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Engineering

The art of the possible

The art of the possible 2030

- The 'team' – who's in charge?
- Convergence
- ADAS > autonomy
- Power systems
- Real time risk pricing
- Towards 2050.....

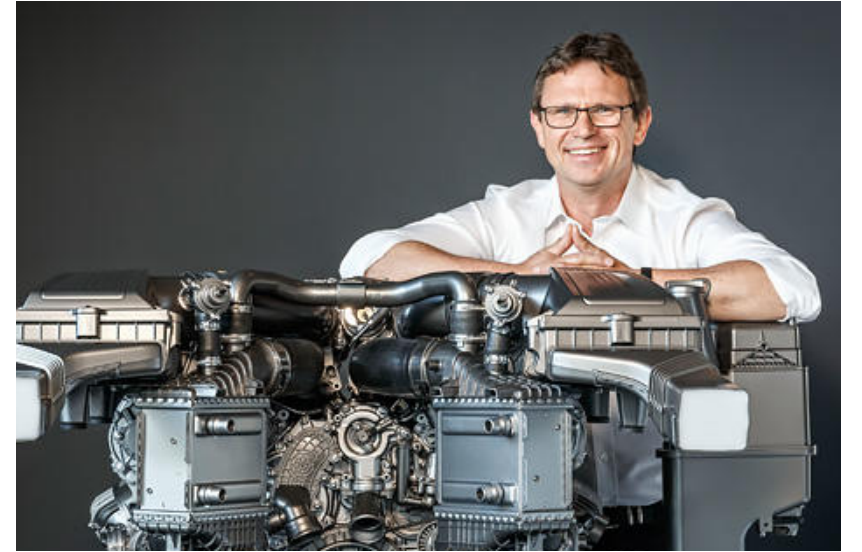
By Andrew Marsh FIMI,
Engineering Director, Auto Industry Consulting Ltd





