

Press Release

Heidelberg, Germany – March 30, 2011

Collaborative research projects win Gold Excellence Award at Celtic-Plus Event 2011

Nokia Siemens Networks-led collaborative research projects contributed to development of 100 Gigabit Ethernet Transport and IMT-Advanced technologies

Two collaborative research projects led by Nokia Siemens Networks have been awarded the Award of Excellence in Gold by the Celtic Core Group at the 2011 Celtic-Plus* Event in Heidelberg, Germany on March 29. The Celtic Core Group selected 100 Gigabit Ethernet Transport Technologies (100GET) and Wireless World Initiative New Radio +*** (WINNER+) for the award for outstanding research performance and contribution to world-wide standardization. Nokia Siemens Networks led the WINNER+ project and the second phase of the 100GET project.**

The outcome of the 100GET project is expected to enable operators to cost-efficiently increase the transmission capacity of transport networks, and provide a high bandwidth and quality to effectively meet the data deluge.

By fostering consensus building in standardization, the WINNER+ project has paved the way for more efficient future radio access technologies as part of IMT-Advanced wireless technology.

“Nokia Siemens Networks believes that the communication industry has a responsibility to enable the growth of other industries and improve the quality of life for individuals,” said Hossein Moiin, chief technology officer of Nokia Siemens Networks. “Collaborative research projects such as Celtic 100GET and WINNER+ verify new technology approaches and prepare the ground for achieving consensus in standardization at an early stage, before commercialization. Nokia Siemens Networks is highly committed to continuous innovation and collaboration on joint R&D projects with governments, industry players, research organizations and universities across the world.”

The 100GET project designed and verified new networking concepts and physical layer technologies for 100 Gbps Ethernet-based transport networks. One of the key achievements of this project is development of new optical technologies that enable spectrally-efficient 100 Gbps transmission and the re-use of existing fiber, in addition to the development of low-cost transponders that feature low power consumption.

Another key achievement of this project is the adoption of Internet protocols and concepts in transport networks to simplify network operations. The project also developed a multi-modal approach, wherein cost-efficient network planning and deployment as well as network operation and management assume significance along with development of a new technology, to reduce capital and operating costs for operators.

The collaborative research project WINNER+ evaluated, further developed and optimized technologies to improve International Mobile Telecommunication-Advanced (IMT-Advanced) standards. The research was focused on Advanced Radio Resource Management (RRM), spectrum technologies, Network Coding and relaying, device-to-device communications,

Multiple-Antenna Systems and Coordinated Multipoint. The project also significantly contributed to the global evaluation process for IMT-Advanced proposals in the Radio Telecommunication Sector of the International Telecommunication Union (ITU-R). This contribution comprised evaluation according to ITU-R requirements and extensive simulations.

As the WINNER+ project partners agreed on basic concepts and algorithms, and basically adopted these results for their contributions to 3GPP for LTE and IMT-Advanced, the project results were exploited by 3GPP for a smooth and fast development of LTE toward a world-wide accepted standard. The results show that collaborative research in the pre-commercialization phase of a new technology is an important means of consensus building for future standards.

Apart from leading the WINNER+ project and the second phase of the 100GET project, Nokia Siemens Networks also led one of the 100GET sub-projects developing the conceptual design, components, network optimization methods and automation technologies of a cost-efficient 100 Gbps transport platform for Carrier-grade Ethernet and IP services.

The outcomes of these projects are joint achievements of the collaborative research by the consortium partners comprising telecom operators, vendors and other companies, universities, and research institutions. The results are being implemented by the project partners into their areas of business and respective portfolios, eventually benefiting the whole telecom industry and end users.

About Nokia Siemens Networks

Nokia Siemens Networks is a leading global enabler of telecommunications services. With its focus on innovation and sustainability, the company provides a complete portfolio of mobile, fixed and converged network technology, as well as professional services including consultancy and systems integration, deployment, maintenance and managed services. It is one of the largest telecommunications hardware, software and professional services companies in the world. Operating in 150 countries, its headquarters are in Espoo, Finland. www.nokiasiemensnetworks.com

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Notes to editors

*Celtic is a European research and development program, designed to strengthen Europe's competitiveness in telecommunications through short and medium term collaborative R&D projects. Celtic is fully dedicated to end-to-end telecommunication solutions.

[Celtic-Plus](#), the follow-up of Celtic, 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. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental [EUREKA](#) network.

