5G-ConnectedMobility is a cross-industry consortium driving 5G R&D in Germany and in Europe

5G-ConnectedMobility is an industry-unique initiative that creates a network infrastructure and application environment for 5G analysis and testing in real-time for Vehicle-to-vehicle, Vehicle-to-infrastructure and Railway-to-infrastructure as well as for use cases relevant to consumers and industries.

5G-ConnectedMobility Objectives

- Strengthening the 5G Research and Development (R&D) and 5G business development in Germany and Europe
- Integration of technology requirements from various industries into upcoming international 5G-standardization activities

What is 5G?

While previous generations of mobile network technologies like 2G, 3G and 4G have been predominantly designed for consumer related mobile usage, the evolution to 5G will additionally create networks ready to digitalize entire industries and societies and match connectivity requirements of the industrial internet.

First commercial 5G networks and devices are expected around end of 2018/2019.
The 5G-ConnectedMobility network infrastructure covers a test track of approximately 30 km along the A9 motorway and a high-speed railway track between Nuremberg-Feucht and Greding in Bavaria, Germany.

The project includes six network sites (Antennas provided by Telefónica Germany, Deutsche Telekom, ABDN and Deutsche Bahn) along the test track equipped with the latest Ericsson Radio Hardware and creates a dedicated infrastructure not depending on any existing commercial networks while using existing fiber and microwave connections. This enables to offer the following testing features:

- Real scenario testing environment
- Dedicated network for secure testing
- 5G prototype-applications test set-up
- Network configurations flexibility

Ericsson received BNetzA permission to use frequencies in the 700 MHz band and will act as a network operator. The core network and cloud infrastructure are operated at the Ericsson ICT Development Center EUROLAB close to Aachen, Germany.
Technology features of the 5G-ConnectedMobility Test Field

The 5G-ConnectedMobility Test field has already been operating with the following features of future 5G Networks to meet 5G use case testing requirements:

Network Slicing

Network slicing allows service providers to segment one physical network into multiple logical networks for different service types over one common infrastructure.

Internet of Things (IoT)

Narrowband IoT and CAT M1 are 3GPP technology standards dedicated to connect a broad range of IoT devices with ubiquitous coverage and low power consumption for long battery life. CAT M1 additionally offers better reliability for IoT devices being in motion. 5G-ConnectedMobility was the first to integrate the technology in a live network in Germany.

Mobile Edge Cloud

Mobile Edge Cloud increases low latency capabilities in the network by bringing the relevant core network intelligence (data center) closer to the edge of the network and therefore closer to the use case and the related network performance demand.

Virtualized Network Functions (VNF)

VNF enables the deployment of software-based network functions into data centers of the core network instead of deploying proprietary hardware. This builds the foundation for creating programmable networks matching future performance, simplification and optimization requirements.

Technology Outlook: Introduction of 5G-NR

5G New Radio (NR) is planned to greatly improve user experience and capacity as well as to create new industrial use case opportunities by introducing features such as eMBB (enhanced Mobile Broad Band) and URLLC (Ultra Reliable Low Latency Communication).
### Use Cases and Activities on the Test Field

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<tr>
<th>Network Slicing for data communication in protected channels</th>
<th>Streaming &amp; Dedicated Use Cases for Consumers</th>
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<tr>
<td>Monitoring of train and service functions via IoT together with Deutsche Bahn as well as providing stable infotainment applications for consumers in the mobile network, e.g. video streaming</td>
<td>Evaluating requirements in case of high network load, video-streaming at high speed as well as antenna positioning and distance analysis to provide the best performance together with BMW</td>
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### Outlook: Future Use Case Ideas and Areas of Application

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<th>Quality-of-Service-Aware Networks and Applications</th>
<th>Drone supported maintenance and traffic monitoring</th>
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<td>Assisted and Autonomous Driving</td>
<td>Intelligent resource management for trains and service areas</td>
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<td>Connected harvesting machines</td>
<td>Connected construction site vehicles</td>
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Learn more about Use Cases of 5G-ConnectedMobility
5G-ConnectedMobility.com
Accelerating 5G Research and Engagement

5G-ConnectedMobility creates a dedicated network infrastructure and application environment for 5G analysis and testing in real-time for Vehicle-to-vehicle, Vehicle-to-infrastructure, and Railway-to-infrastructure as well as for other use cases relevant not only to industries, but also to consumers.

The project is based on a test track of approximately 30 km along the A9 motorway and a high-speed railway track between Nuremberg-Feucht and Greding in Bavaria, Germany.

5G-ConnectedMobility is part of the „Digital test field motorway“-Initiative of the German Federal Ministry for Transportation and Digital Infrastructure.

Get in contact with the 5G-ConnectedMobility consortium

If you want to gain insights into the 5G activities on the test field or discuss and explore new use cases being tested, please contact us:

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