CELTIC-NEXT

CELTIC News 2/2019

The newsletter of EUREKA Cluster CELTIC-NEXT

EUREKA

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CELTIC-NEXT

Join the Industry-Driven Research Programme for a Smart Connected World

CELTIC-NEXT Call for Project Proposals – Deadline: 30th March 2020

Do not miss the opportunity to participate in CELTIC-NEXT, the industry-driven European ICT and telecommunications research programme under the umbrella of EUREKA. Submission deadline for the next call for project proposals is 30th March 2020.

CELTIC-NEXT projects are collaborative private-public partnership R&D projects. All EUREKA member countries and associated countries can financially support them. More information on public funding and national contacts per country can be found on the CELTIC-NEXT Public Authorities Website. Please talk to your national contact early in the process.

Easy proposal process

Preparing and submitting a CELTIC-NEXT project proposal is easy. Just register on the CELTIC-NEXT online proposal tool, fill in the Web forms, and upload your proposal in pdf. Access to the proposal tool and to a proposal template is available via our Call Information page (https://www.celticnext.eu/call-information).

Benefits of participating in CELTIC-NEXT

› You are free to define your project proposal according to your own research interests and priorities.

› Your proposals are not bound by any call texts, as long as it is within the ICT/telecommunications area – see CELTIC-NEXT Scope and Research Areas.

› CELTIC-NEXT projects are close to the market and have a track record of exploiting their results soon after the end of the project.

› High-quality proposals have an excellent chance of receiving funding, with an average success rate higher than 50 %.

› The results of the evaluation will already be known in May 2020.

If you have any questions or need help, do not hesitate to contact us; we are pleased to help you.

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Ready for change

How CELTIC-NEXT's flexibility enables our industry-driven projects to be successful

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The ICT landscape is changing rapidly. In order to keep pace, R&D programmes need to adapt to meet the changing needs. In the case of CELTIC-NEXT, I can confidently say that we are up to the challenge, as this year's successes confirm. At the CELTIC Event in Valencia on 19th June 2019, which was co-located with the EuCNC Event and the Global 5G Event 2019, three projects were awarded for their excellence in the areas of networking technologies (SOOGREEN), applications (E3), and multimedia (4KREPROSYS). The NOTTS project was honoured with the Innovation Award for its outstanding market innovation beyond the project lifespan.

This year has been quite special for our Cluster, as three already awarded CELTIC projects have received in addition EUREKA Awards! In May, SIGMONA was highlighted as EUREKA Global Project of the Year at the EUREKA Global Innovation Summit in Manchester. In September, 4KREPROSYS and E3 each received a EUREKA award at the EUREKA Stakeholder Event in Amsterdam.

These awards for CELTIC projects are the direct consequence of our programme's flexibility. It allows projects to stay aligned with the quickly evolving technological landscape and the company strategies. CELTIC's flexibility in combination with the industry-driven character is at the core of our programme. In view of the ongoing initiative for defining the future of Clusters, which has been launched by the current EUREKA chair from the Netherlands, I am convinced that we need to maintain the flexibility and the industry-driven character of our programme in order to stay successful in the future.

The future of Clusters at the EUREKA Stakeholder event

The future of Clusters was a major topic at the EUREKA Stakeholder event in Amsterdam on 4th September. In this context, a central goal was to capture feedback by stakeholders on Clusters and other EUREKA instruments. Representatives from industry and academia shared their views about EUREKA Clusters. In addition, a live survey among the audience on areas of improvement for Clusters was conducted, which showed interesting results. The participants voted that the most essential measures for improving the Cluster programmes should be:

› Increase availability of funding from countries – 41% of participants supported this
› Simplify the proposal process – 25%
› Have a shorter time to contract – 21%
› Higher visibility of EUREKA Cluster programmes – 9%
› Create cross-technology / cross-Cluster projects – 5%

The major improvement factor identified by the stakeholders – availability of funding from countries – is beyond the scope of any structural change within the Clusters. Concerning the other factors, which are to varying degrees influenceable by Clusters, it should be noted that in the case of CELTIC-NEXT part of the proposal process has already been simplified. We have changed from a two-phase proposal submission to a one-phase submission process, which reduces the required time and effort.

