



EMYNOS Newsletter #4

September 2017

Current emergency systems and 112 services are based on legacy telecommunication technologies, which cannot cope with IP-based services that European citizens use every day. Some of the related limitations are the partial media support, the lack of integration of social media, and the use of an analogue modem for providing eCall services with limited data amount. As most operators have started migrating towards broadband IP-based infrastructures, current emergency systems need also to be upgraded and adapted in order to fulfil regulatory requirements in terms of Next Generation emergency services.

The main objective of the EMYNOS project is the design and implementation of a Next Generation platform capable of accommodating rich-media emergency calls that combine voice, text, and video, thus constituting a powerful tool for coordinating communication among citizens, call centers and first responders.

Additionally, EMYNOS addresses also issues such as call routing/redirection to the closest-available call center, retrieval of the caller location, hoax calls prevention, support for people with disabilities, and integration of social media.

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2. EMYNOS Objectives

EMYNOS will enable users to make emergency calls across heterogeneous devices such as PCs, TV sets, mobile devices, AAC and haptic devices, using various mature technologies (Session Initiation Protocol, IP Multimedia Subsystem (IMS), WebRTC). The project will also demonstrate how the eCall concept can benefit from the IP technologies by allowing audio-video calls towards the emergency call centers and complementing location information, with photos and videos.

Objectives

The actual emergency systems are based on old-fashioned telecommunication technologies that cannot cope with the new IP-based services that the European citizens use every day. Some of these limitations are summarized below:

1. There is no standard underlying technology for the separate emergency systems
2. There is no interconnection among the PSAPs (Public Safety Answering Points): this, unfortunately, limits the transfer of calls in case of congestion and network outage
3. Media limitation: currently only voice calls and sometimes SMS are accepted
4. No unified platform: currently emergency warning systems are completely separate from the 112 emergency centers
5. There are no advanced features, such as accurate caller location
6. Emergency calls are unidirectional: they are established from the end-users towards the PSAP
7. There is no non-telecommunication platform as a backup in case the telecommunication infrastructure is not operational
8. The social media are not integrated: handling emergency situation should not only be the task of the rescue teams. Involving citizens especially through social media (twitter, Facebook, etc) in monitoring events and sharing information will lead to a better management
9. The eCall (the emergency solution for vehicles in case of crash) technology is based on the GSM, which limits the amount of emergency data to be sent

The aim of the EMYNOS project is to design, specify and develop a Next Generation emergency framework that resolves the above mentioned limitations.

3. The Second Workshop on Next Generation emergency communications

In order to provide a forum to researchers and industry partners to keep track of the work progress in the context of Next Generation emergency services, the first workshop **collocated with the IEEE TEMU conference 2016 in Crete, Greece, was organized by the EMYNOS project consortium. This workshop succeeded in elaborating on several actual questions through key speeches from industry (Google), regulators (FCC), and current research projects such as EMYNOS and NEXES.** As a follow up, EMYNOS is organizing the second workshop that will take place on the 27th of November 2017 and be collocated with the 17th PSCE conference occurring on the 28-29 November in the premises of the Spanish National Police on 27 November 2017 in Madrid.

This workshop will focus more on presenting the EMYNOS project ESInet, particularly, in terms of architecture specification and implementation regarding total conversation, WebRTC based emergency calls, accurate location for emergency calls, and solutions for persons with disabilities. This workshop also includes key talks from the European Commission, the Spanish National Police, Madrid 112, and the NEXES project.

As this workshop also includes a hackathon, we welcome and encourage research, industry – in particular SMEs - , and Public organizations to join the workshop, participate to the interoperability tests, and validate their products and solutions against the EMYNOS ESInet.

For more information about how to join the Hackathon, please send an email to markakis@pasiphae.eu

If you wish to sign up for the workshop, fill out [this form](#) and send it to adm@psc-europe.eu

The preliminary workshop agenda is available [here](#).



4. EMYNOS at the ECER AAC 11th Edition

EMYNOS participated to the 11th edition of the Eastern and Central European Regional Augmentative and Alternative Communication (ECER AAC) Conference, which took place on 4-6th July at the University of Bucharest, Romania.

The event is a platform for exchanging experience between specialists from countries with a long tradition in using AAC and professionals who have just started out implementing it, in order to provide equal opportunities in communication for persons with special needs. It gathered AAC professionals, AAC users and their caregivers, teachers, students, representatives of educational authorities and NGOs that are interested in special need education.

