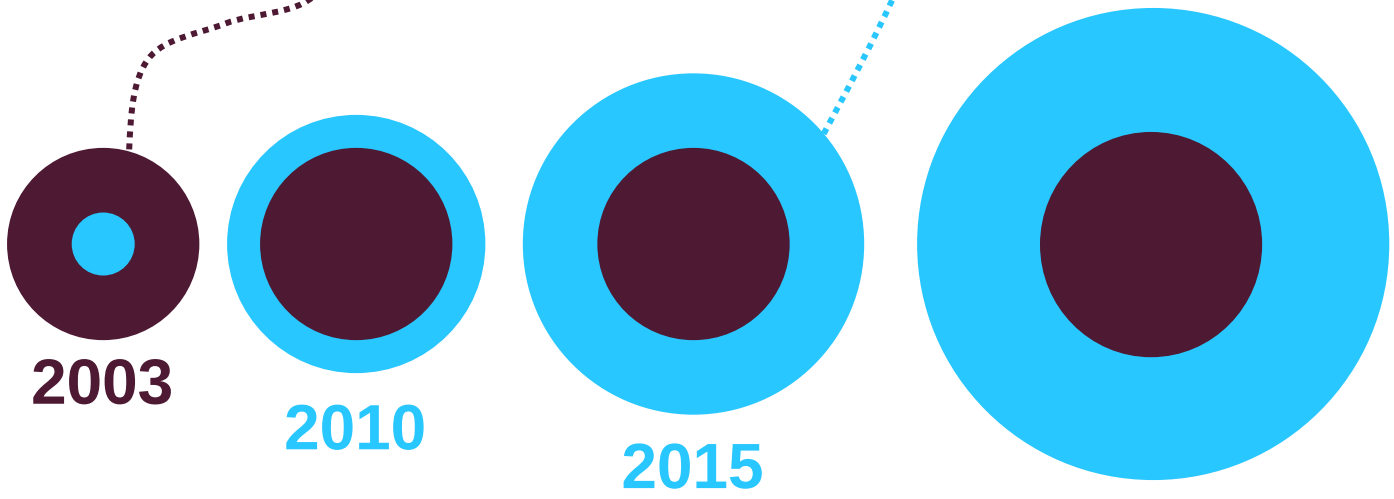
2014 reality

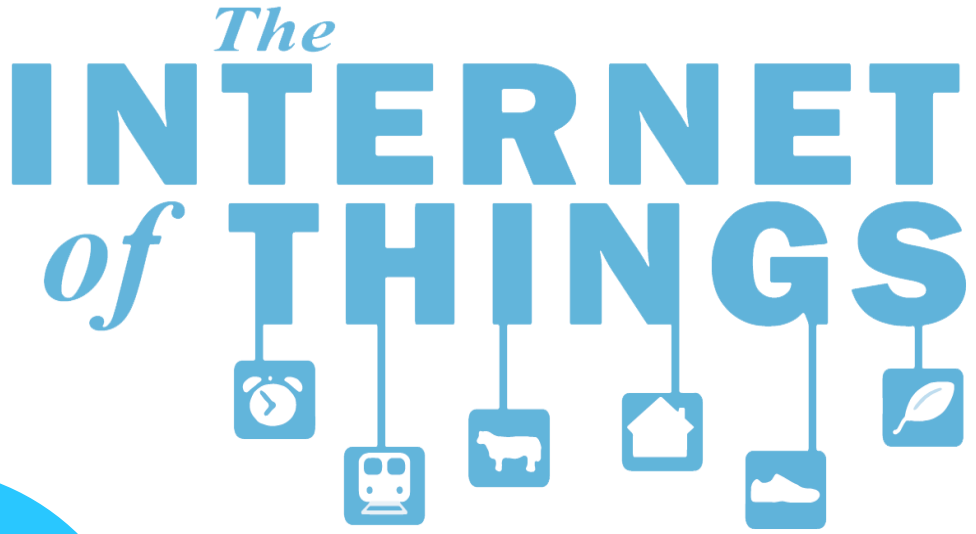
Connected mobility: a new way of life

LESS THAN 20 YEARS

2014…the internet of things

During 2008, the number of **things** connected to the internet exceeded the number of **people** on earth

