

# THE ENGINE OF CAR DIGITALIZATION

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-Abstract : " what are the key enablers for the Automotive Industry to join the Digital ecosystem"

# The Future is now...

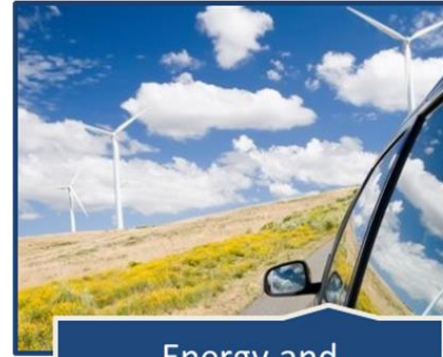
## The driving forces for the automobile future



Mobility and Living



Customer Values



Energy and  
Environment



Global Economic and  
Demographic Changes



Technical Disruptions

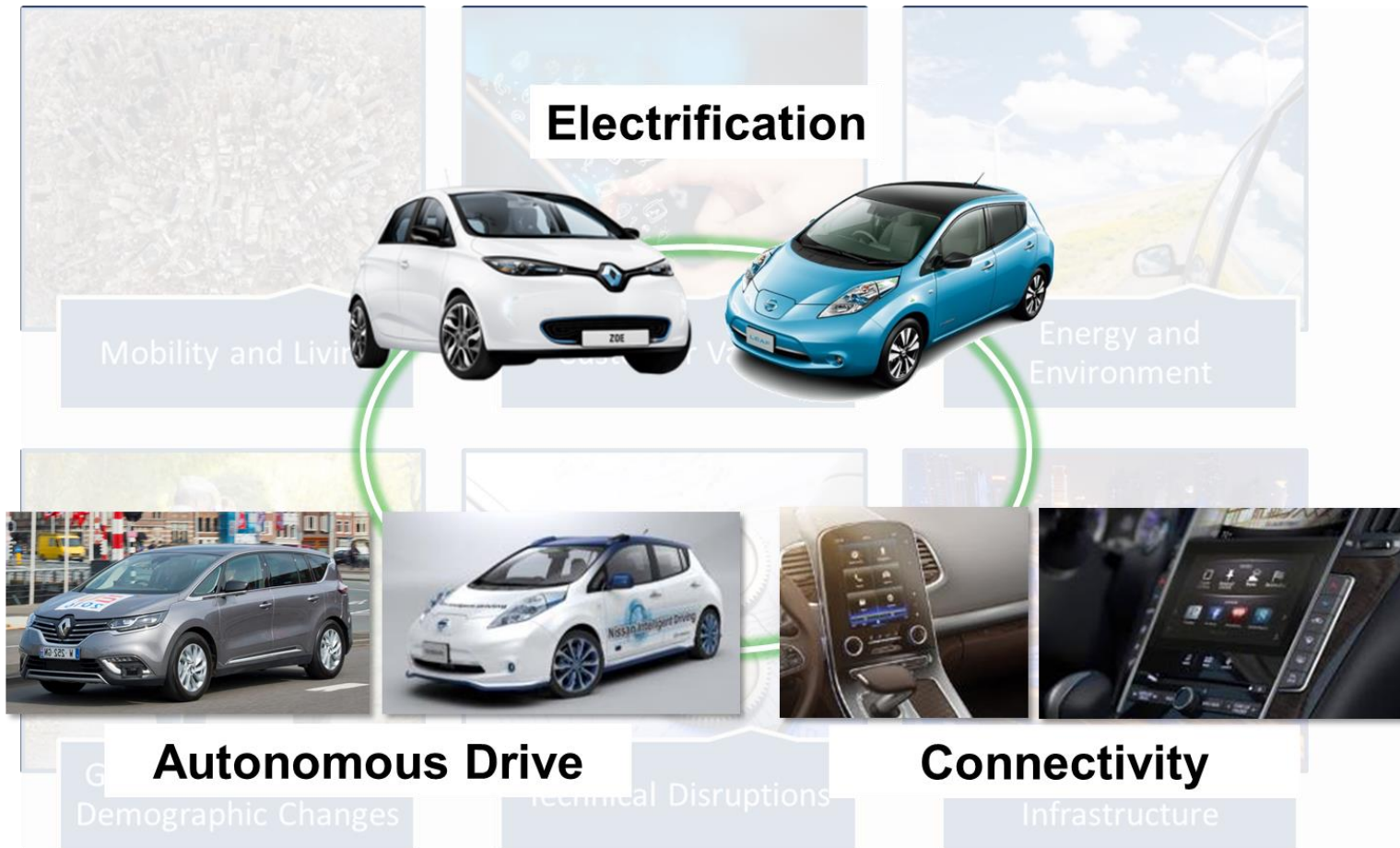


Transport  
Infrastructure



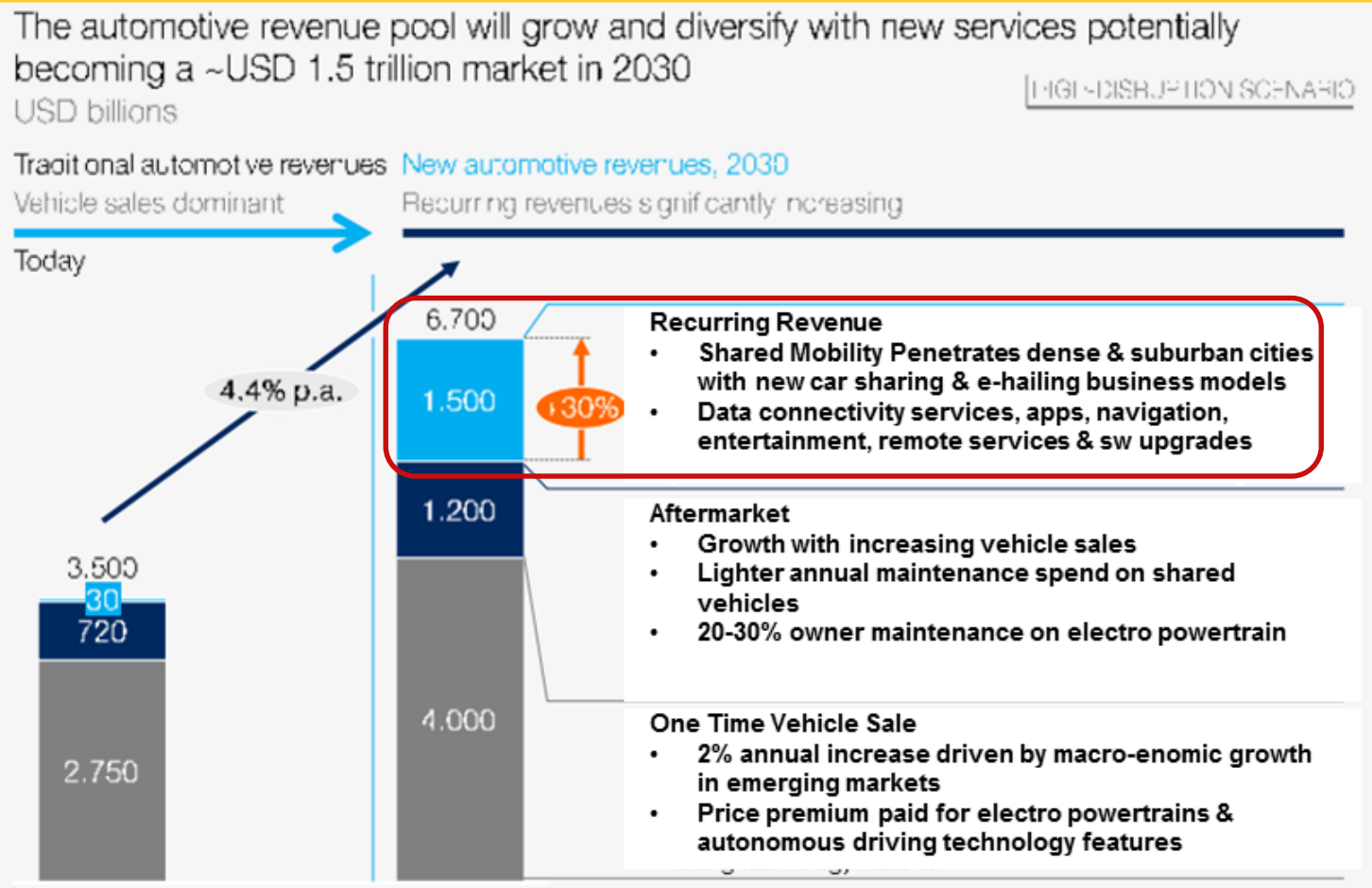
# Now is the answer ...

