

BMW GROUP TECHNOLOGY WORKSHOPS

AUTOMATED DRIVING-DIGITALIZATION

MOBILITY SERVICES

**BMW
GROUP**



Rolls-Royce
Motor Cars Limited

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This document contains forward-looking statements that reflect BMW Group's current views about future events. The words "anticipate," "assume," "believe," "estimate," "expect," "intend," "may," "can," "could," "plan," "project," "should" and similar expressions are used to identify forward-looking statements.

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If any of these risks and uncertainties materializes or if the assumptions underlying any of BMW Group's forward-looking statements prove to be incorrect, actual results may be materially different from those BMW Group expresses or implies by such statements. BMW Group does not intend or assume any obligation to update these forward-looking statements.



AUTOMATED DRIVING

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AUTOMATED DRIVING. CHANGING FRAMEWORK LEADS TO NEW DEFINITION OF FUTURE MOBILITY.

MORE TIME

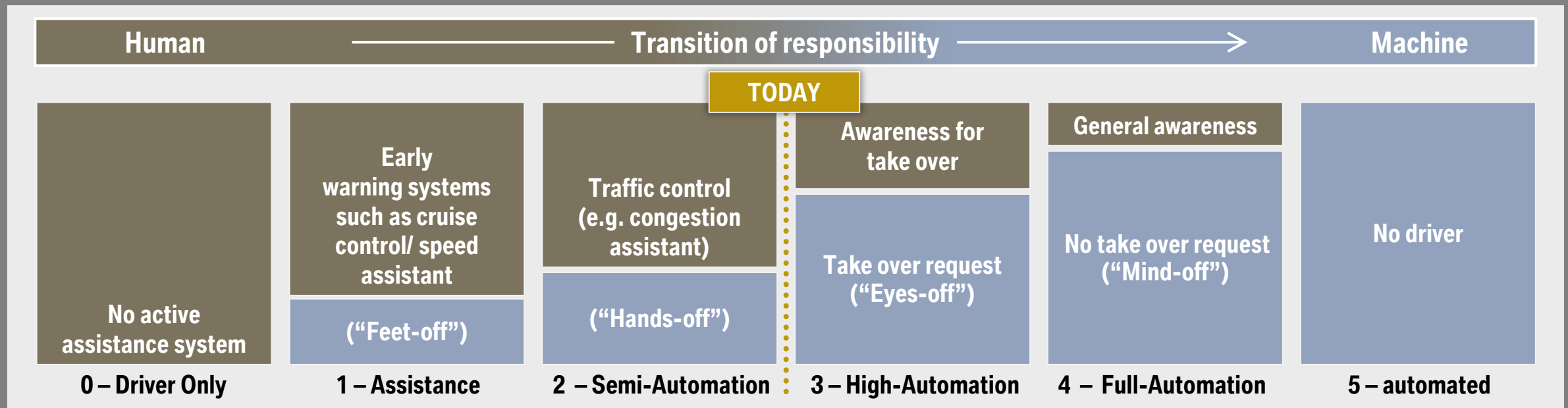
MORE SAFETY

MORE COMFORT

MORE FLEXIBILITY



DEVELOPMENT STAGES OF AUTOMATED DRIVING.



FIRST IDEAS BEING IMPLEMENTED TEN YEARS AGO.

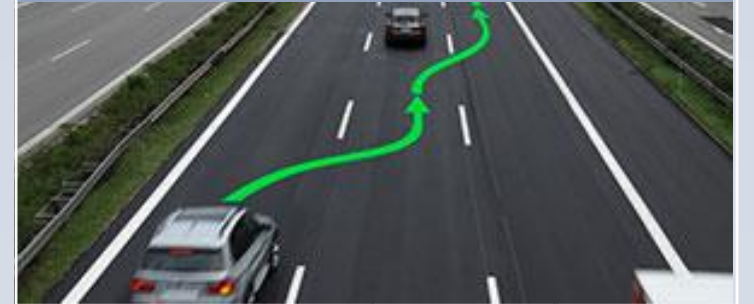
**BMW Track Trainer
(2006).**



**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).**



THE NEW BMW 5 SERIES DRIVER ASSISTANCE PROVIDES COMFORT AND SAFETY AT THE HIGHEST LEVEL.



Top View Remote
Lane keeping assistant with active side collision protection
Active cruise control with Stop&Go function
Rear collision prevention
Crossroad Assist
3D View
Top View
Parking assistant
Active Park Distance Control
BMW Selective Beam
Remote Control Parking

Crossing traffic warning rear / front
Night Vision
Lateral parking aid
Distance information
Lane departure warning

Steering and lane control assistant
Speed limit and No Pass information
Panorama View
Speed Limit Device

