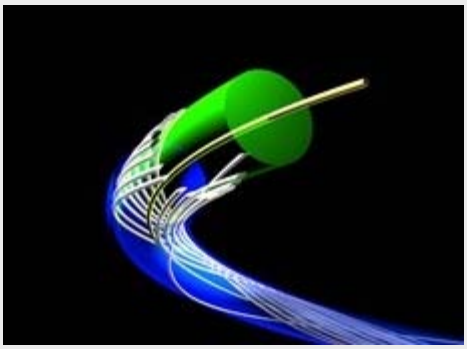
European Research Headlines

Published on 17 May 2013

All-optical broadband ... cheaper, faster and greener

A European team of researchers is exploring new ways of using fibre-optic technology to deliver ultra-high-speed internet access to even the remotest locations in Europe, at less cost and with less impact on the environment. It is ambitious, but innovative solutions are needed to strengthen Europe's digital economy and provide jobs.



© nali - Fotolia.com

In January, an EU-funded team of researchers announced their intention to transform future communications networks in Europe. After a period of analysis, the plan is to (re)design and later demonstrate a "complete end-to-end architecture and technologies for an economically viable, energy efficient and environmentally sustainable future-proof optical network".

"Simply put, the plan is to save Europe billions in broadband infrastructure costs, and provide cheaper, faster and greener access to job-creating internet services in areas where they are most needed," explains project leader Marco Ruffini of Trinity College Dublin's Telecommunications Research Centre (CTVR).

The 36-month project, entitled 'Distributed core for unlimited bandwidth supply for all users and services' (DISCUS), involves consortium partners from academia and industry, including leading telecom operators and equipment vendors such as Telefónica, Telecom Italia, Alcatel-Lucent and Nokia-Siemens.

DISCUS tackles head-on the challenge of growing demand in Europe for better- quality data transmission and services – bandwidth-hungry video applications, telemedicine, etc. – across super-fast, always-on broadband networks.

Irish Communications Minister Pat Rabbitte commented at an official launch of the project in Ireland: "Strengthening Europe's digital economy by advancing areas such as a high-speed broadband roll-out is a priority for the Irish Presidency of the EU." He added that this telecommunications project will provide concrete results for the benefit of both Ireland and Europe, as well as demonstrating the critical links between research and enterprise that lead ultimately to new jobs.

Clean slate

More information:

- Project web site
- Project information on CORDIS

"The architecture will be ultra-energy efficient, simple to operate and robust to new technology introduction – in other words 'future-proofing' Europe's networks," says DISCUS project coordinator Professor David Payne, a co-principal investigator at CTVR.

But this means taking a "clean-slate" approach to the architectural design, using optical technologies throughout the fixed network – with no distinction between traditionally separated network nodes (i.e. metro, regional, core access points). "Using advanced optical technologies throughout will generate unimaginable bandwidth and flexibility," predicts Dr Ruffini who is an assistant professor on optical network architectures.

A unique feature will be a "principle of equivalence" which gives all network access points equal bandwidth and service-level capability, with typical core bandwidths (10Gb/s to 100+Gb/s) delivered directly to the user.

That means, for example, that you would have the same high-quality online experience, capable of handling huge data loads, regardless of where you are – close to a core network in a city or in a remote village.

A further advantage of the DISCUS project's all-optical approach is that it will enable seamless integration of wireless and fixed optical networks, providing cost-effective backhauling of mobile and wireless access network traffic, without sacrificing latency or bandwidth.

This pared-down, integrated approach will also enable a simpler, more competitive regulatory environment controlled by customers and users rather than network operators and service providers. This, in turn, supports the EU's single digital market ambitions as communicated in its Digital Agenda for Europe initiative.

Project details

- Project acronym: DISCUS
- Participants: Ireland (Coordinator), Belgium, France, Germany, Italy, Spain, Sweden, United Kingdom
- Project FP7 318137
- Total costs: €11 722 067
- EU contribution: €8 112 824
- Duration: November 2012 - October 2015

>> ALL HEADLINES

Top