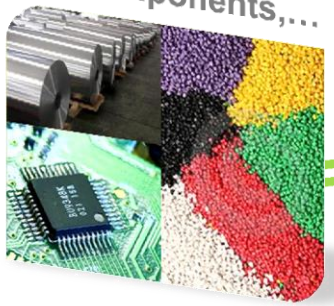




By **2020** there will be **50 to 75 billion**

2014 well known Automotive value chain

Materials
Electronic components,…



Tier 1 Suppliers

Valeo

Car makers

Drivers

Aftermarket

Valeo Service

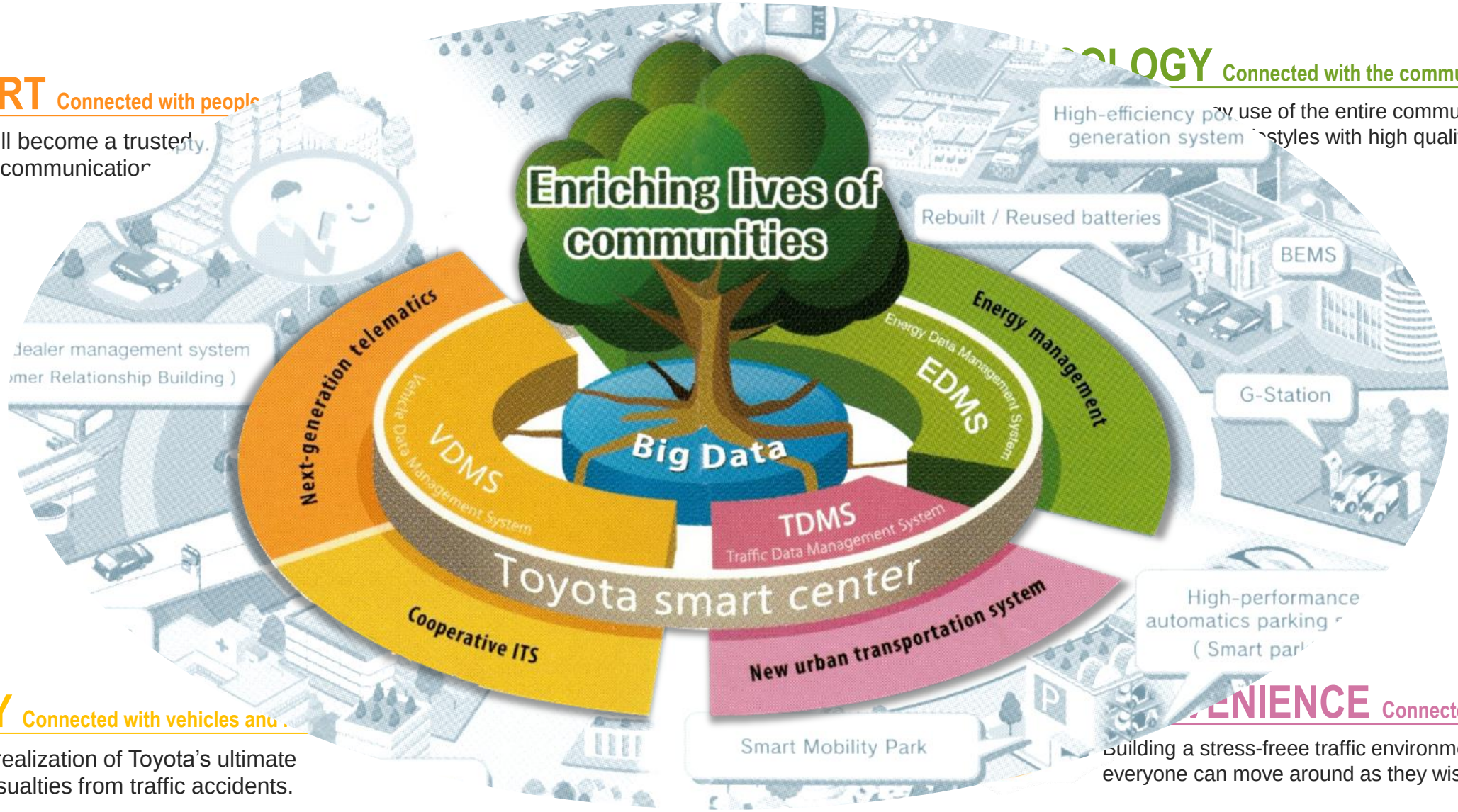
2014 vision: TOYOTA's activities towards SMART MOBILITY SOCIETY

COMFORT Connected with people

The vehicle will become a trusted
through close communicatio

OGY Connected with the community…

High-efficiency po use of the entire community
generation system styles with high quality of life



SAFETY Connected with vehicles and

Towards the realization of Toyota's ultimate goal: zero casualties from traffic accidents.

