

# TECHNOLOGY WORKSHOPS 2017.

December 2017

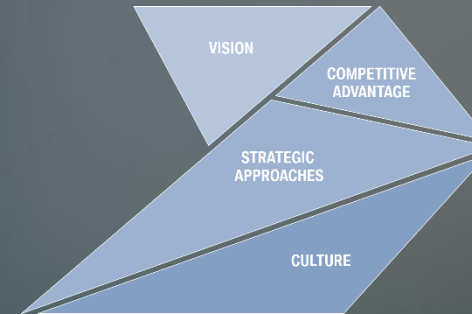


# STRATEGY NUMBER ONE > NEXT CONTINUES THE SUCCESSFUL BUSINESS DEVELOPMENT AND CHARTS THE COURSE FOR AN INNOVATIVE FUTURE.

2007



2016



## Strategy Number ONE

- BMW i
- EfficientDynamics
- Services

## NUMBER ONE > NEXT

- Electrification as the new normal
- Autonomous driving
- Digitalization



# AS A DRIVING FORCE OF INNOVATION, iNEXT WILL SET NEW STANDARDS FOR THE MOBILITY OF THE FUTURE.

## VISIONARY MOBILITY



## BMW iNEXT

Driving force of innovation.

iNEXT  
accelerates emotions



iNEXT  
simplifies driving



iNEXT improves  
experiences



iNext fosters  
networking



Highly automated /  
autonomous driving



Artificial  
intelligence



Connectivity



E-Mobility/  
Lightweight  
construction



Design / Interior of  
the future

Strategic cooperation

**1**

# **DRIVE TECHNOLOGY**

# IN GLOBAL MARKETS WITH DIFFERING LEGISLATIVE, INFRASTRUCTURE AND CUSTOMER DEMANDS, FLEXIBILITY IS KEY.



- ZEV legislation
- Low fuel prices
- BEV focus on US West and East Coast



- Challenging CO<sub>2</sub> requirements
- Customers reluctant as regards xEV
- Very heterogeneous legislation, depending on country

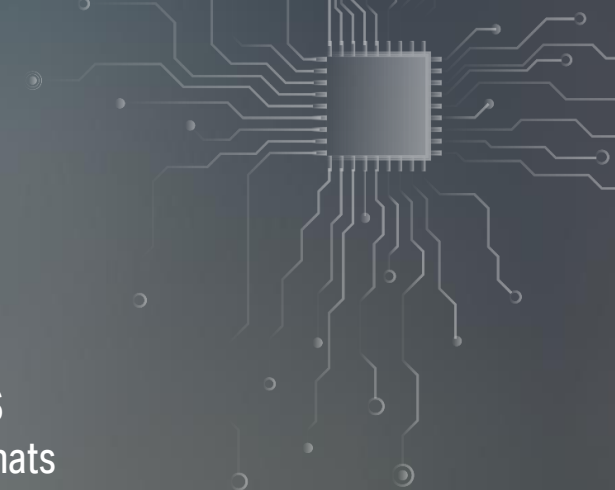


- NEV legislation
- License plate lottery
- Massive market regulation
- Focus on BEVs