## The automotive answer



# AUTOMOTIVE REVENUE FORECAST

## AUTOMOTIVE INDUSTRY FORECAST HEALTHY WITH SIGNIFICANT SHIFT IN VALUE



- **Vehicle sales to grow slowly**
- **Recurring revenue pools to increase significantly (~30%):**
  - Mobility services
  - Digital services



# Software everywhere ...

**Software will drive the future...**

**Artificial intelligence**



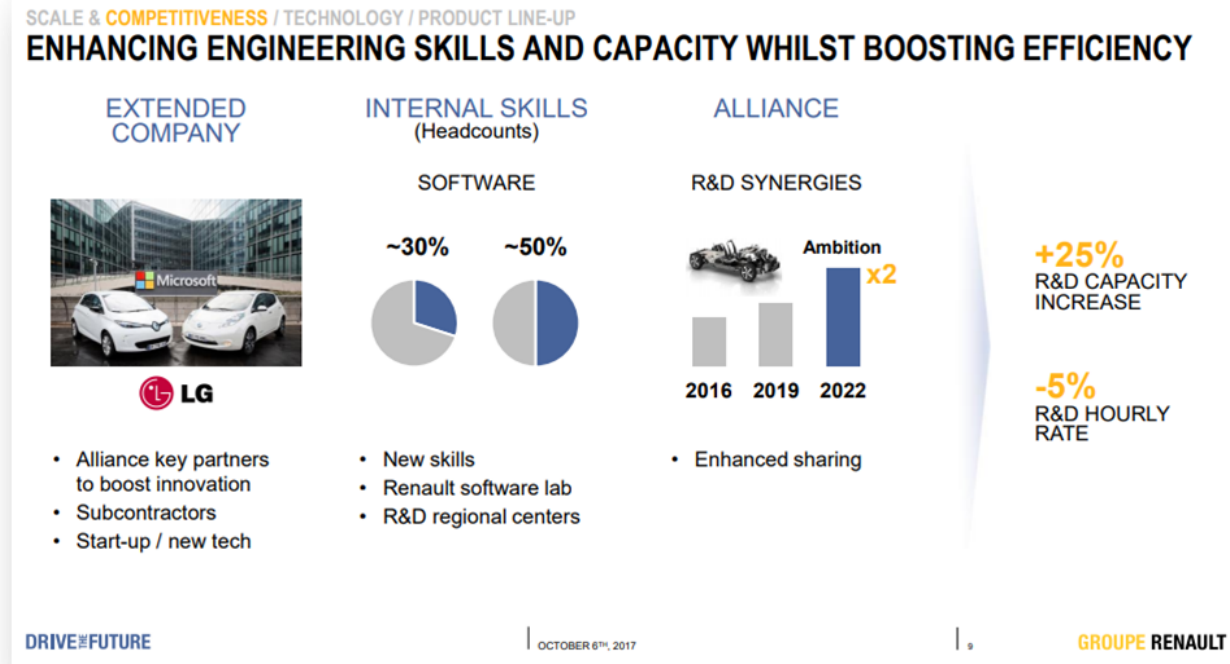
**Critic Control**

**...and Hardware will be the main enabler!**

- Power electronics
- E/E architecture
- Massively parallel microcontrollers



# RENAULT SW LABS FUTURE OF AUTOMOTIVE



**« Today, Software represents 15-25% of total car value, and it will be more than 50% after 2020. We need to control this universe internally »**

**Thierry Bolloré, Directeur Général du Groupe Renault**



# China changing the game dramatically!





# China is becoming the true driver of the global auto industry

Our viewpoint on China's Automobility Revolution was the **most viewed** article on *China Daily* online, 20 Jul 2017

Bill Mason and Chen-Kiang Lim

## China is leading the 'automobility' revolution



**CHINA DAILY** 中国日报

**Editorial**

**With a little give and take, dialogue can bear fruit**

**China is leading the 'automobility' revolution**

**US auto media foundering**

**China is leading the 'automobility' revolution**

Our viewpoint on China's role in driving the future of mobility was quoted on the cover page of *Automotive News*, 11 Jun 2018

## Automotive News

### Trade tussles may derail GAC's U.S. launch

**Threat of auto tariffs grows more ominous**  
Sawtooth trade policies unsettle supply chain

**THE RECKONING**  
China is taking the wheel in the global auto industry

**THE RECKONING**  
China is taking the wheel in the global auto industry

**THE TECH EFFECT**  
Automotive industry's digital transformation

**THE RECKONING**  
China is taking the wheel in the global auto industry



# China's digital landscape by numbers



**772M**

Total Internet users in  
China (Dec 2017)



**753M**

Total mobile Internet users  
in China (Dec 2017)



**1.06Bn**

Monthly active users\*  
on WeChat (Jun. 2018)

**mobike**

**200+**

Global cities with Mobike  
operations since Oct. 2017



**DiDi**

**550M**

Didi users across  
over 400 cities in China  
(2017)