Industrial design

Powertrain





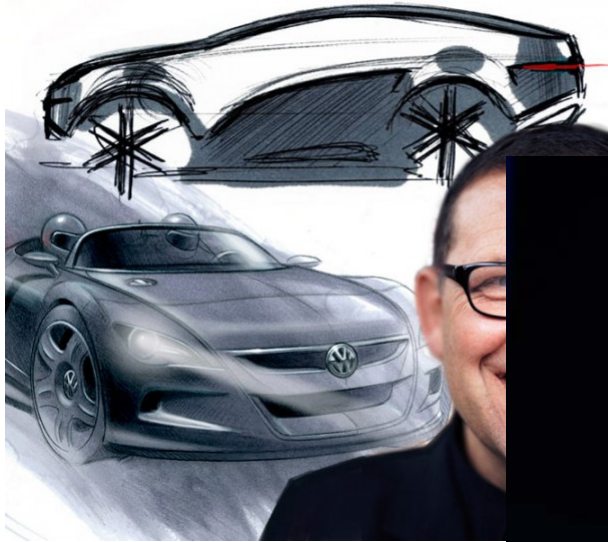
Safety

Chassis dynamics

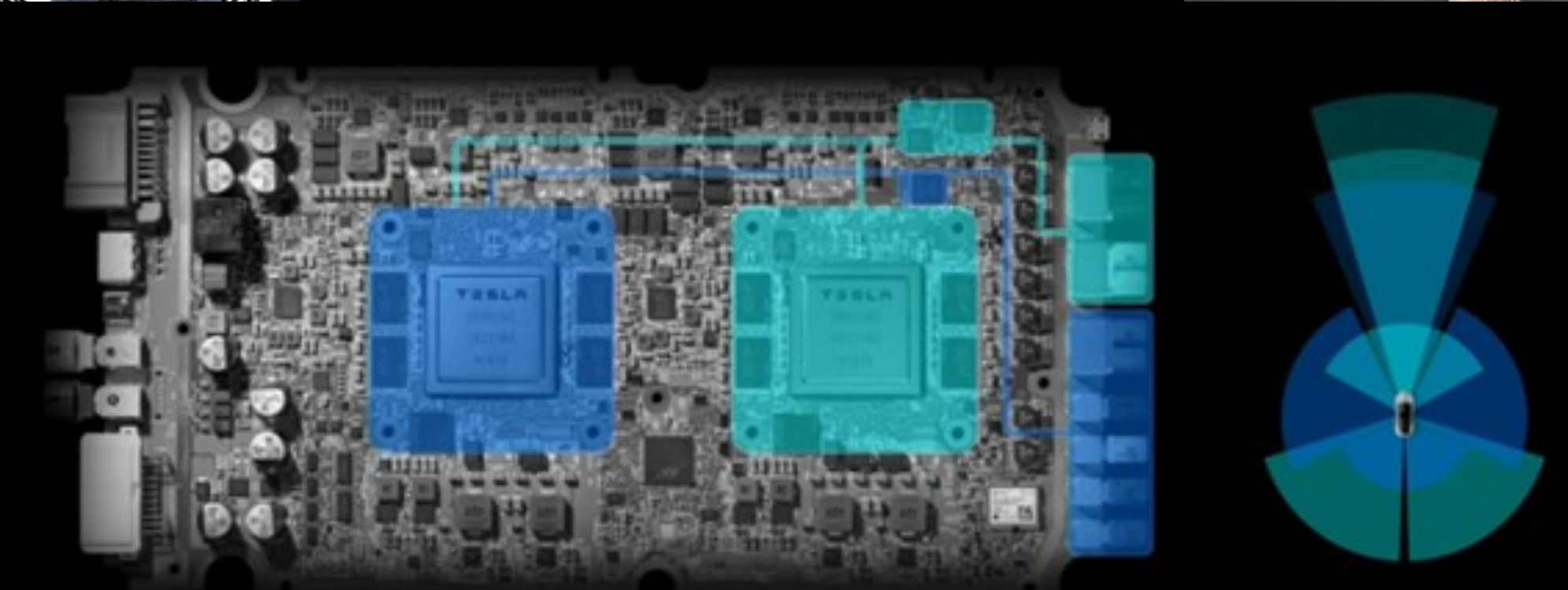


The team

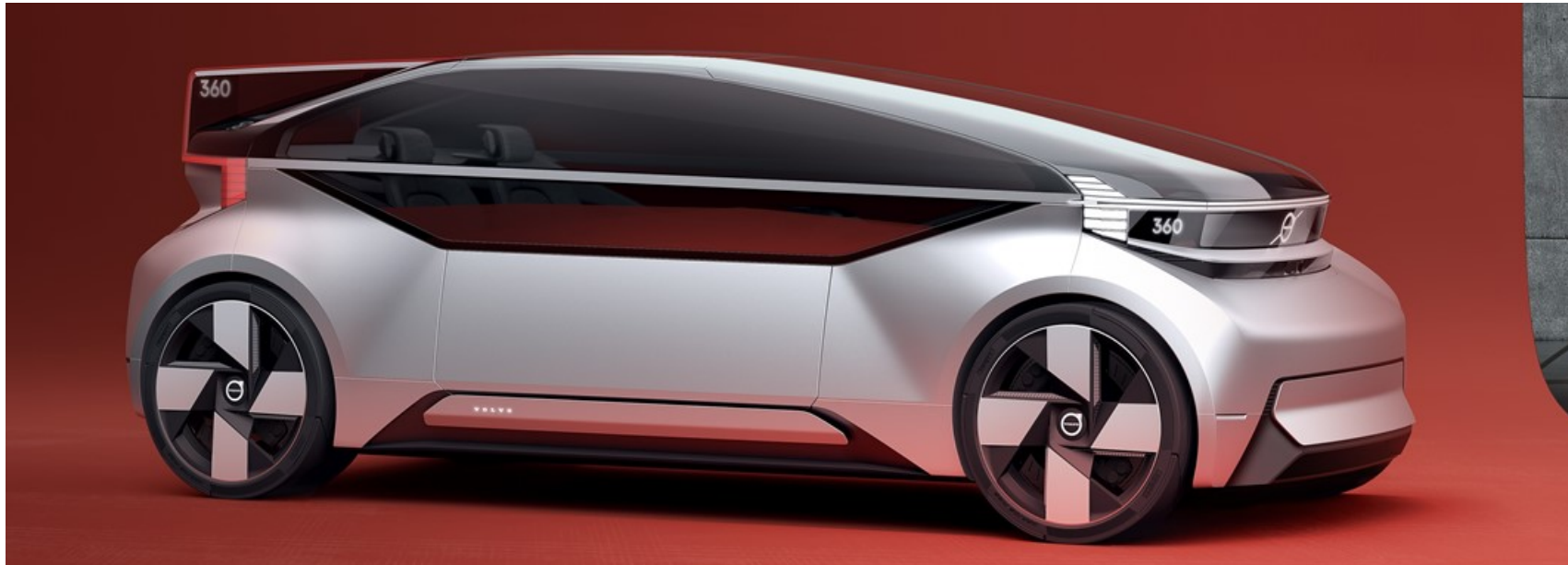
CEO



