Continental
The Future in Motion

Connected by communication.

Involved through connectivity.

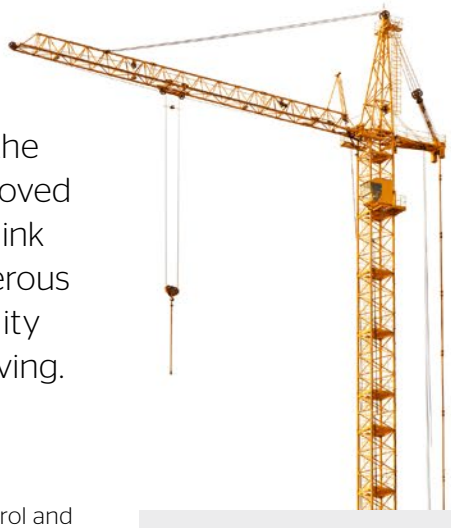
www.conti-engineering.com

Continental **Engineering** Services

Impressive connectivity.
Tailor-made connectivity solutions for your applications.

New opportunities through holistic connectivity.

More efficiency,
more safety,
more comfort.



The latest infotainment and connectivity features in the digital cockpit of the future, accident-free driving, improved traffic flow thanks to intelligent control and a seamless link to mobility services – holistic connectivity offers numerous possibilities. It is the key to the digitalization of mobility and at the same time a prerequisite for automated driving.

The main focus of holistic connectivity solutions is on products that are intuitive to use and secure. Equipped with the appropriate sensors and software, they collect more and more data, share it with each other and send it to their environment.

This is reflected in ever more complex electrical and electronic architectures and increasing real-time connectivity. The growing number of comfort and safety functions underlines this development.

Our connectivity products control and optimize this complex flow of information at the interface between man, machine and the Internet of Things. We rely on the latest transmission technologies, which are particularly well suited to the safety-relevant applications of automated driving thanks to their high performance. In addition to lower latency, greater range and increased reliability, they enable connection to cloud services. We process the required data on a high-performance computer (HPC), a high-volume automotive product from Continental.

To ensure you will not have to forgo a "best-in-class user experience" in small-series, niche and special applications in the future, we develop customized connectivity solutions for the automotive industry as well as for numerous industrial applications.

Continental Engineering Services

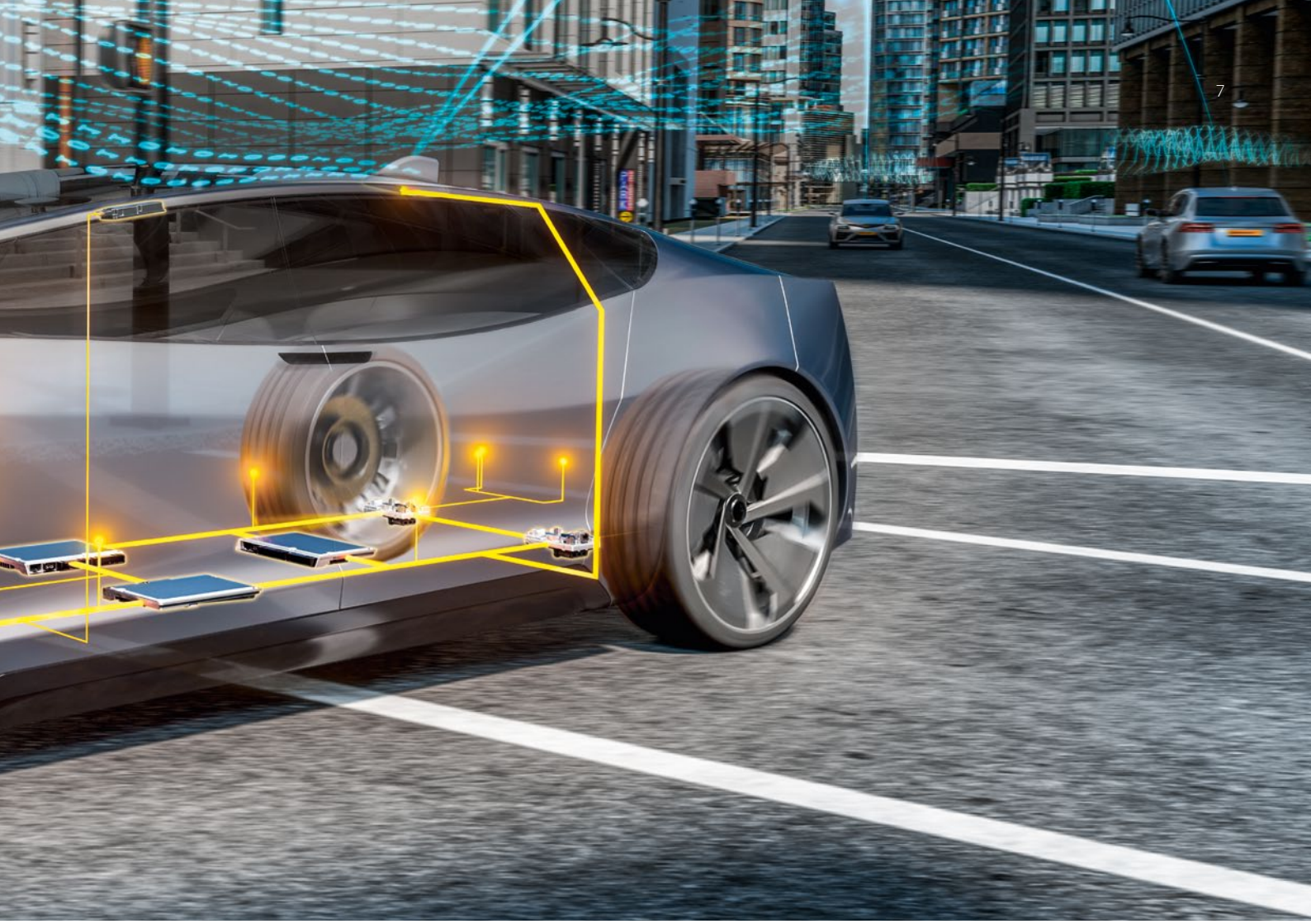
As an engineering service provider with extensive software expertise in the fields of embedded systems and cloud applications, we are your contact when it comes to connectivity solutions in the following areas:

- Shared mobility
- Online vehicle diagnostics/predictive maintenance
- Remote control operations
- Secure over-the-air upgrades through FOTA
- Infotainment

More intelligence, more features, more security.

Information management – in and around the vehicle.

Mobility is changing, including when it comes to the needs of end users. Digitalization is opening the door to a world of new features and services for future mobility. However, it is also significantly increasing the amount of information and data that needs to be processed.



High-performance computing and modern connectivity solutions have therefore become decisive factors in vehicle development. To help you achieve this performance as a small-series, niche and special vehicle manufacturer, we use our high-volume technologies and our expertise to develop customized connectivity solutions for you.

Human and machine: intuitive and innovative

The cockpit high-performance computer is the heart of the car. The integration of all cockpit domains into a powerful high-performance computer enables maximum personalization for driver and passengers while also offering vehicle manufacturers reductions in costs and complexity over the entire vehicle lifecycle.

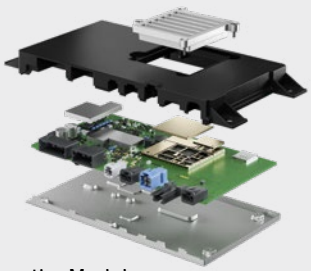
Intuitive user experience and customized software will make the difference in the future.

Cockpit HPC

Modern connectivity: greater intelligence for your vehicle

We offer systems, software, services and complete end-to-end solutions to connect vehicles with the cloud, other vehicles and road users as well as the infrastructure. In this way, the remote monitoring and diagnosis of vehicle fleets can be implemented, for example.

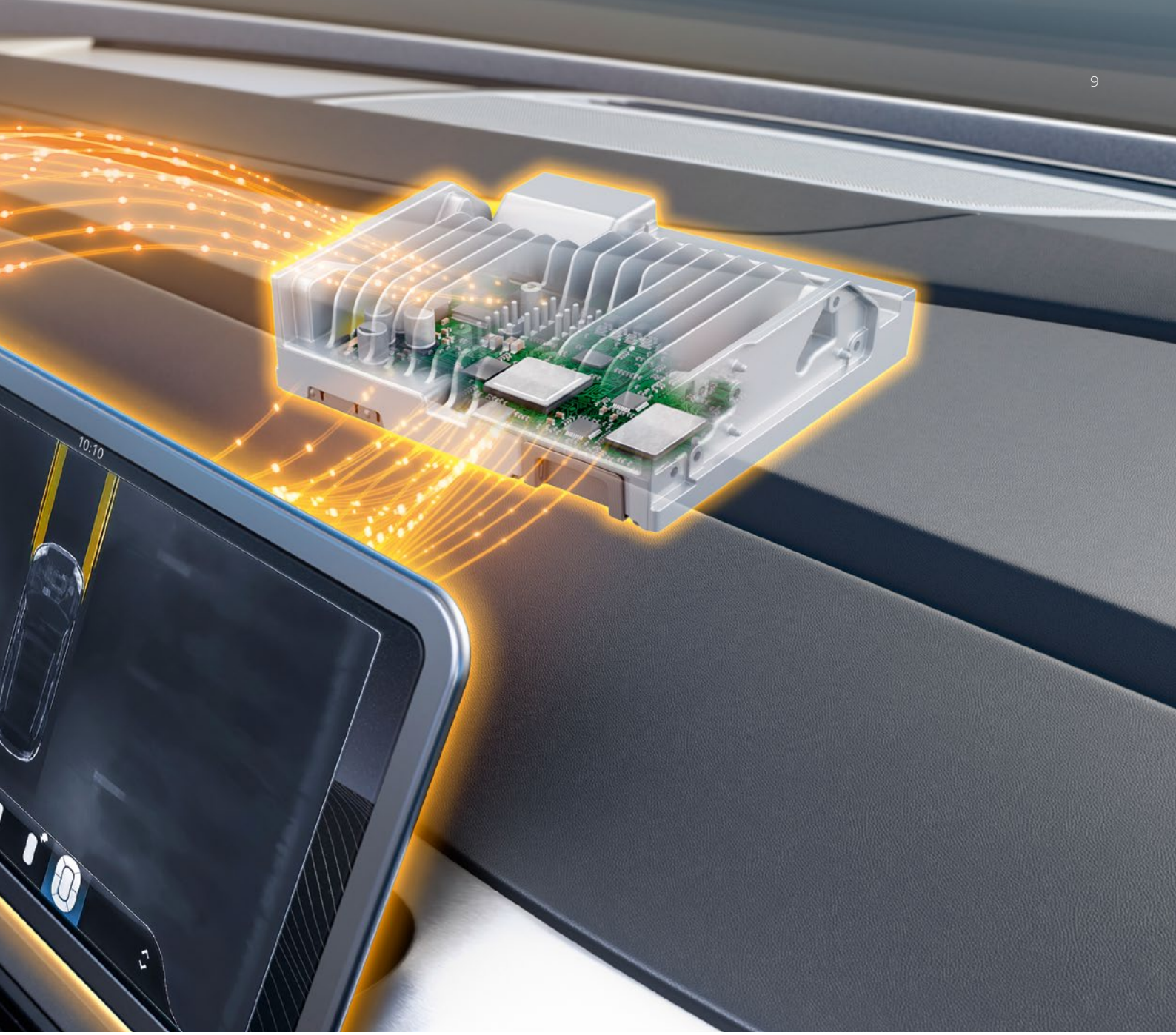
To make this possible, we have been developing telematics modules for over ten years. For us, these are the central component of every customized connectivity solution.