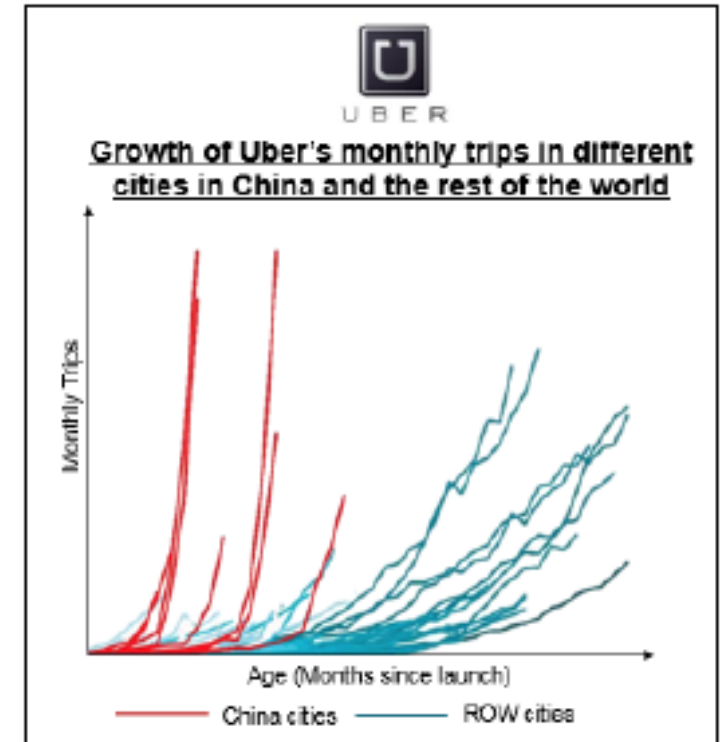
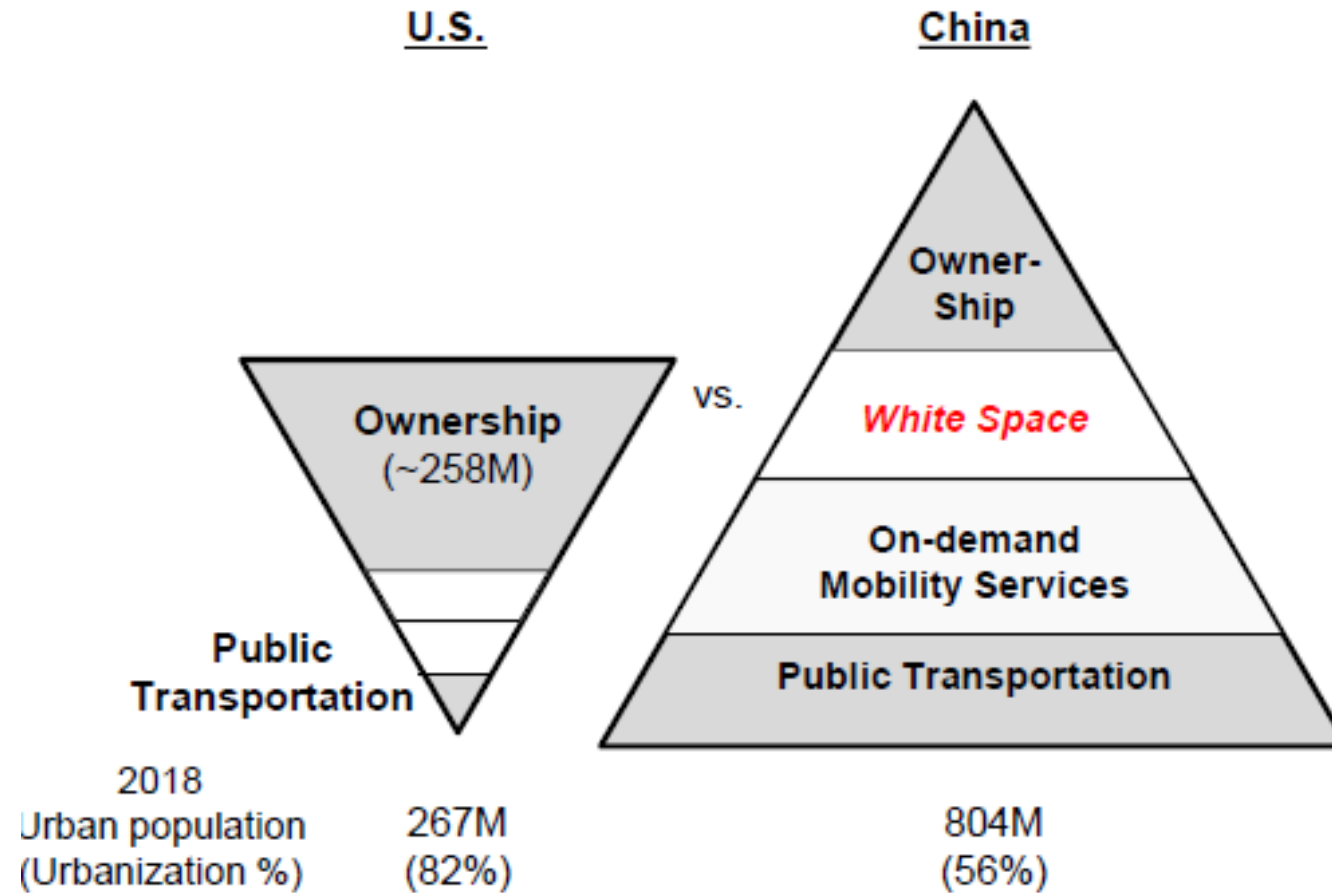
**Alibaba Group**  
阿里巴巴集团

**USD  
30.8Bn**

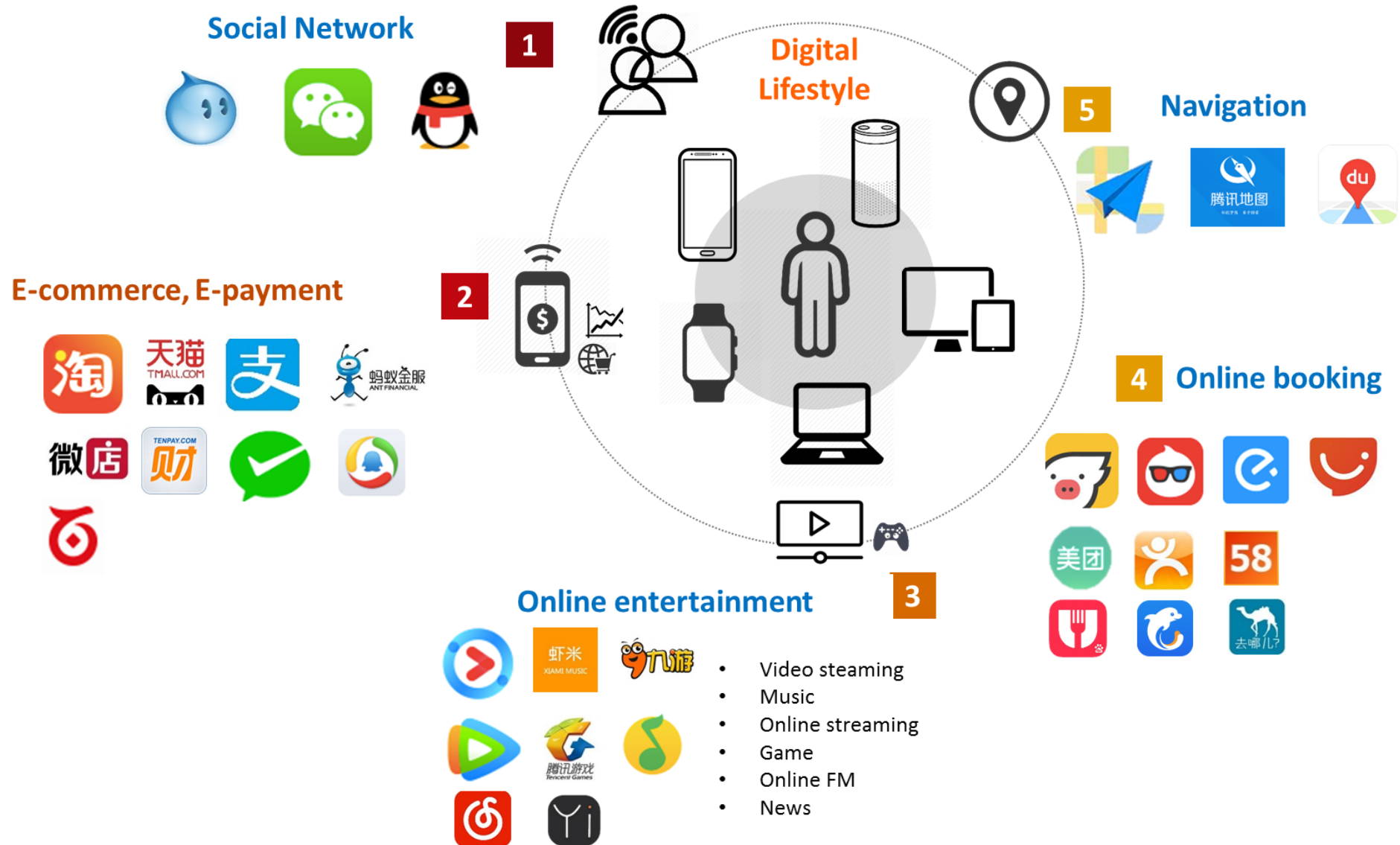
(GMV sales on Alibaba  
Singles' Day 2018)