## RoW:

- Challenging infrastructure for EVs
- Heterogeneous customer demands

# OUR R&D ACTIVITIES ENSURE OUR TECHNOLOGICAL LEAD IN E-MOBILITY.



**Gen 5 modular kit**  
PHEV & BEV  
scalable from UKL to GKL

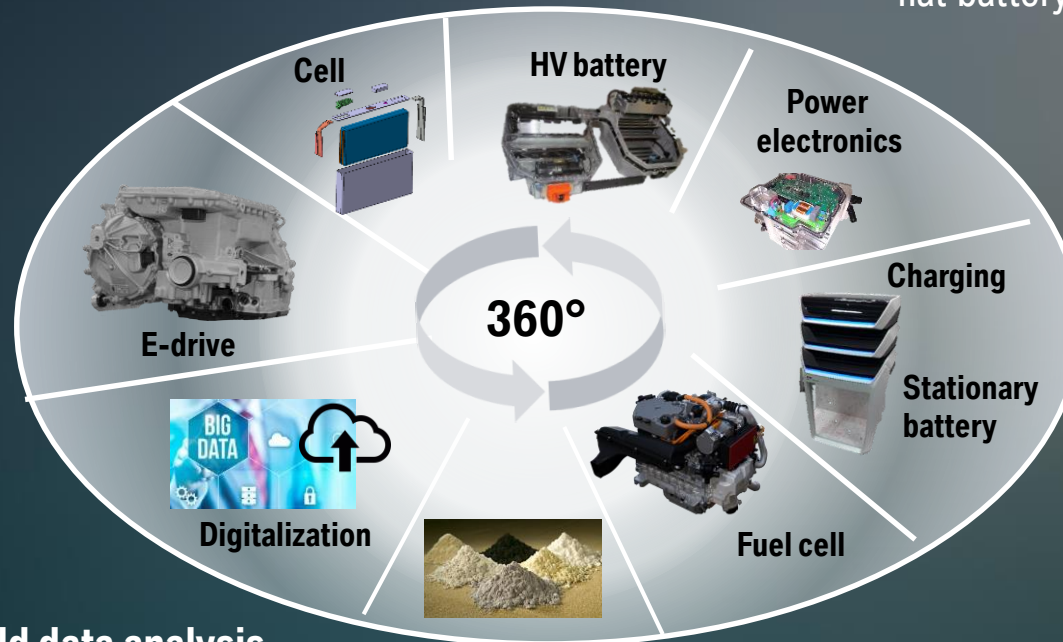
**Technology project on battery technology**  
Product expertise for cells

**Variants**  
HEAT, CCU, HVS  
flat battery, cell formats

**Charging**  
Qualification 800 V, 300 kW

**New business segments**  
Stationary batteries

**Ensuring lead in innovation**  
Patent initiative



**Performance leader**  
HEAT XL 300 kW

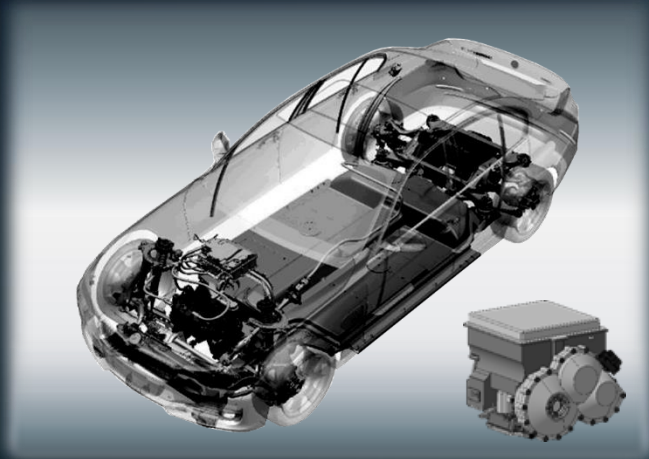
**Agile development methods**  
faster & more efficient

**Cost leader**  
for BEV

**Field data analysis**  
Early fault detection  
(diagnosis)

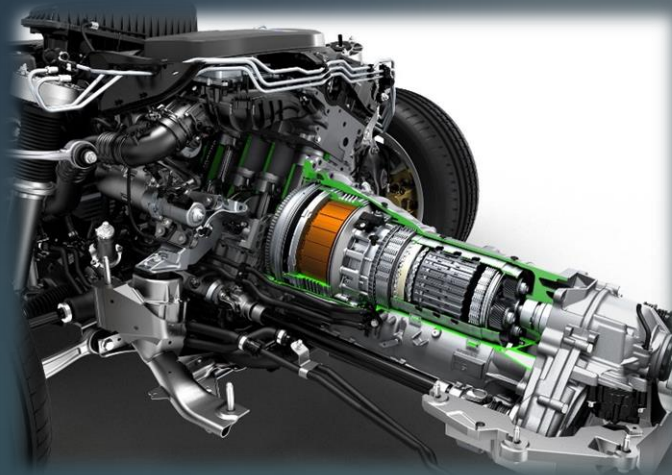
Ensuring supply of  
commodities and production  
capacities

# FLEXIBLE MIX OF DIFFERENT DRIVE SYSTEMS THANKS TO THE PREPARATION OF VEHICLE ARCHITECTURES AND QUALIFICATION OF PLANTS TO HANDLE BOTH E-DRIVES AND COMBUSTION ENGINES.



