



# Virtual Reality and Gaming-Engines in Automotive Engineering

**GamesDays at Hochschule der Medien on November 28th, 2023**

Public

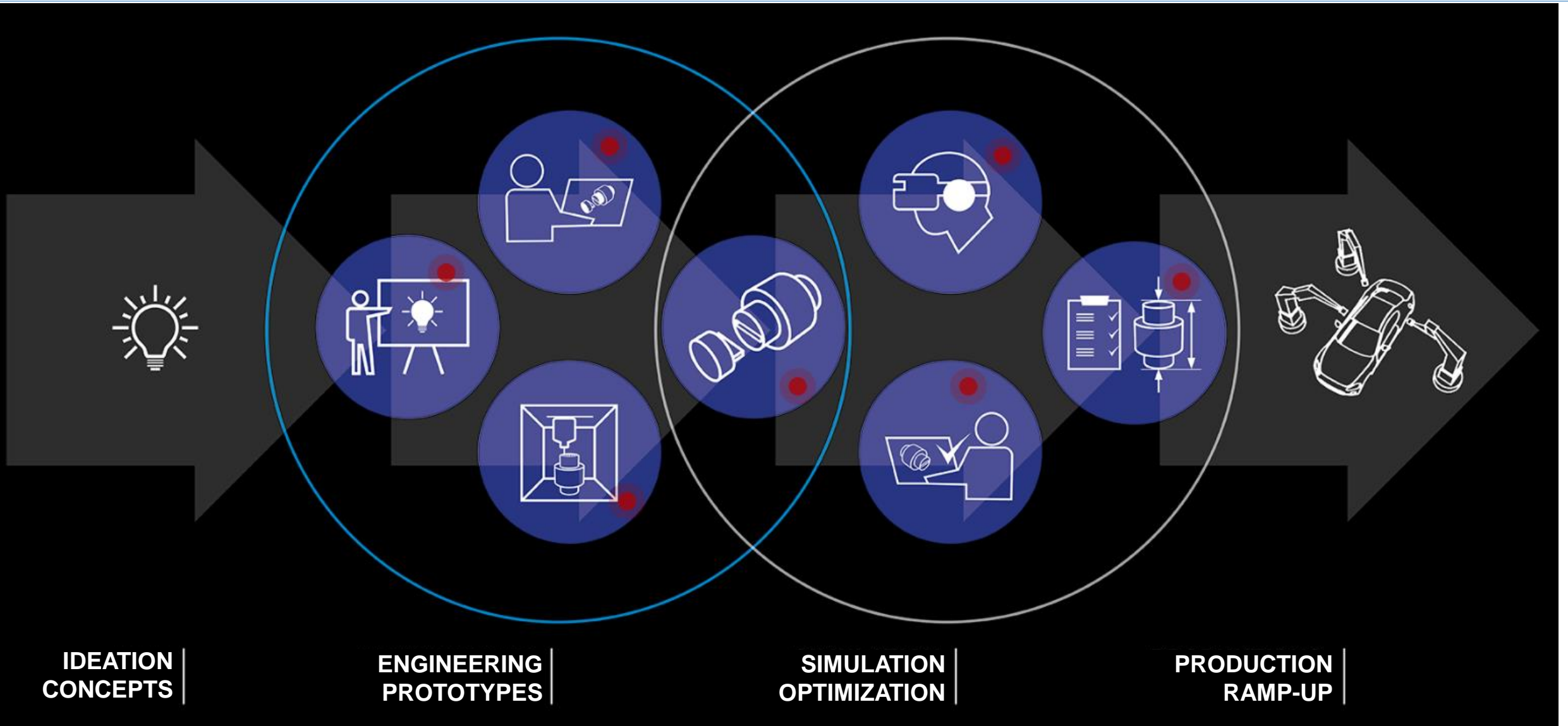
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# About GOTECH: Automotive Engineering Along the Whole Development Process