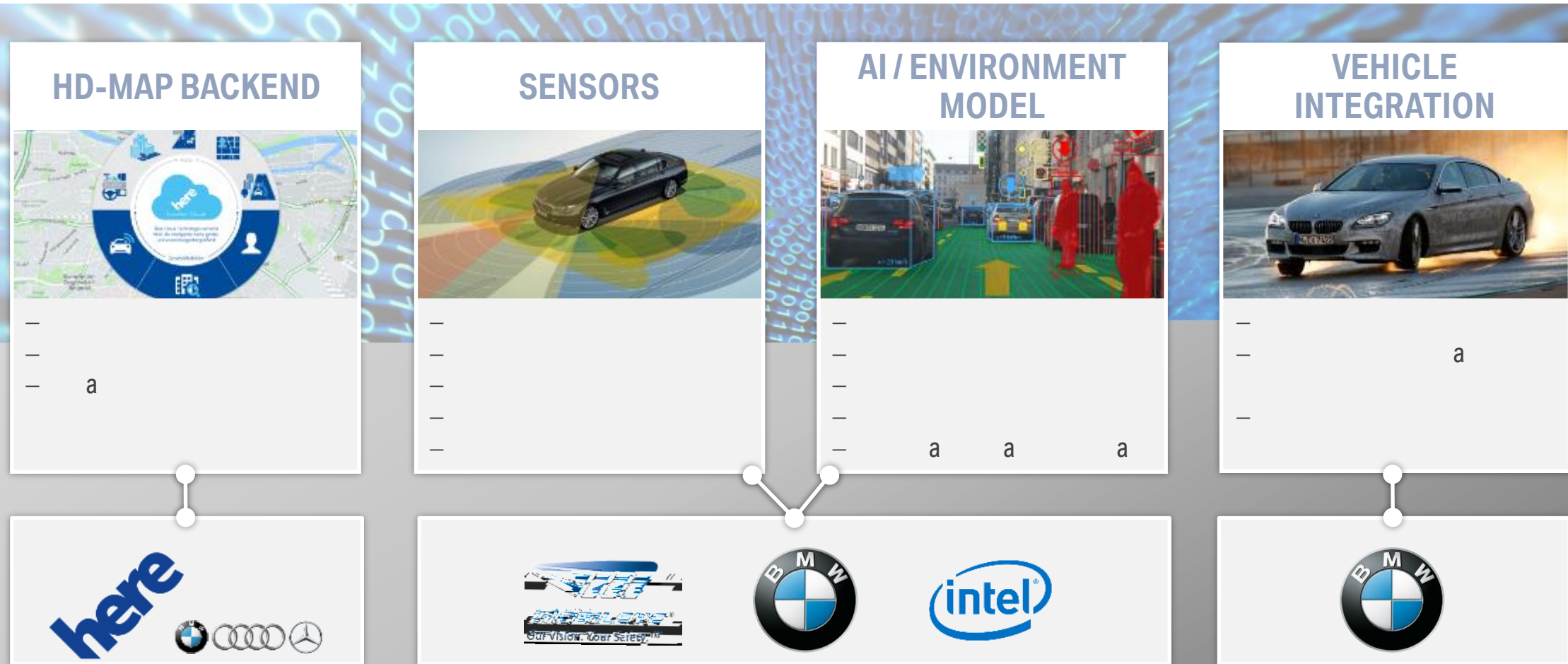
Wrong Way Assist
Lane change warning
Speed Limit Assist
Approach control warning with braking function



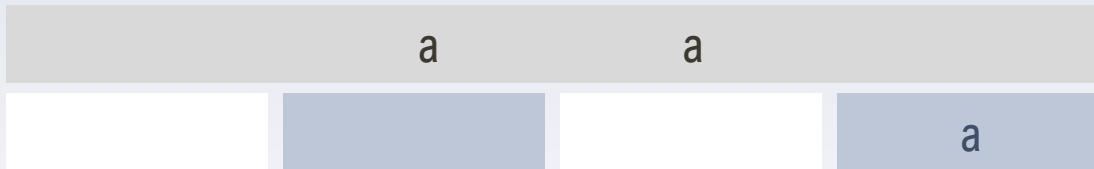
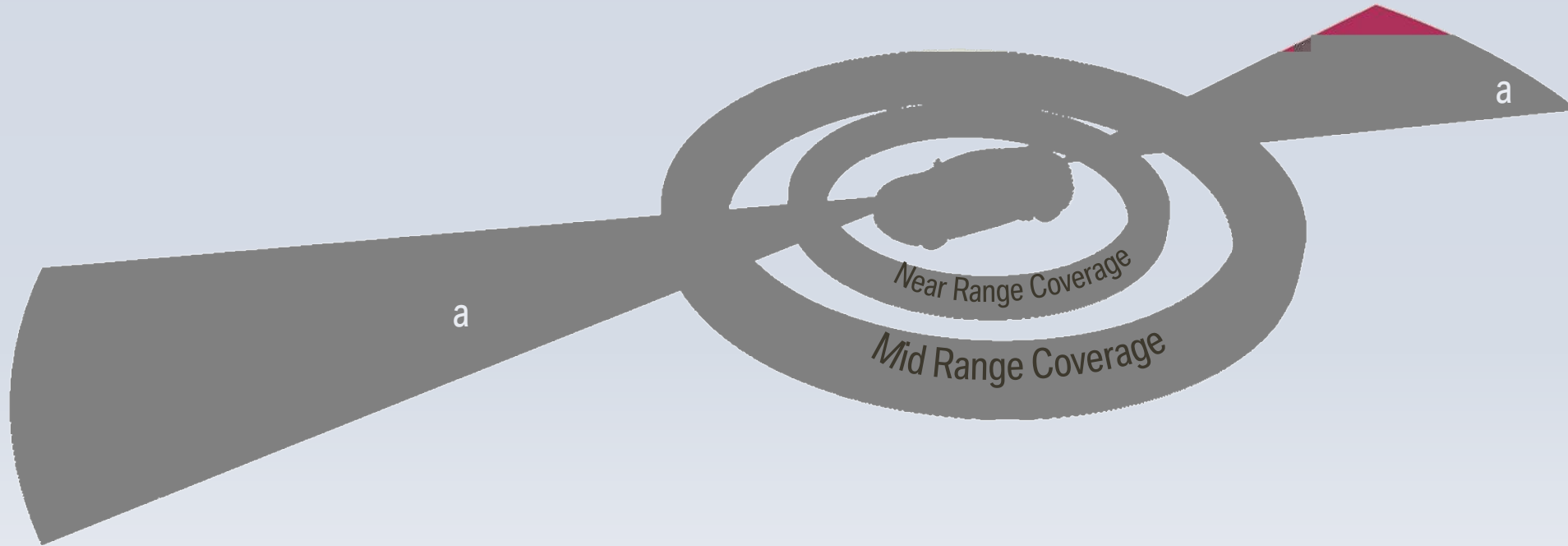
ARCHITECTURE FOR AUTOMATED DRIVING. END-TO-END WITH ALL KEY-TECHNOLOGIES.



