Future platform for connected cars as a managed service based on Microsoft Azure

T-Systems enables rapid rollout of digital services for all of a European car manufacturer's vehicles

"The modular, standardized architecture of our Connected Car platform enables automotive manufacturers to manage their connected cars efficiently and speed up the rollout of new digital services."

Jörg Tischler, Head of Connected Car, T-Systems

Car buyers and drivers are placing greater value on digital services that car manufacturers (OEMs) offer in their cars. Such offerings include vehicle-specific services like remote monitoring of diagnostics data and infotainment services like navigation, as well as location-based services from third parties. With unique, high-quality services and user friendliness, OEMs create USPs in today's modern automobile market that can tip the scales in favor of a specific brand. This applies particularly to the premium segment.

Software is playing an increasingly important role in this, with its share of added value in cars increasing steadily. While such software enables new functions in connected cars, it also increases the need to manage it efficiently, as well as the services that run on it. To achieve this, OEMs need platforms that can serve as management consoles for their connected cars. They make it possible to roll out new services quickly and accurately and to record data from the cars. This, in turn, creates the foundation for new business models and paves the way for software-defined vehicles. A European car manufacturer was already using a connected car platform, but its architecture was no longer future-proof or capable of managing the sheer volume of software-based services and connected cars worldwide.

At a glance

- Reduction in time-to-market for new in-car services
- Transformation to a public cloud infrastructure and DevOps methods
- Automation of all technical processes and workflows
- Coordination of the service provider ecosystem
- Foundation for new business models and service orchestration

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Reference in detail

The challenge

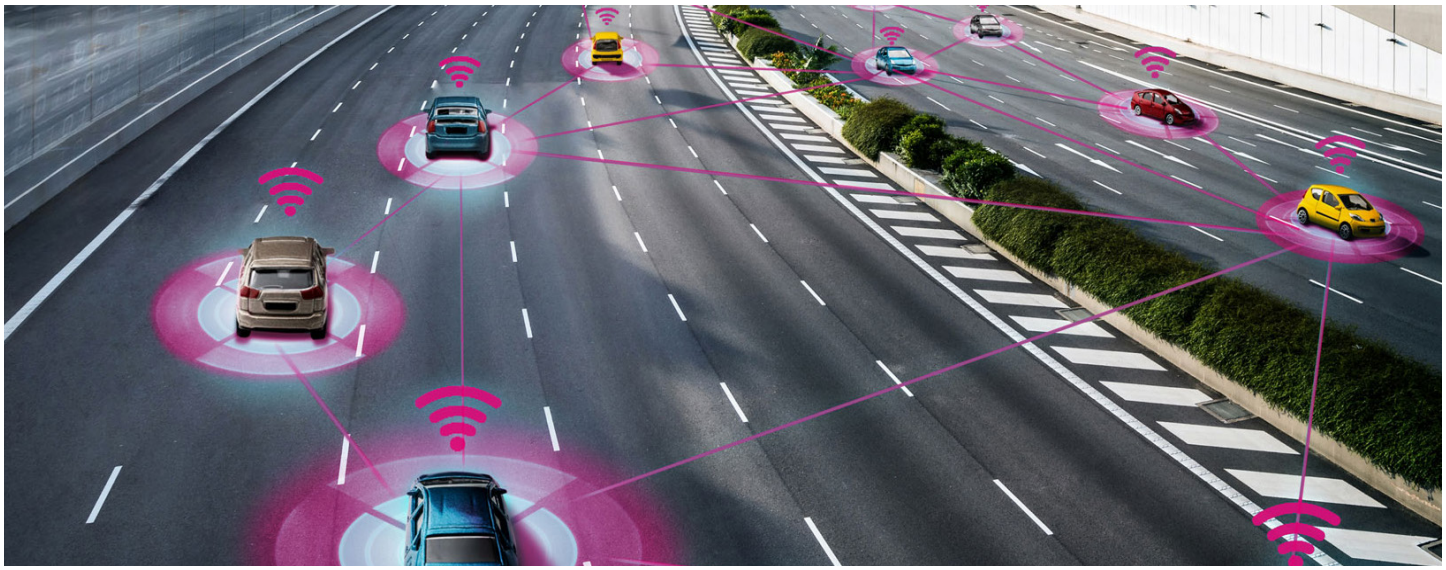
With its platform for connected cars, a European car manufacturer laid the foundations at an early stage for offering digital services in its vehicles. With innovative services and service extensions, the OEM aims to create an outstanding driver experience – a key requirement that the company defined for itself. Time-to-market plays a crucial role here. But the original architecture of the connected car platform was no longer sustainable: the number of managed vehicles had increased 1000-fold in seven years and the number of software-based services had grown to nearly 200. The conventional on-premise installation needed to be replaced by a modern approach, one that supported scalability and automation and offered standardized, agile development environments to the ecosystem of service providers. To achieve a higher level of agility, the OEM decided to source the infrastructures as a managed service from the public cloud – Microsoft Azure in this case. In addition, the company implemented DevOps to establish an agile methodology for software development and operation. With its transformation into the cloud, however, the OEM also needed a forward-looking platform to manage the connected car services. T-Systems played a key role in both innovations: the transformation of the infrastructures to the public cloud and the implementation of the automotive platform that runs on it, including DevOps methodology.