IDEATION  
CONCEPTS

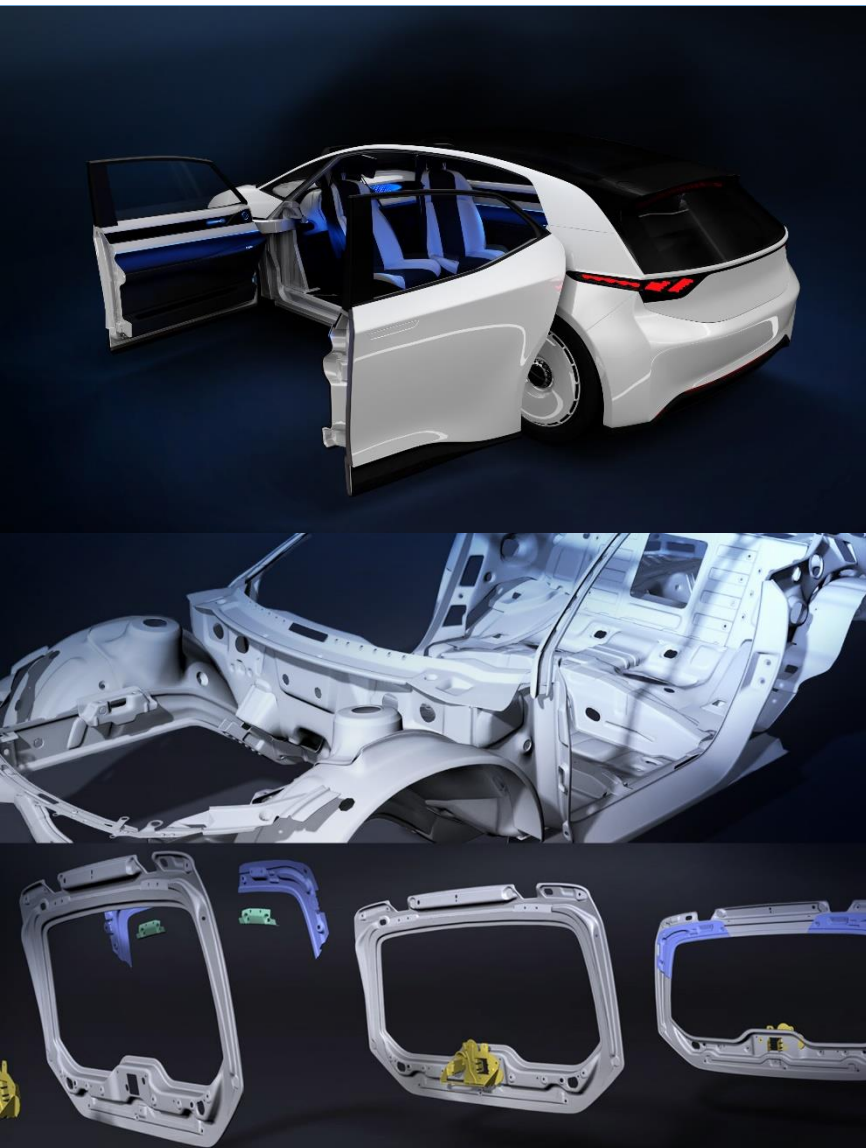
ENGINEERING  
PROTOTYPES

SIMULATION  
OPTIMIZATION

PRODUCTION  
RAMP-UP

# About GOTECH: Automotive Engineering Along the Whole Development Process

## Exterieur

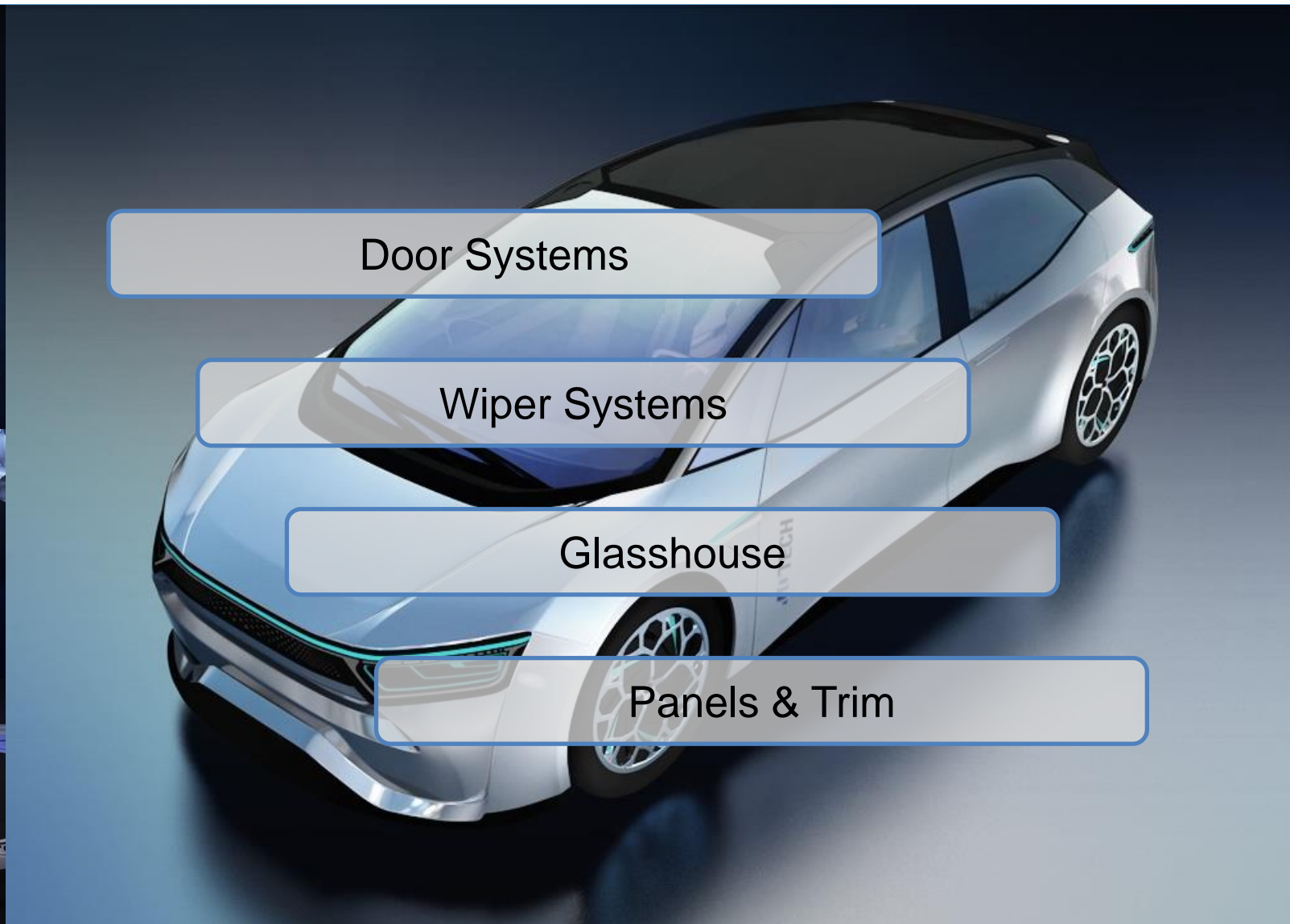