HD-MAP, SENSORS, AI/ENVIRONMENT MODEL AND MOTION CONTROL PLAY A KEY ROLE IN THE ARCHITECTURE OF AUTOMATED DRIVING.



HAD SENSOR SETUP – FOCUS ON LARGE-DISTANCE AREA COVERAGE.

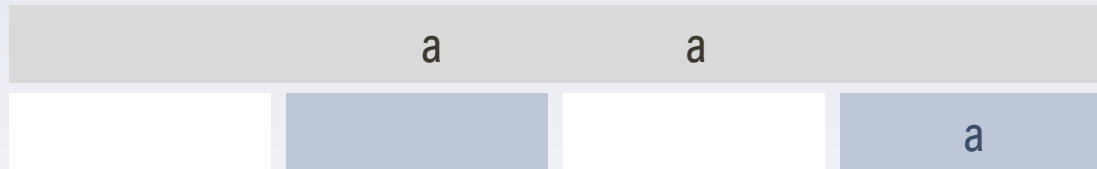
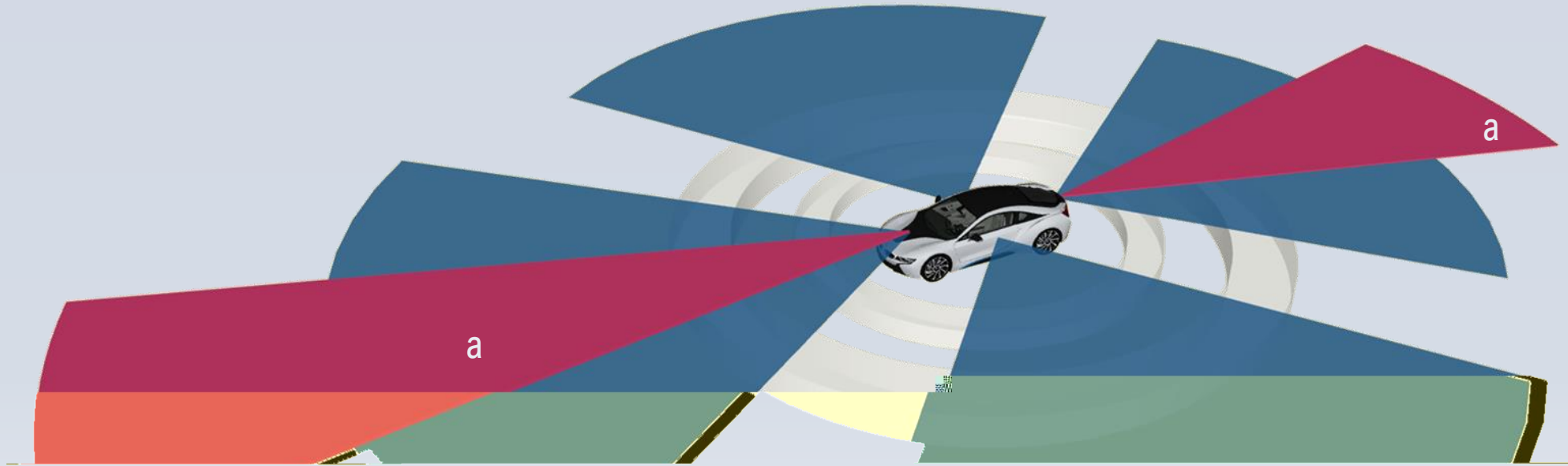


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FAD SENSOR SETUP – FOCUS ON 360° COVERAGE.



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HIGHLY ACCURATE MAPS AND BACKEND CONNECTIVITY – TWO CORNERSTONES FOR HIGHLY AUTOMATED DRIVING.



