

Dirk Wisselmann, Senior Engineer Driver Assistance.
08.09.2016

BEYOND ADAS – HIGHLY AND FULLY AUTOMATED DRIVING. BARCLAYS SELECT SERIES DISRUPTIVE MOBILITY. LONDON, 2016.

**BMW
GROUP**



Rolls-Royce
Motor Cars Limited

FIRST IDEAS BEING IMPLEMENTED 10 YEARS AGO.

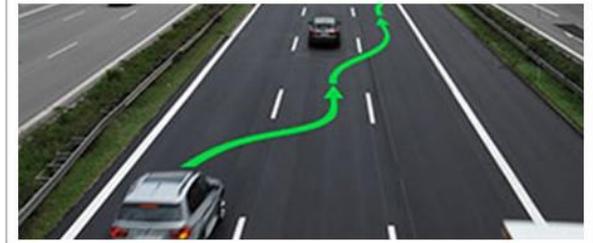
**BMW Track Trainer
(2006).**



**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).**



DRIVING EXPERIENCE REDEFINED. CUSTOMER BENEFIT AS THE FOCAL POINT.

Delegation

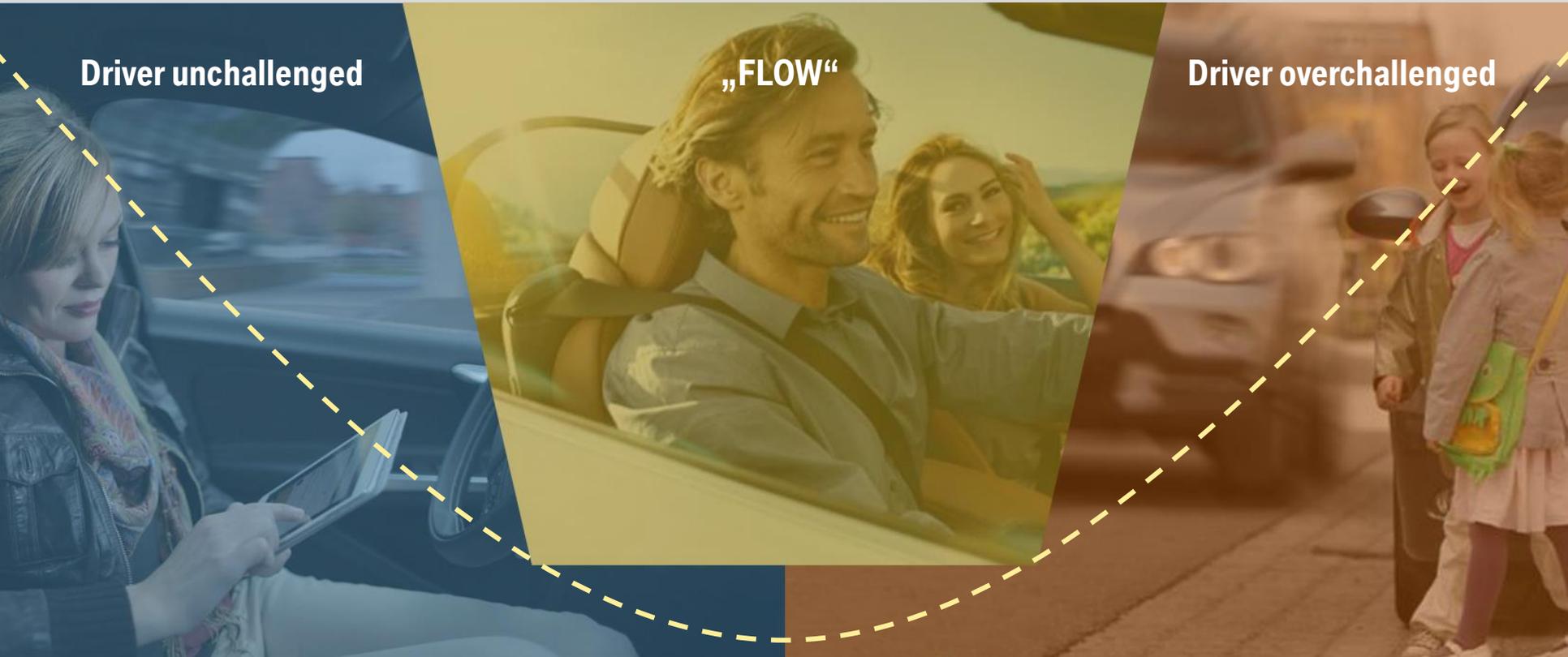
Ability

Safety

Driver unchallenged

„FLOW“

Driver overchallenged



--- Need for automation of driving tasks

THE NEW BMW 7 SERIES DRIVER ASSISTANCE PROVIDES COMFORT AND SAFETY AT THE HIGHEST LEVEL.

Crossing traffic warning rear / front

Distance information

Night Vision

Lane keeping assistant with active side collision protection

