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## Research project "ReICOvAir": closing the gap of test systems for industrial wireless communication

**Erlangen/Magdeburg, Germany: At the final review of the Celtic-Plus project "ReICOvAir – 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 "ReICOvAir" 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.

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**Editorial notes**
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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 "ReICOvAir".

## European collaboration in "ReICOvAir"

"ReICOvAir" 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., Trimek S.A., University of Oulu and Verkotan Oy.

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