The real boss



	Models		Body shapes			
	2018	>	2030	2018	>	2030
Audi	17		11	22		15
BMW	17		10	27		15
Mercedes-Benz	19		15	31		16



2018 > 2030

Audi

2 (+1)

2

BMW

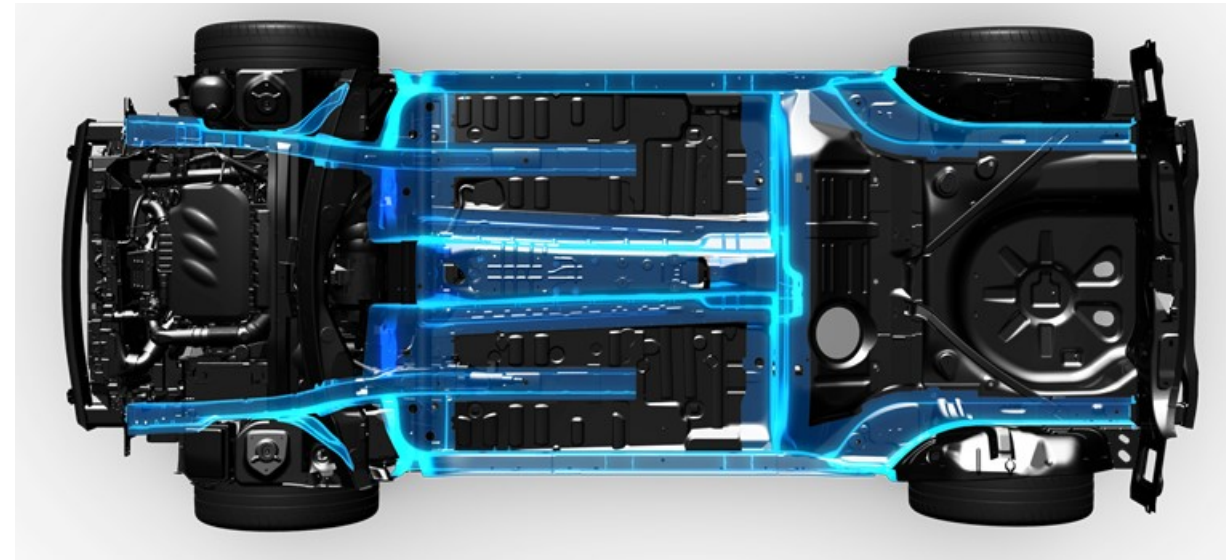
2 (+3)