Active cruise control with Stop&Go function

Speed Limit Device

Rear collision prevention

Lateral parking aid

Steering and lane control assistant

Lane departure warning

Panorama View

Speed limit and No Pass information

3D View

Lane change warning

Top View

Speed Limit Assist

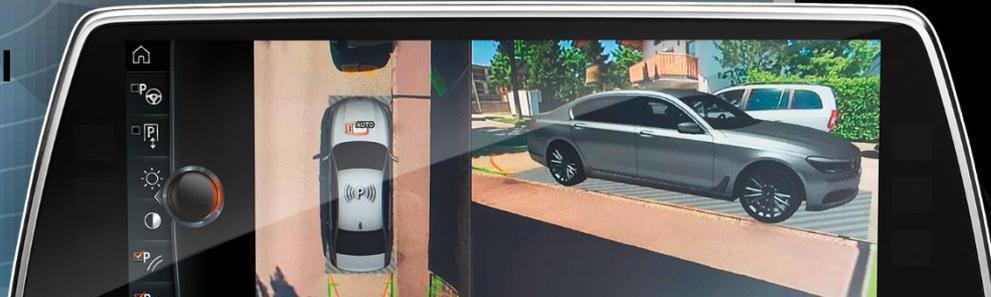
Parking assistant

Approach control warning with braking function

Active Park Distance Control

BMW Selective Beam

Remote Control Parking



ON THE WAY TOWARDS AUTOMATIC DRIVING. THE AUTOMOBILE WORLD CHANGES.

Automated Driving is a customer request.



Sheer driving pleasure will also mean to relieve the driver. **Time** spent in the vehicle can be **used productively**.

Automation- Change



New players are entering the market



Google and Uber run the „Driverless Car“ as Game Changer for **urban mobility** („Automated Ridesharing“).

