

PRESS RELEASE

PRESS RELEASEJuly 22, 2019 || Page 1 | 2

Research project “RelCOvAir”: closing the gap of test systems for industrial wireless communication

Erlangen/Magdeburg, Germany: At the final review of the Celtic-Plus project “RelCOvAir – Reliable Industrial Communication Over the Air” the project team, led by the Fraunhofer Institute for Integrated Circuits IIS, presented a new test system for industrial wireless communication. The developed test system consists of a software-based and a hardware-based test bed solution. Both test beds are proof-of-concept solutions for testing the performance of wireless transmission systems, e.g., in terms of measuring and evaluating reliability, latency and throughput.

To date, there is lack of standardized methods and test systems for measuring the reliability and general performance of wireless communication systems in industrial scenarios. Over the last three years, this problem has been addressed within the “RelCOvAir” project. The project findings and initial versions of a software and a hardware test bed were now presented at the final project review in Magdeburg on July 18, 2019.

Software and hardware test bed

Both test beds are based on extensive research. In a first step, the parameters of industrial environments were characterized through intensive channel and interference measurements in typical industrial communication scenarios. These findings were used to build a comprehensive propagation channel model for industrial use cases. The thereby extended QuaDRiGa channel model is implemented in both test beds. The software test bed offers functions for applying the channel characteristics to PC-based simulation models of wireless communication systems, whereas the hardware test bed includes a channel emulator and serves for testing of real industrial communication hardware.

Benchmarking the reliability of industrial wireless systems

The project consortium emphasized that great care was taken to disseminate the results and provide the findings to standardization bodies.

Head of Corporate Communications

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“The findings of the project pushed forward the required testing and qualification of wireless transmission as it now becomes feasible to realistically assess the behavior of wireless systems in industrial environments. Standardized rating systems and criteria together with suitable test beds will enable companies to decide from a neutral standpoint on the most suitable transmission system for a given use case”, said Thomas Heyn, group manager at Fraunhofer IIS and project coordinator of “RelCOvAir”.

PRESS RELEASEJuly 22, 2019 || Page 2 | 2

European collaboration in “RelCOvAir”

“RelCOvAir” has been funded by the German Federal Ministry of Education and Research, Business Finland and the Spanish Ministry of Energy, Tourism and Digital Agenda in the framework of the Celtic-Plus Programme. Celtic-Next, formerly Celtic-Plus, is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications and services focusing on a new “Smart Connected World” paradigm.

The project consortium was led by Fraunhofer IIS and comprises research and industry partners from Germany, Finland and Spain: CETECOM GmbH, Fraunhofer Institute for Telecommunications (Heinrich Hertz Institute, HHI), GHMT AG, ifak e.V. Magdeburg, Kaltio Technologies Oy, Qosmotec GmbH, Sapotech Oy, Software Quality Systems S.A., Trimex S.A., University of Oulu and Verkotan Oy.

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The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities are conducted by 72 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of more than 26,600, who work with an annual research budget totaling more than 2.6 billion euros.

The **Fraunhofer Institute for Integrated Circuits IIS** is one of the world’s leading application-oriented research institutions for microelectronic and IT system solutions and services. It is the largest of all Fraunhofer Institutes. Research at Fraunhofer IIS revolves around two guiding topics: In the area of **“Audio and Media Technologies”**, the institute has been shaping the digitalization of media for more than 30 years now. Fraunhofer IIS was instrumental in the development of mp3 and AAC and played a significant role in the digitalization of the cinema. Current developments are opening up whole new sound worlds and are being used in virtual reality, automotive sound systems, mobile telephony, streaming and broadcasting.

In the context of **“cognitive sensor technologies”**, the institute researches technologies for sensor technology, data transmission technology, data analysis methods and the exploitation of data as part of data-driven services and their accompanying business models. This adds a cognitive component to the function of the conventional “smart” sensor.

Nearly 1050 employees conduct contract research for industry, the service sector and public authorities. Founded in 1985 in Erlangen, Fraunhofer IIS has now 15 locations in 11 cities: Erlangen (headquarters), Nuremberg, Fürth, Dresden, further in Bamberg, Weismen, Coburg, Würzburg, Ilmenau, Deggendorf and Passau. The budget of 165 million euros is mainly financed by projects. 26 percent of the budget is subsidized by federal and state funds.

Detailed information on: www.iis.fraunhofer.de/en