2

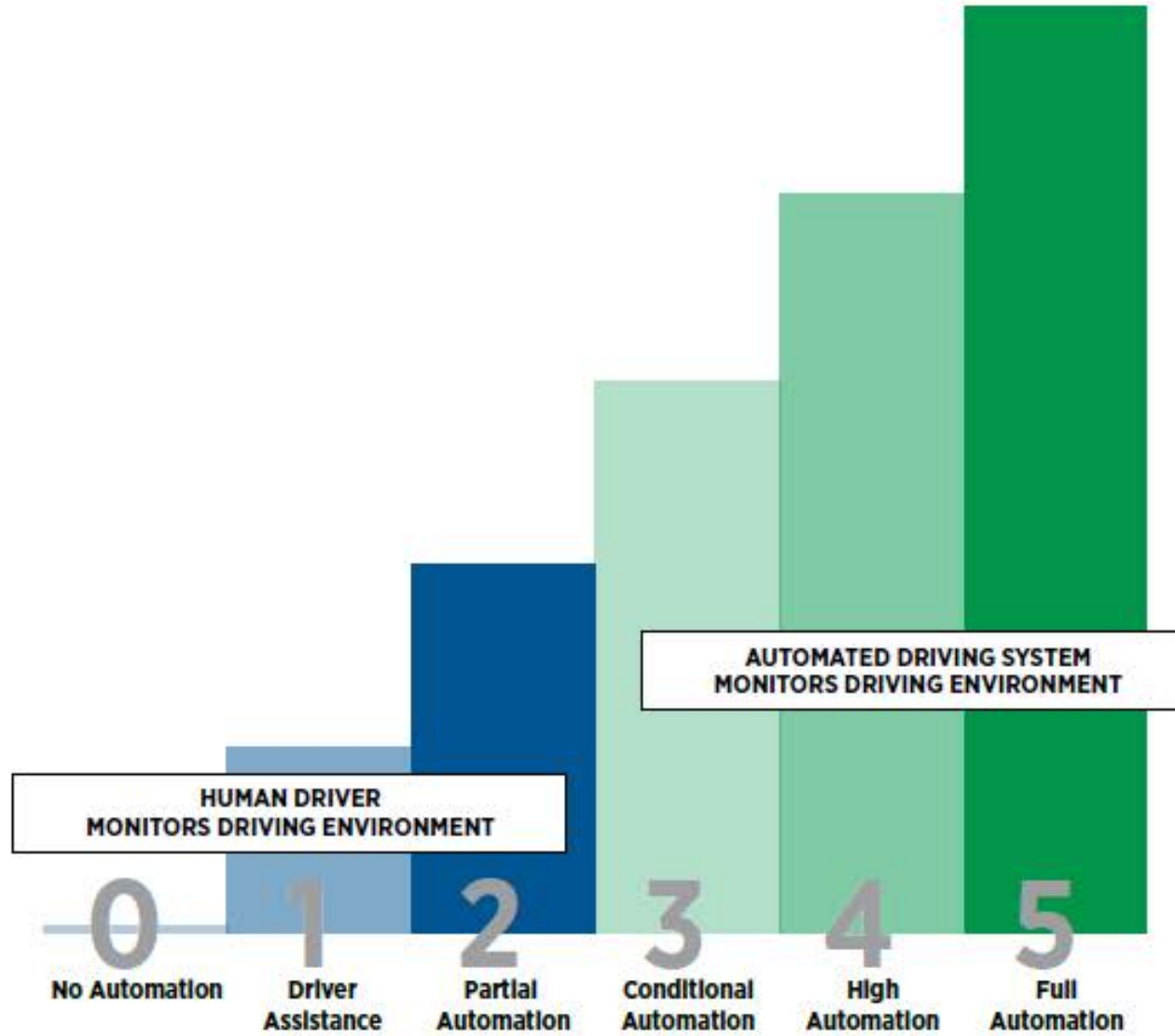
Mercedes-Benz

2 (+3)