EN-ROUTE APPROVAL



VARIABLE TRAFFIC SIGNS



TRAFFIC CONDITIONS



ROAD WORKS



HIGH-PRECISION DIGITAL MAPS



WEATHER CONDITIONS



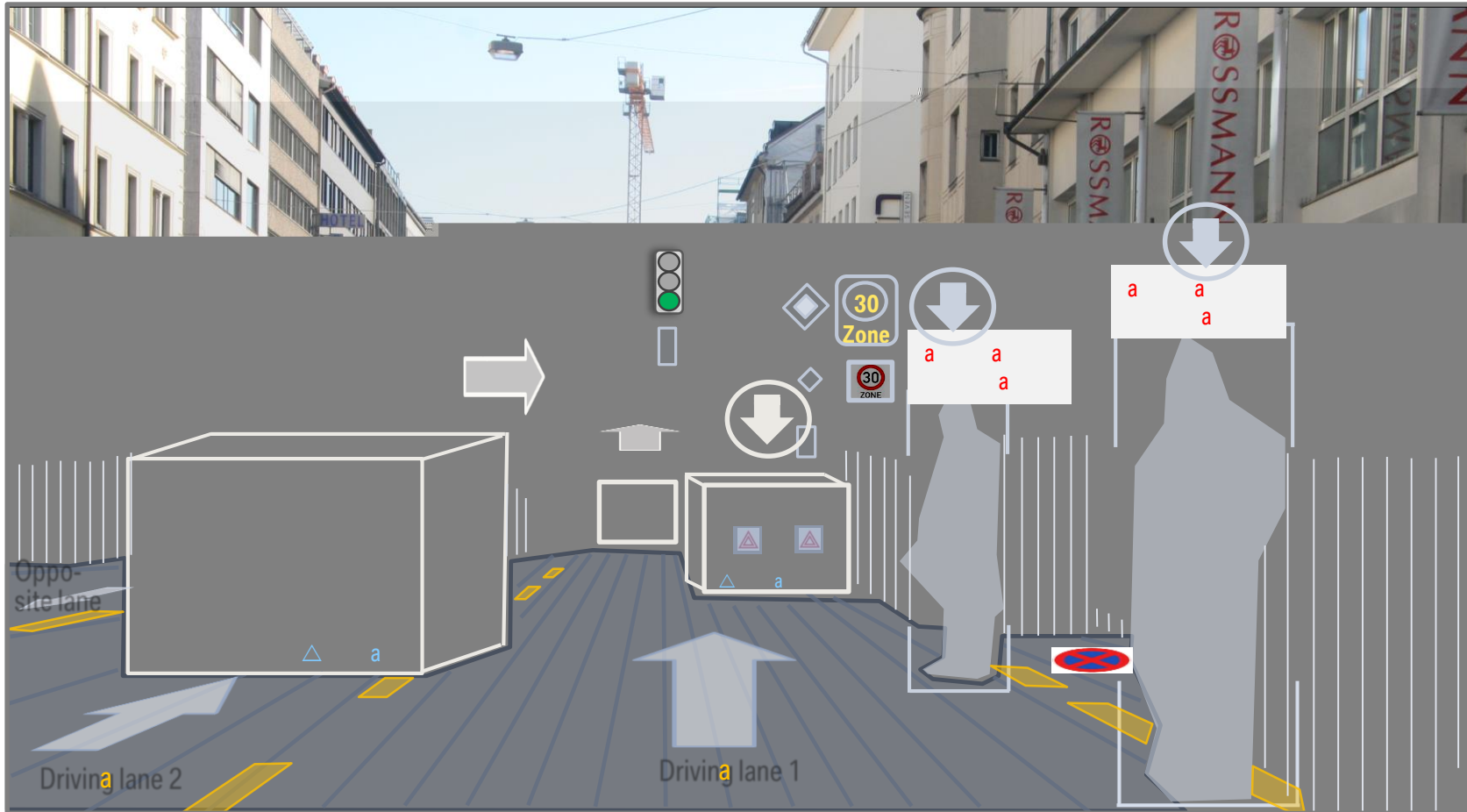
Foresight by Backend > 200 m

Far Range Sensors ~ 200 m

Short/ Mid- Range Sensors ~ 70 m

BESIDES THE MERE TECHNICAL SENSING OF THE ENVIRONMENT, THE CONTEXTUAL UNDERSTANDING IS CRITICAL FOR AUTOMATED DRIVING APPLICATIONS.

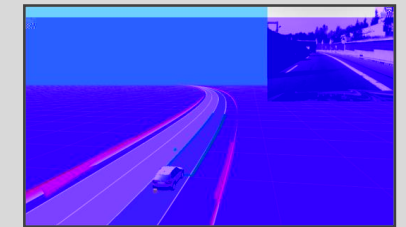
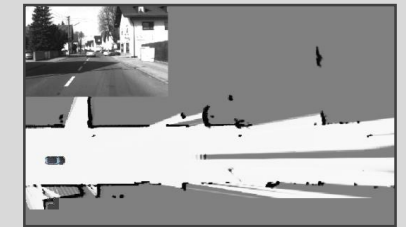
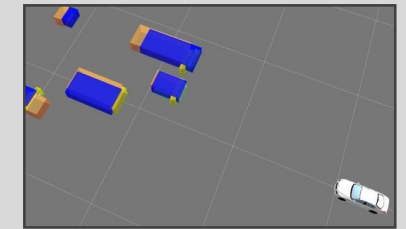
ENVIRONMENT MODEL + PREDICTIVE SITUATION UNDERSTANDING



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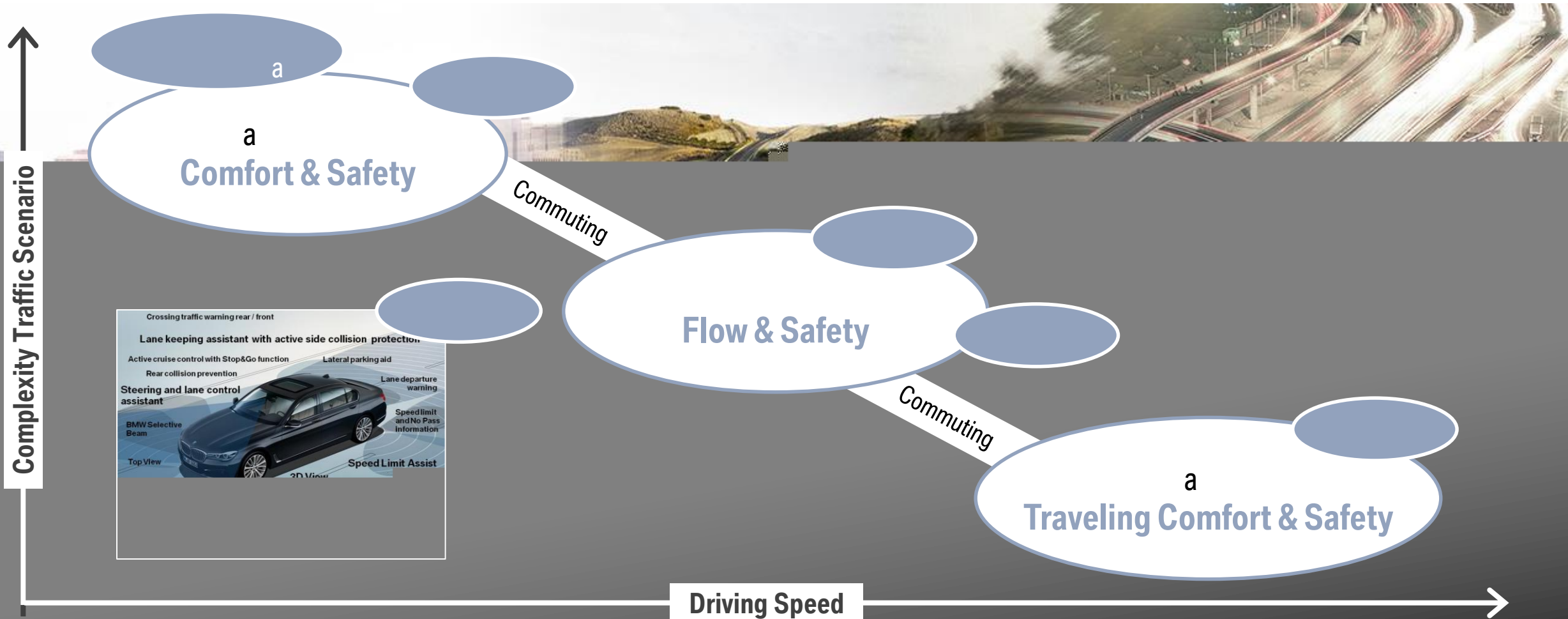
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360° REPRESENTATION