ENIENCE Connected with society…

Building a stress-freee traffic environment where everyone can move around as they wish.

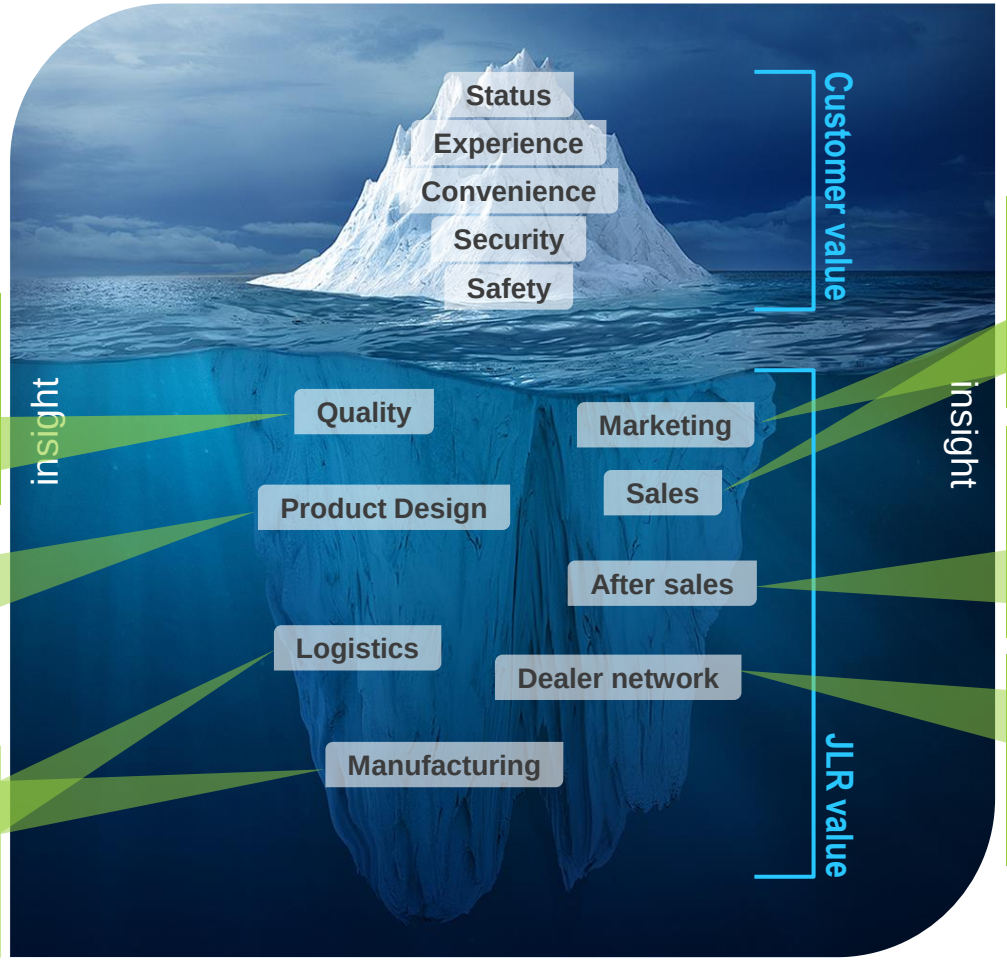
2014 vision: JLR view

Insights: really getting to know our customers and the condition of our vehicles

Vehicle, customer and driving insights (real time DTCs, product recall, OTA updates)

Vehicle, customer and driving insights (feature usage, performance, wear)

Vehicle location (WIP, finished, in transit, in port, battery)



Vehicle, customer and driving insights (personalised relevant offers and experiences)