Pull: Customer Benefits



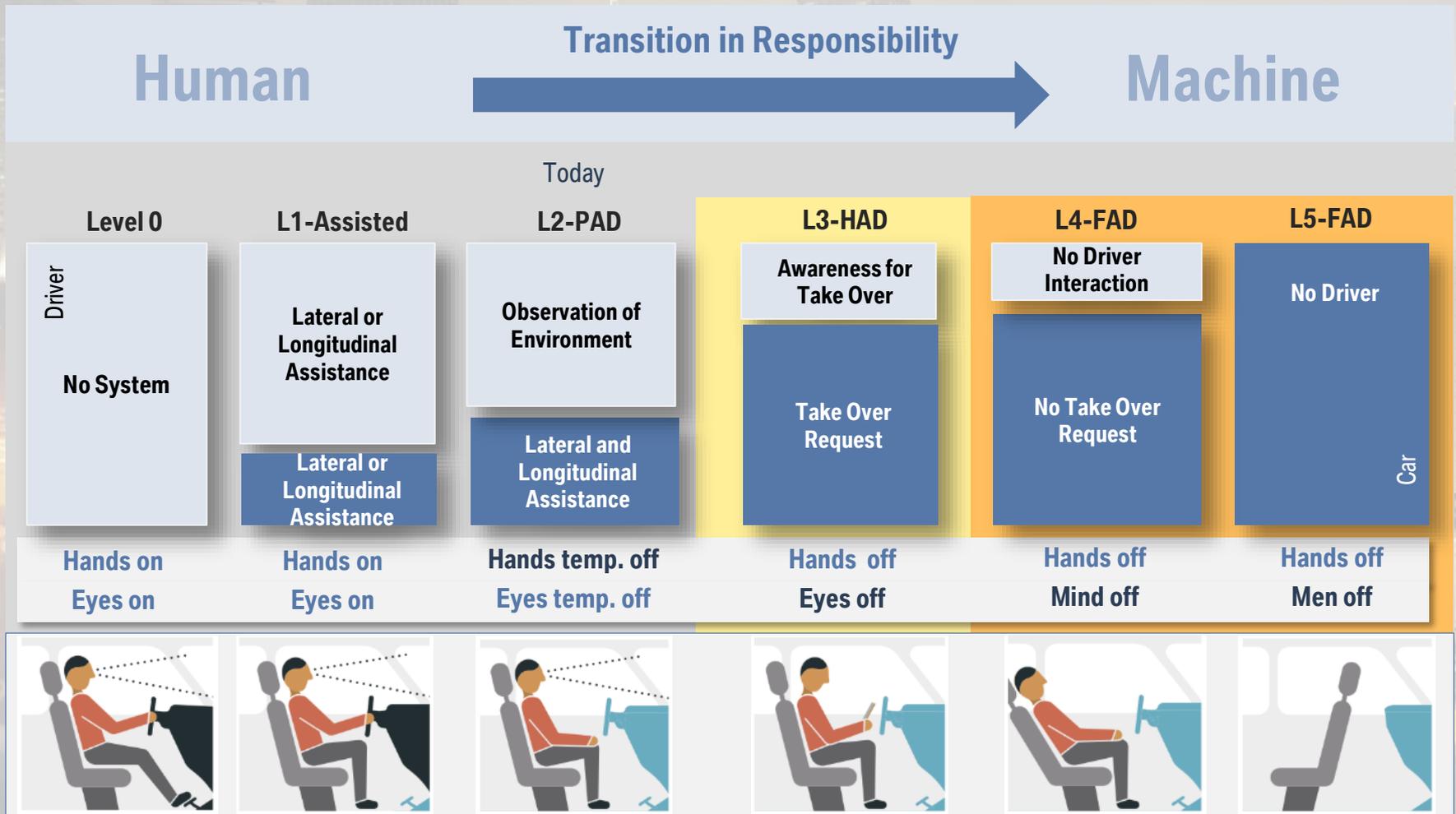
HAD is the chance, to make the next big step towards **accident free driving**.