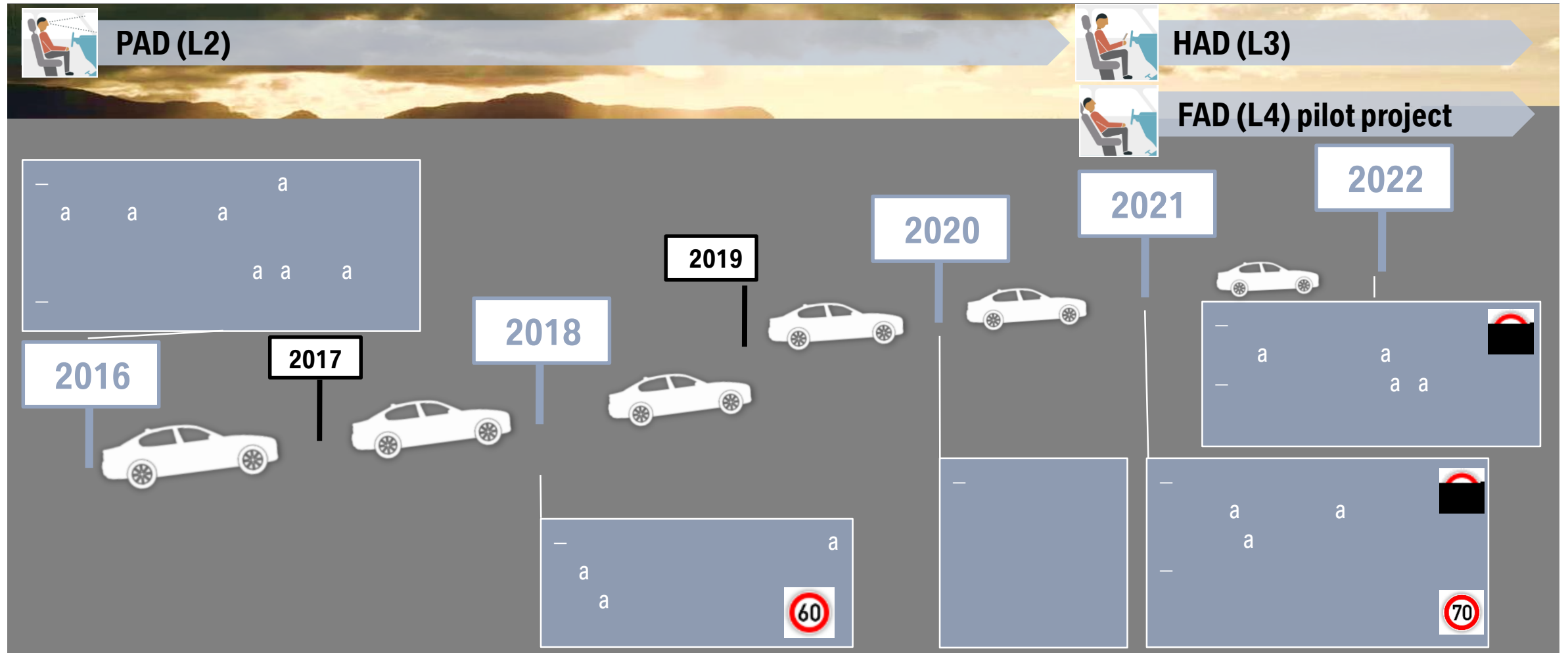


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„PLAYGROUND“ AUTOMATION. ROLL-OUT LIMITED BY SCENARIO COMPLEXITY AND DRIVING SPEED.



ON THE WAY TO AUTOMATED DRIVING.



DIGITALIZATION AT BMW GROUP.

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THE NEXT
100 YEARS 



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STRATEGY NUMBER ONE > NEXT CONTAINS DIGITALIZATION AS A STRATEGIC DIRECTION.

” We leverage innovative technologies, digitalization and sustainability to deliver unique customer experiences.