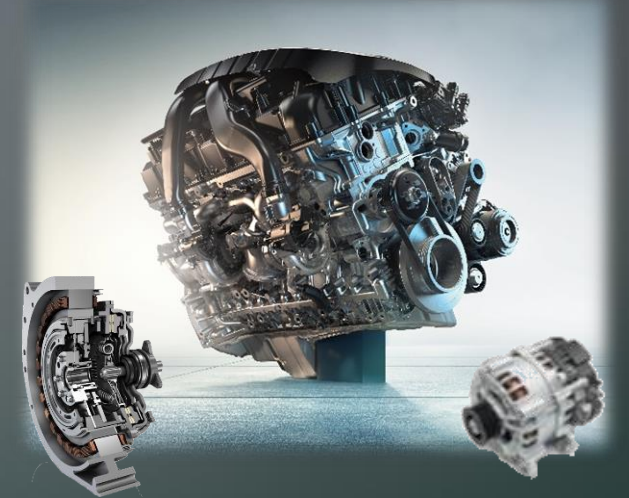
## BEV

- Suitable for large volumes
- Emotional
- Range up to 700 km (WLTP)



## Plug-in hybrid

- Power PHEV (>> 100 kw)
- Range up to 100 km (WLTP)



## Combustion engine

- 48 V
- Leading in terms of CO<sub>2</sub> and other emissions

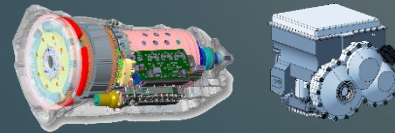
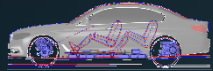
# THANKS TO THE ELECTRIFICATION OF ARCHITECTURES AND THE SCALABLE E-MODULE, THE BMW GROUP HAS THE FULL ABILITY TO ACT.

BEV

Power PHEV / PHEV

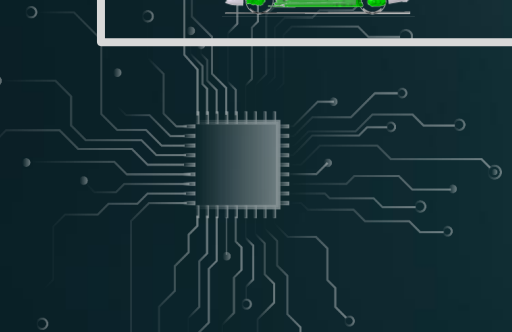
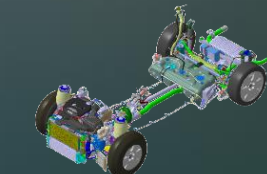
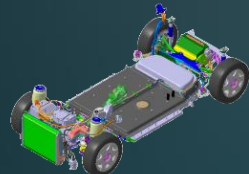
Efficient Dynamics NEXT

RWD architecture  
(CLAR WE)



Electrification  
module  
(5<sup>th</sup> generation)

FWD architecture  
(FAAR WE)