My highlights from the Proposers Day in Istanbul

In order to foster new project submissions, CELTIC-NEXT held a proposer's day in Istanbul on 25th September. There was a keynote by Hakan Çelik, the R&D Design Chief of ISBAK, about the smart city of Istanbul, which I found particularly interesting.

Mr Çelik explained in his presentation that smart cities are a complex and overarching topic. It includes security, smart mobility, governance, energy, living issues, as well as people and NGOs representing them. According to Mr Çelik, the ultimate goal of smart cities is to improve quality of life and enable better sustainability.

Another highlight was a panel on the business impact of Celtic projects, which was moderated by Işıl Özkan from Turkcell. Representatives of Vestel, Argela, NETAS and ISBAK shared their experiences on the benefits of a number of CELTIC projects in which they were involved, including CONVINCE, TILAS, H2b-2Vs, SIGMONA, VIRTUOSE, and COMOSEF. The panellists emphasized the flexibility of CELTIC as a key success factor.

Finally, in the pitching sessions 12 interesting new project ideas were presented, in order to find additional partners for project proposals to be submitted in October or at our spring call next year.

Across the various CELTIC-NEXT Proposers Days in 2019, a total of 52 project pitches were presented, which indicates how attractive our Cluster is to industry and academia in Europe and beyond.

Plans for call on Artificial Intelligence

One of the hottest topics is currently Artificial Intelligence (AI). A number of countries have expressed their interest in a synchronised AI call between CELTIC-NEXT and most of the other EUREKA Clusters. Among the interested countries are Spain, UK, Turkey, Germany, Sweden, Finland, Canada, Denmark, Netherlands, Austria, South Korea, and Hungary as well as the Belgian regions Flanders, Brussels, and Wallonia. Some other countries may join this AI initiative later.

We aim to organise this synchronised AI call in June 2020 in addition to the usual CELTIC-NEXT bottom-up calls. Keep checking our website and social media channels for updates.

Conclusion

My first year as CELTIC chairperson has been exciting. It has shown me that it is important for our programme to embrace change. And it has shown me at the same time how important it is to adhere to the key principles of CELTIC – flexibility and the industry-driven character of our programme. Based on this, I am confident that CELTIC will continue to thrive in a changing landscape. And as this year's inter-Cluster spokesperson I may add that EUREKA Clusters as a whole will keep playing an important role in generating value for industry and citizens in Europe and beyond.

On the road to future networks
CELTIC Event in Valencia

This year's CELTIC Event took place in Valencia, Spain on 19th to 20th June. It was co-located with EuCNC, the European Conference on Networks and Communications, which gave CELTIC-NEXT additional attention among the 5,000+ EuCNC participants. The CELTIC Event consisted of a conference with award ceremony on day 1 and sessions for project proposers on day 2. In parallel, 15 selected CELTIC projects showed their results in the exhibition at the Valencia Conference Centre. One of the highlights of this year's event was the emergency communication demo at the harbour of Valencia, which was performed by CELTIC project UNICRINF.

Eric Hardouin, Ambient Connectivity Research Director at Orange

Valérie Blavette, chairperson of CELTIC-NEXT

Keynotes and SME success story

In the first keynote, *Eric Hardouin*, Ambient Connectivity Research Director at Orange, presented a vision of future networks. He emphasised that beyond performance aspects, research on future networks has to address a number of additional challenges, including trust and resilience in multi-tenant environments, EMF-aware transmissions, the efficiency of energy and natural resource usage as well as digital inclusion. He pointed out that there is still a lot of research needed to deliver the full 5G potential. According to Mr Hardouin, the exploding complexity of networks due to multiple requirements for optimisation calls for system-level solutions.

In the second keynote, *Diego R. Lopez* from Telefónica I+D shared his insights on the application of Artificial Intelligence (AI) to network transformation for nurturing the Smart Network. According to Mr Lopez, such a network should be smart in all senses, i.e. fast, simple to use, easy to tune, and above all, intelligent in order to make the network scalable, adaptable, multi-purpose, and suitable for integration.