# The mobility in China : huge gap with mature markets



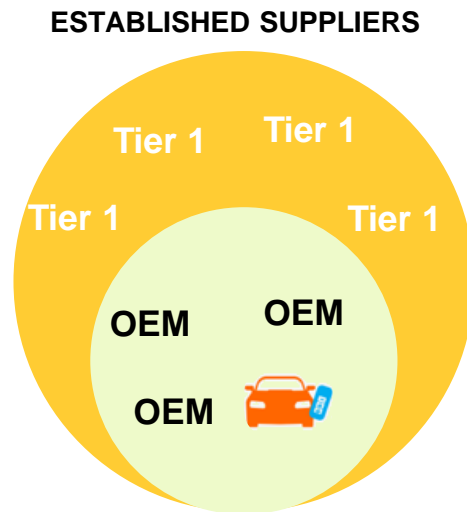
# Eco-system covers all the aspects of life



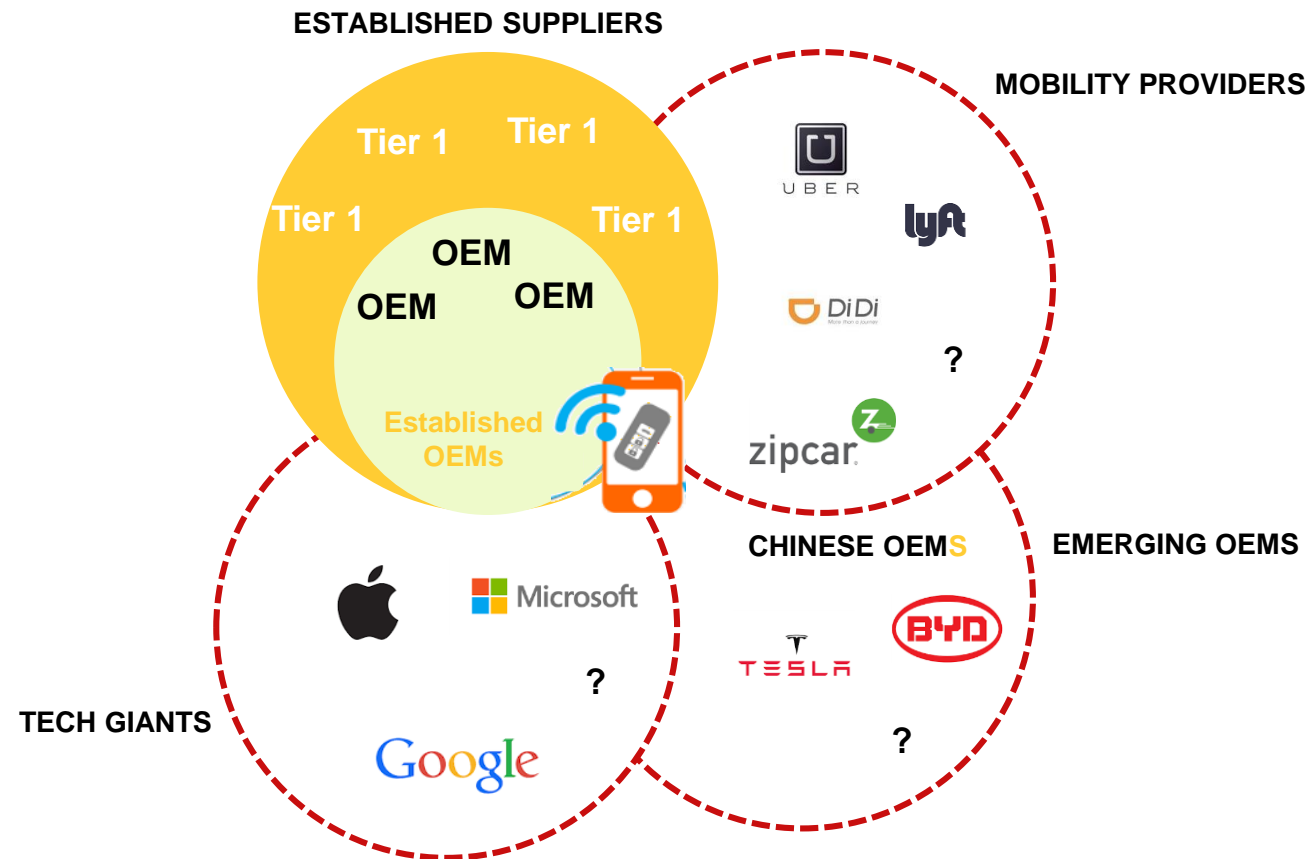


# INDUSTRY LANDSCAPE TRANSFORMATION

PAST: OEMS COMPETE WITH ONE ANOTHER



2030: OEMS COMPETE IN A COMPLEX MARKET LANDSCAPE



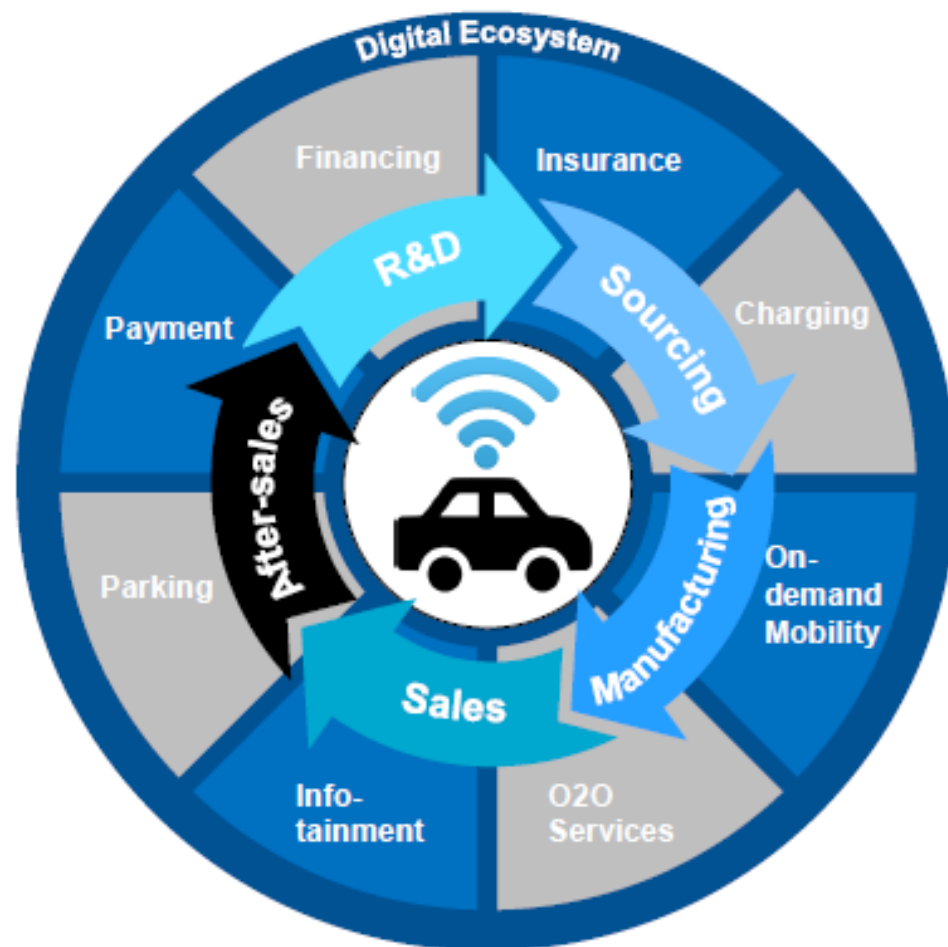
Source (loosely adapted) : McKinsey & Company – Automotive Revolution perspective towards 2030 (2016)