# THE BMW GROUP'S ELECTRIFIED MODEL RANGE IS ON TARGET WHEN IT COMES ON LINE-UP AND SALES.

## PURE ELECTRIC



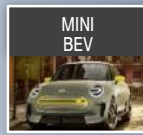
2013



2016



2017



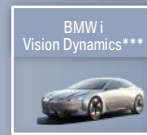
2019



2020



2021



## PLUG-IN HYBRIDS



2014



2015



2016



2017



2018



2015



2016



2017



2018

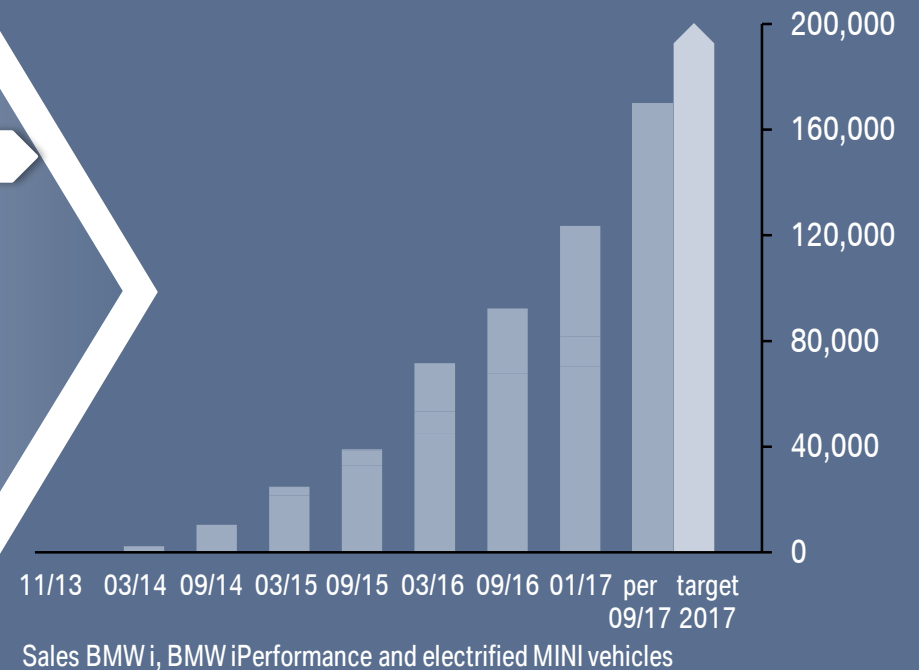


2016



2017

200,000 electrified vehicles sold.



\* Only available in China  
 \*\* LCI: Life Cycle Impulse  
 \*\*\* Launch date not yet confirmed

**2**

**AUTONOMOUS DRIVING &  
ARTIFICIAL INTELLIGENCE**

# FIRST AUTOMATED DRIVING IDEAS CONTINUOUSLY DEVELOPED – STARTING MORE THAN TEN YEARS AGO.

**BMW Track Trainer  
(2006).**



**Remote Controlled Parking  
(2008).**



**Emergency stop assistant  
(2009).**



**Highly automated driving on the motorway (Gen1: 2011; Gen2: 2014)**



**Highly automated driving at the limits  
of vehicle dynamics (2014).**



**Fully automated remote valet parking  
(2015).**



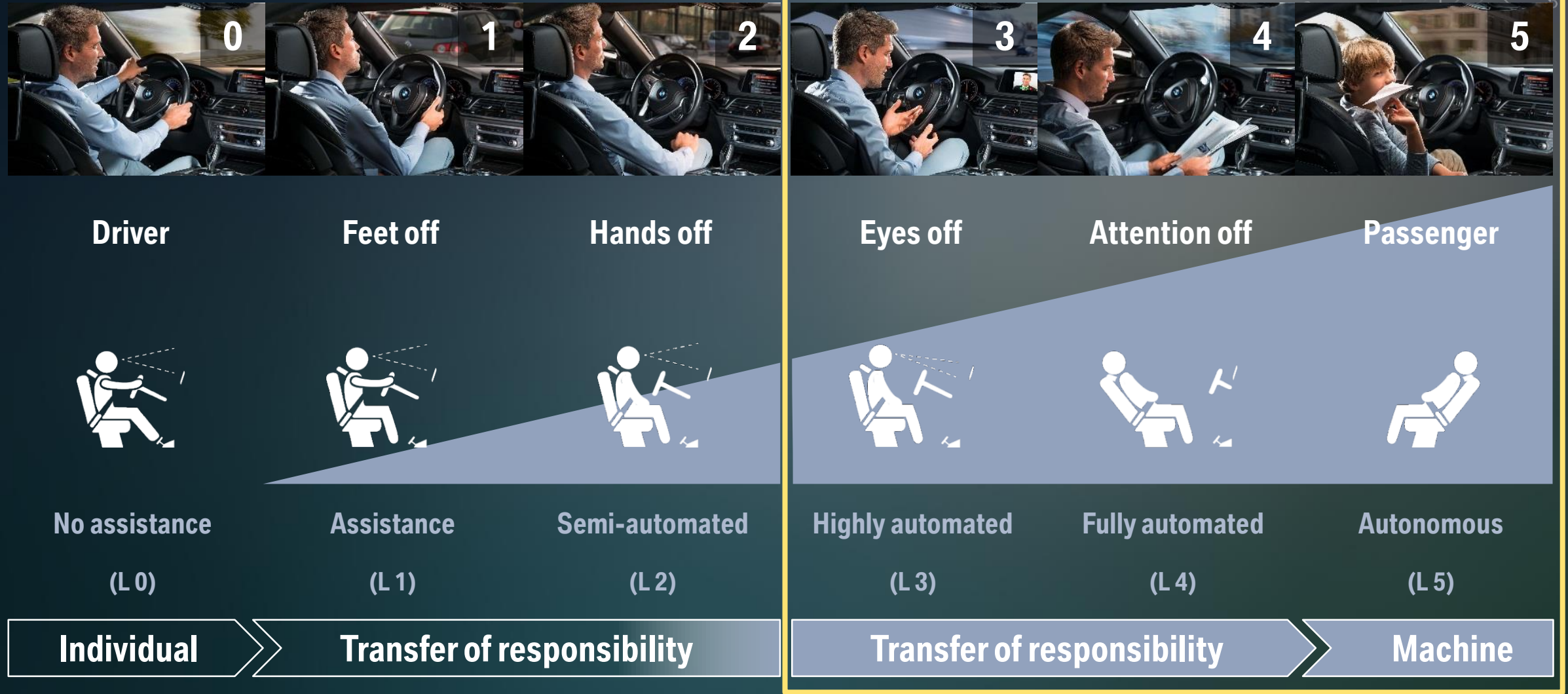
**Highly automated driving Munich to  
Geneva (2016).**