The third speaker, *Steny Solitude* from French SME Perfect Memory, shared the story of his company's success, which is closely linked to its participation in CELTIC

Diego R. Lopez from Telefónica I+D

Steny Solitude from French SME Perfect Memory

Panellists discussing the impact of CELTIC projects (from left): José Costa Requena, Cumucore; Antonio Cuadra Sanchez, INDRA; Emmanuel Dotaro, Thales; Işıl Özkan, Turkcell; Marco Mattavelli, EPFL

projects. Perfect Memory has created an innovative digital asset management (DAM) solution based on results by CELTIC projects MediaMap and MediaMap+.

Panel on impact of CELTIC projects

After the opening keynote, the audience witnessed a lively panel session on the impact of CELTIC projects, which was emceed by David Kennedy, director of Eurescom. The five panellists represented six CELTIC projects: 4KRE-PROSIS – Marco Mattavelli, EPFL, Switzerland; flagship project SENDATE – Emmanuel Dotaro, Thales, France; NOTTS and MONALIS – Antonio Cuadra Sanchez, INDRA, Spain; SIGMONA – José Costa Requena, Cumucore, Finland; and UPSC – Isil Ozkan, Turkcell, Turkey.

Not surprisingly, all five panellists concluded that the industry-driven and close-to-market projects under CELTIC allowed their organisations to reap immediate benefits in terms of accelerating market innovations, sustained competitiveness, and a profound increase of their knowledge base and international business connections. The type and scope of these impacts varied widely, due to the fact that the panellists represented on the one hand large companies like Thales or Turkcell and on the other hand SMEs like Cumucore.

CELTIC Awards

The first day of the CELTIC Event ended with a highlight – the CELTIC Awards. Four CELTIC projects won the CELTIC Award for their outstanding work. Three of these projects were awarded for their excellence in the areas of networking technologies, applications, and multimedia. The fourth was honoured with the Innovation Award for its outstanding market innovation beyond the project lifespan. The awards were presented to representatives of the winning projects by CELTIC-NEXT chairperson Valérie Blavette and handed over by Juana Sanchez from CDTI, the representative of the Public Authority in Spain.

Excellence Award for Multimedia: 4KREPROSYS – 4K ultraHD TV wireless REmote PROduction SYStems

The project partners have been very successful in their specialized video production ecosystem. The business relevance of the developed 4KREPROSYS solution has been evaluated as very high. The successful involvement in major events like the FIFA World-Cup 2018 underlines the competitiveness of the solutions brought forward by the project.

Coordinator: Dominique Grillet, AMP Visual TV
Duration: December 2014 – June 2018
Project Video – https://youtu.be/NNvWkSVlpHo
Website – https://www.celticnext.eu/project-4kreprosys

François Valadoux, AMP Visual TV, France and Marco Mattavelli, EPFL, Switzerland, from 4KREPROSYS; Juana Sanchez, CDTI, Spain; and Valérie Blavette, CELTIC-NEXT Chairperson

Valérie Blavette, CELTIC-NEXT Chairperson; Dominique Bodere, SOO-GREEN Project Coordinator from Orange, France and Juana Sanchez from CDTI, Spain (from left)

E3 project coordinator Oscar Chabrera from Vilynx, Spain and Juana Sanchez from CDTI, Spain

NOTTS Project Coordinator Antonio Quadra Sanchez from INDRA Spain, Juana Sanchez from CDTI, and Valérie Blavette, CELTIC-NEXT Chairperson

Excellence Award for Network Technologies: SOOGREEN – Service-oriented optimization of Green mobile networks

SooGreen's main objectives were to reduce the energy consumption of services and to improve the mobile network architectures and content delivery, taking advantage of the smart grids by using a holistic approach at the level of network components, architecture, management and control. The project has addressed the need to reduce the energy consumption of services in different mobile network architectures, focusing on topics like modelling and measurement of services energy consumption in mobile networks; dynamic optimization in access; energy-efficiency aspects of emerging virtual and cloud RAN architectures; and interaction between service delivery in mobile networks and smart grids.

*Coordinator: Dominique Bodere, Orange
Duration: July 2015 – November 2018
Project Video – https://www.youtube.com/watch?v=rVZfvAaHUIA&t=47s
Website – https://www.celticnext.eu/project-soogreen*

Excellence Award for Applications: E3 – E-health services Everywhere and for Everybody

E3 designed and implemented an end-to-end platform to make e-health services available in both rural and urban areas, to patients and professionals. E3 used and extended the results from the awarded CELTIC project HIPER-MED. E3 developed the HIPERMED results further by addressing other communication types and compression techniques. In addition, E3 extended the type of scenarios by testing the developments in 15 healthcare scenarios, which were validated by doctors and professors who tested the platform results.