Telematics Module

The digital cockpit.
Connectivity and infotainment in perfect combination.

Pioneering technologies for visual, tactile and auditory interaction with the vehicle enable greater comfort, efficiency and control over the vehicle environment in the digital cockpit, as well as a wide range of entertainment functions.



From navigation to driver assistance systems – modern technologies record important information and make it available to the driver at the right time. Furthermore, they also facilitate the connection to cloud and Web services, WiFi, Bluetooth, GSM and GNSS. Modern vehicle architectures make use of this and integrate a large number of features into a single control unit.

In the modern vehicle architecture of a software-defined vehicle (SDV), we integrate our cockpit HPC as a central component that is intended to facilitate both the subsequent addition of features and the installation of security updates over the air. With a comprehensive portfolio of cockpit HPCs, we take your specific requirements into account – from simple single-display solutions as instrument clusters to sophisticated multi-display/camera solutions with the seamless integration of mobile devices.

In-vehicle infotainment systems provide the driver and passengers with entertainment and important information about the vehicle. Our telematics solutions enable the integration of new technologies (cloud, Web, apps, Bluetooth, WiFi, GSM, GNSS, sensors) into the vehicle for perfect connectivity.

Vehicle hub: the cockpit high-performance computer (HPC).

With its pre-integrated functions for instrumentation, entertainment and driver assistance, the smart cockpit HPC is a further building block for the ecosystem from the road to the cloud. It allows us to reduce the development time, complexity and costs for car manufacturers. Combining user friendliness and system performance, it also meets customer requirements for typical cockpit designs with multiple displays for driver and passengers.

The smart cockpit HPC enables comprehensive domain and function integration for cluster, infotainment and Advanced Driver Assistance Systems (ADAS). The number of installed control units and extensive wiring harnesses is reduced, and all features are brought together in a single box.

The smart cockpit HPC is designed to provide ideally adapted system performance for a pre-integrated function set. This enables fast response times and a smooth user interface, even in the case of cross-domain functions.

This approach helps to minimize the costs and time required in the development phase – for a good balance between user experience, costs and system power.

Your advantages:

- Ready-to-use solution – development in just 18 months
- State-of-the-art cross-domain functionality in a single box: cluster
- Infotainment incl. navigation
- Enables ADAS with 360° all-round visibility and driver monitoring system
- Generative AI and voice-based assistant from Google Cloud
- Cost- and performance-optimized solution without compromising user experience
- Pre-developed solution minimizes the effort for research and development as well as for project management

We provide the following functions and products:

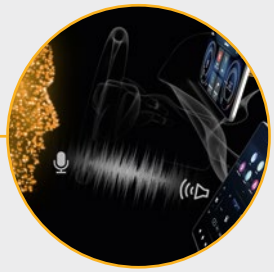
- Clusters
- Infotainment
  - Radio/media
  - Navigation
  - Phone/connectivity
- Audio, sound, speech
- Augmented reality
  - Head-up display
- Entertainment
  - Co-driver entertainment
  - Rear-seat entertainment
- Driver and cabin sensing
- Human vision
  - 360° view
  - Digital mirror
- Machine vision

Find out more about our product portfolio including smart cockpit here.

Cluster

Infotainment

Augmented Reality
Head-up Display



Audio
Sound Speech

High-Performance
Computer

Driver Monitoring
Cabin Sensing

Digital Asset
Entertainment

Human Vision

Machine Vision

Customized telematics solutions.

