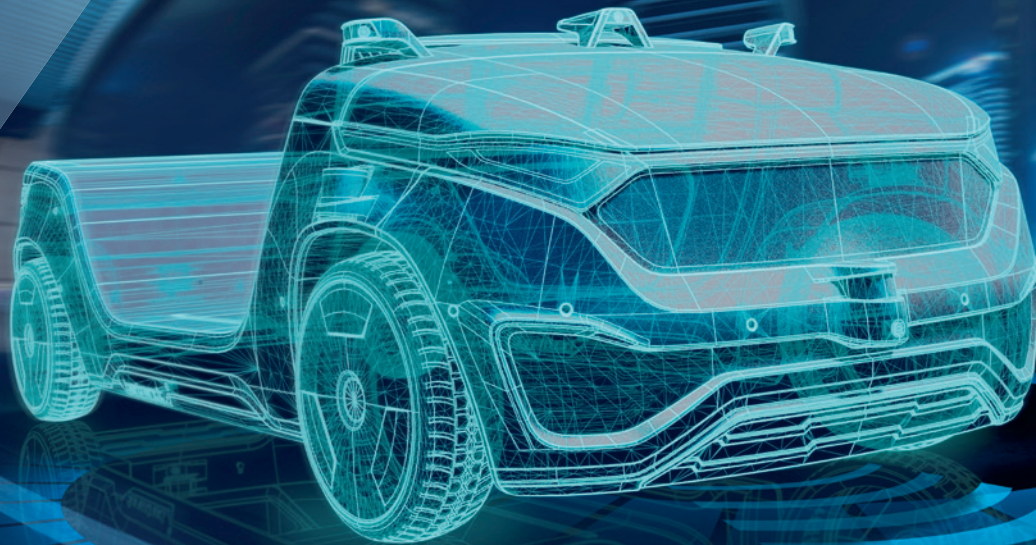


HARRI – The Innovation Platform for Future Mobility Concepts



GERMAN
**INNO
VATION**
AWARD '20
WINNER



SOLUTIONS FOR KEY MEGATRENDS

Benefit from our universal expertise and our visionary mobility concepts. They form the basis for individual solutions, innovation, and efficiency. Our aim has always been to support our customers as an innovative partner, both in individual projects and along the entire value chain. Find out more about HARRI – our innovation platform on the following pages.



Digitization



Autonomous Driving



Connectivity



Electromobility



Hello, my name is HARRI!

... an innovation platform and flagship project for automotive technology and solution expertise provided by Bertrandt. My parents are engineers, IT and software specialists, designers, project managers, model makers and vehicle assembly experts working on the trend topics of tomorrow.

Focussing on the mega-trends of

**DIGITIZATION, AUTONOMOUS DRIVING, ELECTROMOBILITY
AND CONNECTIVITY**

they have linked and implemented visionary mobility concepts based on a domain / system structure with all associated interfaces and functions. That's how I was created as an innovation platform for

solutions to all aspects of automated, connected and electric driving – and as a holistic inspiration for your future projects.