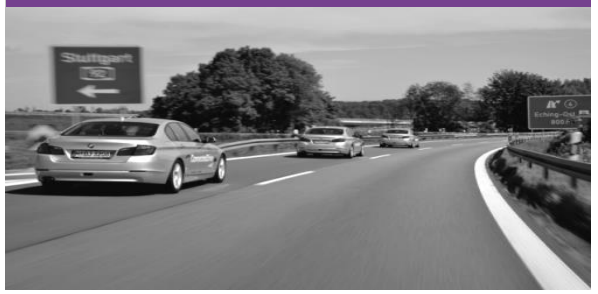
Vehicle, customer and driving insights (miles to service, wear, driver behaviour, battery, brake pads, DTCs, warranty)

Vehicle location (network planning)

2014 Reality: OEM Race towards Automated Driving

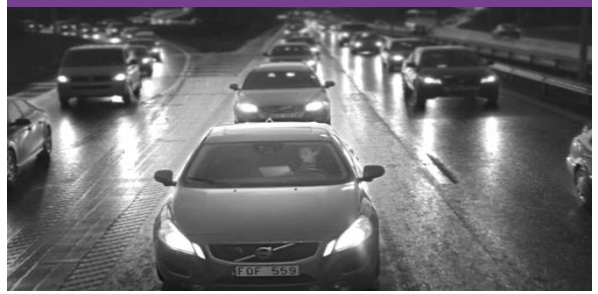
Daimler (Aug ‘13)
Berta Benz drive
Country and Urban roads

BMW (since ‘11)
Motorway Pilot
(with Lane Change)



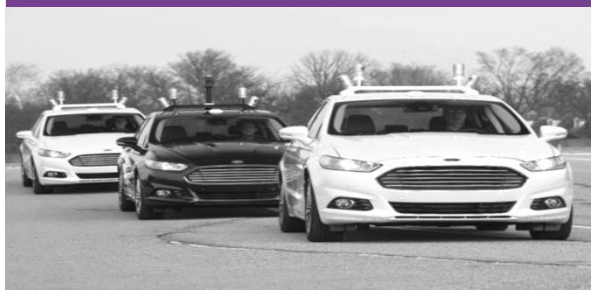
Audi (Jan ‘14)
Traffic Jam Pilot
Valet Parking

Volvo (Nov ‘13)
Mixed roads
100 vehicles in 2017



GM (Apr ‘13)
Motorway Pilot
(ACC + Lane Keeping)

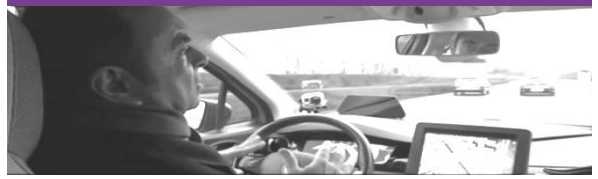
Ford (Dec ‘13)
“Autopilot capabilities,
such as vehicle platooning”



Toyota (Oct ‘13)
Motorway Pilot
(ACC + Lane Keeping + V2V)

Nissan (Nov ‘13)
Motorway Pilot
(ACC + Lane Keeping)