Door Systems

Wiper Systems

Glasshouse

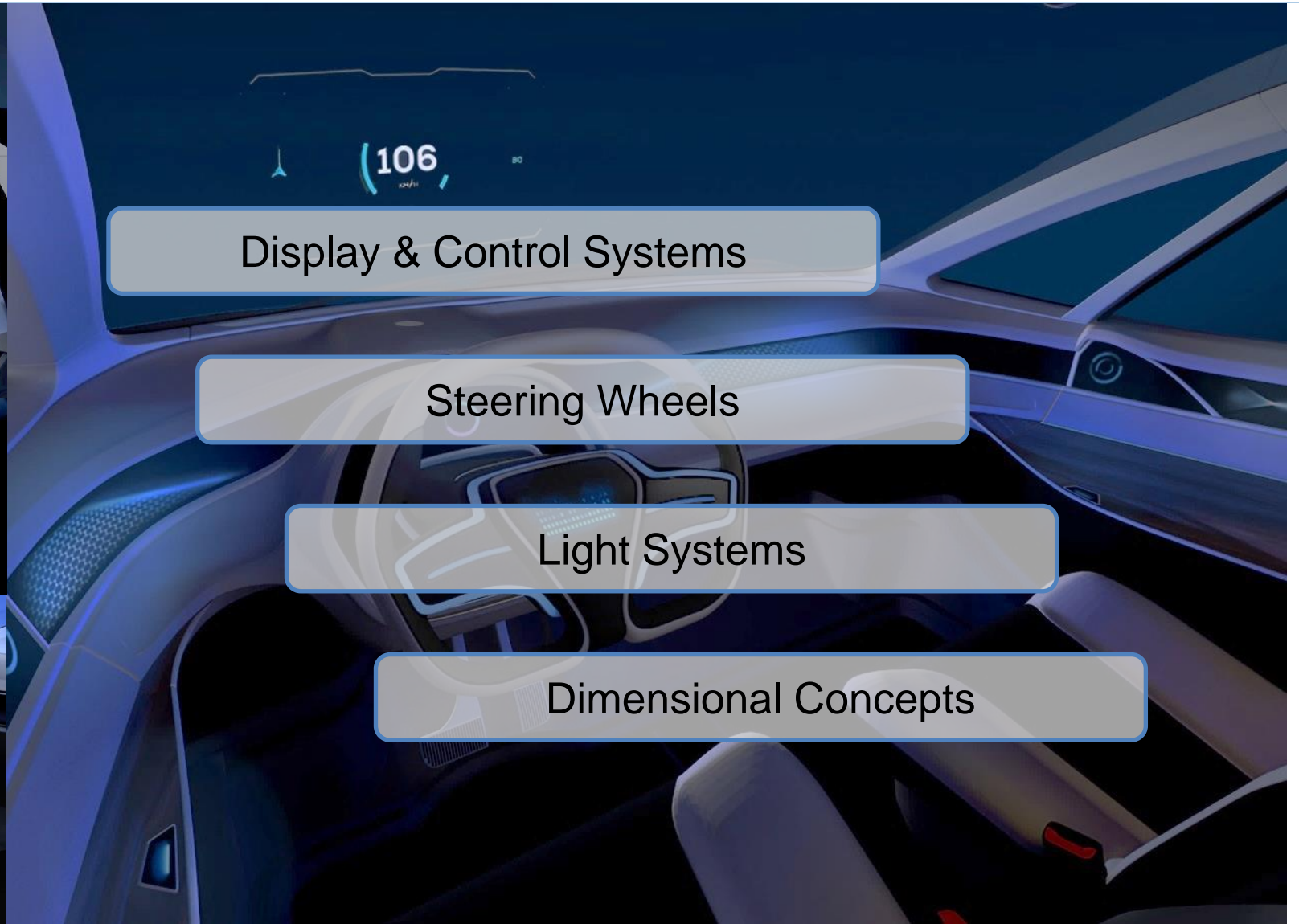
Panels & Trim





# About GOTECH: Automotive Engineering Along the Whole Development Process

## Interieur



Display & Control Systems

Steering Wheels

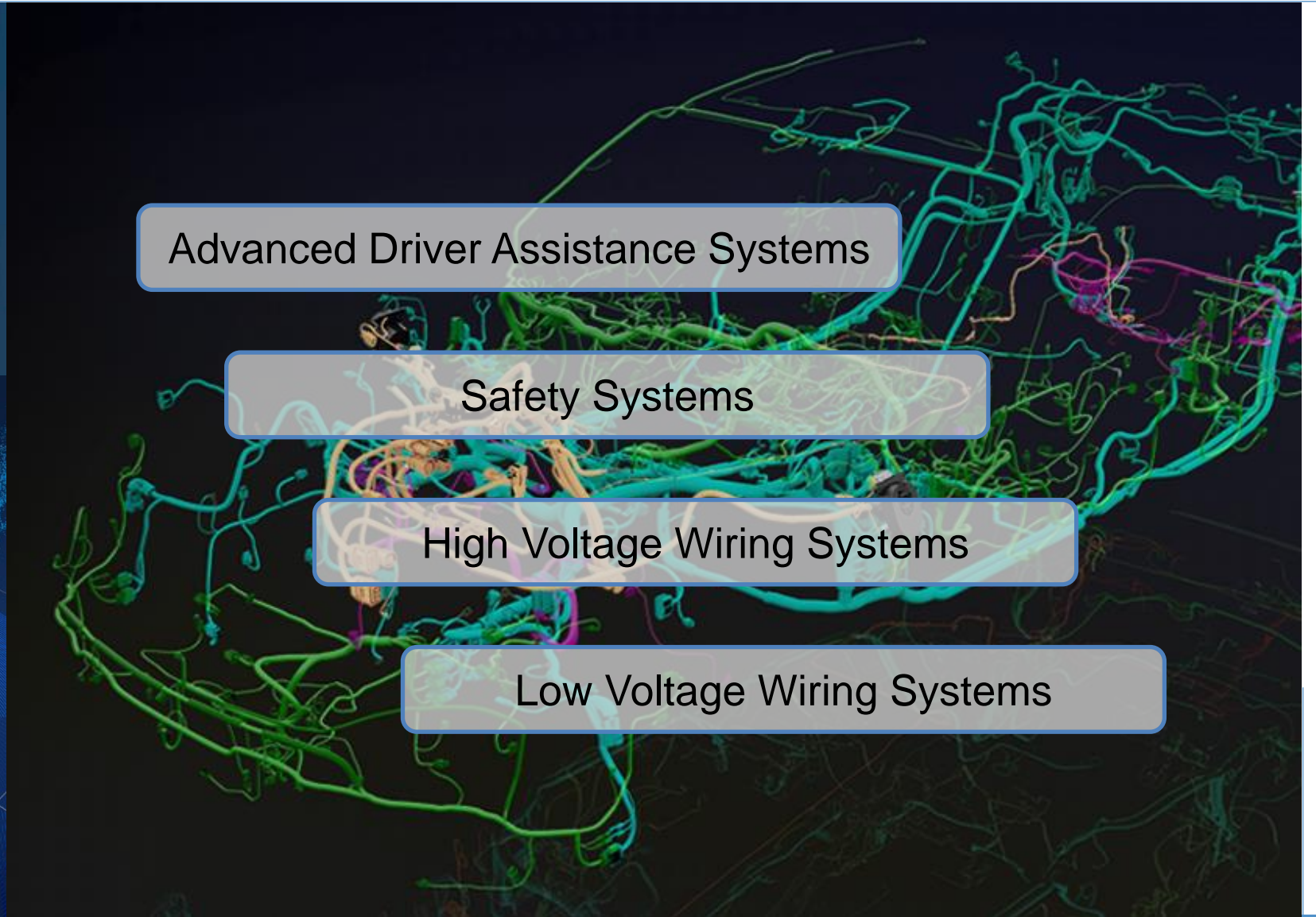
