Celtic-Plus and its fellow Clusters have contributed significantly to the growth of the annual turnover of firms involved in Cluster projects (+13% compared to non-participating firms) and to the development of employment (+7% employment growth compared to non-participating firms).  

In 2003, all the major European telecommunications vendors and operators decided to work together and create an ambitious European intergovernmental R&D programme providing the means to tackle issues related to an end-to-end approach in communications. This was the best option to address a “system view” of communications to complement the other existing Clusters at that time. The Celtic Initiative, which was the outcome of their common effort, was granted the EUREKA Cluster label, as many countries shared the objectives of this new programme. Celtic was a key milestone in initiating ambitious and innovative projects dedicated to end-to-end communications solutions.

Eight years later, in 2011, the EUREKA High-Level Representatives decided to renew the label for the Celtic-Plus EUREKA Cluster. By then, large-scale data transfer and use was exploding. People were downloading music and videos on their laptops, and businesses were fighting to find large storage facilities in their premises to ensure backup for their employees’ data. Today, everyone listens to music and watches online videos on their mobile devices anywhere and anytime, and both businesses and individuals have their data stored in large data centres located all around the world. This creates new technological and societal challenges, primarily related to the security and privacy of data transmission and storage.

Celtic-Plus projects have heavily contributed to enabling this evolution e.g. by providing more bandwidth and more secure and reliable networks for businesses and citizens. Examples include the HIPERMED (High-Performance Telemedicine Platform) and HFCC/G.fast (Hybrid Fibre-Copper connectivity using G.fast) projects, that have been awarded the EUREKA Innovation Awards for their excellent results respectively on remote video for surgeries, and on providing gigabit class broadband access without the need to replace the existing cables to the home. Other examples include SASER (Safe and Secure European Routing), which performed many breakthroughs in secure communications; SIGMONA (SDN Concept in Generalized Mobile Network Architectures), that led the first “Software Defined Network” general solution in the mobile network architecture that is now broadly adopted for 4G and 5G communications; and H2B2VS (HEVC Hybrid Broadcast Video Services), which contributed to boosting video distribution via broadcast and broadband.

The participation of SMEs in Celtic-Plus has continuously increased throughout the years, to reach more than 40%. In 2017, the total budget of SMEs in Celtic-Plus projects overcomes the total budget of large Industry.

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2 “Industry” in the sense of Celtic-Plus excludes telecommunication operators.
In EUREKA Clusters, large enterprises serve as 'door-opener' to SMEs. SME participation is desired and supported, and flexible³.

“Flagship projects” have given the opportunity to some EUREKA countries to share and work together with industry on common strategic priorities leading to the deployment of ambitious and innovative solutions, thus creating major impact for the European economy.

Celtic-Plus projects are fostering the creation of new businesses and new markets. By the end of 2017, 11 start-up companies had been created from completed Celtic-Plus projects. Since the launch of the Celtic initiative, 926 products have been commercialised, and 910 students have done their PhDs or Master Thesis thanks to projects.

The success of the Celtic and Celtic-Plus programmes has increased the European societal and industrial demand for advanced services over high performant networks by showing what is possible. Now we are facing the challenge of scaling up the digitisation of every industrial process and providing secure, reliable and user-friendly communications that can be integrated into every aspect of our lives. This must be done while achieving significant improvements in the equipment performance and security matched by equally impressive reductions in energy consumption and environmental impact of all those new services and infrastructures.

Celtic-Plus “flagship projects” have given the opportunity to some EUREKA countries to share and work together with industry on common strategic priorities leading to the deployment of ambitious and innovative solutions, thus creating major impact for the European economy.
CEL蒂克·纳西特（CEL TIC-NEXT）的端到端方法对于允许使用网络开发特定应用程序至关重要，这些应用程序拥有所有必要的功能，适用于给定的经济部门。今年早些时候，由德国联邦教育和研究部（BMBF）举办的专家听证会旨在探讨EUREKA集群未来的发展前景。

**CEL蒂克·纳西特**

**范围和研究领域**

CEL TIC-NEXT将基于15年来支持Celtic社区的核心价值观，即自下而上、行业驱动的方法，以及大型“旗舰”项目，旨在解决具有战略重要性的关键问题。这些项目通过公共当局和行业之间的共同努力和协调方法来推进。

CEL TIC-NEXT将定期审视改进流程和工具，类似于Celtic-Plus，以确保它们及时适应整体环境的演变需求。它还将定期更新其范围和方向，以进一步加强该倡议。为新成立的初创企业和成长中的中小企业提供更多的支持，同时改进合作伙伴工具，将有助于扩大和深化社区。提高计划的灵活性，以应对技术和社会发展速度的加快，以及允许更接近市场的项目，直到达到高技术成熟度水平，将提高项目的影响力和计划对经济和社会的影响。

提供学生和研究人员贡献创新思想的机会仍然是CEL蒂克·纳西特社区的关键资产。

有至关重要的技术和社会问题需要在接下来的几年内解决，但这些问题是其他EUREKA工具没有涵盖的，或者只部分覆盖了欧洲的其他工具。从技术角度来看，包括网络安全、人工智能、5G及之后、FinTech、大数据、商务分析和物联网等，是值得关注的重要方向。CEL蒂克·纳西特将特别关注服务于垂直行业（例如内容（视频、游戏）、医疗保健、智慧城市、农业、交通、能源、汽车、电子商务和制造）的应用和服务。这些垂直行业同样重要，需要优化和提高效率，以实现最佳的端到端连通性和安全性。ICT服务的发展将通过合作模式实现，该模式在垂直行业协作确定其ICT解决方案方面发挥关键作用。