*Project Coordinator: Oscar Chabrera Villarreal, ViLynx Spain S.L.U.
Duration: December 2014 – June 2018
Project Video – https://www.youtube.com/watch?v=X7_fH8wUQDw
Website – https://www.celticnext.eu/project-e3*

Innovation Award: NOTTS – Next generation Over-The-Top multimedia Services

The project had developed a sustainable integrated solution to guarantee the OTT content delivery from the customer's perspective for the whole content distribution chain. The main activities included new media distribution architectures for OTT contents, and novel methods for Quality of Experience (QoE) estimation. NOTTS technology has supplied European content providers, service providers and telecoms network operators with new technologies that allow increasing revenue from new OTT business models.

*Project Coordinator: Antonio Quadra Sanchez, INDRA Spain
Duration: May 2013 – 31 March 2016
Project Video – https://www.youtube.com/watch?v=UmQn2o-7Ak4
Website – https://www.celticnext.eu/project-notts*

Exhibition

In the EuCNC exhibition area, 15 commercially important CELTIC projects presented their results. Visitors had the chance to experience first-hand prototypes of solutions which have been developed in the selected CELTIC projects. The demos allowed visitors to experience the technological progress made by those projects in an interactive and playful way.

Live emergency demo at the harbour

Shortly before the EuCNC social event on 18th June, CELTIC project UNICRINF showcased a live emergency demo at the Port of Valencia. The demo attracted a large number of visitors who witnessed how the UNCRINF solution enabled the communication between emergency teams on land, in the air, and at sea.

The video of the live demo is available on the CELTIC YouTube channel at https://youtu.be/ b2wFQ6eB6Zo
See also the article about UNICRINF in this edition of CELTIC News.

Sessions for proposers

The sessions on the second day were dedicated to helping proposers learn about making a good proposal for the upcoming autumn call in October and finding the right partners for their consortium. In the first session, CELTIC Office Director Peter Hermann presented best practices for proposers and explained how to set up a successful CELTIC project. The ensuing round-table with representatives of Public Authorities provided practical information on funding and research topics in different EUREKA countries.

The afternoon was dedicated to project idea pitches and networking. This offered ample opportunities for meeting other experts from the ICT community to discuss emerging R&D needs and proposals for related collaborative projects. Session moderator Christiane Reinsch, Programme

Exhibition – High media interest in CELTIC projects, here the VIRTUOSE project

UNICRINF-Demo-YouTube

Coordinator at the CELTIC Office, introduced 17 new project ideas. This was followed by proposers, who pitched their innovative project ideas for the upcoming CELTIC call in short elevator pitches. The CELTIC Event ended with open networking and bilateral discussions between proposers and representatives of Public Authorities.

❯ Further information
CELTIC Event 2019 page – *https://www.celtic-next.eu/event/celtic-event-co-located-with-eucnc-19-20-june-in-valencia-spain/*

EUREKA Awards for CELTIC Projects 4KREPROSYS and E3

EUREKA Stakeholder Conference in Amsterdam

At the EUREKA Stakeholder Conference in Amsterdam on 5th September 2019, the CELTIC projects 4KREPROSYS and E3 were among the happy winners of the prestigious EUREKA Awards. The EUREKA Awards were presented on the main stage of the DeLaMar Theater by Odilia Knap, Chairwoman of the EUREKA Network.

Three months earlier, in June 2019, both projects had already received CELTIC Excellence Awards at the CELTIC Event in Valencia – 4KREPROSYS for excellence in multimedia and E3 for excellence in the applications domain.

EUREKA Award Winnner 4KREPROSYS

4KREPROSYS (4K ultraHD TV wireless REmote PROduction SYStems) investigated and developed a new integrated cost-effective approach for the production of 4K TV content. The goal was to cover a wide range of 4K TV production needs, from indoor studio pro-duction to large outdoor events, such as Olympic Games, cycling, and car races. 4KRE-PROSYS was involved in major events like the FIFA World Cup 2018, which underlines the high relevance of the project's solutions.