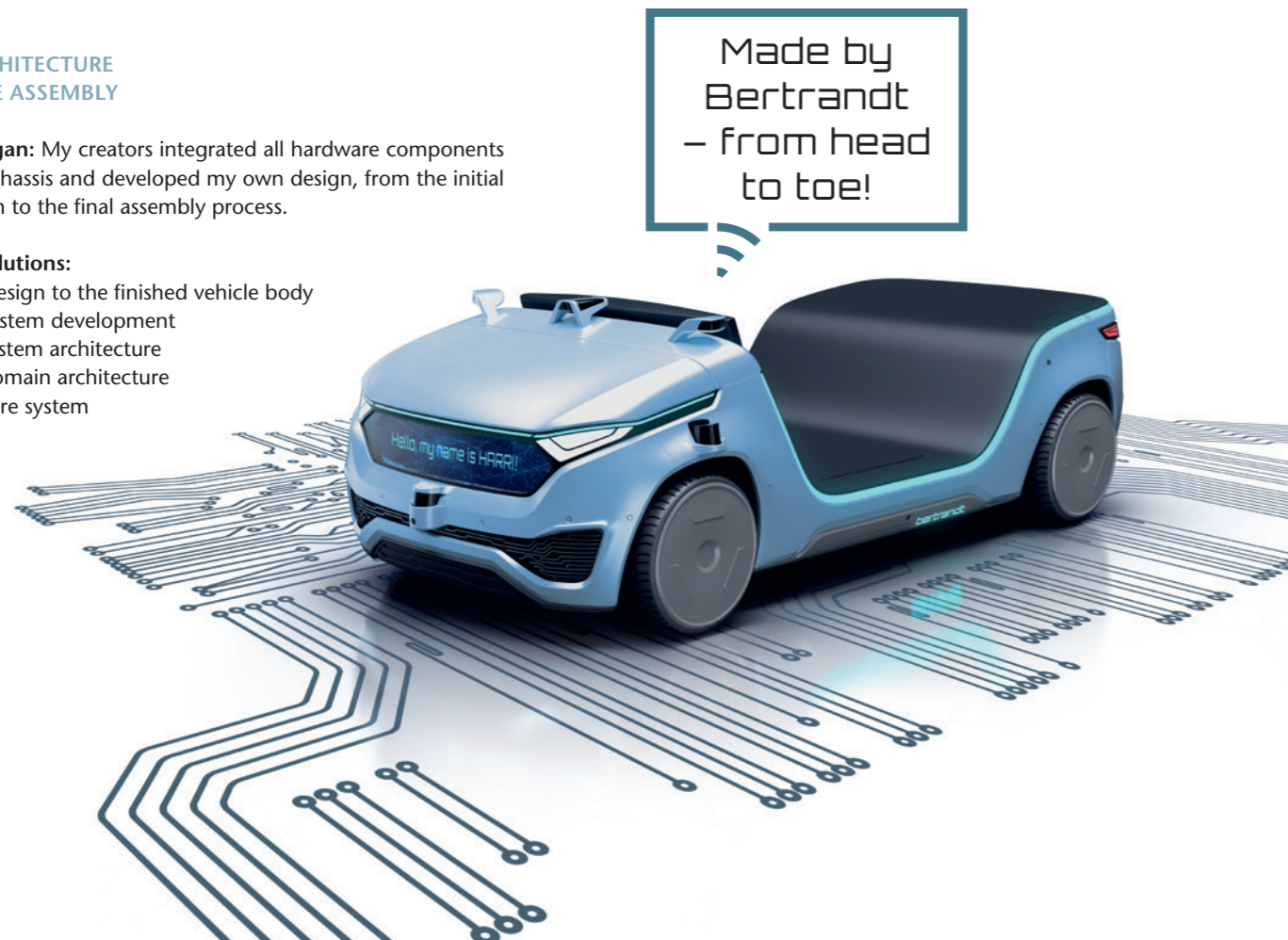


VEHICLE ARCHITECTURE AND VEHICLE ASSEMBLY

How it all began: My creators integrated all hardware components into a rolling chassis and developed my own design, from the initial sketch through to the final assembly process.

Integrated solutions:

- From the design to the finished vehicle body
- Electrical system development
- In-house system architecture
- In-house domain architecture
- Drive-by-wire system