另一个关键问题是CEL蒂克·纳西特将要发展能够适应各种业务部门需求的通讯基础设施和服务。车辆之间的通讯需求与在建筑物和房屋中试点电力需求是不同的。同一原则同样适用于虚拟和沉浸式现实技术，在未来几年内将成为医疗和媒体行业的关键要素。有独特挑战的创新制造过程必须得到一统的基础设施的支持。

我们预计，许多CEL蒂克·纳西特项目将定义和发展自适应性解决方案，能够适应许多不同部门和社会挑战。CEL蒂克·纳西特与端到端方法的关键在于允许发展专用应用程序，使用网络中具有所有必要的功能，为给定的经济部门。代表从垂直部门将被逐步邀请参加CEL蒂克·纳西特行业核心小组，以确保持续的交叉授粉。

在平行中，电信业将利用跨行业技术，如人工智能和大数据，为不同的经济部门和全社会定义和提供定制化的智能解决方案。
Celtic and Celtic-Plus have established a strong global research & innovation community, targeting technological and business areas that are not addressed or addressed only partially by other European initiatives. The Celtic community includes European players as well as organisations from outside Europe e.g. from South Korea and Canada. CELTIC-NEXT will continue to expand the community within and outside Europe, in line with the EUREKA globalisation strategy.

Celtic-Plus has enabled industry to initiate projects addressing the relevant technical and business topics at the time of their choice and has promoted “flagship projects” to solve issues of strategic importance at European level. The flagship approach allows European countries to team up together and to strategically advance on key challenges and key technologies.

Thematic cooperation of bi- and multi-national interest can be limited to a (few) participating countries that have more influence than in other EU instruments.

Celtic-Plus is a founding member of the “Inter-Cluster Committee”, that is facilitating the work on objectives common to all running EUREKA Clusters, and is making sure that the contributions of the Clusters to EUREKA and to the European Research Area are effective. CELTIC-NEXT will continue to contribute actively to the Committee and ensure together with the other Clusters that activities performed by each Cluster allow an effective complementary coverage of the technological and business areas, that will continue to strengthen the European economy. It will also continue to interact whenever relevant with the telecommunications activities supported by the European Commission.

This has already been done in the past, e.g. when participating in the “Future Network & Mobile Summit” and the “European Conference on Networks and Communications”, and when Interacting with the “Future Internet Public-Private Partnership” and the “5G Public-Private Partnership”. The NetWorld2020 European Technology Platform is currently working on a new Strategic Research & Innovation Agenda that will without a doubt become a reference for CELTIC-NEXT.

CELTIC-NEXT will further strengthen its ties with the national Public Authorities, as well as with Clusters and Competitiveness Poles that address similar issues at national or regional level. This will help to ensure that innovative ideas developed and tested locally can eventually become global, and that projects addressing similar issues with different solutions, or developing technological and business pieces that could together form a broader solution, can benefit from each other’s findings.

CELTIC-NEXT will dedicate more effort to supporting start-ups and spin-offs participating in projects or created thanks to successful CELTIC-NEXT projects. At the same time, already established SMEs broadening and expanding their offer and their market thanks to CELTIC-NEXT, will be more stimulated towards growth. To achieve this, CELTIC-NEXT will utilise cooperations with initiatives such as the EUREKA Eurostars and InnoVest Programmes and make use of tools such as the European Investment Project Portal (EIPP). Other initiatives and tools will be investigated at European and local levels and cooperations and interactions will be supported whenever deemed relevant. Considering the high participation of SMEs in Celtic-Plus projects, it is envisaged to invite SME representatives to participate in the CELTIC-NEXT Industry Core Group.

The flagship approach allows European countries to team up together and to strategically advance on key challenges and key technologies.
Why CELTIC-NEXT?

Applications and services available to businesses and citizens have become increasingly accessible anywhere and anytime, thanks to broader mobility and to the deployment of cloud technology. At the same time, security and privacy issues have become primary concerns.

Those critical technological and societal issues need to be addressed in the coming years. They are not addressed by other EUREKA instruments, and only partially by other instruments in Europe.

In an increasingly digital society, CELTIC-NEXT is the key to the development of the next generations of enabling telecommunications technologies and services, that will reflect the evolving needs of businesses in all sectors and citizens in Europe and beyond, for a broad range of applications and solutions.

What is CELTIC-NEXT?

CELTIC-NEXT will be based on the core values that have been supporting the Celtic community for 15 years, i.e. a bottom-up industry-driven approach, along with large “flagship” projects aimed at solving issues of strategic importance through a combined effort and coordinated approach of public authorities and industry.

CELTIC-NEXT will continue to expand the Celtic community within and outside Europe, in line with the EUREKA globalisation strategy.

CELTIC-NEXT will dedicate more effort to supporting start-ups and spin-offs. Already established SMEs will be more stimulated towards growth.

CELTIC-NEXT will further strengthen its ties with the national Public Authorities, as well as with Clusters and Competitiveness Poles that address similar issues at national or regional level.