Innovative, intelligent, intuitive.

Continental Engineering Services has been developing telematics solutions as an interface between the Internet or cloud and the vehicle for over a decade. Our innovative products enable sophisticated over-the-air updates for several electronic control units in the vehicle and have for many years been characterized by their high security standards.

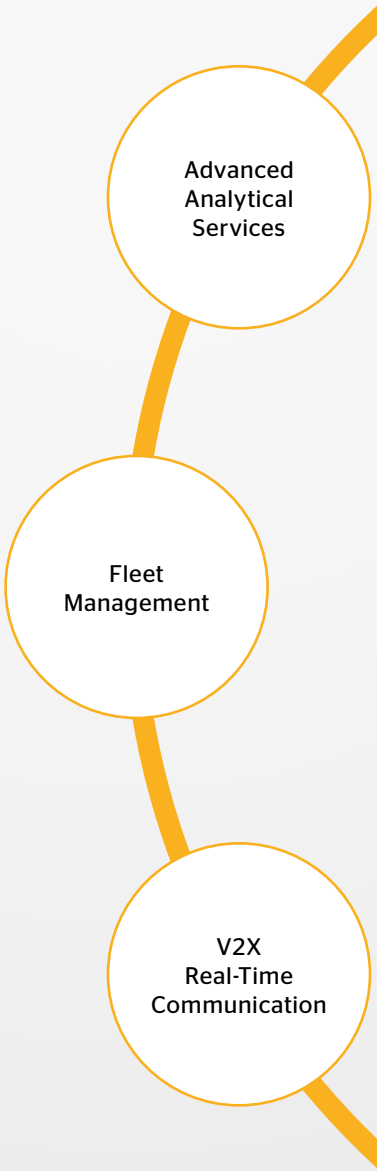
The telematics systems send and receive vehicle information and remote vehicle commands via telecommunications (5G/4G, V2X). The telematics system connects the vehicle with the OEM, dealer, service station and driver/owner. This connectivity facilitates many applications (such as insurance, the guarantee, maintenance, shared mobility). Our telematics systems are changing the future of modern software-defined vehicles.

Sophisticated IT communication.
Complex performance – simple handling.

Telematics modules are the cornerstone of our customized connectivity solutions and establish communication with other networks, vehicles and the cloud.

Telematics thus enable numerous security, safety and convenience features such as remote diagnostics, cloud-based navigation, vehicle search, theft protection and automatic emergency calls.

Already in use in numerous connected vehicles, these solutions are scalable and support both the secure processing and storage of millions of data streams in real time.



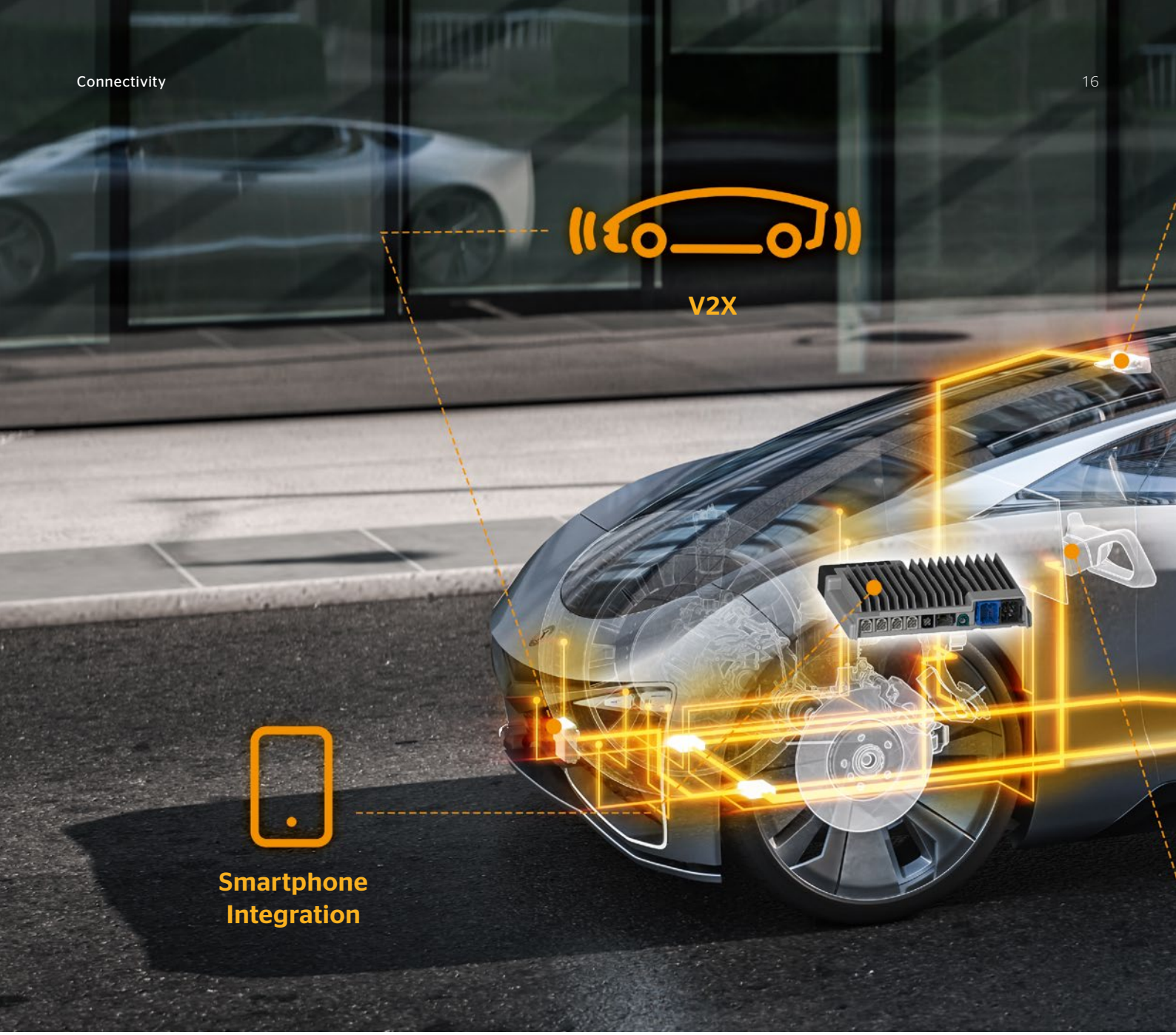
Your advantages:

- Significant network improvements
- "Equipped" for the mobility of the future and software-defined vehicles (SDVs)
- Instantaneous, fast communication between vehicles, infrastructure and a growing number of connected devices
- Improved data transfer rates, greater reliability and ultra-fast response times
- Increased driving safety, comfort and efficiency

What we offer:

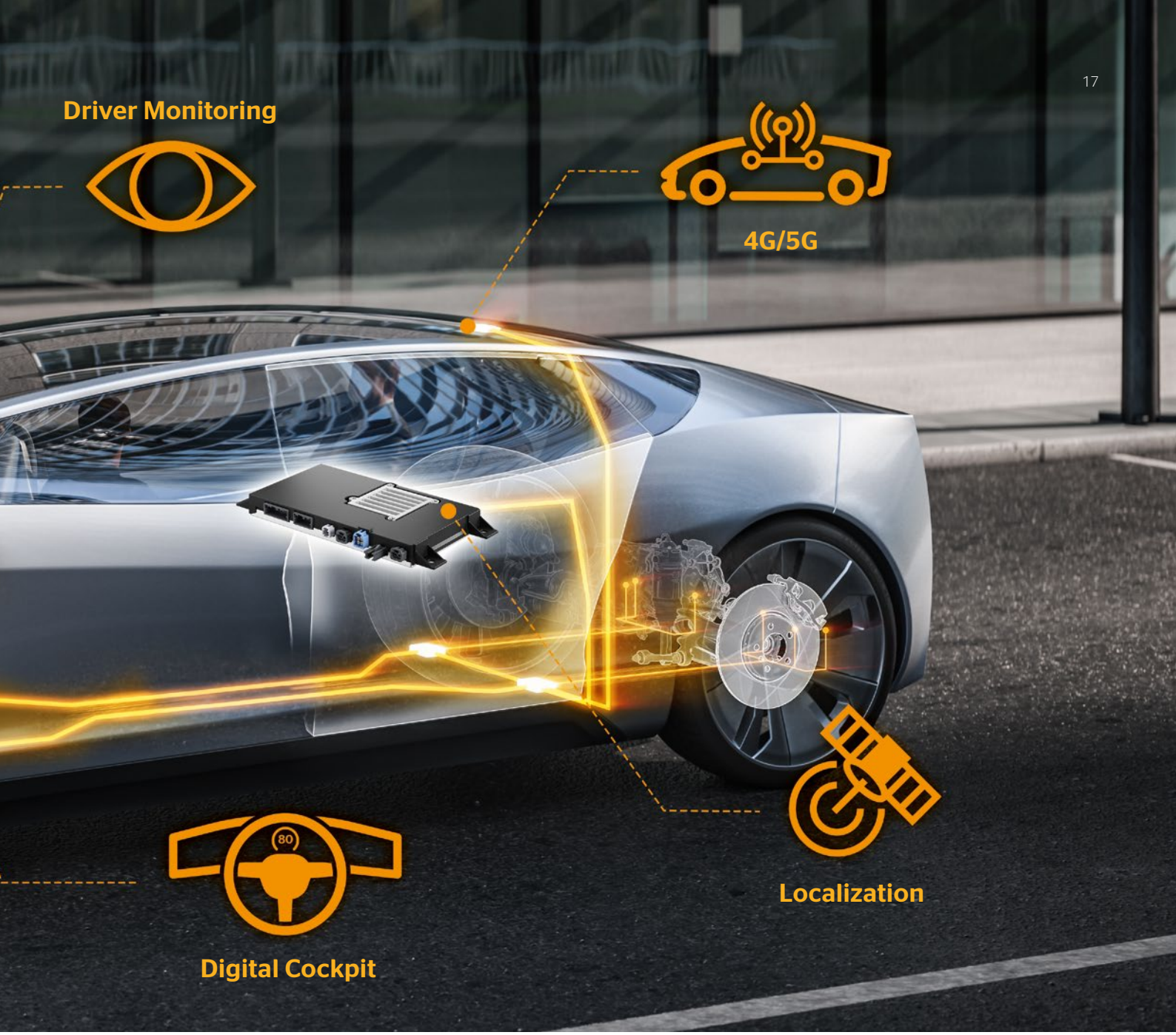
- Advanced security options, including intrusion detection
- Minimization of latencies with the latest mobile standards such as 5G release 16, C-V2X and DSRC
- Over-the-air updates as OTA master of a large number of electronic control units
- Localization options via GNSS and IMU (Inertial Measurement Unit) for vehicle location
- Improved scalability within the CES telematics portfolio (common housing, connector strategy)
- Value-added services such as stolen vehicle tracking, remote diagnostics and connectivity options for mobile phones via WiFi 6 and Bluetooth 5.x
- Hardware separation through independent vehicle processors that are scalable within the telematics portfolio with respect to computing power