Light Systems

Dimensional Concepts



# About GOTECH: Automotive Engineering Along the Whole Development Process

## Electric Systems and Wire Harness



Advanced Driver Assistance Systems

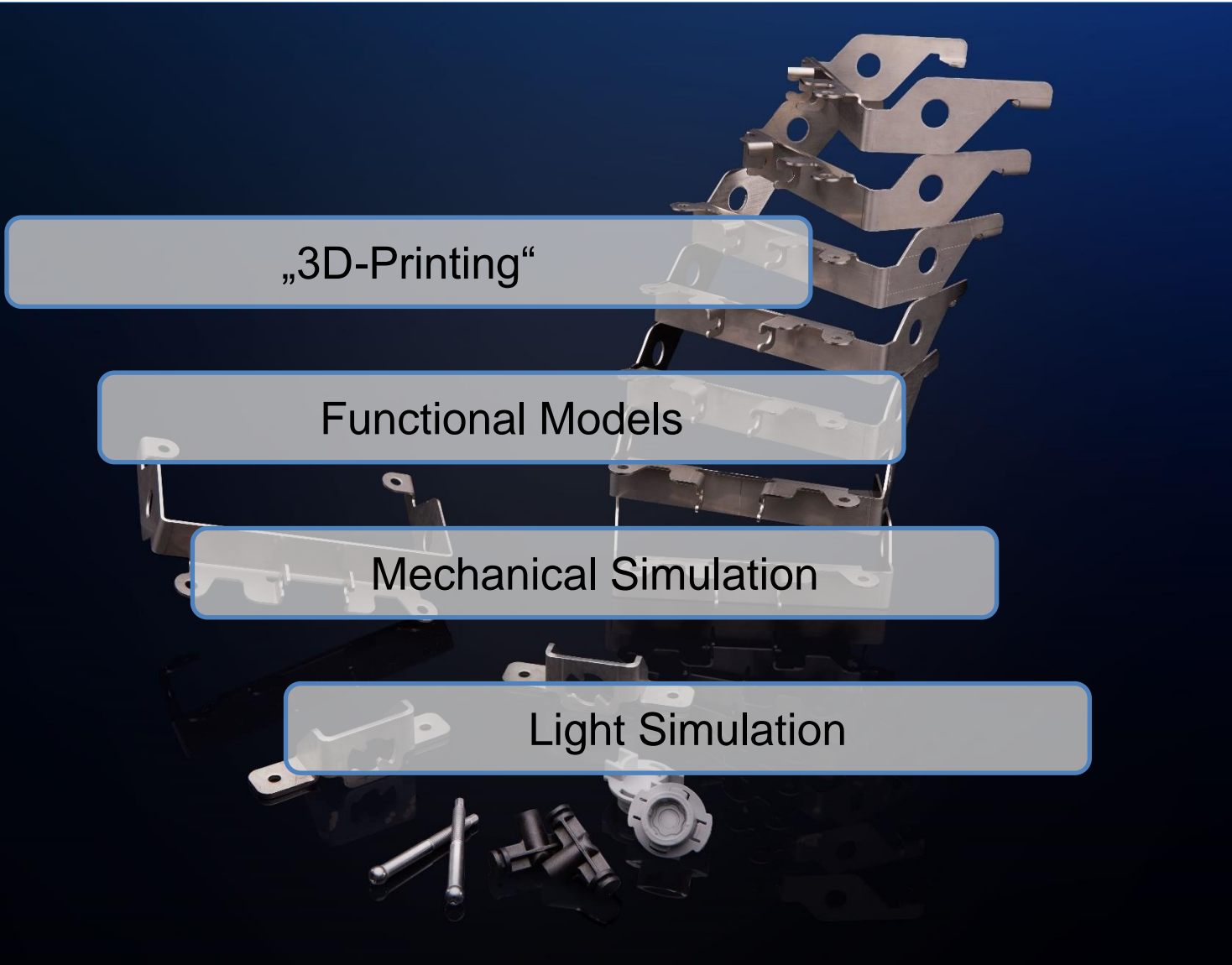
Safety Systems

