



HFCC/G.fast

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Project Website

www.celticplus.eu/Projects/Celtic-Plus-Projects/2012/HFCC_G_FAST/hfcc_g_fast-default.asp

Hybrid Fibre-Copper connectivity using G.fast

The project HFCC/G.fast will advance the emerging digital subscriber line (DSL) technology "G.fast" by innovations ranging from channel measurements and transceiver design to novel system architectures and use cases. This will push the standardization process as well as the broadband deployment in Europe.

Main focus

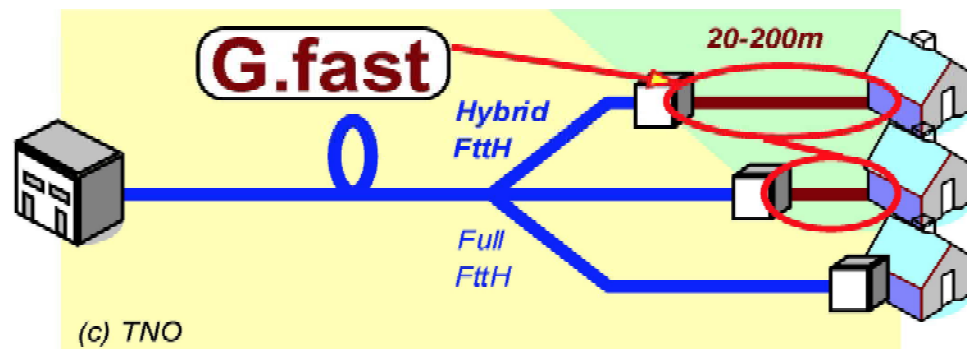
- ◆ The project is a follow-up of the awarded Celtic project "4GBB" (2009-2012) and has a budget of 3978 kEUR. The consortium consists of 14 partners from 8 European countries, including major actors from the whole telecom value chain.
- ◆ The International Telecommunication Union (ITU) is currently standardizing a novel digital subscriber line technology under the working title "G.fast". It targets the last 250 m to the customer premises at bit-rates of up to 1 Gbps. As of 2011 fibre-to-the-home (FtTH) was used by solely 1.8% of all broadband lines (EU-27 average). G.fast provides a cost-efficient broadband evolution step towards the long-term target FtTH.
- ◆ The project addresses questions related to techno-economical deployment models and use-cases for operators (such as wireless backhauling of base stations or self-installation), novel transceiver technologies (e.g. copper-fibre coupling and reverse/remote powering), meas-

urements and models of cables and the electro-magnetic noise environment, and novel transmission models.

- ◆ The project will push the standardization process of G.fast, maintain a European technology lead, and support the transition from a completed standard to an economical commercial deployment, thereby supporting the Commission's Digital Agenda.

Approach

- ◆ Firstly we expect to produce several technical contributions on cable measurements, modelling, simulation, and the impairments observed in operational networks. This puts performance simulations for G.fast on solid ground by adjusting the underlying assumptions and by introducing well-designed and validated cable and noise models. By doing so, we give guidance to the industry in terms of fundamental G.fast design choices.
- ◆ Secondly, we expect to produce technical contributions that are more system oriented, such as interworking issues between fibre and copper technologies, reverse/remote powering of nodes, layer 2 end-to-end architecture and management functionalities. This will help the industry in translating these requirements into technical solutions and to consolidate these in standards.



- ◆ Thirdly, we expect to produce contributions that are more deployment related, regarding for instance the identification of service, installation and maintenance requirements, of different deployment scenarios and network topologies. Each of these has an impact on the implementation and performance of G.fast.
- ◆ Project partners will participate at the meetings of various standardization bodies. This is not only essential for presenting the contributions, but also for building consensus on technical proposals. Since various standardization participants are in this project, they can exploit the gathered know-how for boosting up the standardization and the developments of Hybrid FttH via G.fast.
- ◆ Test plans/environments on early G.fast prototypes will be devised and published to allow for a fair evaluation of potential G.fast solutions to be made.

Main results

In the course of the project various G.fast prototype chipsets and systems will be developed and tested in order to compare potential G.fast solutions. For predicting the service quality, models and tools for realistic performance evaluation of G.fast are derived. Test setups for access networks as well

as mobile backhauling are constructed in order to assess potential deployment scenarios. All these aspects benefit from standardization and hence the time-to-market of the G.fast technology. Furthermore, various system architecture requirements and deployment scenarios are derived, impacting standardization and regulation as well as the operators' roll-out strategy. Novel fibre/electrical interfaces are expected to be developed which minimise the complexity/cost and increase reliability/manageability of the remote fibre-fed node, thereby widening the acceptance and increasing the potential deployment volume of the emerging broadband technology G.fast.

Impact

Advanced high-quality services including IPTV, (Ultra-) HDTV, Video-on-demand, hybrid broadcast broadband TV, or cloud services, demand for increasingly higher bandwidth broadband access. Take-up rates of fibre-to-the-home (FttH) offers are fairly low at the moment. A combination of fibre-to-the-basement and G.fast provides fibre-like data-rates at low ownership and provisioning costs (e.g., due to self-installation). Furthermore, the combination of unbundled local copper loops and partial fibre deployment leads to new market opportunities for network operators. As one example,

mobile broadband deployments become denser and currently lack an affordable backhauling solution, a gap that G.fast is envisioned to fill. Moreover, G.fast gives operators an economical network-migration strategy towards FttH. Altogether G.fast boosts fibre deployment and broadband roll-out. The project will advance Europe's technological lead in this new broadband niche. It will actively support the standardization process of G.fast under ITU, ETSI, and the Broadband Forum, thereby speeding up the availability of products on the market.

About Celtic-Plus

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 & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organisations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

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