The project consortium included: AMP VI-SUAL TV (coordinator), France; WorldLinX Alliance NV, Belgium; Siru, Finland; Supponor Oy, Finland; TUT-Tampere University of Technology, Finland; INSA de Rennes (IETR), France; Kalray, France; NuLink SA, Switzerland; European Broadcasting Union (EBU), Switzerland; EPFL - Ecole Polytechnique Fédérale Lausanne, Switzerland.

4KREPROSYS website: https://www.celticnext.eu/ project-4kreprosys

EUREKA Award Winnner E3

E3 (E-health services Everywhere and for Everybody) designed and implemented an end-to-end platform which enables patients and professionals in both rural and urban areas to cost-effectively access e-health services based on high-quality video conferencing technology. The platform was successfully tested in 15 healthcare scenarios and validated by doctors and professors.

The project consortium included: ViLynx Spain S.L.U., Spain; Calboquer S.L., Spain; IDI EIKON, Spain; SeniorSome Oy, Finland; eHOIVA Palveluverkko Oy, Finland; Institut Mines Télécom, France; Université de Lorraine, France; Vitec Multimedia, France; Poznań Supercomputing and Networking Center, Poland; Galaksiya Bilisim Teknolojileri, Turkey; SoSoft, Turkey; Vestel Electronics, Turkey.

E3 website: https://www.celticnext.eu/project-e3

Proposal pitching in Turkey
CELTIC-NEXT Proposers Day in Istanbul

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The CELTIC-NEXT Proposers Day in Istanbul on 25th September highlighted the strong interest of the Turkish RDI community in building international partnerships. The audience witnessed inspiring presentations, engaged in interesting discussions, and learned about twelve new interesting proposal ideas.

Speakers and organisers of the Proposers Day (from left): Hakan Çelik from ISBAK, Rıza Durucas-ugil, Vice-chair of CELTIC Core Group from NETAŞ, Juana Sánchez Pérez from CDTI (Spanish Public Authority), Valérie Blavette, CELTIC Chairperson from Orange, Mustafa Eruyar from ISBAK, Maria Barros Weiss, CELTIC Office at Eurescom, and Umut Ege from TÜBİTAK (Turkish Public Authority)

The event took place at the Istanbul Technology University. It was organized by CELTIC-NEXT and the Turkish Public Authority TÜBİTAK with the support of Sabancı University and Enterprise Europe Network. The programme consisted of interesting keynote speeches, practical information about the CELTIC-NEXT programme and the national funding programmes in Turkey and Spain, a lively panel discussion about the business impact of CELTIC projects, and a session for project proposal pitches.

In the morning, Mr. Tarık Şahin from TÜBİTAK, Ms. Valérie Blavette, CELTIC Chairperson from Orange, and Mr. Rıza Durucasugil, CELTIC Vice-chair from NETAŞ, opened the event and welcomed the participants. After the opening, Ms. Fatma Kesik from Sabancı University presented the opportunities of the Enterprise Europe Network. In the following keynote speech by Mr. Mustafa Eruyar from ISBAK, he shared the future vision of smart cities and presented exemplary scenarios and use cases from the city of Istanbul.

The Public Authority representatives, Mr. Tarık Şahin from Turkey and Ms. Juana Sánchez Pérez from CDTI in Spain, highlighted their support of the CELTIC-NEXT programme and presented the funding opportunities in Turkey and Spain. Guidelines and recommendations on how to submit a CELTIC-NEXT project proposal were presented as well.

Panel discussion

The ensuing panel discussion was moderated by Ms. Işıl Özkan, CELTIC Core Group Member from Turkcell, and focused on the business impact of CELTIC projects. In the discussion, Mr. Burak Görkemli from Argela mentioned the importance of international collaboration and referred to the projects his company has been involved in, namely TILAS, H2b2Vs and SIGMONA.

Mr. Yaşar Burak Savak, from Vestel Electronics, stressed the impact created by awards, based on the example of CELTIC and EUREKA awards received by the E3 project. Mr. Mehmet Dağlı, from NETAŞ presented the impact of the VIRTUOSE project on the different organizations in the consortium, referring to the patent submissions, prototypes and field trials. He also mentioned new and improved products implemented by the project. In addition, he highlighted a start-up on cloud gaming created in Spain, which uses the video encoders implemented in the project. Mr. Mustafa Eruyar from İSBAK stressed the importance not only of the impact on business but also on the quality of living, highlighting results of CELTIC projects like COMOSEF. The social impact created through the services offered by the projects to the public was also recognised during the discussions.