High Voltage Wiring Systems

Low Voltage Wiring Systems

# About GOTECH: Automotive Engineering Along the Whole Development Process

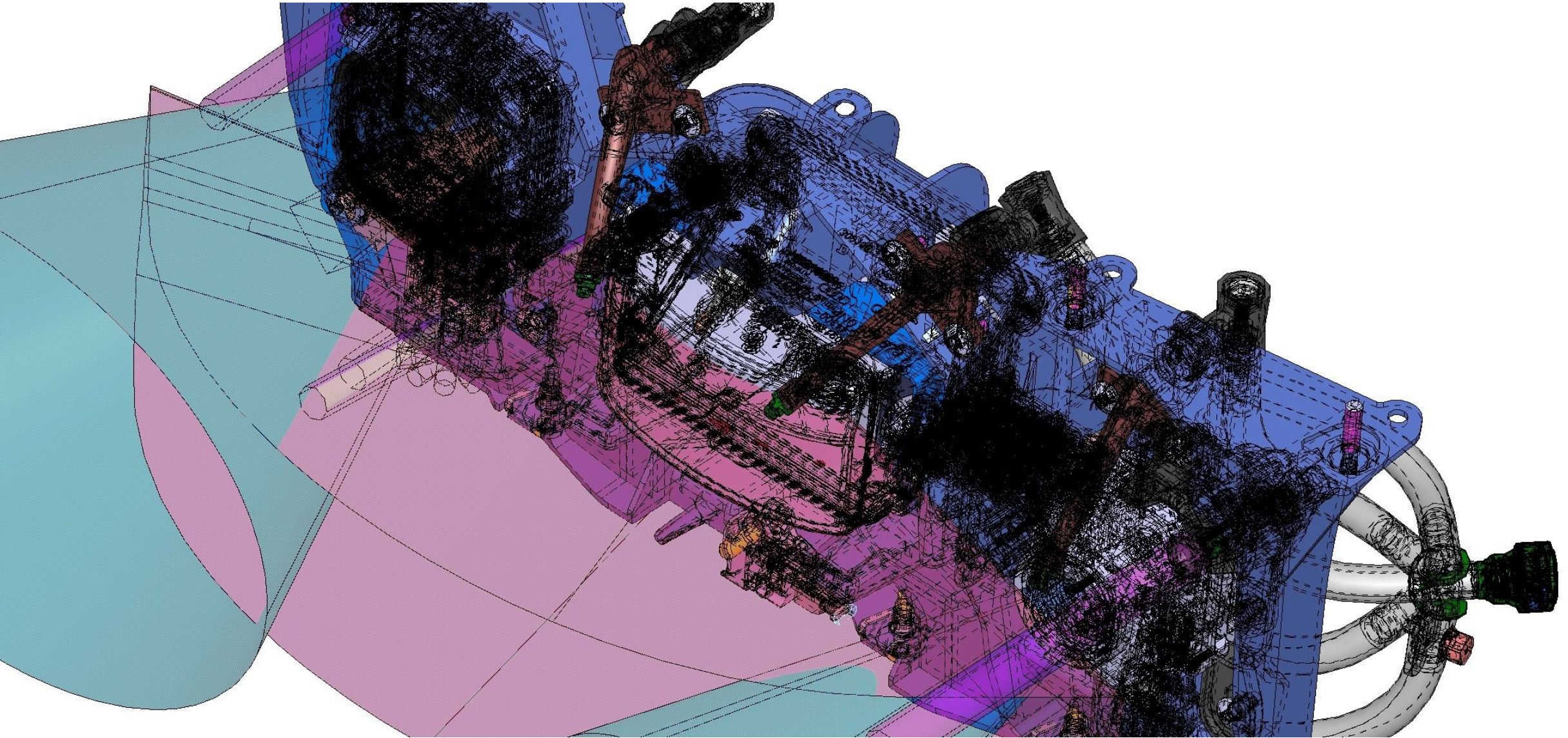
## Prototyping and Simulation





# About GOTECH: Automotive Engineering Along the Whole Development Process