**Software is the key enabler for innovation and new business models**

# The automobility world joins the exponential digital ecosystem



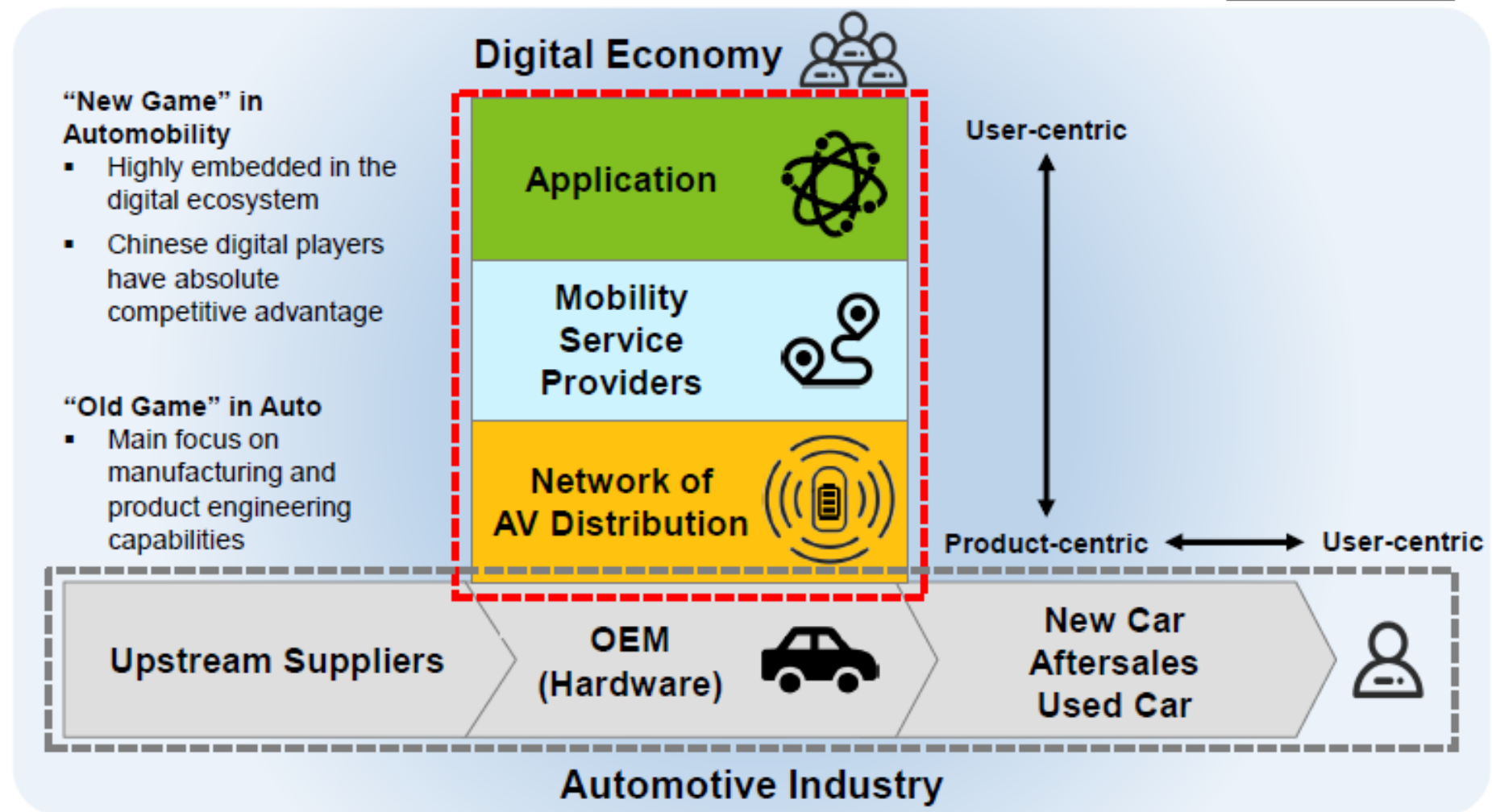
Vehicle Lifecycle-focused



Use Case and Scenario-focused



# Digital disruption creates an entirely new business model



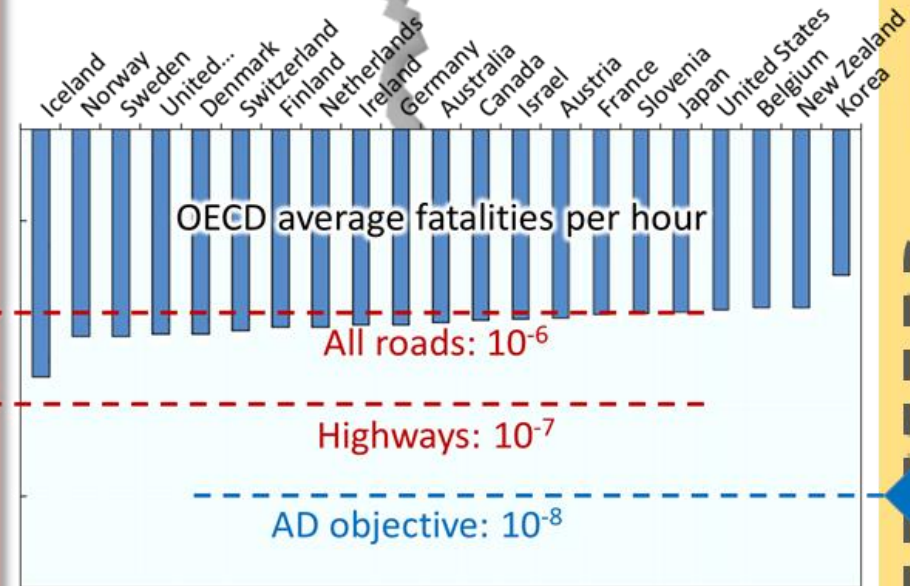


# Tomorrow's Electronics will play leading role...



## ...if it succeeds for 4 challenges

# #1 Safety: Mandatory for new mobility!



# #1 : New generations of chips are yet ready

## INTELLIGENT SYSTEMS: A TECHNOLOGICAL DISCONTINUITY

1970



COMPUTERS:  
**APPLICATION  
PROCESSING**

1990



SMARTPHONES:  
**CONNECTIVITY  
& MOBILITY**