Remote Diagnostics
Software Over-the-Air (OTA) Updates
eCall/ Service Call
Dense Traffic Warning
Automated and Remote Driving
Telematics Control Unit
Infotainment e.g. 4K Video Streaming
Video Conferencing
GNSS Localization
Stolen Vehicle Tracking



The heart of our connectivity solutions.

Products, features and functions.



Our Telematics Control Units (TCUs) offer a variety of sophisticated and useful features to ensure communication with other networks, vehicles and the cloud. The network access devices (NADs) developed by Continental and the telematics software framework enable the TCUs to be customized and adapted to regional guidelines and requirements.

Our telematics product range complies with the latest mobile communications standards such as 4G, 4.5G and 5G. Since 5G facilitates higher bandwidth and lower latency, we are running extensive tests to ensure that our telematics products support predictive and autonomous driving across the entire spectrum.

Our telematics products offer a wide range of benefits, including improved security and an automatically or manually triggered emergency call option (eCall) in the event of an accident. Our telematics solutions make us your ideal partner for convenience and safety – both in the future and in the here and now!

One-stop shop.
How your ideas become your own connectivity solutions.

Your idea

You need development support in the area of telematics or cockpit HPC? Our experienced automotive technology engineers will gladly make design proposals based on our infotainment/connectivity product platforms or on your own specifications.

Specification

You can provide us with the necessary technical data or we can use our comprehensive vehicle expertise to help you develop a suitable specification.

Industrial and mechanical design

We have highly experienced mechanical and automotive engineers who can provide you with design proposals based on our infotainment/ connectivity product platforms or based on your own specifications.

Hardware and software concept

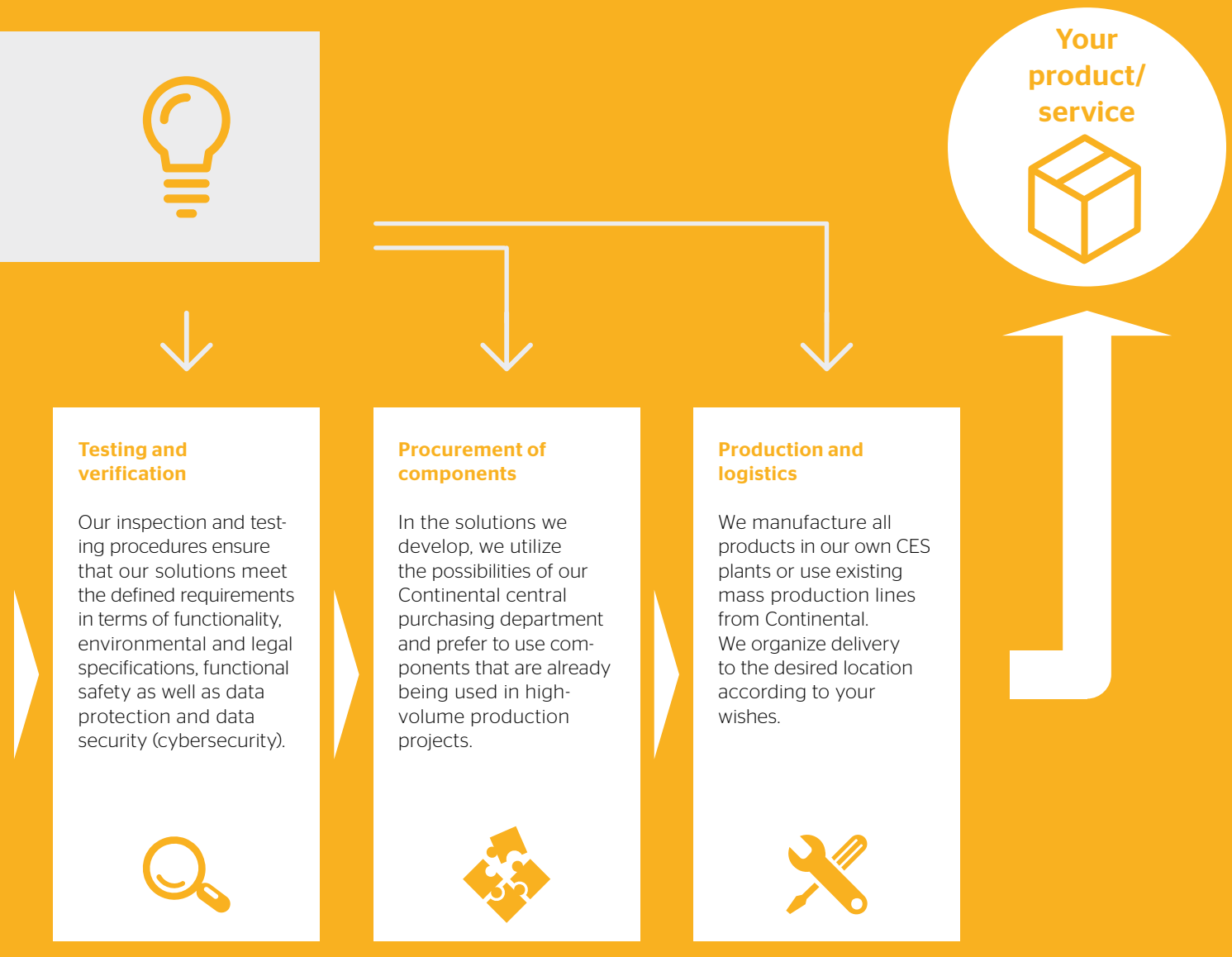
Our software and hardware engineers adapt products on the basis of our own product platforms or develop SW/HW from scratch according to your needs as a customer.