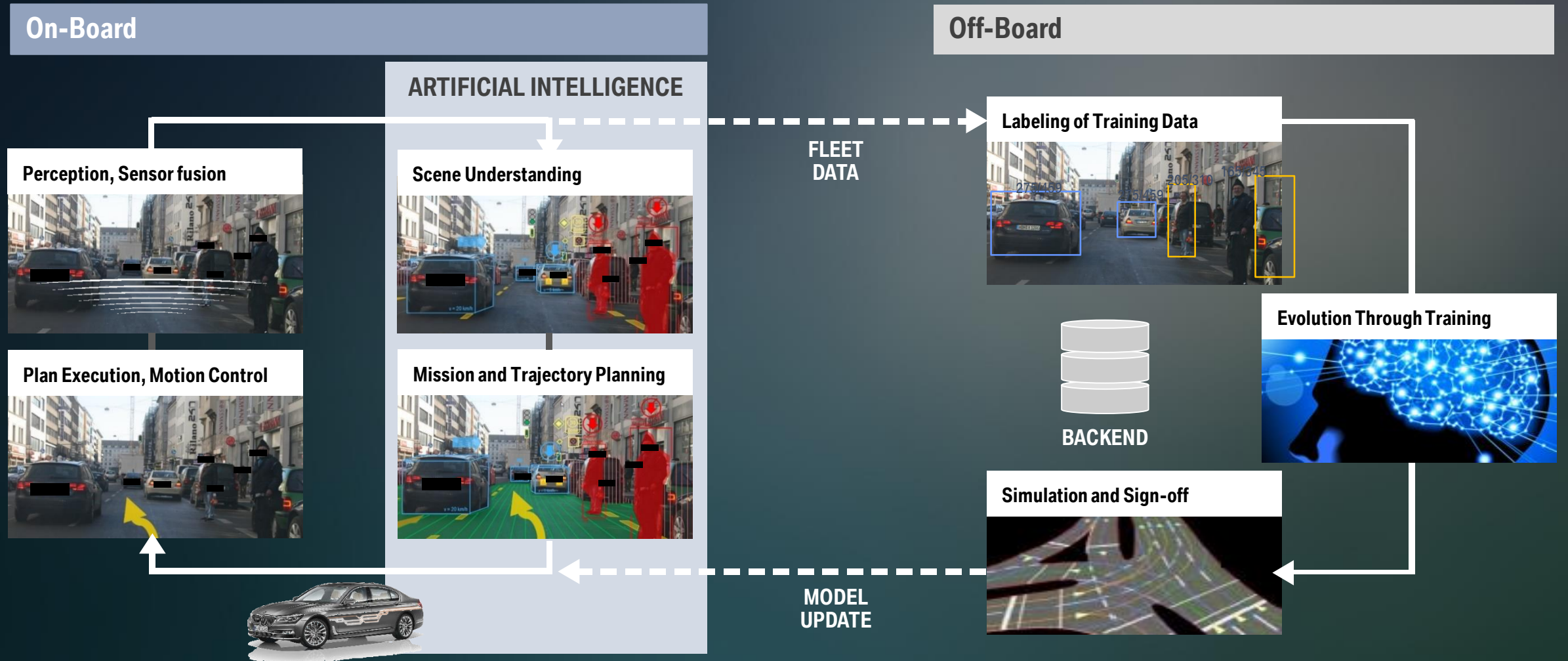
**Test fleet up and running (2017).**



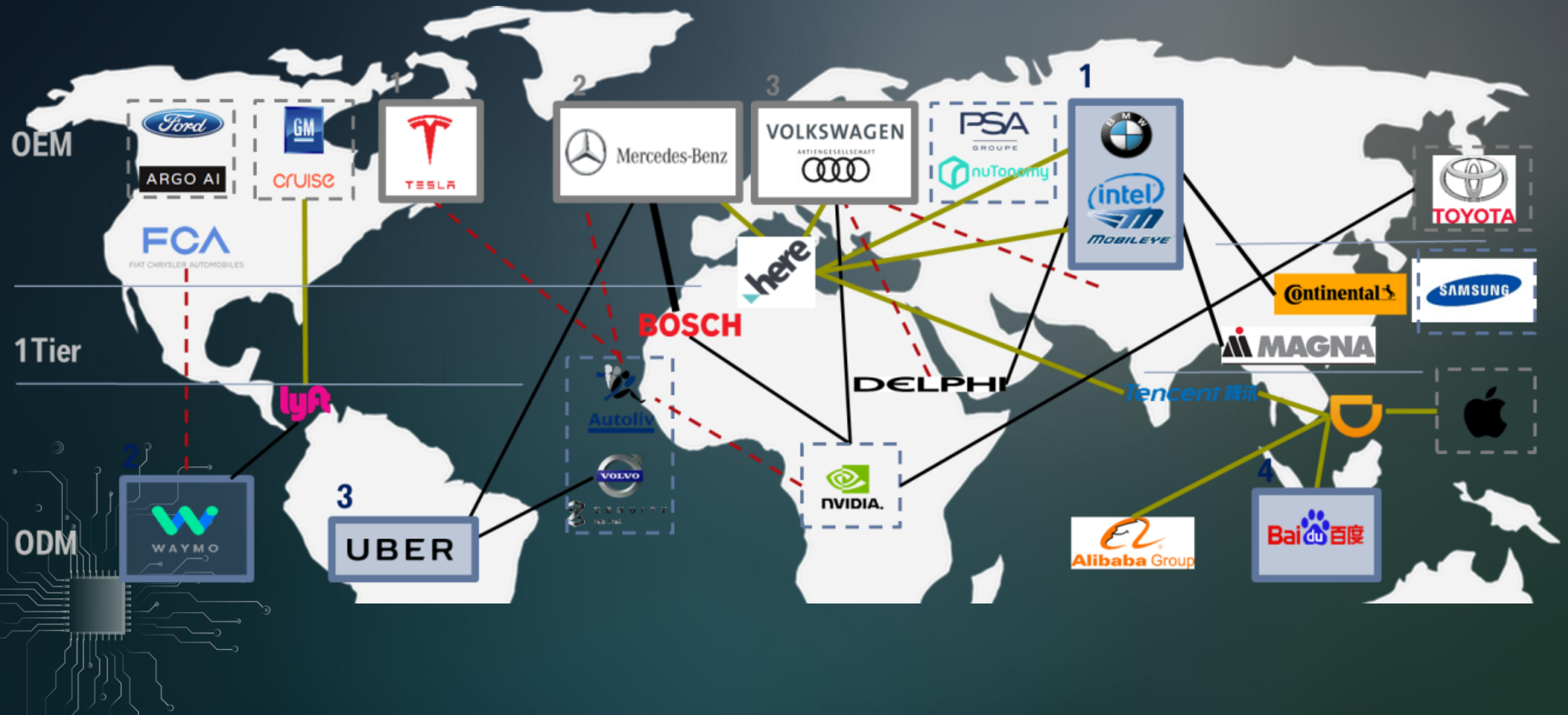
# HIGH COMPLEXITY OF AUTONOMOUS DRIVING.



# SENSOR FUSION, ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING MAKE TARGET-ORIENTED ENVIRONMENT MODELS POSSIBLE.



# TECHNOLOGY DEVELOPMENT OF AUTONOMOUS DRIVING: VARIOUS PLAYERS CONSOLIDATE INTO 14 TECH STACKS AND FORM NETWORKS.



# NEW SOLUTIONS FOR INTERIORS THROUGH DIGITALIZATION AND AUTONOMOUS DRIVING.

- Living environment seamless integrated
- Operation intelligent, personalized and intuitive
- Retreat with new ways of communication
- Room for new usecases



**THANK YOU FOR YOUR ATTENTION.**