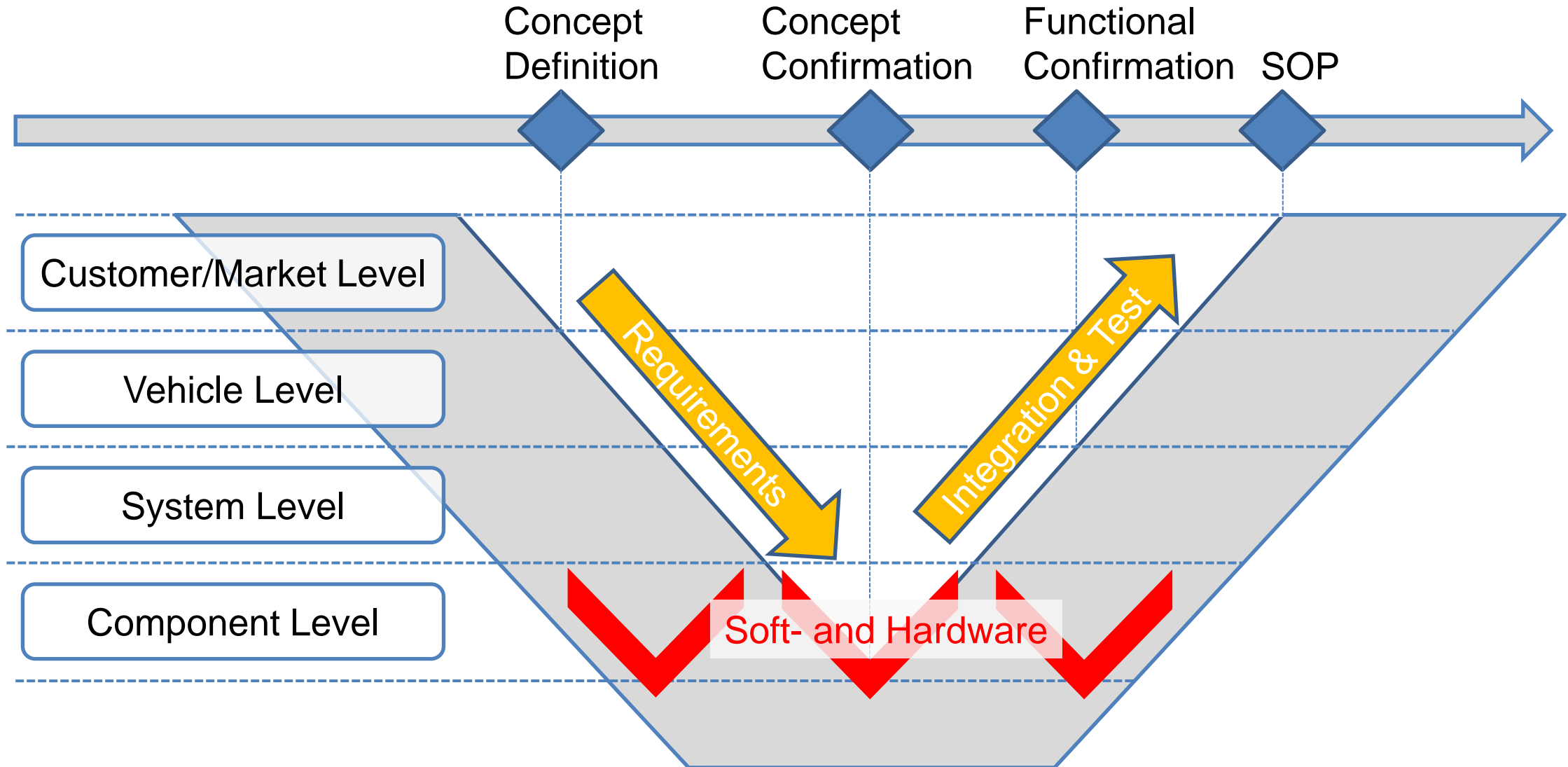
But we usually do not see fancy renderings...





# Automotive Engineering: From Ideation to Start-Of-Production (SOP)

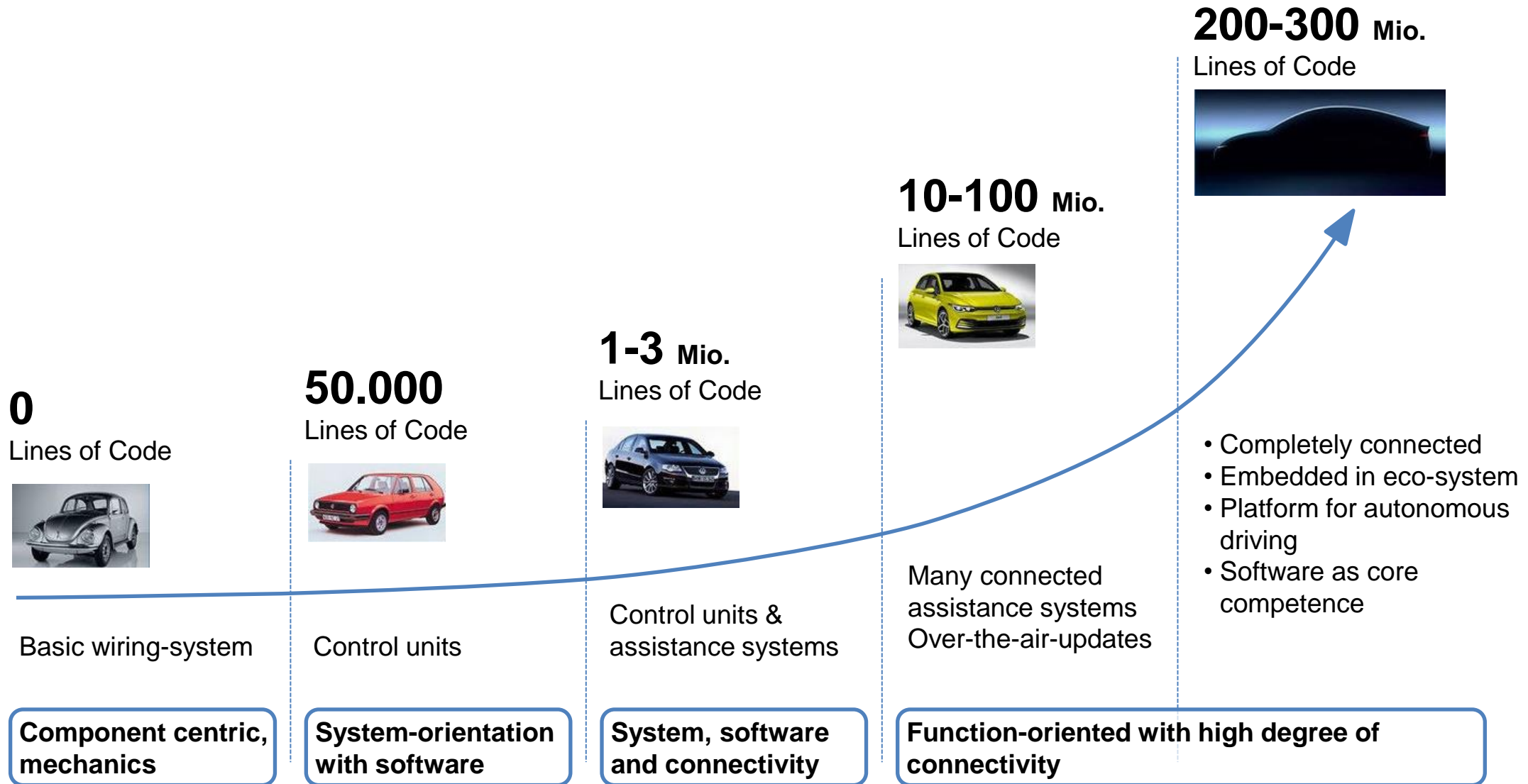
## What the development process schemetically looks like