2020



INTELLIGENT SYSTEMS:  
**ANALYSIS &  
DECISION-MAKING**



# A NEED FOR A NEW GENERATION OF PROCESSORS AT THE HEART OF INTELLIGENT SYSTEMS

1970



PROCESSORS  
DESIGNED  
FOR **LARGE**  
APPLICATIONS

1990



PROCESSORS  
DESIGNED  
FOR **LOW**  
CONSUMPTION

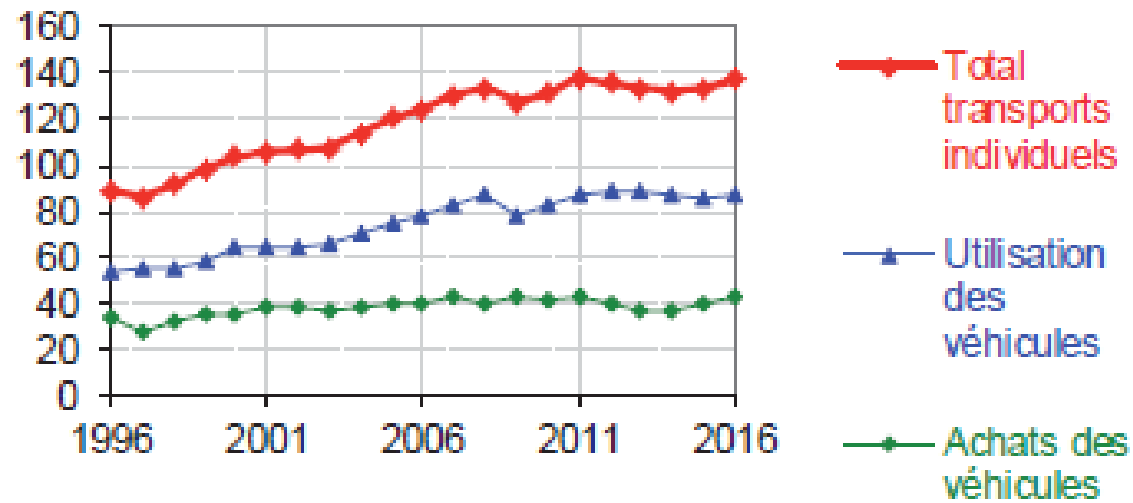
2020



PROCESSORS  
DESIGNED  
FOR **INTELLIGENT**  
PROCESSING

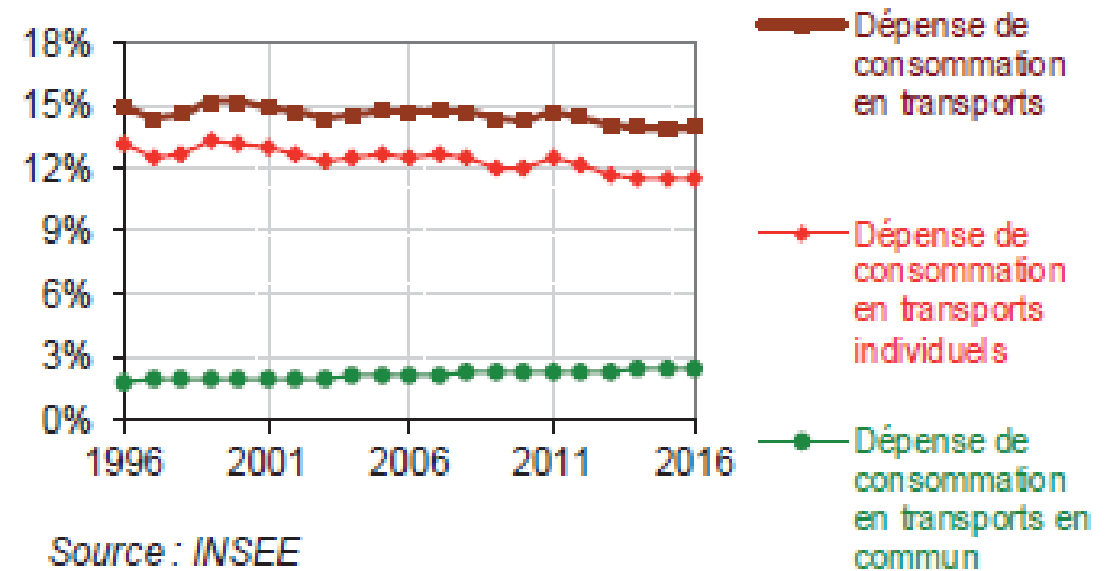
## #2 Value for cost higher and higher!!!

► **Dépense de consommation des ménages en transports individuels** (milliards d'euros)



Source : INSEE

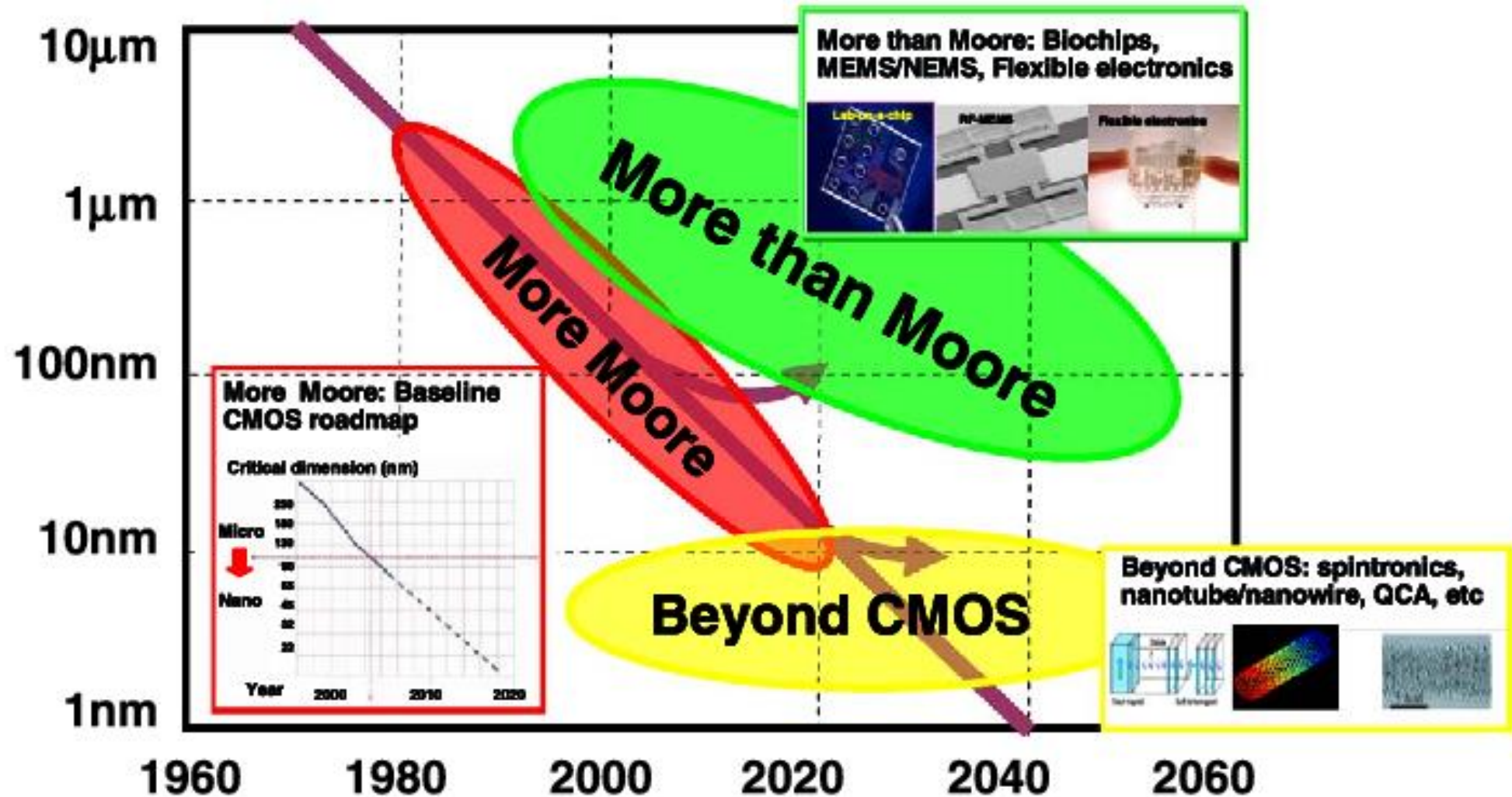
► **Part dans la dépense de consommation totale** (milliards d'euros)



