The partners at a glance

IRT
The Broadcast Technology Institute IRT is an internationally renowned research and innovation center for audiovisual technologies. It carries out research with the goal of adapting broadcasting solutions to new markets and modern requirements. www.irt.de/en

Kathrein
Kathrein is a specialist for reliable, high-end communications technology. The company is a driving force for innovation and technology in today’s connected world. www.kathrein.com/en

Rohde & Schwarz
Rohde & Schwarz has been an innovator in broadcast and media for over 70 years. Its solutions cover the entire signal chain, from the studio to the broadcaster. www.rohde-schwarz.com

Telefónica Deutschland offers telecommunication services for private and business customers as well as innovative, digital products and services for the internet of things and data analytics. With a total of 49.6 million customer lines (as of June 30, 2018), the company is one of the leading integrated telecommunications providers in Germany. www.telefónica.de/home-corporate-en.html

BR
Bayerischer Rundfunk, is Bavaria’s public broadcasting service with around eight million viewers and listeners per day throughout Germany. With ten radio and two television stations, two internationally renowned symphony orchestras, a celebrated chorus and innovative online services, BR is one of Europe’s most respected broadcast institutions. www.br.de

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The 5G network standard is more than just the fifth generation of mobile communications technology with higher data rates and lower latency. It is a comprehensive communications system that will connect people and things in the future, changing entire industries and markets. 5G is a key technology for automated driving, industry 4.0, smart grid and eHealth. 5G also offers substantial potential for the media industry. Millions of tablets and smartphones could benefit from the efficient broadcasting of TV programs in an independent, easily accessible network. The data volumes in IP networks are growing rapidly due to the ever-growing use of video. Other drivers include new technologies such as 4K, 8K, VR and AR. 5G Broadcast mode allows efficient distribution beyond the cell boundaries of traditional mobile communication-technologies. The resulting convergence offers the possibility of a return channel based on the same technology. This creates added value in 5G devices – from seamless combination of linear TV programs and on-demand TV to security-relevant information for the entire population.

**FeMBMS (Further evolved multimedia broadcast multicast service)** is a further development of the LTE broadcast mode eMBMS in 3GPP Release 14. It enables 100% of the transmission capacity to be used for broadcast applications. Considerably increased inter-site distances permit the use of broadcast transmitter stations for economical area coverage. The 3GPP standard established a receive-only mode without the need for a return channel and defined the audiovisual transport and coding formats that are now used in broadcasting technology.

**Internationally renowned partners**

As part of the 5G TODAY project, a 5G test site for broadcasting is being set up in the Bavarian Oberland region to test and evaluate the FeMBMS mode in operation. Two Rohde & Schwarz high-power transmitters with 100 KW ERP are being installed at the Bavarian Broadcasting Corporation transmitter sites in Munich-Ismaning and on top of Wendelstein Mountain (1828 meters altitude). Kathrein antennas are being integrated and specially optimized for cellular reception.

Both test transmitters will operate in a single-frequency network over channel 56/57 (750 MHz to 760 MHz). The spectrum for the test transmitters are being provided by Telefónica.

The Broadcast Technology Institute IRT is coordinating the project and has developed an FeMBMS receiver based on software-defined radio (SDR) technology. IRT is also involved in transmitter network planning and test site measurements. The insights from the project will contribute greatly towards advancing 5G broadcasting, supporting standardization work and promoting the development of components all the way to market launch.

**5G TODAY timeline with milestones and project phases**

- **Start of the project**
- **Infrastructure analysis**
- **Network planning and design**
- **Development of infrastructure with transmitters, receivers and measuring system**
- **Implementation at the test site: 1st transmitter**
- **2nd transmitter, implementation completed (SFN)**
- **Field test**
- **Results analysis and utilization planning**

**FeMBMS receivers are designed based on software-defined radio technology. In the future, this technology could be integrated into smartphones, tablets and TVs.**