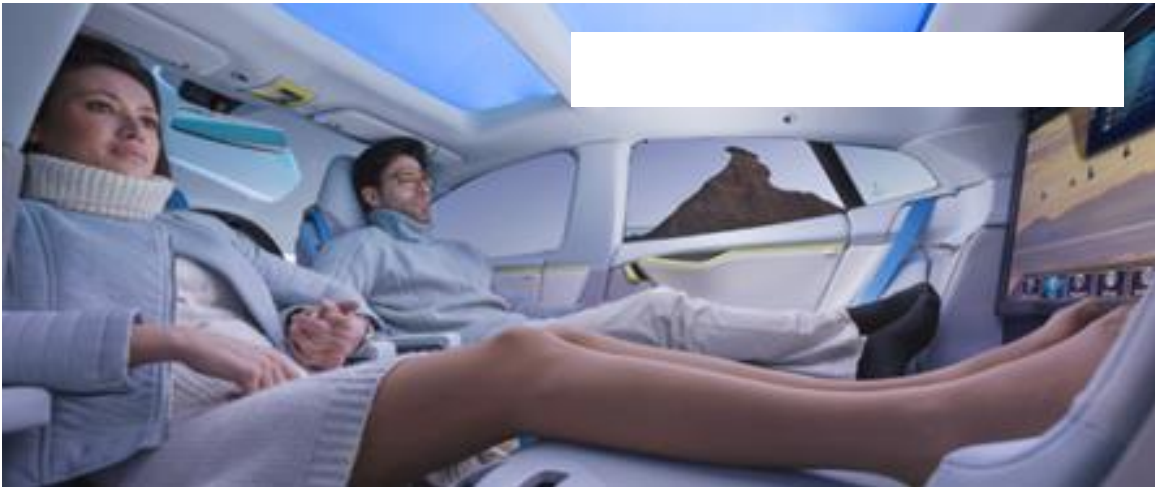
We embrace the opportunities that the transformation of our industry offers. We are committed to expanding our technological competence in the years to come, to enhancing the interaction of individuals, vehicles and services and to driving progress in sustainable mobility. This will secure our success and set new standards amongst our competitors.

“

Strategy NUMBER ONE > NEXT



AUTOMATED DRIVING ENABLES NEW (DIGITAL) BUSINESS OPPORTUNITIES.



MOBILITY SERVICES – THE URBAN REVOLUTION.



ChargeNow



ReachNow



DriveNow



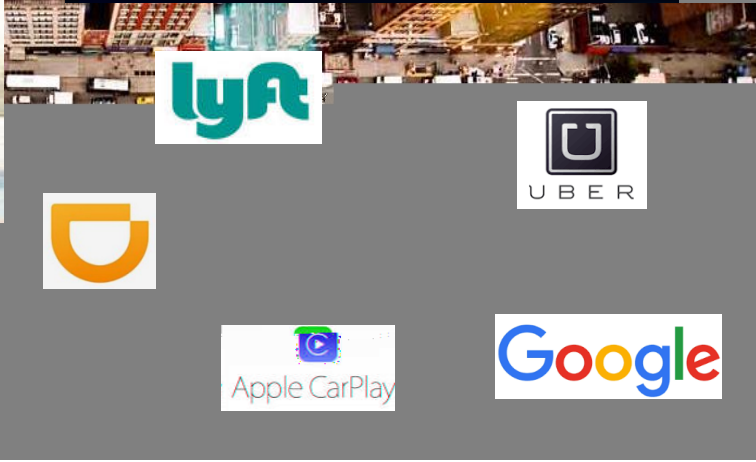
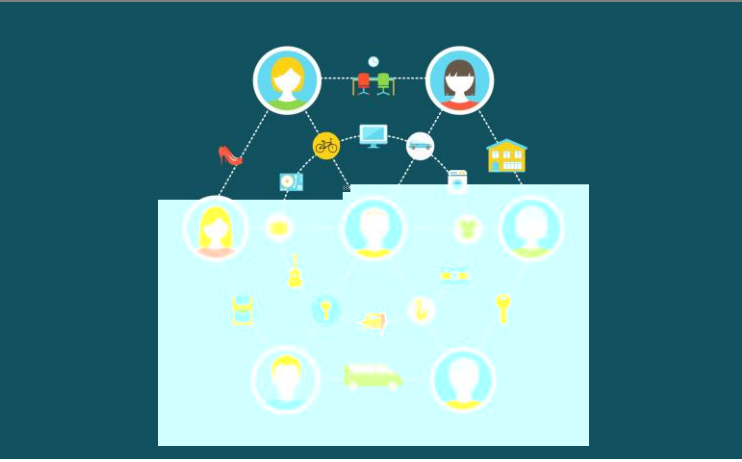
ParkNow