The panellists also discussed challenges of CELTIC projects and international collaborations in general, like for example the size of the consortium or dealing with the requirements of multiple funding agencies. They also pointed out the contradiction between agile processes and short deadlines used by many companies and the long deadlines of project proposals, which are hard to reconcile. Many times the companies' strategies change during the long duration of project set-up and implementation, which could become a risk for projects.

They mentioned leadership roles in CELTIC-NEXT as beneficial for the organizations, and they especially appreciated the bottom-up character of the programme, which they considered to be a big advantage for the alignment of project work with the companies' strategies. The impact of project collaborations for academia was also stressed, as well as the importance of having academic partners in projects, proven for instance by the 110 high-quality papers published by CELTIC projects SIGMONA, H2B2VS, and TILAS combined.

Timely technology and quality of the project implementation, as well as a strong coordination and valid use cases were factors indicated as crucial for the success and business impact of the projects.

Proposal pitches and networking session

During the proposal presentations session, twelve potential project ideas were presented to the audience, covering topics like 5G, artificial intelligence, big data, IoT, blockchain, automation, and others. The proposed applications of such technologies ranged from a wide spectrum of vertical industries, such as banking, supply chains, self-driving vehicles, assisted living, smart energy, and smart agriculture, just to name a few. The interest of the audience in the project ideas was demonstrated not only by the full room, but also through the lively networking session at the end and the interactions among the event participants and feedback to CELTIC and Public Authority representatives.

Outlook

The Proposers Day in Istanbul was part of a series of events co-organised by CELTIC-NEXT to support interested proposers in finding collaboration partners and building international project consortia. Besides the several proposers days organized in different EURE-KA/CELTIC countries, CELTIC also offers Proposers Sessions via web-conference. The pitch presentations presented during all the proposers days or sessions are available for download on the CELTIC-NEXT website.

› Further information
› How to get involved – *https://www. celticnext.eu/how-to-get-involved/*
› Proposal pitches presented at the Proposers Day in Istanbul – *https://www. celticnext.eu/pitch-presentations-from-proposers-day-in-istanbul/*

Panel on the business impact of CELTIC projects (from left): Mustafa Eruyar, İSBAK, Mehmet Dağlı, NETAŞ, Burak Görkemli, Argela, Yaşar Burak Savak, Vestel Electronics, and moderator Işıl Özkan, CELTIC Core Group Member from Turkcell.

Audience at the CELTIC-NEXT Proposers Day in Istanbul

› Join new project ideas – *https://www.celticnext.eu/join-new-project-i*

Universal Critical Infrastructures
CELTIC Project UNICRINF

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Major catastrophes demand efficient coordination and control of resources in order to ensure people's safety. In the era of 5G and IoT, networks and applications play a fundamental role in monitoring and decision making in all areas involved. CELTIC project UNICRINF plans to use the available communications infrastructures to create a global integrated platform to monitor catastrophes, create ad-hoc communication infrastructures, communicate with emergency teams, and advise citizens.

Areas involved in a major catastrophe include emergency services, affected people, hospital resources, communications networks, infrastructure, and more. The fundamental objective during an emergency situation is the safety of the people. Technology should help and allow information to flow smoothly between all people involved.

Emergency scenarios and application domains

Emergencies come in different shapes – it could be an earthquake, a tsunami, a flood, a volcanic eruption, a toxic explosion, or a big fire. What all these disasters have in common is that they can compromise communications, which is vital for emergency services and affected people.

However, communications must also include the monitoring of the affected infrastructures, the contact with the people within the affected area regardless of the operator that serves them, the warning of the nearby population by all means available with action guidelines or the evacuation route of victims and available resources.
The UNICRINF project aims to facilitate effective disaster communication solutions covering a variety of scenarios and use cases, including:

› Helping to up the part of the optical trunk network using a contingency truck that replaces the affected node as well as the priority services.
› Updating a local 5G or 4G VPN network using small cell or portable nodes
› Facilitating access to the internet and external servers through an ad-hoc satellite connection
› Performing a national pseudo roaming in order to have the affected people listed and located in the affected area regardless of the operator that serves them

Currently not even the geolocation is available in 112 calls as well as the broadcast of the same service.