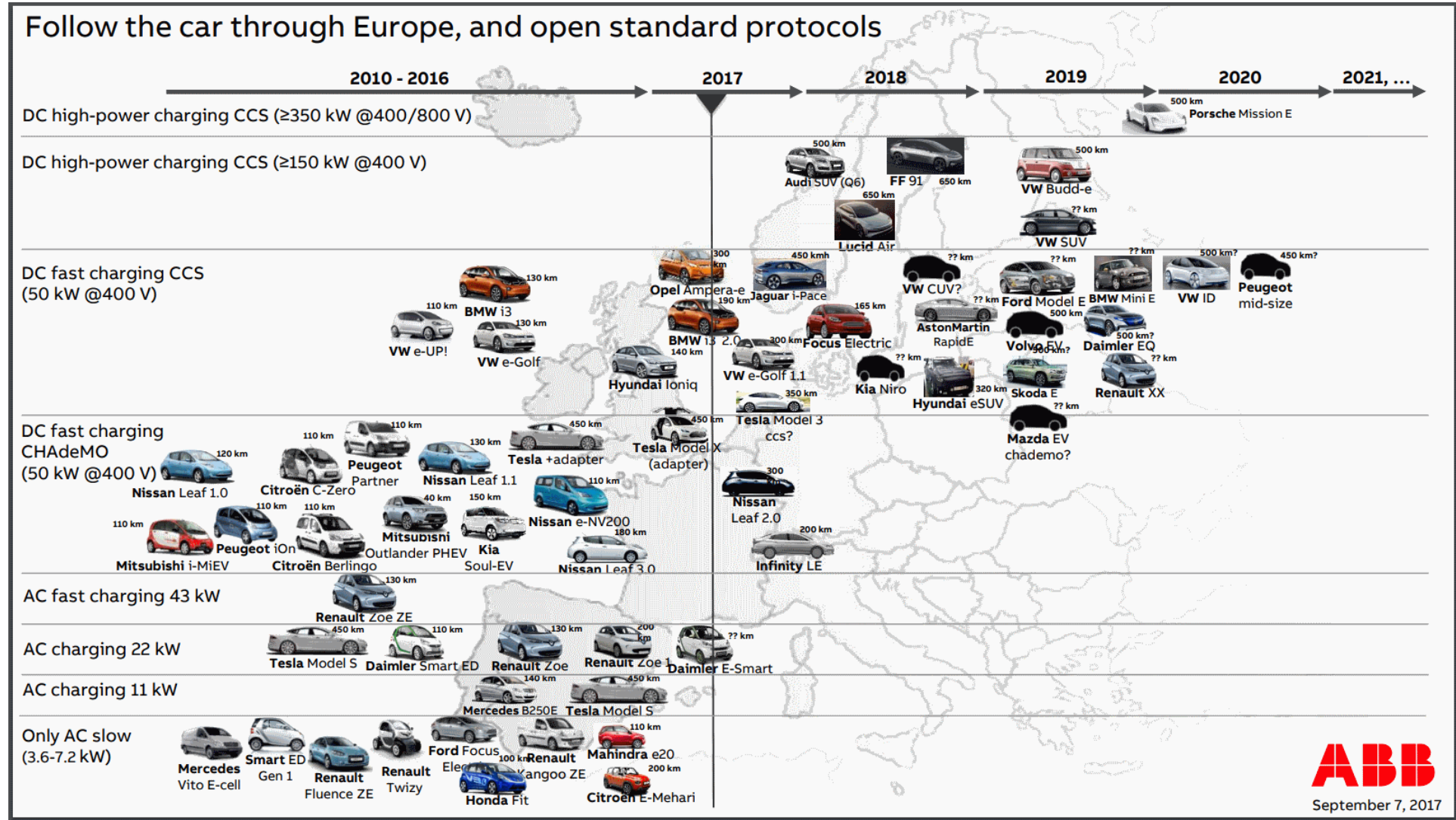
Source : INSEE

=> Meaning that all these innovations (AD, EV, etc)... must keep the same TCO for the final customer

