

# A5GARD

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## Partners:

ADTRAN, Germany

BT, United Kingdom

Enovas, Turkey

GOHM, Turkey

InPhoTech, Poland

Lund University, Sweden

MaxLinear, Spain

MIC Nordic AB, Sweden

Nokia, Belgium

Region Västerbotten, Sweden

Sensative, Sweden

Telenor Sverige AB, Sweden

Transtema Network Services AB, Sweden

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## Project Websites

[www.celticnext.eu/project-a5gard](http://www.celticnext.eu/project-a5gard)

<http://a5gard.eu/>

## Achieving 5G service Assurance in the Residential Domain - A5GARD -

Today's telecommunication industry focuses increasingly on machines and their future needs. With this project, we focus on telecommunications for humans, in and around the home, and on human-machine interactions. We innovate and influence standardization and development of telecommunications to support new services with technology-based self-care for chronically ill elderly as a use case.

### Main focus

An ever-increasing amount of entertainment, social activities and shopping takes place in and around the home. More and more services will be consumed there, including even work, democratic processes, and health care. It is of paramount importance that the telecommunications infrastructure of the homes is shaped so that it can carry these services. While not losing sight on the plurality of future services, we have chosen to focus on healthcare as a primary use case, in particular rural healthcare for the chronically ill elderly. These services are emotionally engaging, economically important and technically challenging.

Europe is a global industrial centre for telecommunications with a long-standing tradition of technical leadership. The broadband revolution, with the enormous

value creation it has led to and the fundamental changes towards a new and sustainable lifestyle it spawned, is largely a European technological success. However, a gap is forming in the otherwise tight relation between operators and end-users as control over especially the in-home Wi-Fi networks is handed over to over-the-top providers such as smart speakers and smart home assistants. This would lead to home networking being under the simultaneous control of two competing systems and that the delivery of quality-sensitive services as healthcare could become impossible.

### Approach

The project has goals on three different levels: technology area; company value; and individual competence development. The project's model to achieve impact in the technology area is not to create all the future technology in-house. Of course, some of the technology will be created by the project's partners but the strongest impact of the project is to serve as a coordination platform for standardization work and policy thinking. This way of working has proved very effective in the series of CELTIC-projects that created the global G.fast broadband standard.

On the company value level, the project

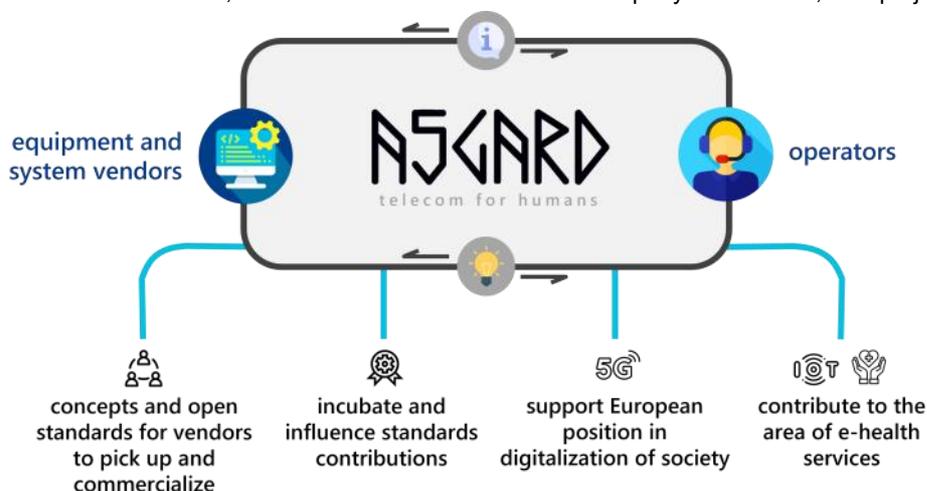


Figure 1: A5GARD approach and goals

creates value through the improvement of products and services based on the project as a joint innovation platform with shared knowledge. In addition, the innovation platform gives rise to new business relations and alliances. The amassed knowledge also reduces uncertainty about business and technology decisions.

The project brings together expertise from optical networks, 4G and 5G mobile communications, Wi-Fi connectivity, as well as in-home and copper communications. The project team is experienced and participates in standards activities. For the participating researchers it is often of great value to be a part of the shared intellectual environment where new findings and unexplained phenomena are constructively and openly discussed. As world class expertise are gathered in a single room, the knowledge frontier can be pushed forward.