2







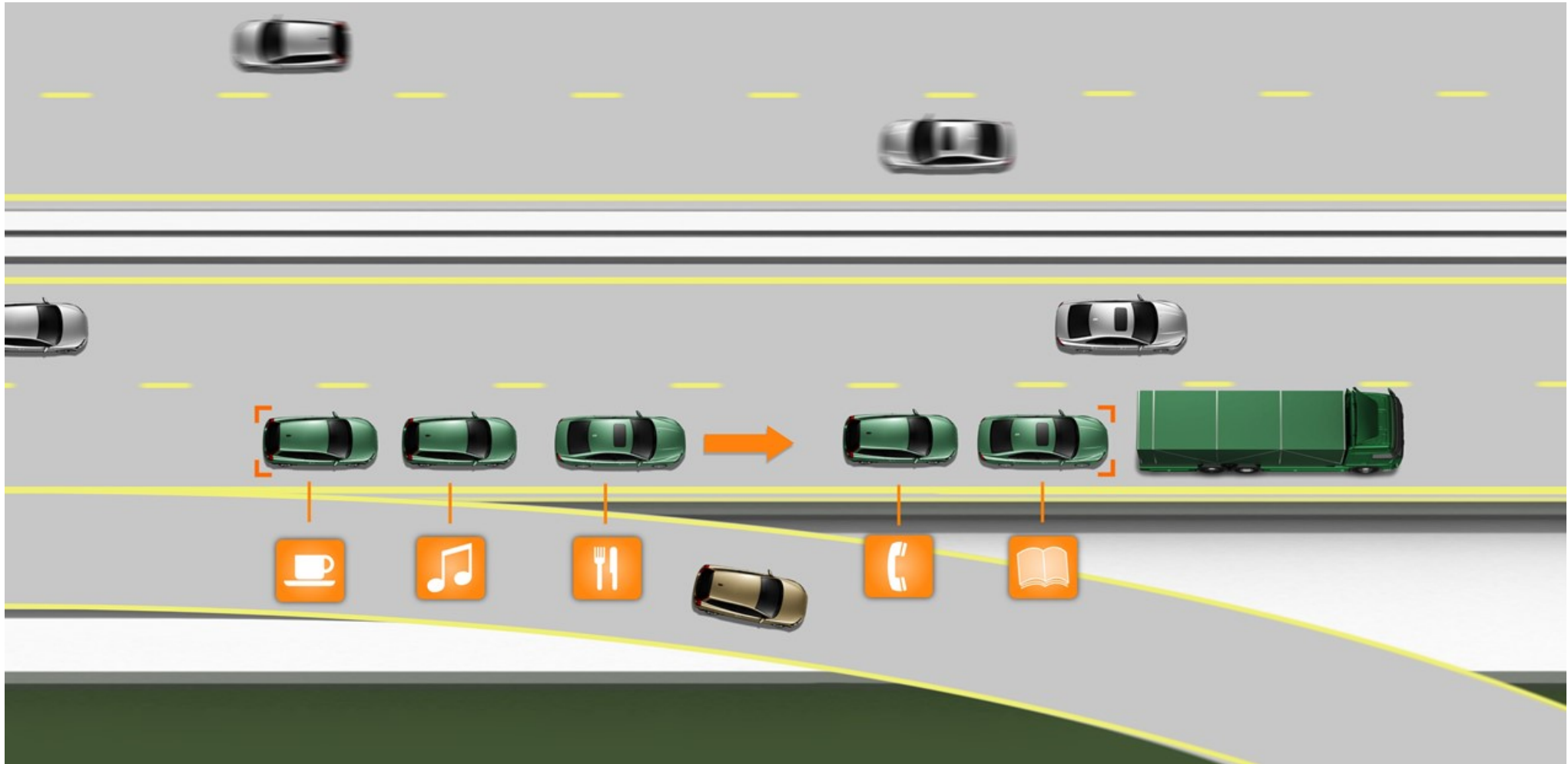
SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/Deceleration	Monitoring of Driving Environment	Fallback Performance of Dynamic Driving Task	System Capability (Driving Modes)
Human driver monitors the driving environment						
0	No Automation	the full-time performance by the <i>human driver</i> of all aspects of the <i>dynamic driving task</i> , even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a
1	Driver Assistance	the <i>driving mode</i> -specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	Human driver and system	Human driver	Human driver	Some driving modes
2	Partial Automation	the <i>driving mode</i> -specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	System	Human driver	Human driver	Some driving modes
Automated driving system ("system") monitors the driving environment						
3	Conditional Automation	the <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> with the expectation that the <i>human driver</i> will respond appropriately to a <i>request to intervene</i>	System	System	Human driver	Some driving modes
4	High Automation	the <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> , even if a <i>human driver</i> does not respond appropriately to a <i>request to intervene</i>	System	System	System	Some driving modes
5	Full Automation	the full-time performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> under all roadway and environmental conditions that can be managed by a <i>human driver</i>	System	System	System	All driving modes

















Audi connect

06/16

> Audi connect services in the vehicle

- Audi smart-phone interface
- City events
- Country information
- Map update online
- Access to smartphone voice control
- Traffic information online
- Twitter
- Bus and train information
- Point-of-Interest-search (POI) search with voice control
- Online roadside assistance
- E-Mail
- Wi-Fi hotspot
- Travel information
- Emergency call
- Messages
- Parking information
- Picturebook navigation
- Fuel prices
- Audi service request
- Flight information
- Navigation with Google Earth and Google Street-View