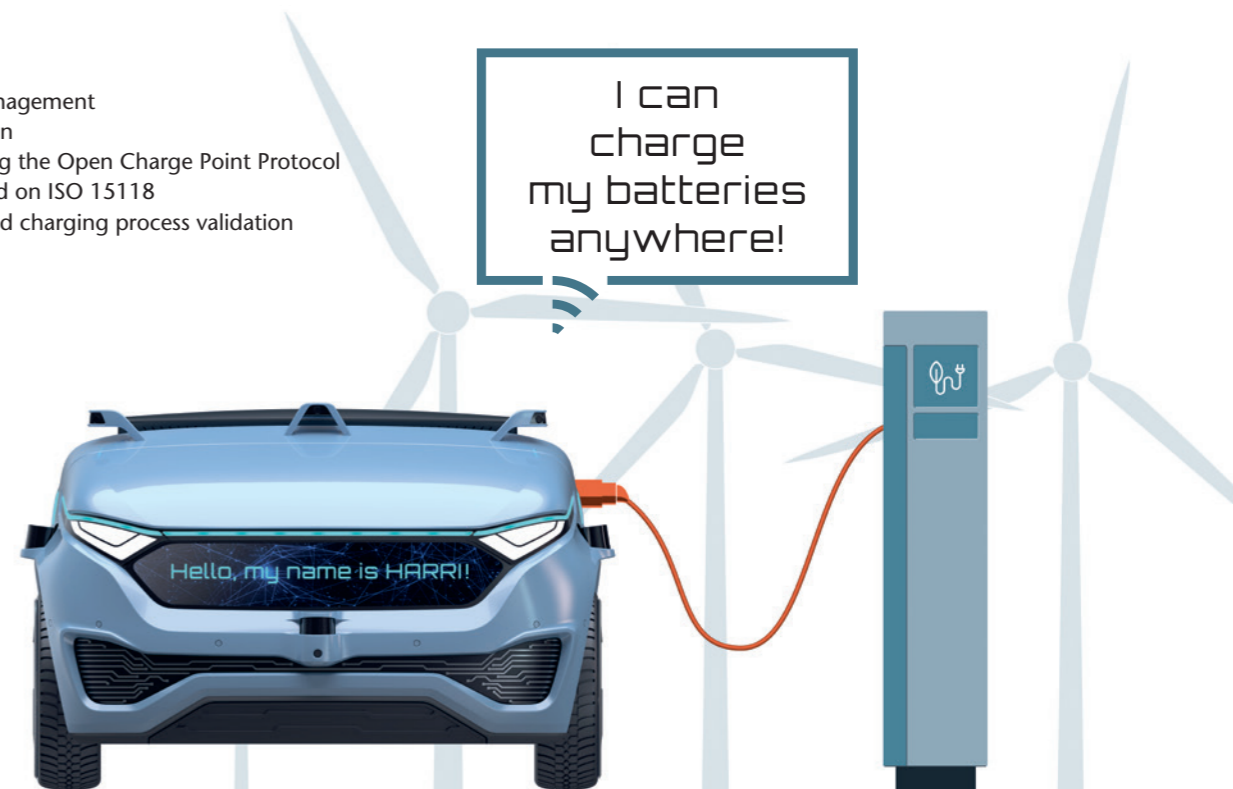


CHARGING PROCESS AND CHARGING INFRASTRUCTURE

Energy is vital: My energy supply are intelligent charging stations. With my IEC 61851 based charging infrastructure I can communicate with charging stations from any manufacturer.

Integrated solutions:

- Charging app
- Onboard energy management
- Cloud communication
- Communication using the Open Charge Point Protocol
- Smart charging based on ISO 15118
- Charging strategy and charging process validation



AUTOMOTIVE SOFTWARE

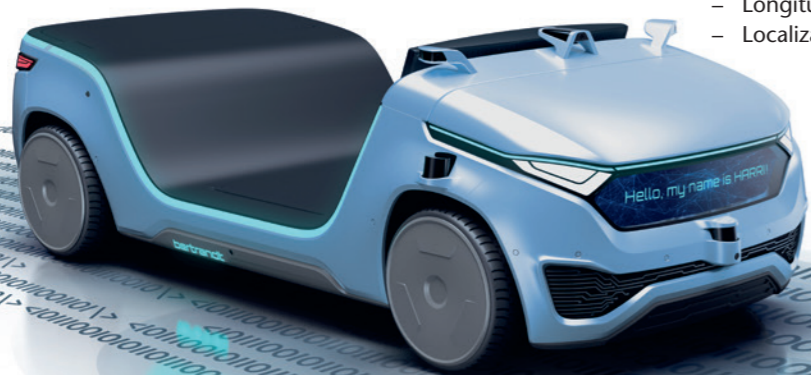
I know
where I'm
heading to!



Sensing the world: The data from my four lidar sensors, 16 ultrasonic sensors, and 12 cameras is combined and evaluated in real time, enabling me to drive independently. The combination of high-performance software with GPS allows me to find my way on my own.

Integrated solutions:

- ADC (autonomous domain controller) with algorithms developed in-house
- AI-based environment and object detection
- Sensor data fusion
- Trajectory planning
- Longitudinal and lateral control
- Localization