## Main results

The overall project goal is to facilitate the digitalization of our society by providing ubiquitous access to high-end digital services like remote healthcare to all user devices independently of geography (urban/rural). Making 5G services available to the entire population in an economically viable way and ensuring the management of the combined access, 5G and in-home networks within one system are essential to achieve this goal.

For this, the project will develop a set of novel transmission technologies around the deployment and

extension of fibre access networks up to the end user devices through wired and wireless transport together with means to preserve QoS and to measure the QoS that is being guaranteed to the user up to the end device (e.g. tablets, mobile phones). In addition, the project will investigate the economics be-

will develop new wired transmission systems to optimize, maintain and extend fibre networks. This novel ICT infrastructure will of course provide higher speeds but will also be designed to minimize the latency on the in-home segments and to guarantee QoS up to the end user device.

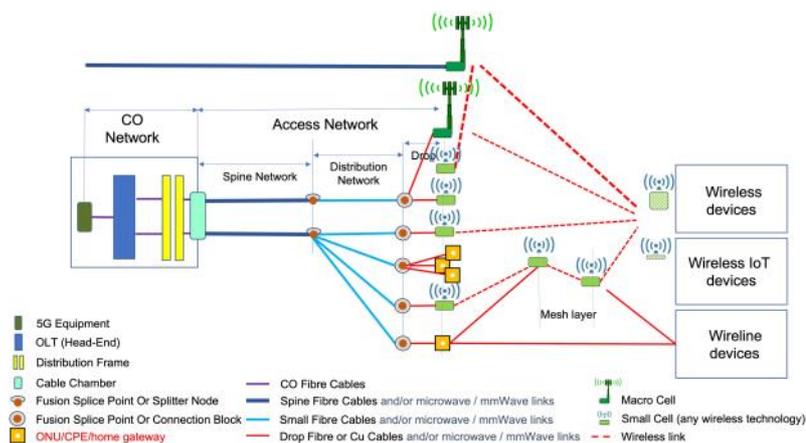


Figure 2: A5GARD reference architecture

hind the deployment and maintenance of the end-to-end systems (including the optical access system). This will result in a pan-European Fibre-To-The-Home (FTTH) roll-out, both as true FTTH and the fibre-copper hybrid G.mgfast. Furthermore, Passive Optical Networks (PON) will be prepared for carrying Mobile Transport. Enabling Mobile Transport over the FTTH network will further facilitate the FTTH adoption by sharing the cost of the fibre investments over the fixed and mobile ecosystems.

Networking activities are at the heart of A5GARD project since we

As e-health is of special concern as a service applied within the project, it is expected that the project will adapt and further develop novel secure IoT technologies to medical applications and safely allow remote health monitoring solutions. With the new technologies we expect to be able to provide highly cost-efficient connectivity solutions to the e-health area.

## Impact

The project serves in many ways as an interaction platform for sharing ideas and information between leading equipment and system vendors and operators. Hence, it is expected to incubate and influence standards contributions before bringing them to the relevant standards bodies. The project results that will be made visible to the outside world relate to methodologies, architectures, proof of concepts and open standards that any vendor in the ecosystem can pick up and commercialize. This will result in products to support the European front position in the digitalization of the society.

Our contribution to the area of e-health services will attract interest for end-service providers, to build new medical end-user services based on new standardized IoT technologies. In a continuation this will improve the quality of life for the patients, e.g. the elderly population, that can remain in their homes for a longer time.

## About CELTIC-NEXT

CELTIC-NEXT is the EUREKA Cluster for next-generation communications enabling the digital society. CELTIC-NEXT stimulates and orchestrates international collaborative projects in the Information and Communications Technology (ICT) domain.

The CELTIC-NEXT programme includes a wide scope of ICT topics based on new high-performance communications networks supporting data-rich applications and advanced services, both in the ICT sector and across all vertical sectors.

CELTIC-NEXT is an industry-driven initiative, involving all the major ICT industry players as well as many SMEs, service providers, and research institutions. The CELTIC-NEXT activities are open to all organisations that share the CELTIC-NEXT vision

of an inclusive digital society and are willing to collaborate to their own benefit, aligned with their national priorities, to advance the development and uptake of advanced ICT solutions.

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