› Allowing the transmission and reception of images taken by unmanned aerial, land or sea drones, both to the control centre and to people on the ground through augmented-reality glasses
› Multiscreen display in the control centre of the state of physical, human and image resources
› Control of victims with digital triage and allocation of vehicular and hospital resources with online monitoring
› Traffic control by emergency services for greater fluidity in the evacuation of people and victims
› Monitoring and control of damaged infrastructure and possible toxic spills (air or sea) through IoT sensors
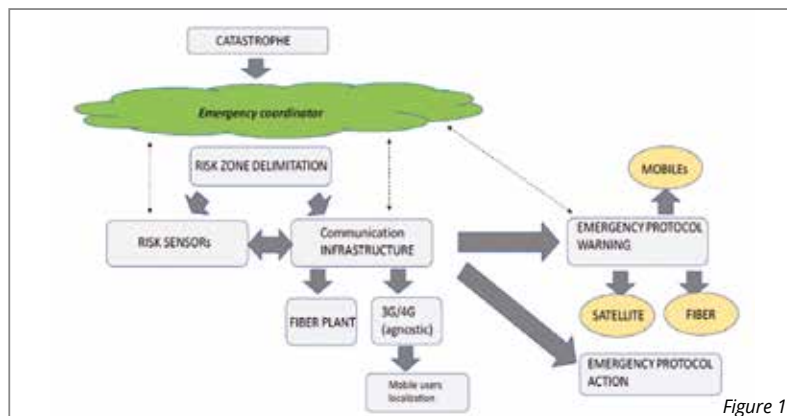› Notice to the population of the affected area with action guidelines or evacuation orders
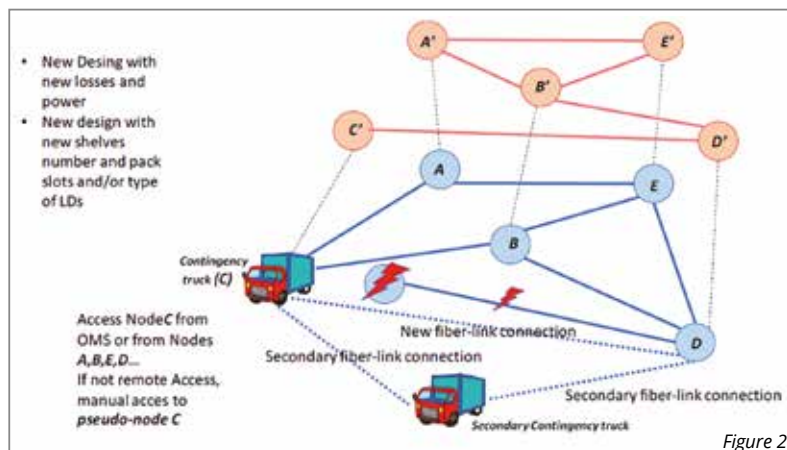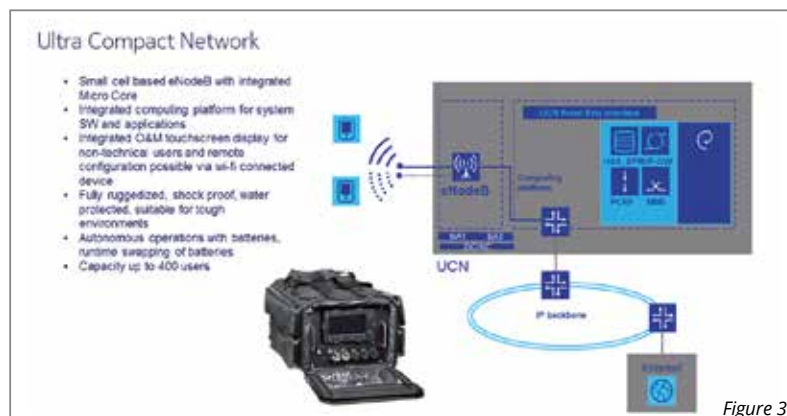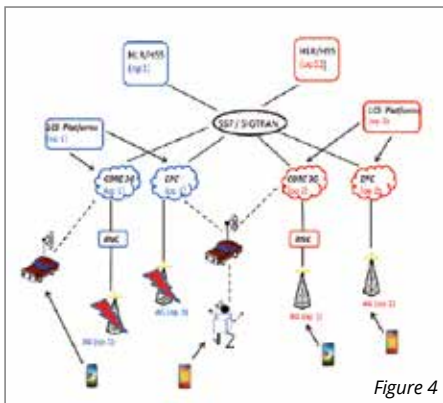

