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PRESS RELEASE

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National Instruments and Lund University Announce Massive MIMO Collaboration

New test bed leads the way for next-generation wireless systems research.

AUSTIN, Texas - Feb. 24, 2014 - National Instruments and [Lund University](#) today announced collaboration on the development of a test bed capable of prototyping a massive multiple input, multiple output (MIMO) system. The test bed will consist of a massive MIMO base station with 100 transmit and receive nodes. Researchers can link several pieces of user equipment that simulate mobile devices with the massive MIMO base station. They can emulate a real-world scenario in order to evaluate how the performance of massive MIMO compares to theory.

Massive MIMO is a relatively new concept in 5G communications and addresses capacity and energy challenges facing next-generation communication systems. This commitment from Lund University and NI toward the development of a massive MIMO test bed represents an ambitious collaboration. With more than 100 antennas, this prototype is the largest and most comprehensive of its kind, making it the first test bed to reach this level of magnitude and complexity on the road to 5G.

Ove Edfors and Fredrik Tufvesson, Lund University researchers, state, “We are very pleased with the commitment that National Instruments has shown to our massive MIMO research and the test bed. Through this partnership, we believe that we will be able to deliver ground-breaking results that could significantly impact the definition of 5G networks of the future.”

“At National Instruments, we believe that our [PXI](#) platform and our [USRP](#) software defined radio platform, combined with NI [LabVIEW](#) graphical system design software, are the perfect technologies to prototype such a system,” said James Kimery, director of [RF](#) and communications research at National Instruments. “Without these technologies, prototyping such a system would be impractical. We are excited to partner with Lund University on this project to research and evaluate the massive MIMO concept and to contribute to the 5G research effort.”

Massive MIMO Overview

The concept of massive MIMO involves the deployment of base stations with very large-scale antenna arrays, encompassing perhaps hundreds of transceiver elements, to increase network capacity, improve reliability and reduce the overall transmitted power in a channel. Theoretically, the total transmitted power from the large antenna array would be less than the transmitted power of a single antenna serving a designated cell or region, while delivering the same or higher data rates. Massive MIMO has been the topic of many research papers, but no one has been able to test the concept in a real-world scenario of the scale proposed by Lund University and NI.

About Lund University

Lund University seeks to be a world-class university that works to understand, explain and improve our world and the human condition. The university is ranked as one of the top 100 in the world and has 47,000 students and 7,200 employees. We tackle complex problems and global challenges and work to ensure that knowledge and innovations benefit society. The research carried out is of a high international standard and world-leading in several areas. The research group at the Department of Electrical and Information Technology, together with its partners, is seen as a pioneer in the area of massive MIMO.

For more information on how National Instruments is collaborating with top wireless communications researchers—focused specifically on 5G—visit www.ni.com/5g

About National Instruments

Since 1976, National Instruments (www.ni.com) has equipped engineers and scientists with tools that accelerate productivity, innovation and discovery. NI's graphical system design approach to engineering provides an integrated software and hardware platform that speeds the development of any system needing measurement and control. The company's long-term vision and focus on improving society through its technology supports the success of its customers, employees, suppliers and shareholders.

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