Push: New Players

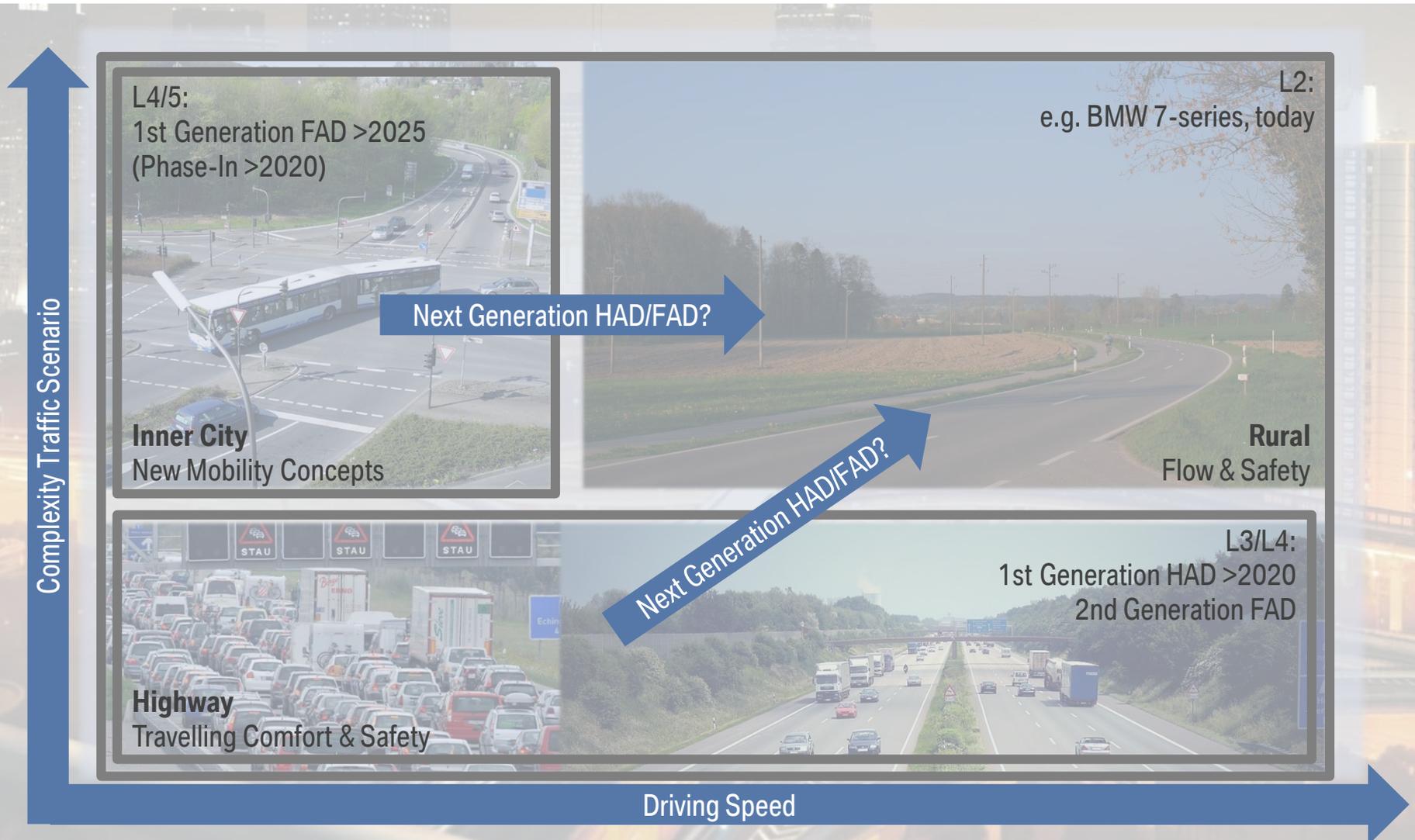


Actors from other markets with deep knowledge in **robotics** and **artificial intelligence**.

LEVEL OF AUTOMATION.



“PLAYGROUND“ AUTOMATION: ROLLOUT LIMITED BY SCENARIO COMPLEXITY AND DRIVING SPEED.

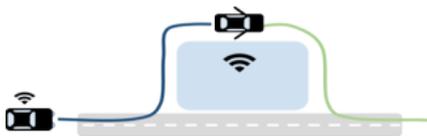


HIGHLY AUTOMATED DRIVING (L3-HAD): HIGHWAY PILOT. TAKE OVER SCENARIO.



AUTONOMOUS DRIVING (L4/5-FAD): NEW MOBILITY SERVICES.

Step 1



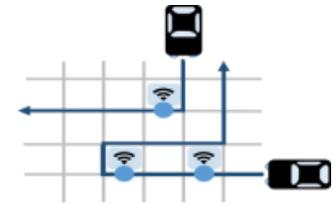
Autonomous Driving
to /from customer

Step 2



Autonomous Relocation
during Night

Step 3



Fully Automated
Driving/Ridesharing

ARCHITECTURE FOR AUTOMATED DRIVING. END-TO-END WITH ALL KEY-TECHNOLOGIES.



CROSS-INDUSTRY-COOPERATION. SHAPING THE FUTURE – BMW, INTEL AND MOBILEYE.



- Three industry leaders
- AD technology to series production
- Target: iNEXT 2021
- Open platform as an industry standard
- Sensors and supercomputer with a real-time environmental model
- New mobility services / ride sharing

HIGH-DEFINITION MAPS FOR FUTURE MOBILITY. ACQUISITION OF MAPPING AND LOCATION SERVICE 'HERE'.