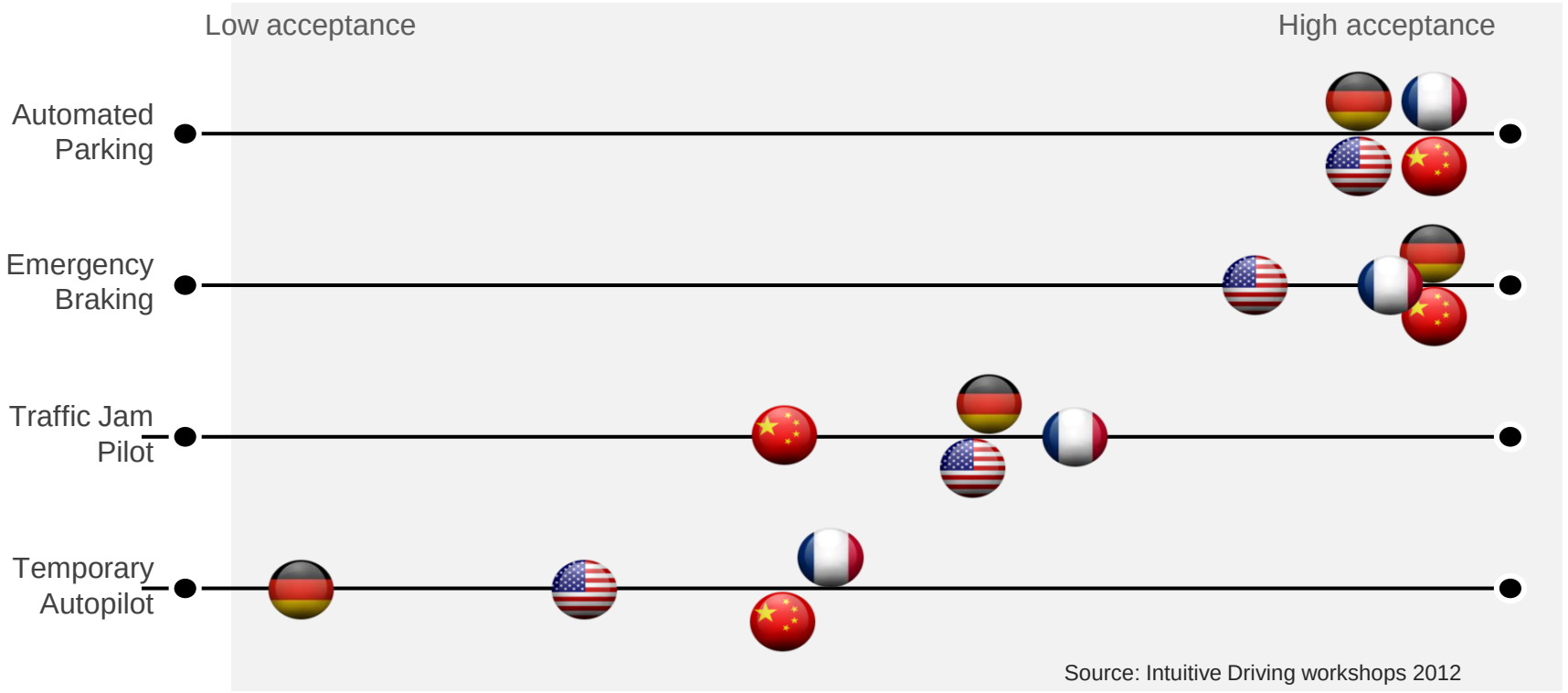
Renault (Feb ‘14)
Traffic Jam Pilot
(ACC + Lane Keeping)