The solution

As the customer's long-standing service provider for connected car systems, T-Systems had proven itself in two ways: firstly, for the global on-premise operation of the existing platform (Europe, China, Americas), and secondly in the service development environment (architecture, software engineering, operations). In light of this extensive experience, as well as their skills in DevOps, the OEM decided to commission T-Systems to build the new platform as well. The target: the transformation should be ongoing, during regular operations – for all cars and all generations. The project partners chose an agile approach: they started small, tested, and quickly scaled successful concepts. The services were modernized before the infrastructure transformation started, so they could be run in a cloud. Microsoft Azure was selected as the infrastructure. During the project, the public cloud infrastructure posed a variety of challenges, for which solutions had to be found using agile methods. At the end of the transformation process, an extensive, scalable automotive platform had been created that allowed the OEM to manage its connected cars worldwide.

Customer benefit

With its new automotive platform, the OEM has a standard foundation worldwide for managing its connected cars, which minimizes operating expenses, increases efficiency, and cuts costs. End users didn't notice the change at all: the rapid cloud transformation during regular operations ensured continuously stable in-car services – an excellent user experience worthy of a premium offering. At the same time, the company managed a cultural change to agile development methods, giving a sustained boost to the OEM's capacity to innovative and cutting time-to-market significantly. The platform enables the OEM to manage its partner ecosystem and offer new business models like features on demand. In the future, the platform will also serve as a launchpad for transforming management of cars into management of the customers. With this step, the OEM is intensifying its relationship with the users of its cars.



The future of connected car platforms

We have answers to the challenges posed by system architectures in the automotive industry

Technology trends

- Software-defined vehicles, based on cloud and edge computing, in a **single, consistent connected car technology stack**
- **Continuous content and software streaming** in cars (media, road maps, games, functional updates, etc.)
- Standardized **pan-fleet integration (V2V) and infrastructure (V2I)**, including legal requirements

Connected car platform

- Shift from a vehicle-centric to a **customer-centric view**
- **Integration** of telematics, infotainment, and safety-relevant functions
- Customer-centric, branded OEM layer based on a (distributed) **ecosystem of content partners for digital services**

The connected customer 2025+

- **...is always online and consumes device-independent, individual digital services – on demand.**
- **...is worried about data security and privacy, but values highly-integrated digital services**
- **...expects new digital products and services to become available immediately and regularly**

Connected car reference architecture

- **Optimally defined PaaS layer** with core functions: OTA device management, digital twins, remote control, etc.
- **A standardized platform for all vehicle generations** for management and configuration (including legacy systems)
- **Integrated development environment** for continuous enhancement and rapid time-to-market

Challenges manufacturers face

- **Cross-OEM sharing of digital services and development costs** without losing brand awareness or loyalty
- Guarantees stable remote access to vehicle systems **without sacrificing safety**
- **Harmonizes short technology life cycles** (3–4 years) with long automobile life cycles (>10 years)

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