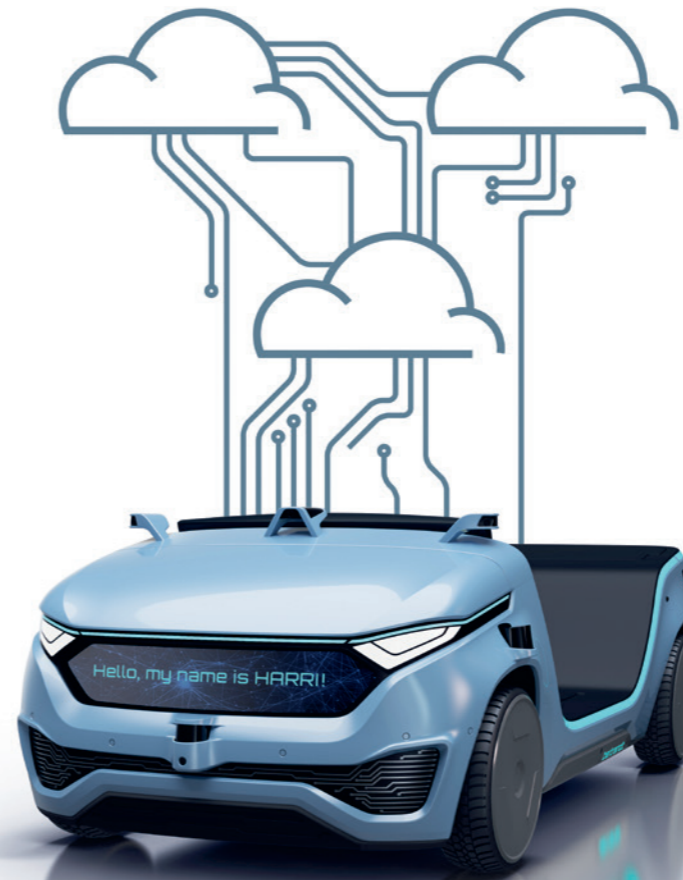


CONNECTIVITY AND BACK END

Fully connected: Communications with my app, IoT devices, cloud services and clouds use certificate-based encryption. The cloud also supplies me with high-precision map data and software upgrades to ensure that I am always up-to-date.

Integrated solutions:

- Remote diagnostics
- Online/offline navigation based on the NDS standard
- Cloud-to-cloud communication
- Integrated cloud voice assistant service



I am
always
up-to date!

HMI

Both inside and out: I interact with humans in many ways. My interior touchscreens give the driver full control at all times. I communicate with my environment via curved displays and my drive mode indication.

Integrated solutions:

- User-oriented UX design
- Wraparound light strip indicates the operating status
- Control via touchscreens
- Curved displays to communicate with other road users
- Drop-off and pick-up using an in-house smartphone app

We will get along great!



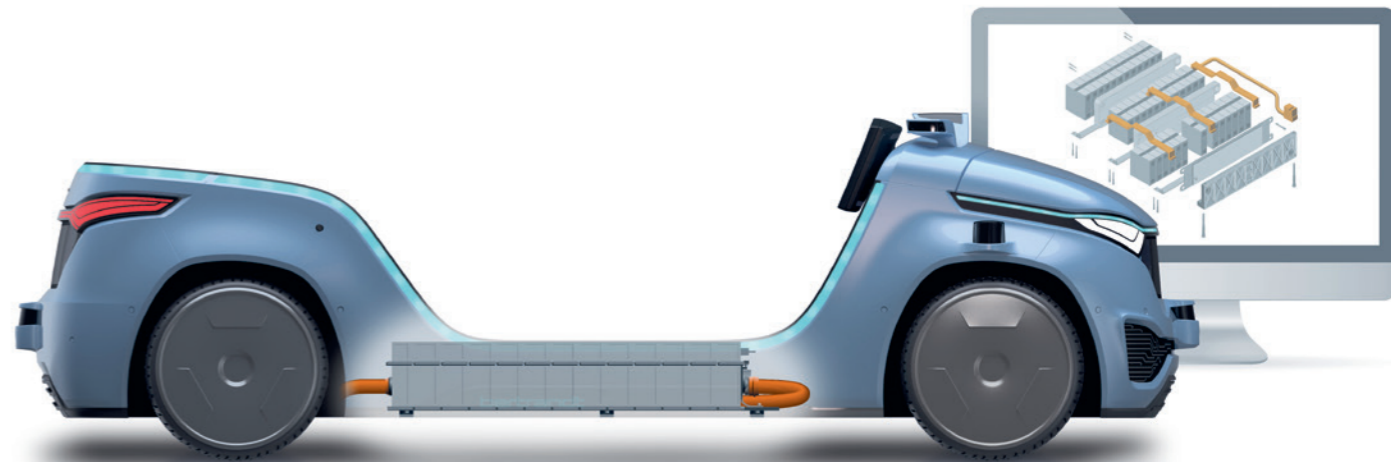
HIGH-VOLTAGE BATTERY

Full power: Power and performance are provided by a high-voltage battery that has been developed in-house from scratch. Our multinational developer team has worked seamlessly together on the design of the electrical system. The battery has been built and successfully tested by our best engineers through to final approval.