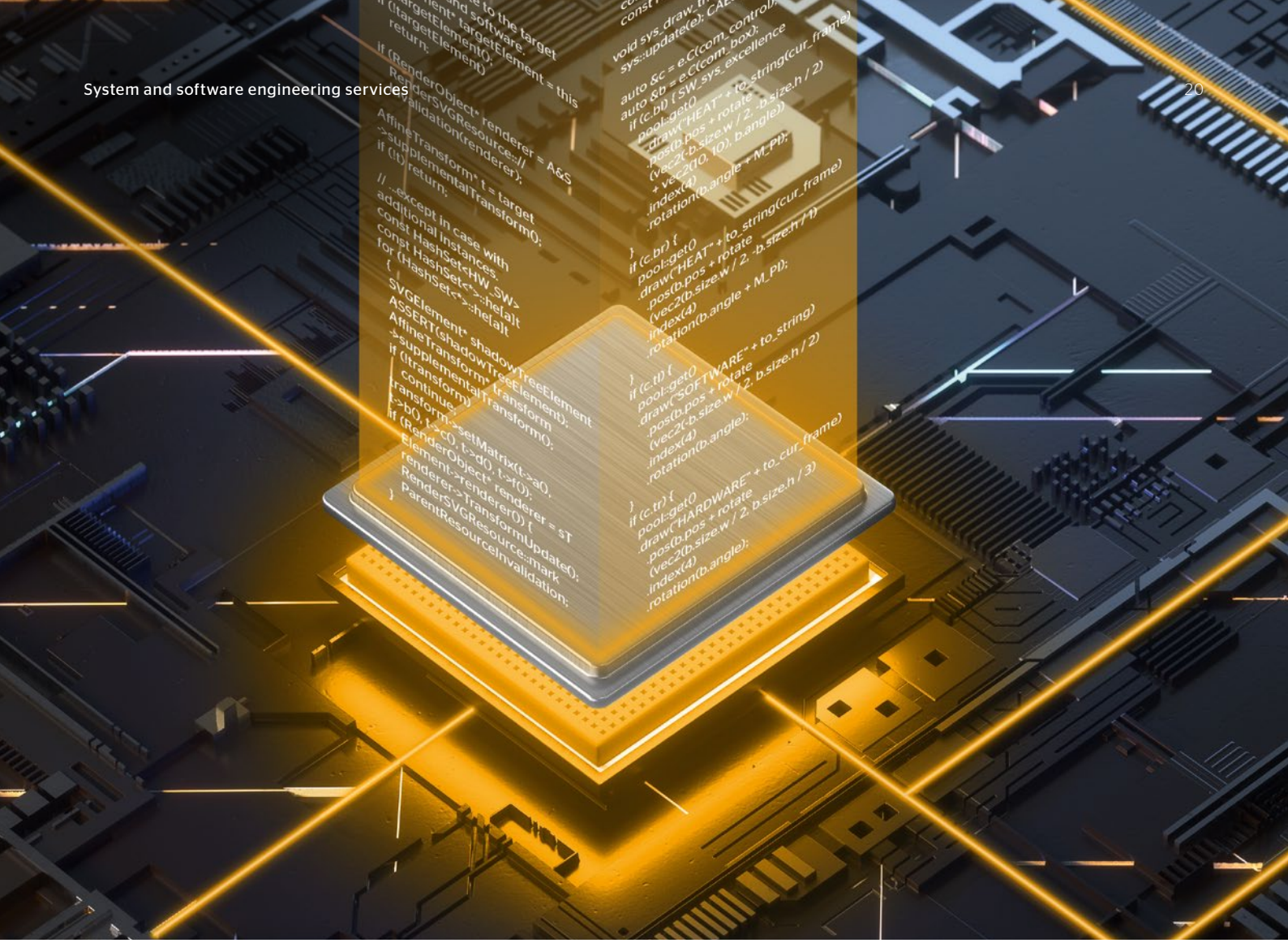
Connectivity

We have our own CES cloud platform or we cooperate with third-party providers (OTA, data collection, remote diagnostics) to provide a complete end-to-end connectivity solution for your proposed product.

The relevant development steps and work packages can of course also be selected individually and can be specifically adapted to your requirements.

Continental Engineering Services is your competent partner, regardless of the current status of your project. We have everything you need – experienced engineers and innovative technologies that are necessary for successful implementation. So that your ideas become solutions.





Everything from a single source.

Our expertise – your advantage.

Benefit from our comprehensive vehicle expertise, our consulting support and our expertise in connected system solutions, vehicle architecture and software development. This helps you avoid expensive follow-up costs for your automotive development project.

Software development – tailor-made

We design and develop software – from low-level customization to comprehensive application level – that is connected to the cloud via online services.

We offer our customers everything from a single source: software development services, device drivers, frameworks, boot loaders or the entire infrastructure through to the cloud – in a completely transparent development process. We build efficient and secure embedded systems for complex requirements that close the gap between product conception and realization.

Our offering starts with complete BSP development services (Linux, QNX, RTOS), including infrastructure development and the necessary modularity for scalability and long-term maintenance. This includes customized applications that are tailored to the requirements of each individual project. Our internal quality management procedures are used here.

Benefit from our deep understanding of how the embedded software connects to the cloud using secure methods to generate customized end-to-end online services specific to each customer.

System partner
Expert domains

Concept development

- Android Automotive feasibility and gap assessment
- Google Automotive Services, impact and cost analysis
- Regionalization assessment for non-European market with focus on China
- Hardware strategy and requirements
- PoC development
- Assessment for hypervisor or hypervisor-less architecture
- Team enablement and development

Continuous integration/ continuous development and DevOps

- Establish a scaled agile working model for collaborative development
- Set-up of continuous integration and continuous delivery pipeline
- Manage new features releases for new car lines via OTA
- Migration of core platform to newest versions of Android incl. monitoring and merges of security patches
- Pipelines for checking the Android test suits: CTS, VTS, STS, ATS, BTS and ART

Platform development

- Architecture and development of the platform