**BMW
GROUP**

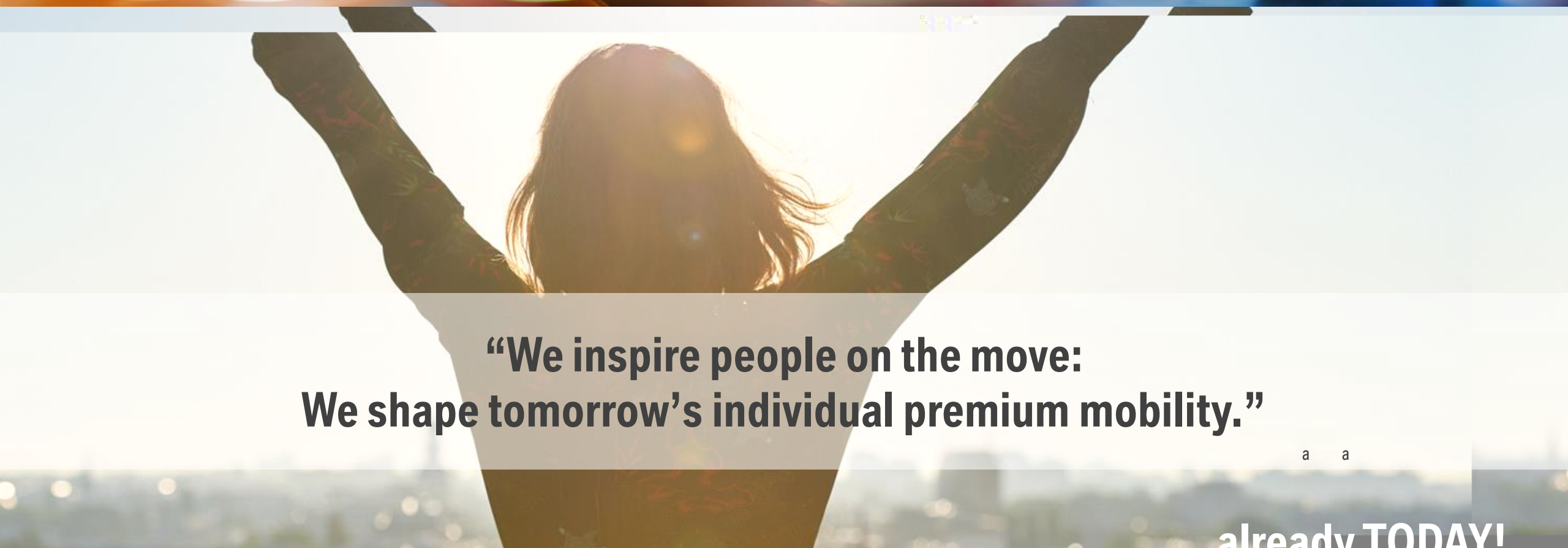


Rolls-Royce
Motor Cars Limited

MAJOR TRENDS AND NEW TECHNOLOGICAL POSSIBILITIES ARE CHANGING THE RULES OF THE GAME.



BMW GROUP'S CORPORATE STRATEGY NUMBER ONE NEXT IS THE ANSWER TO THE CHALLENGES OF SUSTAINABLE MOBILITY AND CHANGING MARKET CONDITIONS.



**“We inspire people on the move:
We shape tomorrow’s individual premium mobility.”**

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...already TODAY!

DRIVE NOW. PREMIUM, FREE FLOATING CAR SHARING SERVICE FROM BMW GROUP & SIXT.

youngest & most modern

750,000
11

5,000+



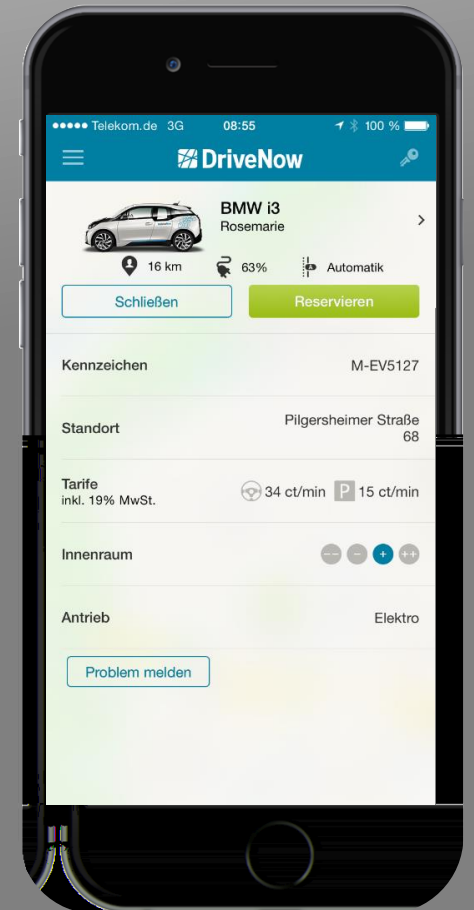
DRIVE NOW OPENS THE WAY FOR E-MOBILITY AND THE BMW i3.

200,000+

6 Mio.+

20%

electric



REACH NOW. ON DEMAND MOBILITY SERVICES IN THE US.

Seattle

1.000.000+

Portland
Brooklyn

32,000+

32.000+

a additional
features



ON DEMAND MOBILITY ON A NEW LEVEL. REACH NOW TO INTRODUCE UNIQUE FEATURES FOR THE CUSTOMERS.

New features, as piloted in US from end 2016:



Ride:

Reserve:

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Fleet Solutions:

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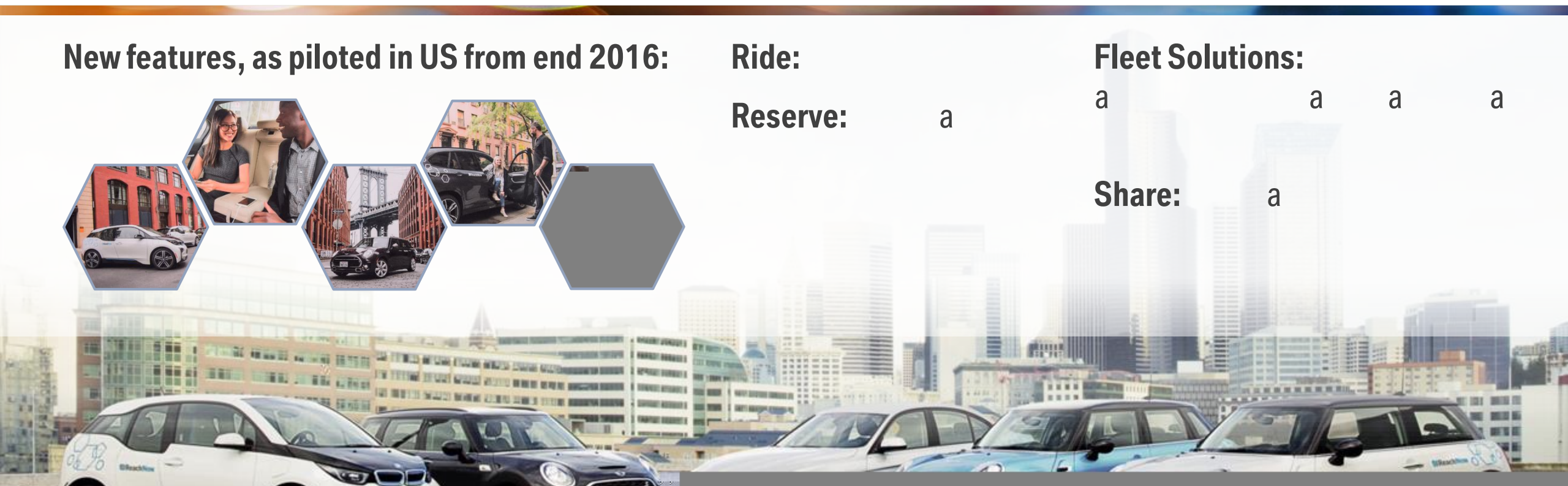
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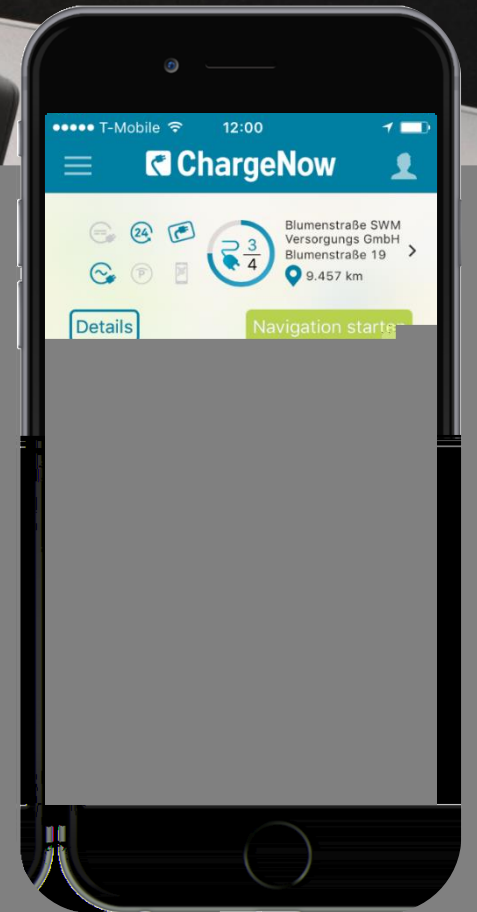
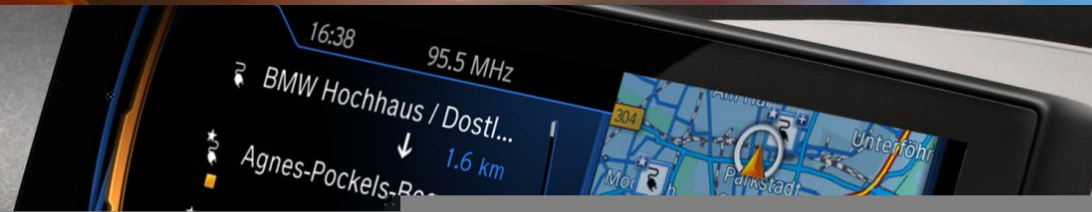
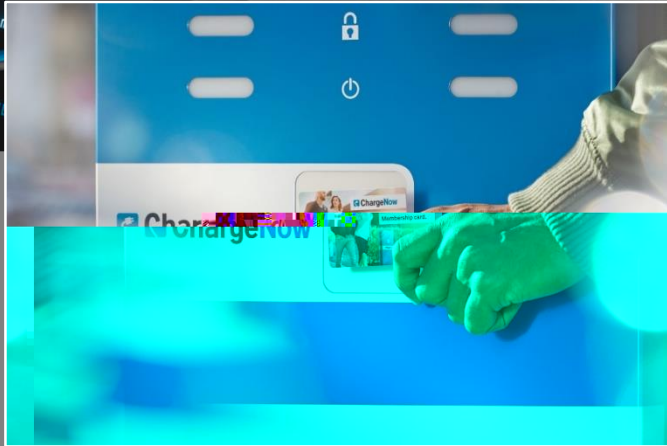
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Share:

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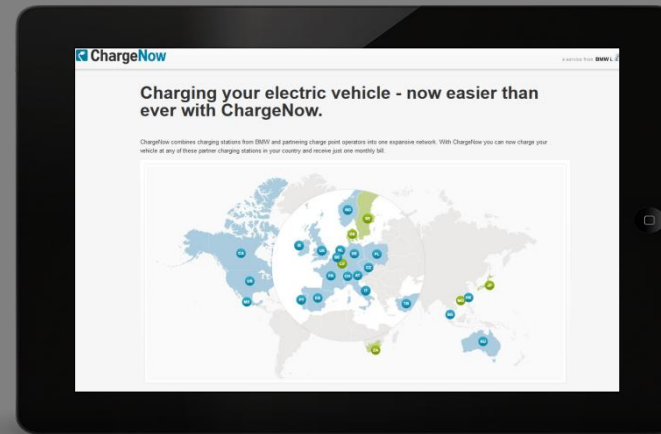


CHARGE NOW. THE SERVICE THAT MAKES CHARGING CONVENIENT AND EASY.



65,000+ a a

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**PARK NOW.
OFFERING PREMIUM ON- AND OFF-STREET PARKING SERVICES.**

On- and off-street

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efficient



**Launch
in 2016**



car integration

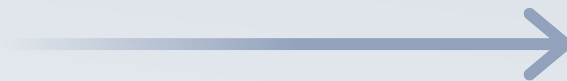
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BMW 5 Series

CENTER OF COMPETENCE URBAN MOBILITY: IMPLEMENTING SUSTAINABLE URBAN MOBILITY – TOGETHER WITH ALL STAKEHOLDERS.



Before...



...After



DIGITALIZATION AT BMW GROUP.

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MAXIMS FOR THE BMW GROUP IN THE CONTEXT OF DIGITALIZATION.

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BMW WILL DRIVE DIGITALIZATION FORWARD ACROSS THE COMPANY.

We will lead the digital transformation of the automotive industry



**Connected /
Autonomous Vehicle &
Mobility Services**



**Digital Customer
Experiences**



**Business
Processes**