# Trends in Automotive Development

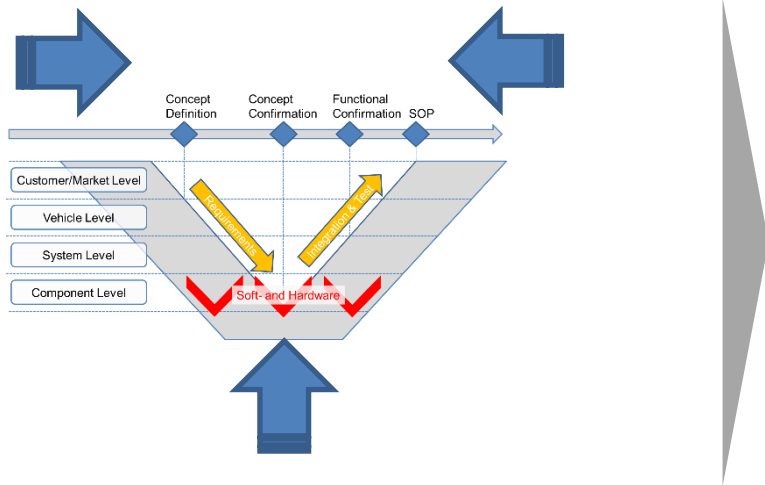
## From „Vehicle with Entertainment-System“ to „Entertainment-System on Wheels“



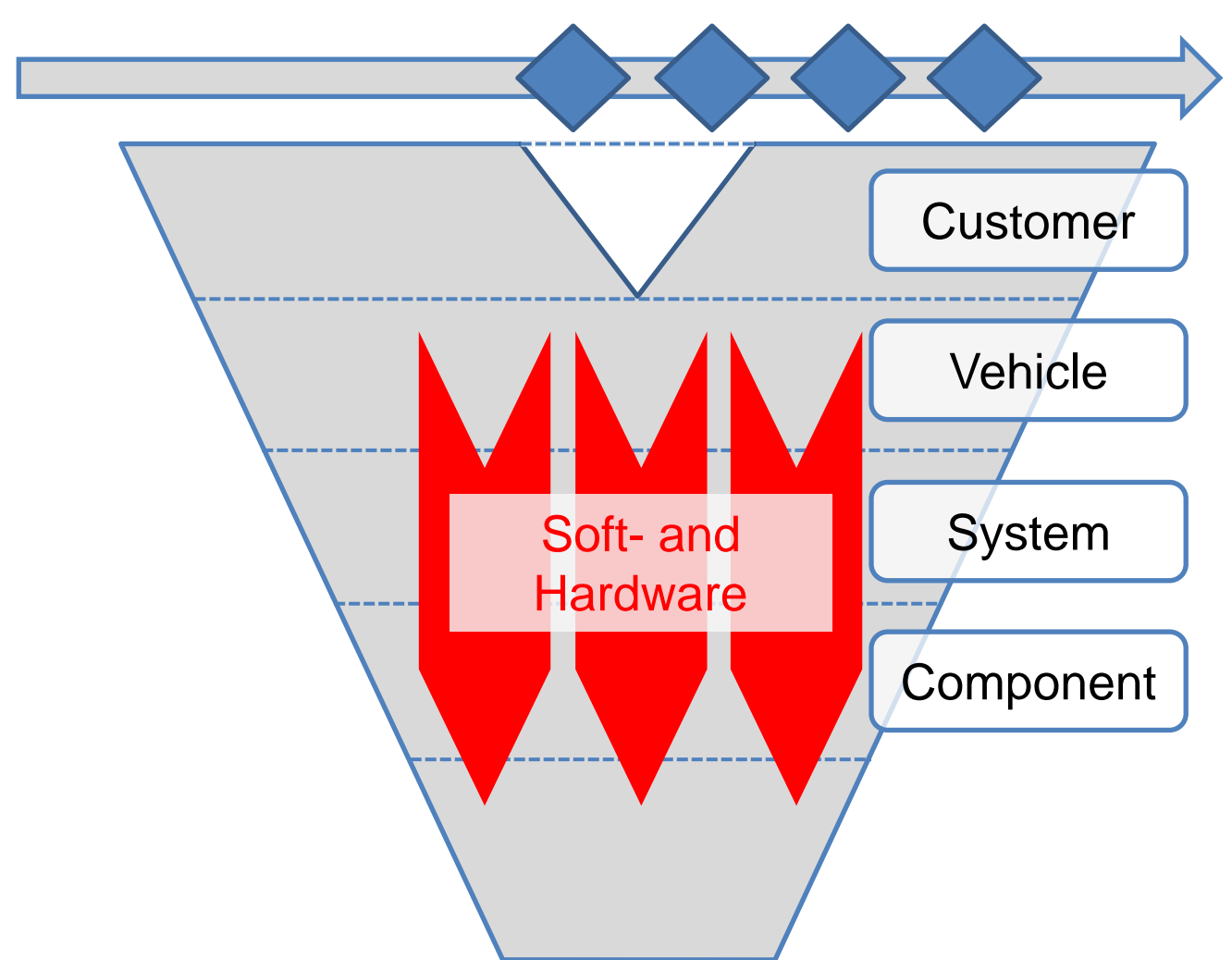
Source: According to <https://www.volkswagen-newsroom.com/> (2022)