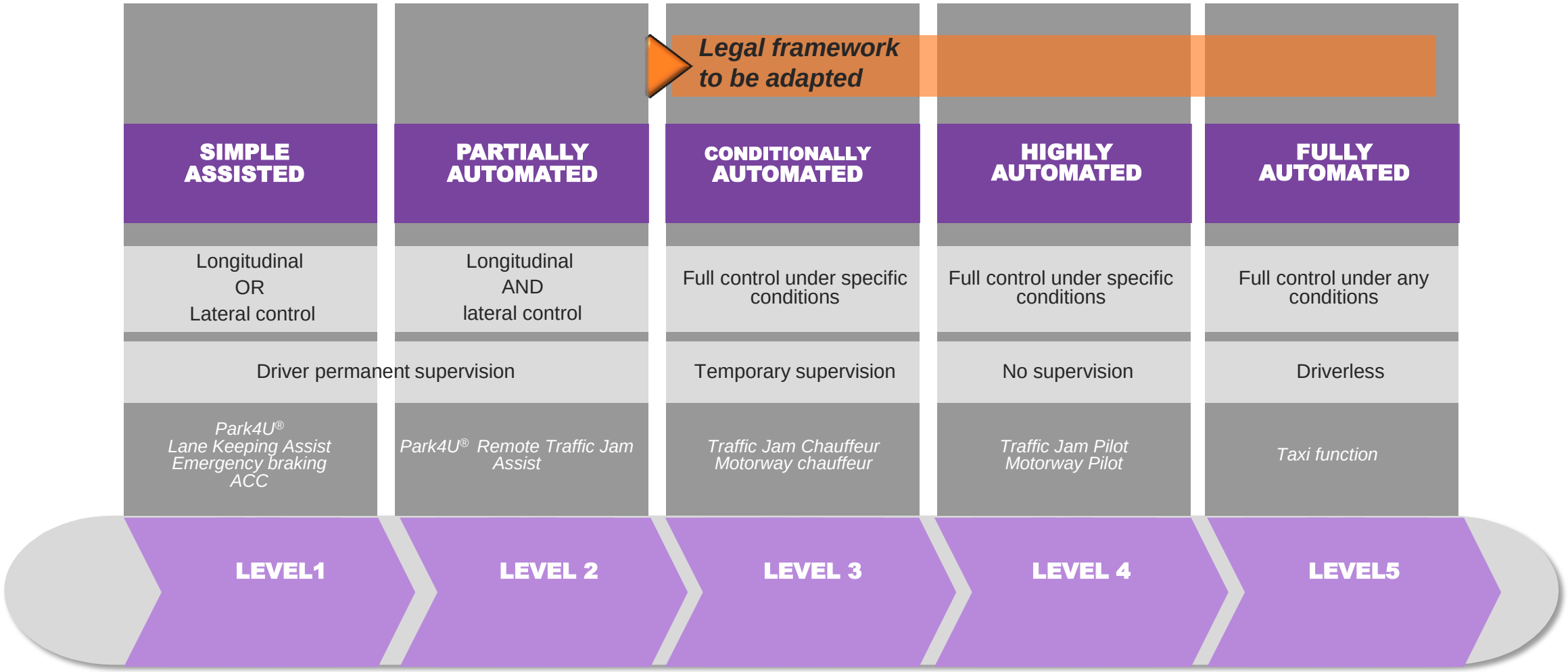
Images: OEMs

2012 End user expectations

Automated driving will leverage experience from automated parking and low speed control to extend to motorway and urban driving



Automated car classification



Automous driving roadmap: level 0

Automation ↔ Driver

Driver continuously performs the longitudinal and lateral dynamic driving task

No intervening vehicle system active

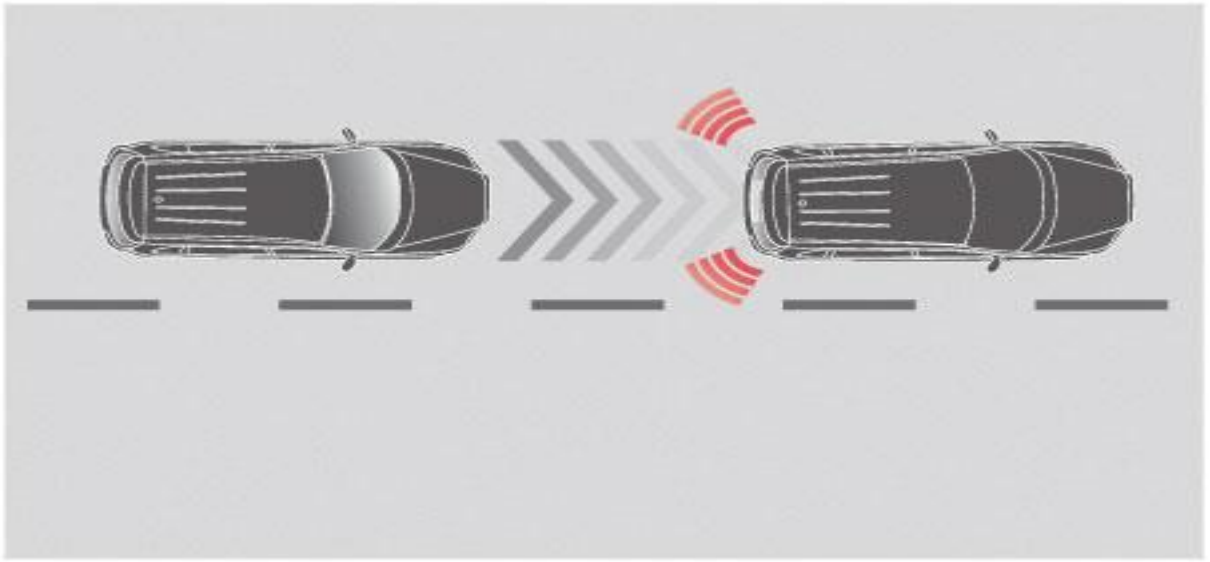
Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Driver Only	*Assisted*	*Partial Automation*	*Conditional Automation*	*High Automation*	*Full Automation*