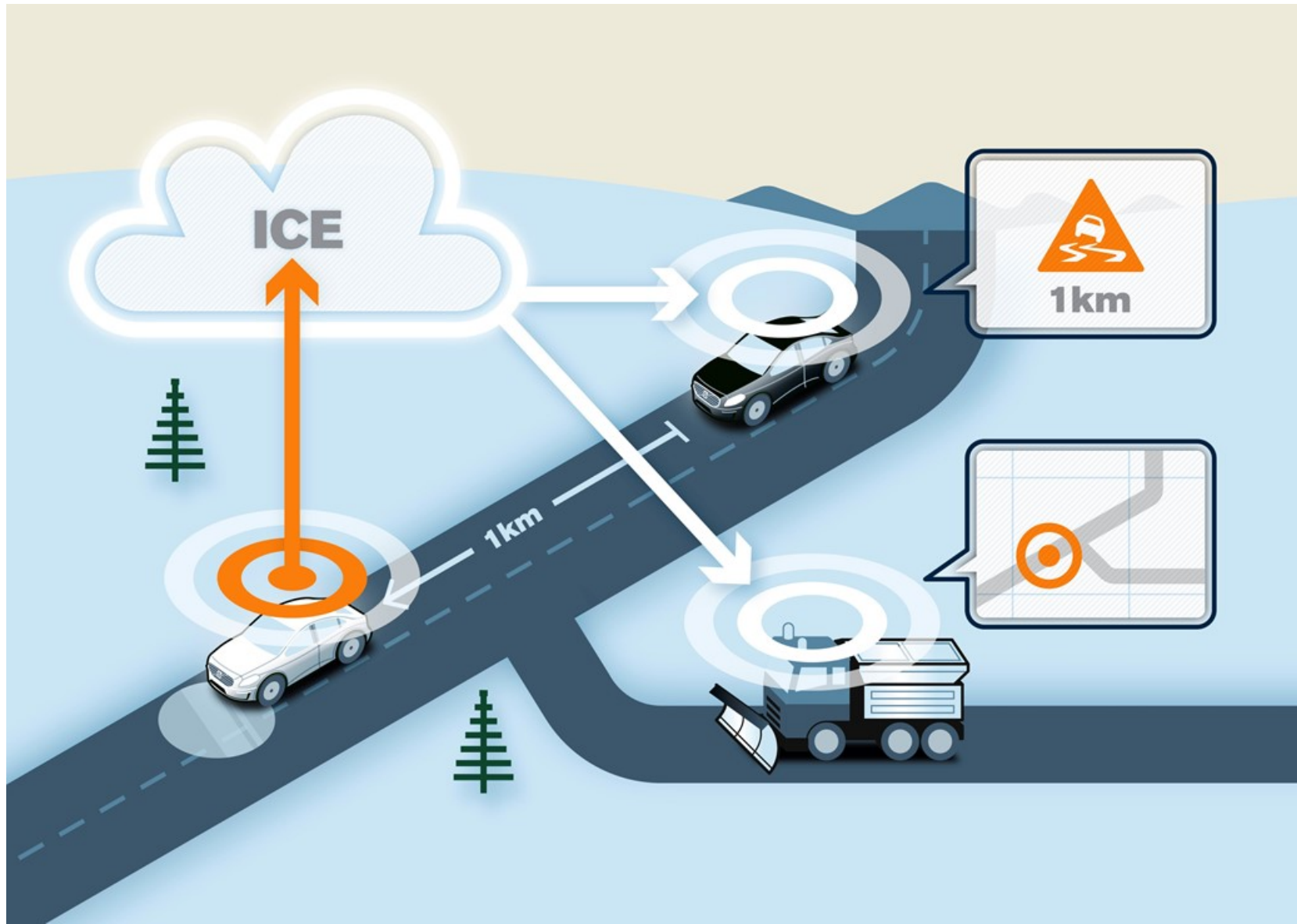
> Audi connect services via myAudi online portal

- Destination entry via myAudi or Google Maps
- Online news
- Map update online
- Twitter
- myAudi - special destinations

> Audi connect services via smartphone App

- Traffic information online
- myAudi - special destinations
- Car finder
- Travel
- Online Media Streaming with AUPEOJ, Napster and Audi music stream
- Calendar

The availability of services supported by Audi connect varies from country to country