# Trends in Automotive Development

## Challenge: Streamline Automotive-Development and HW/SW-Development



- Early HW-SW integration and testing on system- and vehicle-level
- Improve synchronization of development lifecycles
- Utilization of tools to facilitate integration and streamline development processes





# Virtual Reality and Gaming-Engines in Automotive Engineering

## Our Approach for Bridging the Gap: Virtual Reality Based Driving Simulation

IR-Camera-System

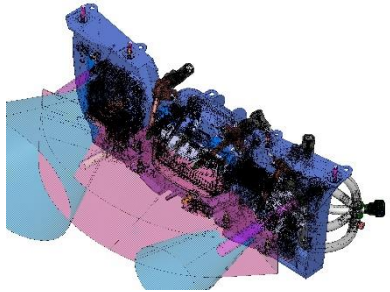
VR-Goggles

Easy-to-Change  
Interieur Mockup

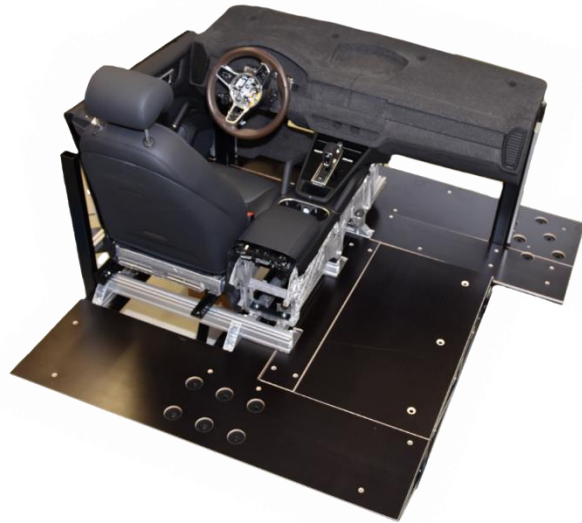
6 DOF Motion System

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### CAD-Data



### Interieur Mockup



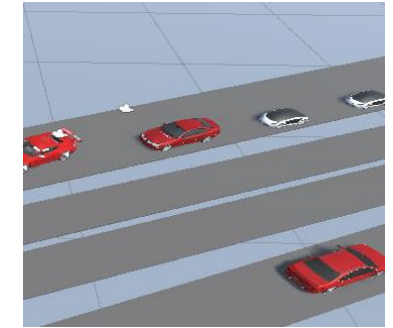
- Display & Control Systems
- Steering Wheel
- Pedalry
- Dimensional Concept

### Digital Twin in VR



- Functional Variety
- Dimensional Variety
- Autonomous Driving

### Driving-Physics





# Virtual Reality and Gaming-Engines in Automotive Engineering

## Further Improvement within the Research Project AVEAS



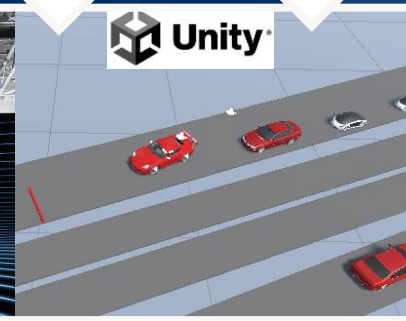
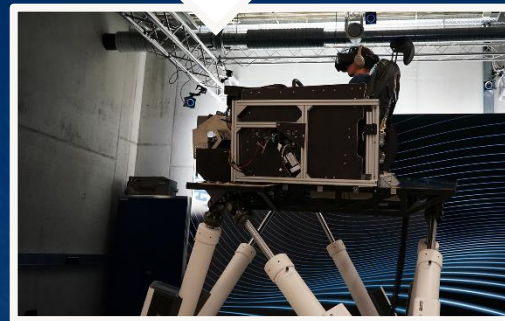
Street-Maps



Accidents



Traffic



Parameter-Logging

- Driving physics
- Passenger behavior
- Movement trajectories

Supported by:



on the basis of a decision by the German Bundestag



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And after all...

It's pretty fun to use it for gaming as well ;-)





WIR GEBEN  
**DER BEWEGUNG**  
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