



H-OPTO

Project ID: C2016/2-7

Start Date: 1 December 2016

Closure date: 29 February 2020

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GPON Doctor Scoop, Spain

Lund University, Sweden

Marvell Hispania, Spain

MIC Nordic AB, Sweden

Netia SA, Poland

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Project Website

www.celticplus.eu/project-h-opto

Maintenance and deployment of optical and in-home networks

H-OPTO aims at establishing best practices and create new knowledge about optical networks, with focus on cost reduction and quality.

Up to today research efforts on optics have gone towards increasing the bitrates and developing new optical components. Less research has gone in the direction of optical access networks and the costs of their deployment, operation and maintenance. The rate of fibre deployment is very sensitive to these costs. In addition, the uncertainty associated with the cost of deploying a large scale optical fibre network and even more so, the costs associated with operating and maintaining such a network is prohibitive when it comes to making investment decisions.

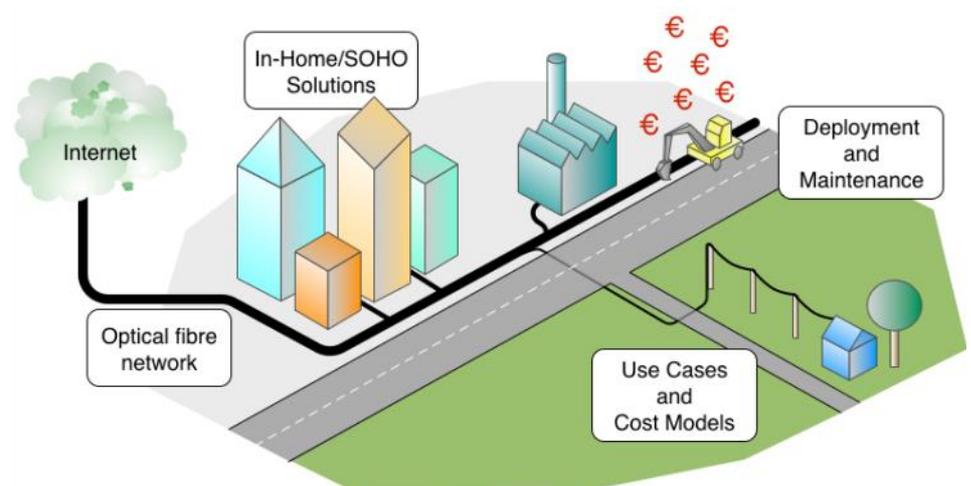
Main focus

This project is focused on costs and industrial requirements with the ambition to stay ahead of industry's need for practical knowledge. Although optical broadband access networks are yet far from ubiquitous, they are rapidly increasing in size and numbers. As the networks grow and

start to age, cost and quality issues also amass.

Compared with the legacy copper networks, the operations and maintenance of optical access networks is still in many ways low-tech and labour intensive. This has worked well so far as the number of faults in the optical networks is comparatively very low, but as the networks grow and age, the number of faults increase and cost becomes an issue. The project address this through a range of topics from the sharing of best practices to new sensor technology and algorithms.

The deployment of optical access networks has been a political focus for some time and through ambitious network expansions in Europe, networks grew and a considerable amount of experience was gathered. However, the arrival of 5G mobile networks will necessitate a wave of access fibre deployment to be added onto the already accelerating "regular" deployment of access networks. Cost and efficiency will become increasingly crucial, also for the success of 5G.



Use cases and cost models for deployment and maintenance of optical fibre networks and in-Home access including small offices and home offices (SOHO).

Approach

The project gathers experts from many of the foremost European companies, organizations and universities in the field of optical networks. Focus is put on both: 1) Vertical integration bringing networks owners, companies within maintenance and deployment and academia to the same table, and 2) Geographical spread, attempting to get expertise from a number of national markets. The project is run as an innovation platform driven foremost by the exchange and development of industrial expertise.

Main results

The project will produce knowledge and innovation in the following four areas, see figure:

1. Best practices of maintaining and operating fibre-optical and in-home, including small offices and home offices (SOHO), networks.
2. More precise knowledge of the OPEX of fibre-optical and in-home networks.
3. Best practices of deployment of fibre-optical network, including trenching, micro trenching and the hanging of fibre.
4. Optimization of the joint management of access and indoor networks to reduce net OPEX.

This project is mainly about services and infrastructure, and in these areas, the following outcomes are planned:

1. Operations and maintenance of optical networks: today optical networks are run in a considerably more manual way than say copper networks as the routines and support tools have not had time to develop. The project aims at "industrializing" the maintenance of optical networks as has previously been done for copper networks.
2. Deployment: Although by now substantial amounts of access fibre has been laid, there is still a lot of debate on the virtues and disadvantages of various methods, e.g. trenching, micro-trenching and the hanging of fibre. Little is also known about the long-term effects of these deployment techniques on the fibre.
3. The merging of in-home and access networks: As users no longer want nor can skilfully manage their in-home networks, these internal home networks must become a part of the managed access network. The projects new joint management methods will seek to reduce the overall network OPEX.

Impact

This project improves European competitiveness in three ways:

1. We increase the competitiveness of European telecommunications industry.
2. We contribute towards the deployment of high-speed networks in Europe.
3. We increase the competitiveness of Europe itself by enabling high-speed fixed broadband access and 5G mobile networks. This boosts IT-skills of the European population and supports entrepreneurship.

There is no doubt about that the competitiveness of Europe in many ways depends on European citizens and organizations having access to high-quality and affordable broadband.

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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