Automous driving roadmap: level 1

Automation ↔ Driver

Driver continuously performs the longitudinal or lateral dynamic driving task

The other driving task is performed by the system



Adaptative Cruse control

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Driver Only	*Assisted*	*Partial Automation*	*Conditional Automation*	*High Automation*	*Full Automation*

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Automous driving roadmap: level 2

Automation ↔ Driver

Driver must monitor the dynamic driving

a defined use case

Traffic Jam Assist:
Automatic longitudinal
and lateral control

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Driver Only	*Assisted*	*Partial Automation*	*Conditional Automation*	*High Automation*	*Full Automation*

Valeo

Automous driving roadmap

Automation ↔ Driver

Driver continuously performs the longitudinal or lateral dynamic driving task

Driver must monitor the dynamic driving task and the driving environment at all times

The other driving task is performed by the system

System performs longitudinal and lateral driving task in a defined use case

Limited connectivity

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Driver Only	*Assisted*	*Partial Automation*	*Conditional Automation*	*High Automation*	*Full Automation*

Automous driving roadmap: level 3

Automation ↔ Driver

Traffic Jam Assist:
Automatic longitudinal
and lateral control
Without permanent driver supervision

Driver does not need to monitor the dynamic driving task nor the driving environment at all times; must always be in a position to resume control

System performs longitudinal and lateral driving task in a defined use case. Recognizes its performance limits and requests driver to resume the dynamic driving task with sufficient time margin.

Level 0	***Level 1***	***Level 2***	***Level 3***	***Level 4***	***Level 5***
Driver Only	*Assisted*	*Partial Automation*	*Conditional Automation*	*High Automation*	*Full Automation*

Automous driving roadmap: level 5

Automation ↔ Driver

No driver required

System performs the lateral and longitudinal dynamic driving task in all situations encountered during the entire journey. No driver required.

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Driver Only	*Assisted*	*Partial Automation*	*Conditional Automation*	*High Automation*	*Full Automation*

Parking roadmap

Automation ↔ Driver

Ultrasonic sensors

Level 0

Driver Only

vening system active

Park4U®

Level 1

Assisted

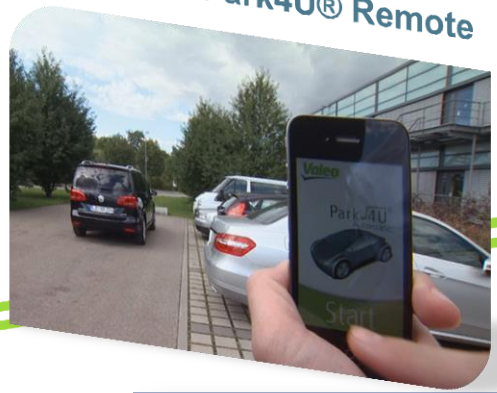
The other driving task is performed by the system

Level 2

Partial Automation

m performs dinal and lateral driving task in a defined use case

Park4U® Remote



Level 3

Conditional Automation

System performs longitudinal and lateral driving task in a defined use case. Recognizes its performance limits and requests driver to resume the dynamic driving task with sufficient time margin.

Level 4

High Automation

System performs the lateral and longitudinal dynamic driving task in all situations in a defined use case.

Valet Park4U®

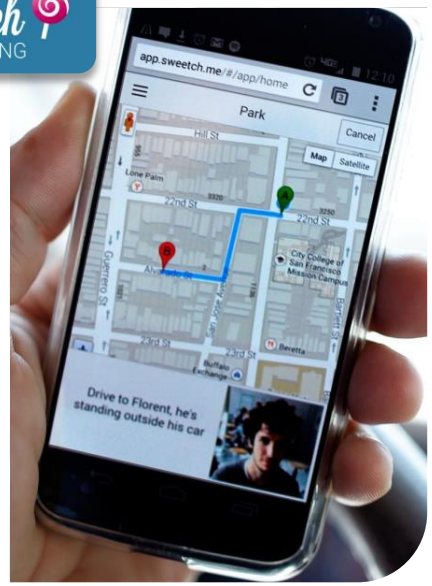
Level 5

Full Automation

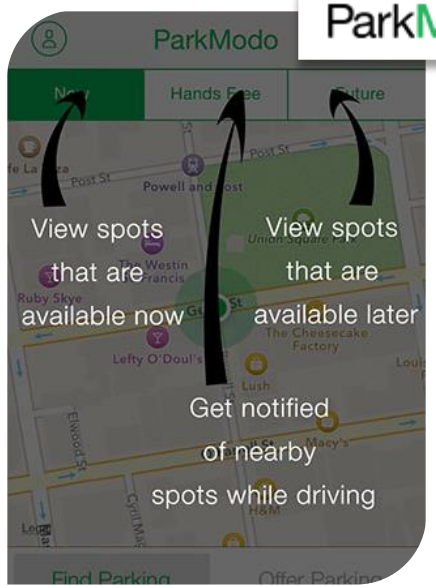
encountered d… the entire journey. No driver required.

