EUREKA CLUSTER PROJECT

CELTIC-PLUS

C2014_2-6 GOLD

NEW GOLD STANDARD FOR BROADBAND ACCESS

The Celtic-Plus GOLD project has brought next generation broadband technology closer to market, inspired cutting edge research and created a whole new industrial ecosystem. What's more, millions of consumers stand to benefit through faster internet access at a fraction of the cost.

The technology, known as G.fast, delivers high speed internet access through existing copper wires at a fraction of the cost of installing optical fibres (known as Fibre To The Home, or FTTH). The roll-out of FTTH in Europe has been slower than anticipated, primarily due to the significant amount of construction work involved in laying optical fibres for the last few metres to people's homes. This poses a challenge given that the explosion of video content and file sharing – as well as the emergence of concepts such as the Internet of Things – all demand greater bandwidth.

Efficient broadband access

To address this, the GOLD (Gigabits Over the Legacy Drop) project used new architecture to bring optical fibres to distribution points closer to homes, and to then make use of abundantly available legacy telephone networks through which Gigabit services can be deployed. This could lead to major cost reductions, particularly within dense urban areas in Europe. The architecture also allows for smaller distribution point units to be powered 'reversely' from customer premises, thereby significantly reducing the need to involve utility providers and technicians for installing equipment.

"This is the third in a series of ambitious projects, where Gigabit copper access has matured from an insane idea to a concrete research plan, and then to a standardised solution with real industrial potential," explains Jochen Maes from Nokia Bell Labs in Belgium, one of the key industrial partners in the project. "Previous Celtic-Plus projects - 4GBB and HFCC – achieved outstanding results in re-using copper to deliver broadband services, with GOLD achieving multiple-gigabit access."

> ***"Of every three contributions towards industry standardisation, two have originated from this consortium.***

Extensive field trials involving telecom operators and equipment providers were deployed throughout Europe. Based on these results, several chip and system vendors within the consortium have been able to develop product lines suitable for both the European and global markets, and new G.fast services are up and running.

Among operators, BT is the most advanced so far in deploying G.fast. Two services have been launched, one with 152 Mbps downstream and another with 314 Mbps downstream, both with 50 Mbps upstream. Apart from Nokia, other industry project partners involved in the project include ADTRAN, Deutsche Telekom, Orange, SAGEMCOM, Sckipio Technologies, TNO, Maxlinear Spain, Telnet Redes Inteligentes, Ericsson and British Telecom. "The ecosystem that the GOLD project has created is important for companies like Nokia to develop and commercialise the G.fast technology," says Maes.

Setting new standards

Another key measure of the project's success has been the speed with which G.fast standards have been put in place. While the previous VDSL standard took 13 years to mature, G.fast standards have taken just five years. "Of every three contributions towards industry standardisation, two have originated from this consortium," says Maes. "This indicates that the visions laid out here have significantly shaped the industry. And while GOLD set out to standardise 1 Gbps copper technology, it has also opened the door to new research into multi-Gbps G.mgfast technology."

GOLD, which received the Celtic-Plus Excellence Award for Network Technologies, has also stimulated a great deal of academic research, with papers published and two PhD candidates at Lund University (which coordinated the project) finalising their studies based on work performed within the project. A follow-on initiative – the Celtic-plus FU5ION project – is underway, building on the work of GOLD to standardise multi-gigabit copper access.

MAIN PARTNER

Lund University, Sweden
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DURATION

January 2015 to December 2017

TOTAL R&D INVESTMENT

€ 3.56 million

OTHER PARTNERS

Nokia Bell N.V., Belgium
ADTRAN GmbH, Germany
Deutsche Telekom AG, Germany
Orange SA, France
SAGEMCOM, France
Sckipio Technologies, Israel
TNO, Netherlands
Maxlinear, Spain
Telnet Redes Inteligentes SA, Spain
Ericsson AB (EAB), Sweden
BT (British Telecom), UK
Southampton University, UK

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