Figure 1

Figure 2
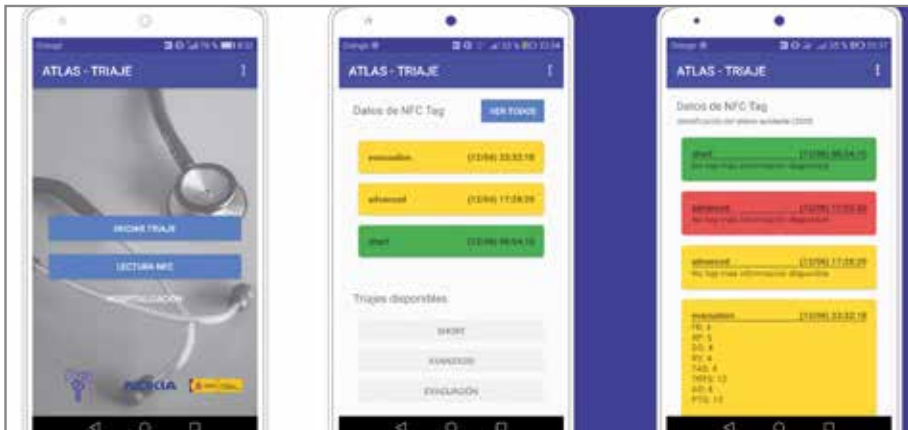

Figure 3

Figure 4

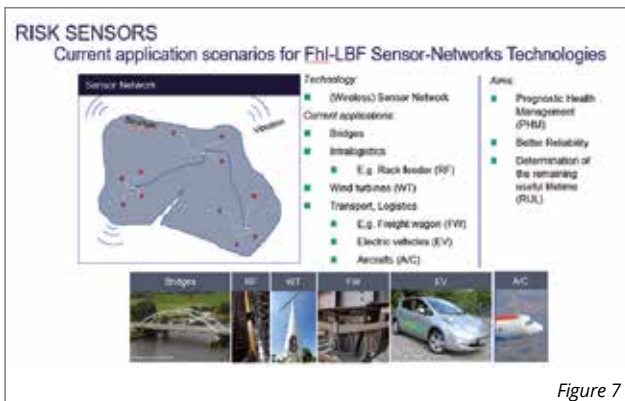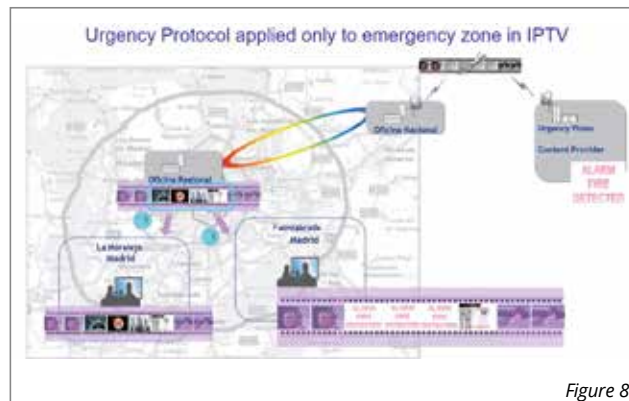*Figure 5*

Figure 6

Figure 7

Figure 8

Information for emergency decisions

For correct decision making in an emergency situation, the state of the communications network, the acquisition of data and its presentation in a user-friendly way are important. Applications that facilitate the co-ordination and control of resources should be included and handled in a simple way. The collection and processing of data from sensor networks must be able to be filtered according to programmable criteria. There are many areas where current information to facilitate the resolution of problems from the control centre is required.

› Further information
- › UNICRINF project page – *https://www.celticnext.eu/project-unicrinf/*
- › Video of emergency communication demo – *https://youtu.be/b2wFQ6eB6Zo*