**The [100GET](#) project was started on Oct 1, 2007 and was concluded on Dec 31, 2010. Nokia Siemens Networks led the second phase of the project, while Alcatel-Lucent led the first phase. Nokia Siemens Networks and Alcatel Lucent received the Celtic Award of Excellence in Gold on behalf of the 100GET project and sub-project consortia.

100GET Project consortium included 41 partners from five European countries – 24 German partner companies, two French, five Swedish, five Finnish and five Spanish. 100GET project was a cluster project consisting of five sub-projects studying different approaches and verifying technologies and components in a common 100 Gbps test bed:

- In the Sub-project '100 Gigabit Ethernet Transport Technologies' ([100GET-AL](#)), partners including Alcatel-Lucent Deutschland AG, Germany; Alcatel Thales III-V Lab, France; Fraunhofer Institute for Telecommunications, Heinrich-Hertz- Institut, Germany; IntexyS SA, France; MICRAM Microelectronic GmbH, Germany; u2t Photonics AG, Germany; and University of Limoges, France participated.
- In the Sub-project 'Cost-optimized optical 100 Gbps transport technology for metro networks' ([100GET-METRO](#)), partners including ADVA AG Optical Networking, Germany; Agilent Technologies R&D and Marketing GmbH & Co. KG, Germany; Christian Albrecht Universität Kiel, Germany; Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut, Germany; Technische Universität Hamburg- Harburg, Germany; Technische Universität Dortmund, Germany; and VPIsystems, Germany participated.
- Sub-project '100 Gbit/s Ethernet Transport Technologies - End-to-end Carrier Grade Ethernet' ([100GET-E3](#)) was led by Nokia Siemens Networks, Germany. Project consortium partners included Nokia Siemens Networks, Germany, CoreOptics, Germany; Helsinki University of Technology, Finland; IHP GmbH, Germany; Nethawk Oy, Finland; Nokia Siemens Networks, Finland; Technical University Braunschweig, Germany; Technische Universität Dresden, Germany; Technical University München, Germany; Tellabs Oy, Finland; Universität Würzburg, Germany; and VTT Technical Research Center of Finland, Finland.
- In the Sub-project '100 Gbit/s Ethernet Transport Technologies - e2e Carrier Grade Ethernet (Ericsson cluster)' ([100GET-ER](#)) research partners including Acreo AB, Sweden; Chalmers University of Technology (CTH), Sweden; Christian Albrecht Universität Kiel (CAU), Germany; Ericsson AB, Sweden; Ericsson GmbH, Germany; FhG – Heinrich-Hertz Institut, Germany; MICRAM Microelectronic GmbH, Germany; Royal Institute of Technology (KTH), Sweden; SP Devices, Sweden; and Universität Stuttgart (IKR & INT), Germany participated.
- Partners of the Sub-project 'Cost optimized optical 100Gbit/s transport technology for metro networks' ([100GET-ES](#)) included CTTC - Centre Tecnològic de Telecomunicacions de Catalunya, Spain; Telefónica I+D, Spain; Telnet Redes Inteligentes, Spain; University of Malaga, Spain; and University of Zaragoza, Spain.

***The 'Wireless World Initiative New Radio +' (WINNER+) project started on Apr 1, 2008 and was concluded on June 30 2010. The project was led by Nokia Siemens Networks. Research partners

included Alcatel-Lucent Telecom Limited, UK; Bundesnetzagentur, Germany; CEA-Leti, France; Chalmers University of Technology AB, Sweden; CTIF, Research Centre at Aalborg University, Denmark; DOCOMO Communications Laboratories Europe GmbH, Germany; Elektrobit Corporation, Finland; Ericsson AB, Sweden; France Télécom SA, France; FhG e.V., acting for Heinrich Hertz Institut (HHI), Germany; Institute of Communications and Computer Systems (ICCS), Greece; iTEAM Institute of Telecommunications and Multimedia Applications-UPV, Spain; Kungliga Tekniska Högskolan, Sweden; Mitsubishi Electric R&D Centre Europe (MERCE), France; Nokia Siemens Networks, Germany; Nokia Siemens Networks, Finland; Nokia Siemens Networks, Poland; Poznan University of Technology, Poland; QUALCOMM CDMA Technologies GmbH, Germany; RWTH Aachen University, Germany; Sequans Communications, France; Technische Universität Dresden, Germany; Technische Universität Ilmenau, Germany; Telecom Italia SpA, Italy; T-Mobile International AG, Germany; University of Oulu, Finland; and Valtion Teknillinen Tutkimuskeskus (VTT), Finland.