## #2 More Moore and More than Moore are at stake!

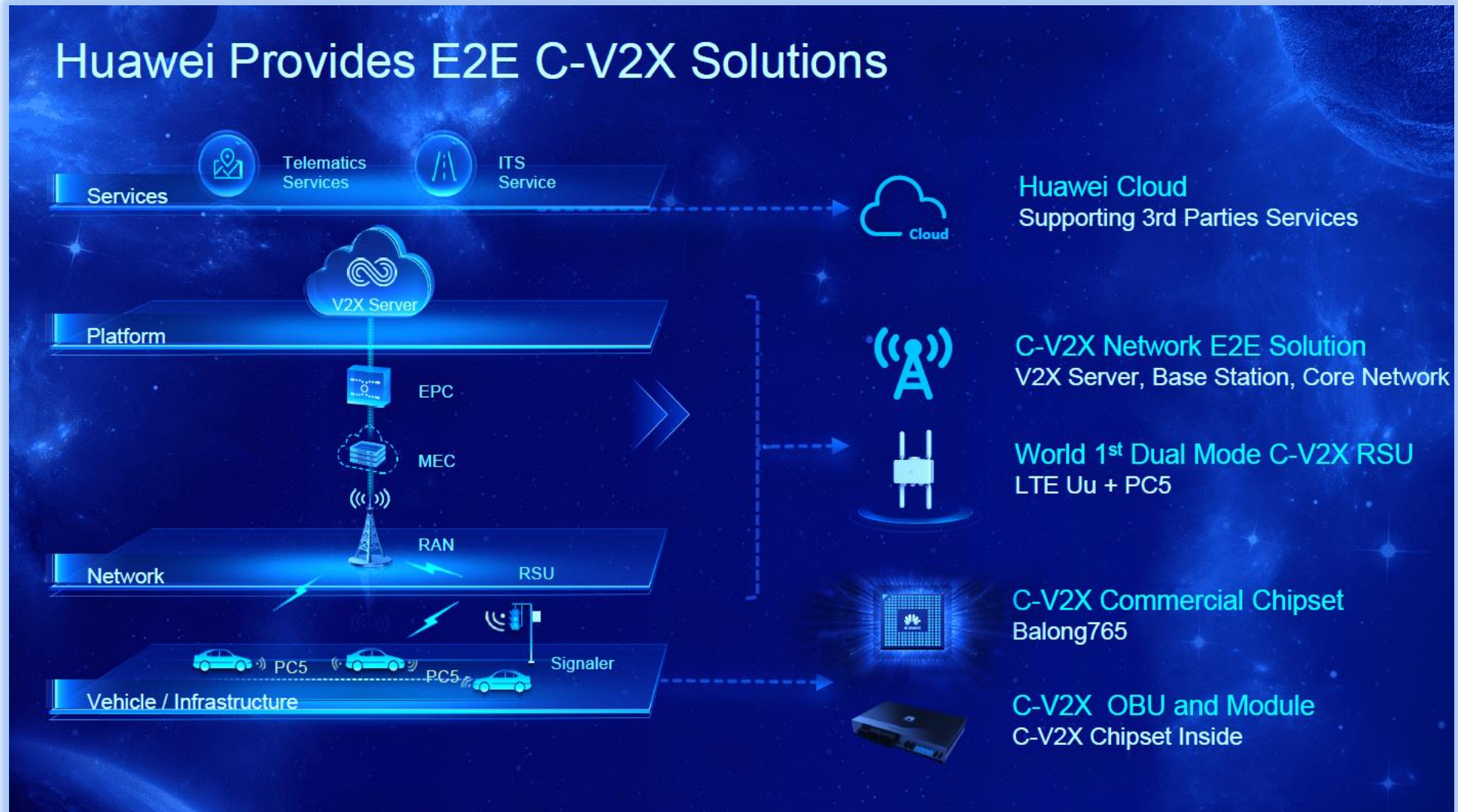


# #3 Interoperability & global standards: ex. of EV





# #3 Some actors in China are speeding up!



# #4 New paradigm for business : ex. BanMa

OEMs

Tier 1 Suppliers



Software

Chipset

Devices

Parking

Alibaba



Road trip B&V Insurance Petrol



OS\ID\Cloud\Pay

Online Audio

Telecom

Charging

Assistance

Traffic



old

new



# #4 PFA can enable to bridge all the stakeholders

## Les acteurs clés de la filière automobile (parmi lesquels)

### Constructeurs



### Equipementiers français et internationaux



### Organismes de recherche et de formation



## Un élargissement aux acteurs de la mobilité et des services (parmi lesquels)

### Start-ups



### Grands groupes



### Collectivités publiques



**mov'eo**  
Imagine mobility

# VISION & MISSION

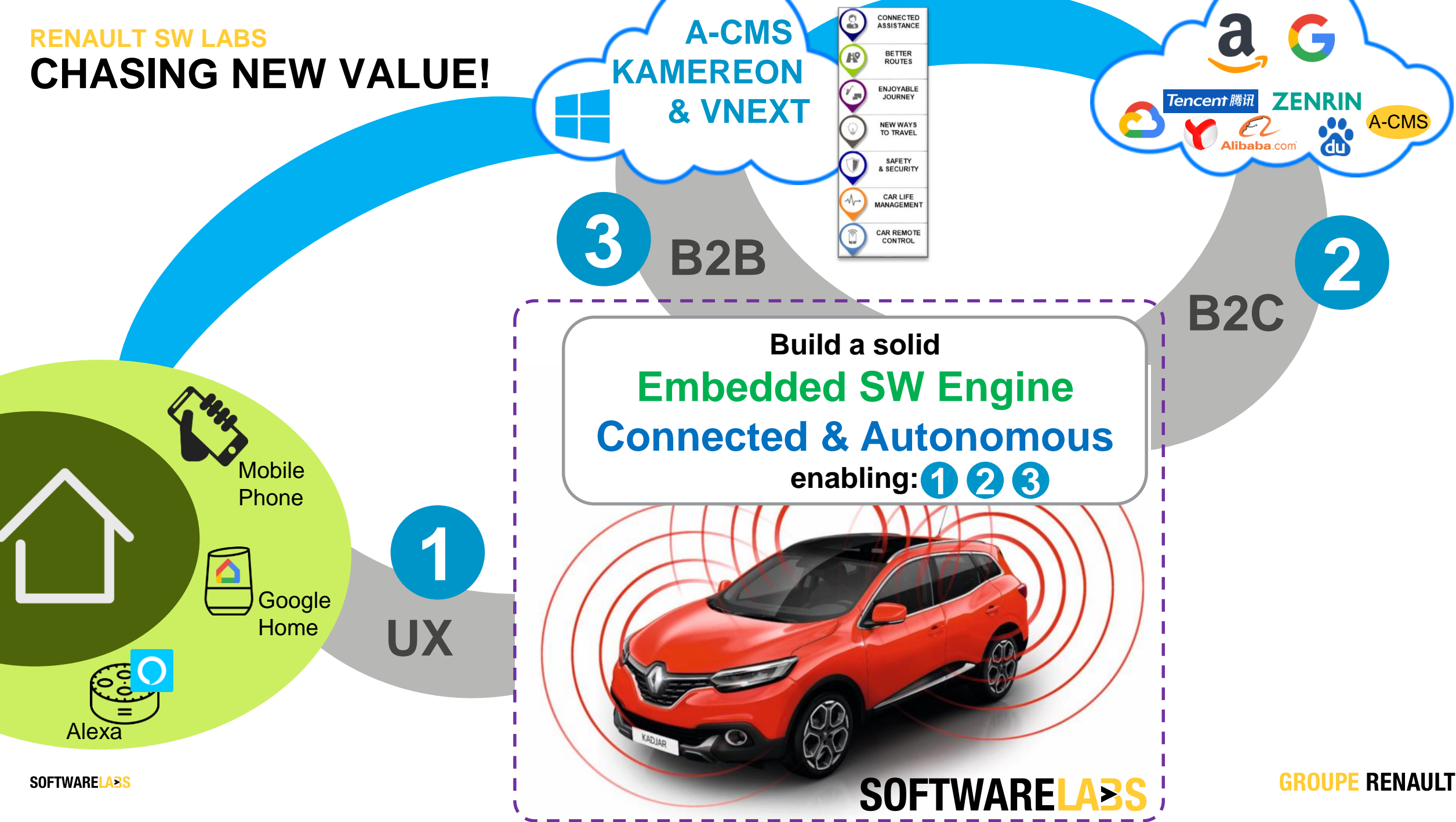
**Define & create innovative, safe, accessible & affordable best in class platform SW solutions for Electrical, Connected & Autonomous vehicles**



- **Strengthen Alliance's Embedded Software Competence**
- **View Vehicle as a Software System**
- **Internalize Critical Software to master SW vehicle quality**
- **Develop Innovative SW for future Alliance Vehicles**
- **Prototype solutions for early & reliable project decisions**
- **Participate in several research & open-source communities projects**



# RENAULT SW LABS CHASING NEW VALUE!



# VEHICLE **EMBEDDED SOFTWARE** « ENGINE » – 4 PILLARS