Engineers



ADAS >

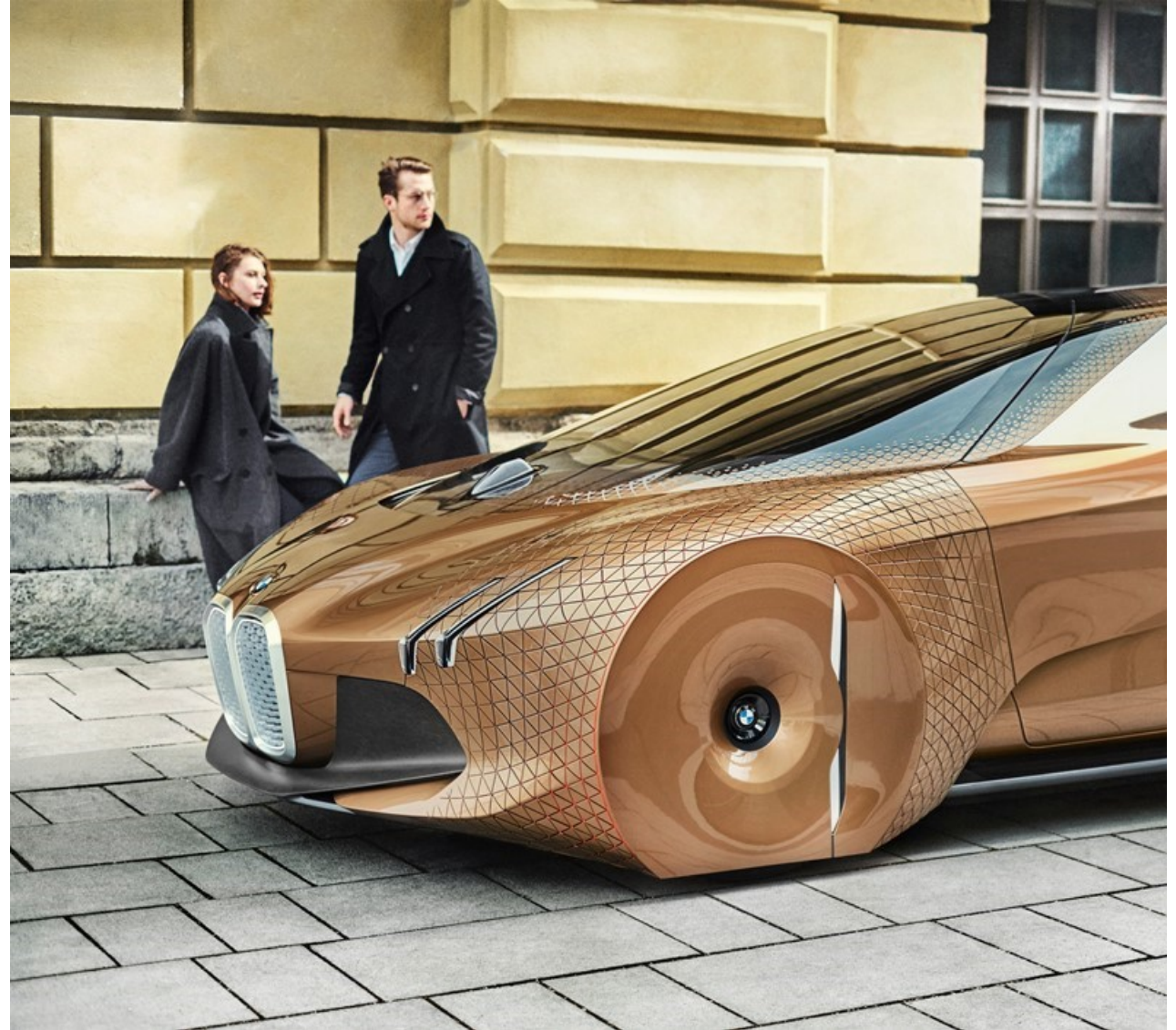
- Platooning (HGV)
- Autonomous (HGV)

Electrification >

- New road system

V2X >

- Comm 'zones'
- Dedicated channels



Towards 2050

Engineers >

- Pivotal to decisions
 - Strategy
 - Operational

...at the heart of it all



The art of the possible – thank you!

- The ‘team’ – who’s in charge?
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