Parking roadmap (other views)

Sweetch PARKING

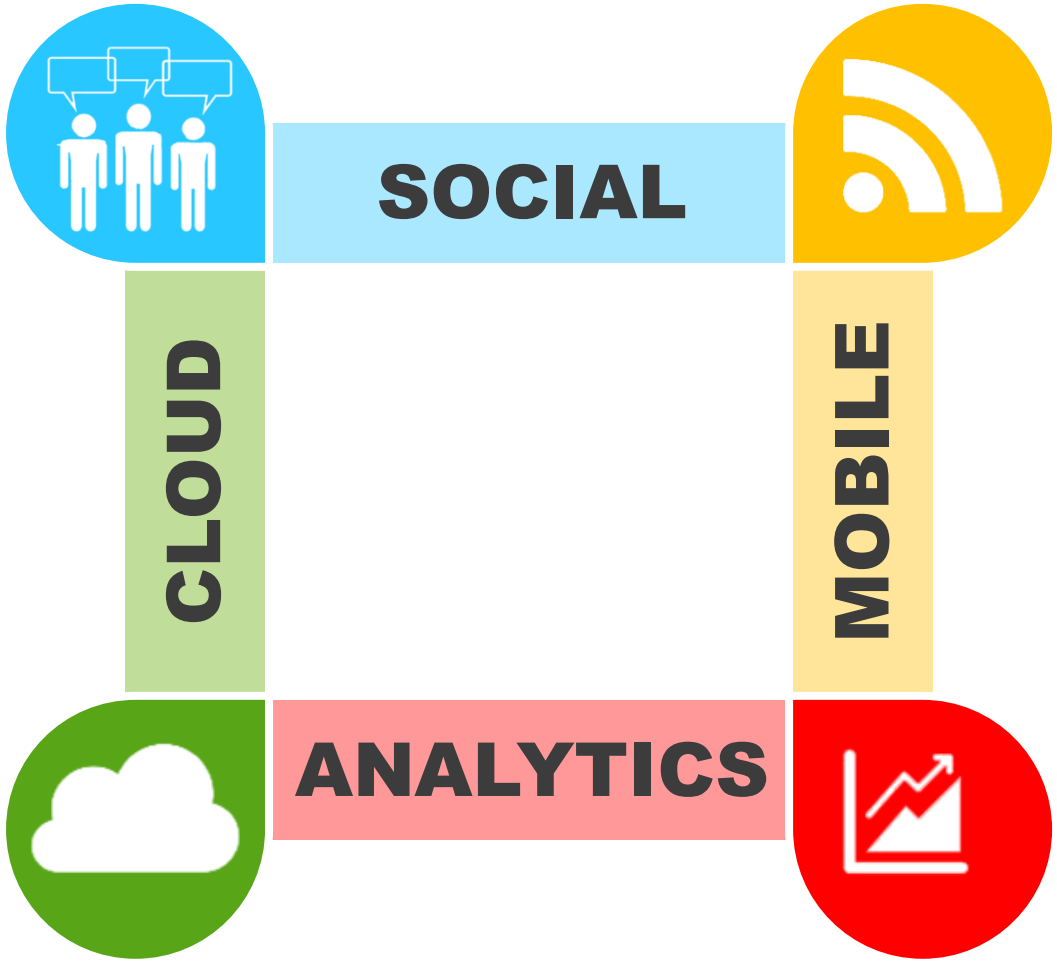


ParkModo



Valeo

The Digital Revolution…




NOTHING IS A MISTAKE.
THERE'S NO WIN
AND NO FAIL.
THERE'S ONLY
MAKE
JOHN CAGE
Embraccess
JANUS
Valeo
Valeo
embrace

Automotive technology, naturally