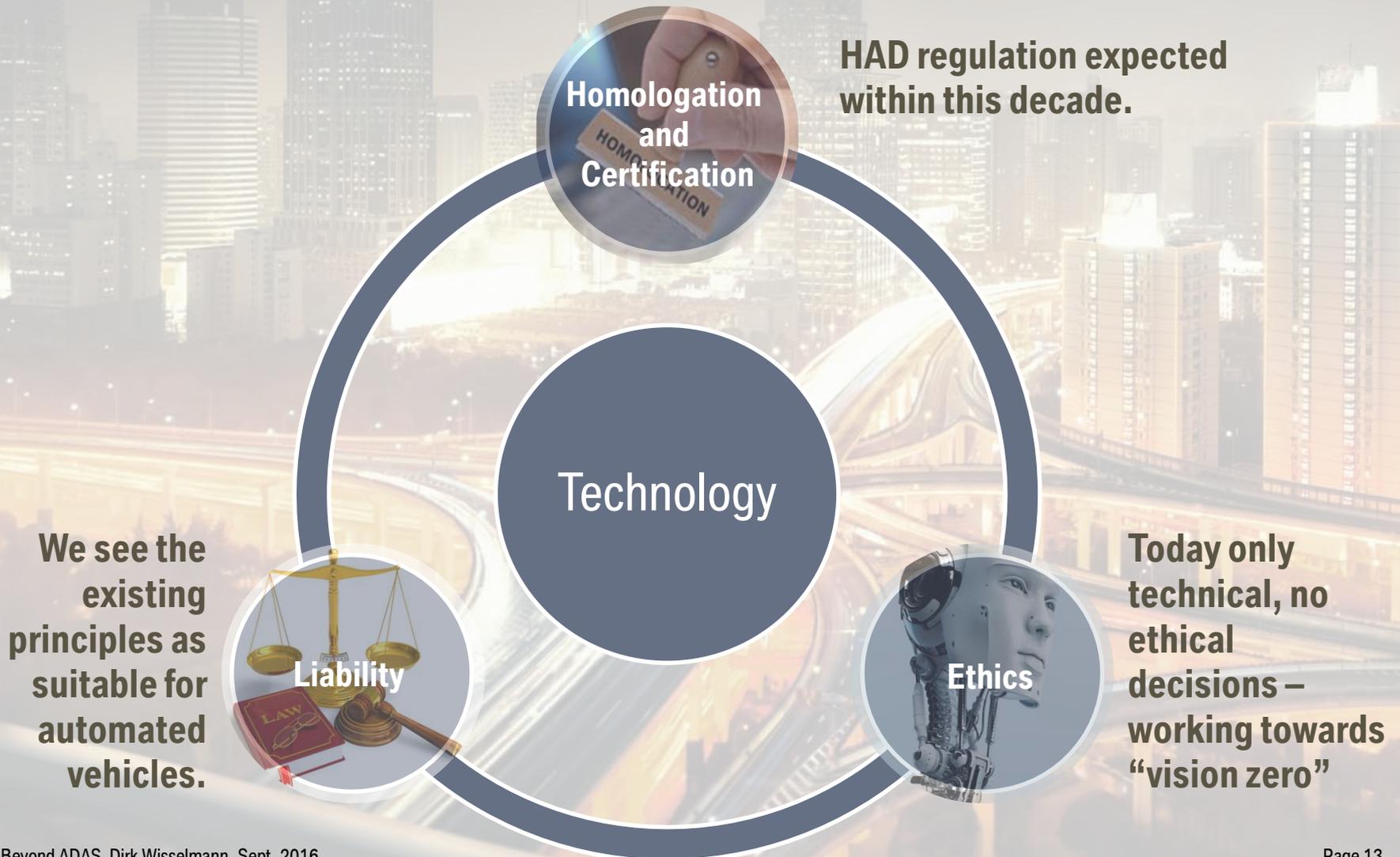


HERE provides high-definition **maps** and thus the basis for new driving assistance systems up to highly-automated driving.

The combination with **real-time vehicle data** optimizes traffic security and the offer of individual services.

HERE remains an open and independent **platform** for cloud-based maps and mobility services.

LEGAL ASPECTS....



**DRIVING LUXURY.
THE ALL NEW BMW 7-SERIES.**



THANK YOU FOR YOUR ATTENTION.