- BSP and Vehicle HAL development, boot and board optimization
- 3D party integration for Google Automotive Services, navigation and other connected services
- Hypervisor or hypervisor-less based development
- Integration for cluster instrument and rear-seat entertainment

Connected IVI development

- OEM-specific development for the in-vehicle infotainment (IVI)
- UI/UX design and development
- Application development for system, media, communication and vehicle control
- Product regionalization for non-European markets like China
- Google Automotive Services, integration and customization
- Connected cloud services, development like telemetry, OTA, App Store

End-to-end testing

- Android Automotive, component and system testing
- Instrumentation tests, native tests and host tests adapted for Android Automotive
- Compatibility suite tests based on CDD for CTS, VTS, STS, ATS, BTS and ART
- End-to-end automatic test scenarios
- SIL testing end-to-end using Google CatBox
- Perform Android Automotive's regular penetration testing

Our cooperation models.
The choice is yours.

The vehicle of tomorrow is connected, user-friendly, comfortable and intelligent. To ensure that you are always up to date in the field of vehicle development, we offer consulting and development services and, if required, suitable Continental system technology for modern, connected information management in the vehicle.

We can offer you a wide range of cooperation models:

Fixed price

Fixed price models are ideal for projects with a clear scope, established project management methods and stable requirements.

Time and materials

This type of cooperation model is useful when the cost and duration of the project are difficult to calculate.

Team with budget

This combined model with an upper limit is highly suitable for projects where priorities change very dynamically but budget control must be maintained at all times.

Continental Engineering Services GmbH
Breitlacherstr. 94, 60489 Frankfurt a. M., Germany
Tel. +49 69 678696-0
info.CES@conti-engineering.com
www.conti-engineering.com

Continental Engineering Services

Legal notice

The information provided in this brochure contains only general descriptions or performance features, which, in actual use, may not always apply as described or which may change as a result of further development of the products. This information concerns only a technical description of the product. It especially does not represent any guarantee of condition or durability. This means that the desired performance features are binding only if they are expressly agreed when a contract is concluded. Subject to availability and technical changes.

© Continental Engineering Services GmbH

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Continental is under license. Other trademarks and trade names are those of their respective owners.

Continental
The Future in Motion

Printed in Germany | 06/2024 | EN