Integrated solutions:

- Mechanical and electrical design
- Developing test specifications and pre-commissioning
- High-voltage battery construction
- Testing (battery test bench and climate test chamber)
- Battery management system software

I guarantee a high-voltage experience!



PROCESSES, METHODS, QUALITY

Quality is the top priority: We are international, with German roots. Quality is our top priority. The application life cycle management tool chain (ALM) ensured the quality of my software development process. Automotive SPICE combined with agile development approaches were the fundamentals for my hybrid software development processes implementing and validating my innovative functions at the highest quality standards.

Integrated solutions:

- Modified ALM
- In-house tools
- Iterative and incremental development
- Automotive SPICE
- Functional safety
- Quality management

Quality is
my top priority!



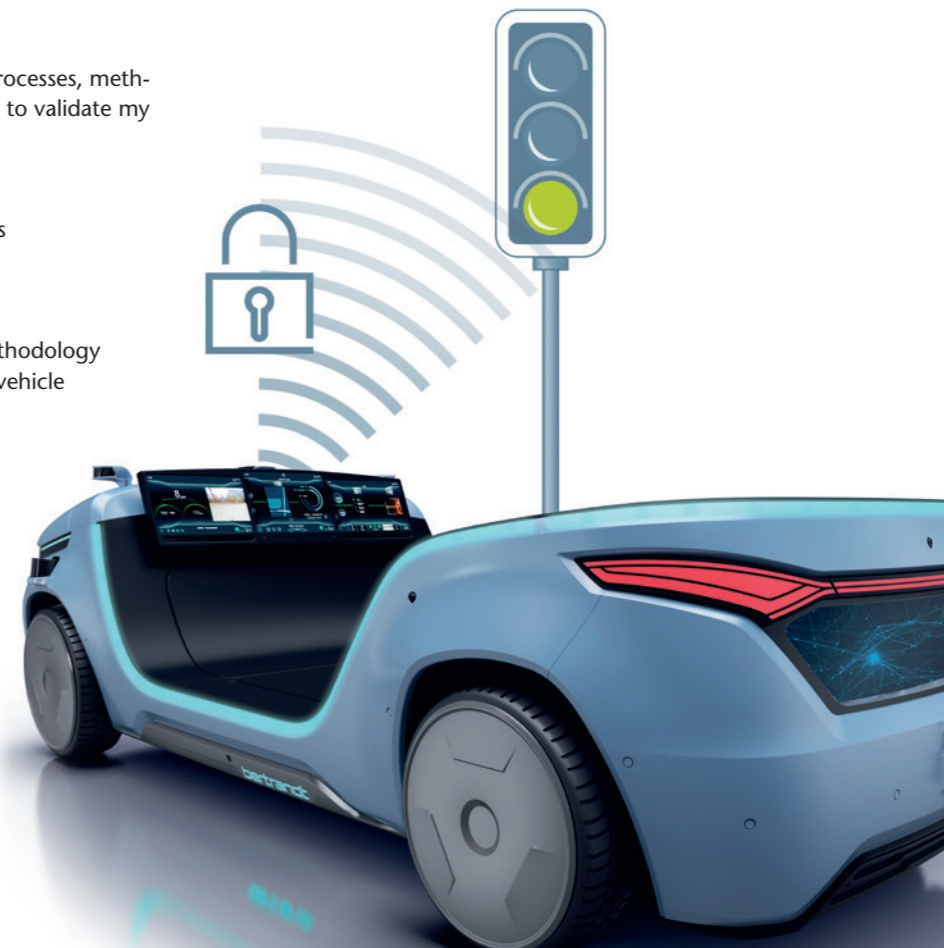
ADAS VALIDATION

Endurance testing: My engineers have developed processes, methods and tools for virtual and physical testing in order to validate my autonomous driving functions.

Integrated solutions:

- Test methodology for automated driving functions up to SAE level 5
- Scenario catalogues and criticality assessments for scenario-based testing
- Virtual test tool chains based on the PEGASUS methodology
- Tools and test equipment for physical sensor and vehicle validation

My systems
are tested,
safe and
secure!



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The HARRI innovation platform is impressive evidence of Bertrandt's technical expertise along the entire value chain of future mobility concepts. It offers completely new solutions, not only for the automotive industry, but also for local authority infrastructure, logistics companies, and passenger transportation.”

KLAUS HÄRTL

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