The event was a great opportunity to present The Assistive Technology Platform of the EMYNOS system aimed at providing support for persons with different types of disabilities: Augmentative and Alternative Communication users, motor disabled Assistive Technology users, blind and low vision users, deaf and hard of hearing users. It was shown how the Platform enabled access to the EMYNOS system with the use of different Assistive Technology devices and software, thereby allowing them to establish an emergency call and to send/receive voice, text and video messages and to send user's disability profile information to PSAP.



5. EMYNOS at the IIT RTC/MTC conference in Chicago

We are delighted to announce that EMYNOS will be presented at the Illinois Institute of Technology Real-Time Communications (IIT RTC) conference and Expo/The International Multimedia Telecommunications Consortium (IMTC) Connect Forum to take place on 25-28 September in Chicago, USA. EMYNOS presentation is scheduled from 2:00 - 2:30 PM local time on Wednesday, September 27.

The IIT RTC Conference and Expo, and IMTC Connect Forum is a globally recognized collaborative event, where industry and academia connect. Leveraging its unique academic setting, this annual conference brings together technical professionals and business executives from the data and telecommunications industry, standards bodies, policy and regulatory institutions, and academic educators and researchers to promote an open exchange of ideas to lead future development in the rapidly changing field of real-time communications.

6. EMYNOS paper accepted by the IEEE Communications Magazine!

The EMYNOS project is proud to announce that its latest article will be published in the IEEE Communications Magazine.

Abstract

Traditionally emergency communications between citizens and public authorities relied on legacy telecommunication technologies unable to cope with the agile, rich-media content communications that mobile users are already using. This is due to the lack of harmonization and inter-operable IP-based networking solutions. With the operators currently migrating to broadband IP infrastructures, emergency systems need also to follow this path and adapt their emergency communication platforms to fulfill next generation emergency services regulatory requirements. This becomes even more evident in light of the forthcoming 5G networks, which are envisioned to support an amalgam of diverse applications and services with heterogeneous performance requirements, including mission critical IoT communication, massive machine-type communication and Gigabit mobile connectivity. Emergency service operators are against an enormous challenge in order to synchronize their model of operation with the 5G paradigm. This article is studying the challenges that next generation emergency services need to overcome in order to fulfill the requirements for rich-content, real-time, location-specific communications. The concept for next generation emergency communications as described in the project “EMYNOS” is presented, along with a vision of how this concept can fulfill the 5G requirements for ultra-reliable and ultra-low latency emergency communications.

For more information, please contact markakis@pasiphae.eu



7. Successful interoperability test with NEXES project

EMYNOS project has recently conducted some initial tests with the NEXES project during which the interoperability between the two systems was successfully demonstrated through an audio call.

More information about NEXES project is available here:

<http://nexes.eu/>

8. EMYNOS pilots underway!

The EMYNOS project has finalized the specifications of all upcoming activities related to field trials and demonstrations.

The first part of the testing and integration activities was realized in the test environments of the developing partners. The tests will provide feedback regarding the technical correctness of the system. The metrics used to evaluate the system include performance, availability, and scalability.

The second part of the testing and integration activities include the tasks that will occur at the field test sites. The intention to bring test cases to operational infrastructures of existing PSAPs is to **test EMYNOS developed applications for their suitability, efficiency and usability in real life**. These tests will provide verification of the technical readiness as well as acceptance and adoption of these applications by end users.

Use cases and scenarios*

Please note that this table is not definitive (last update 20 September 2017)*

Use case	Scenario
Linphone emergency voice/video call to EMYNOS PSAP	An internet user makes an emergency call. Pushing a “112” button on the EMYNOS software client, the system determines the locally responsible agency and a voice/video call is established. On the PSAP side, information about the caller location is received and visualized by the call taker. Upon call acceptance, a voice/video communication is established.
Automatic emergency call to EMYNOS PSAP This use case describe two scenarios reflecting automatic triggering of emergency calls. The first one is related to persons with disabilities or in general e-health, and the second one is related to eCall.	Smartwatch/sensors triggering A person with e.g. cardiac problems uses a smartwatch connected via Bluetooth technology to an EMYNOS client. His heart rate goes beyond a defined threshold. The smartwatch detects the vital change and automatically triggers a video emergency call towards the PSAP. The call is received at the PSAP with detailed sensor and location information.
	EMYNOSeCall The EMYNOSeCall is an extended next generation eCall, using IP based communication. In addition to the support of passenger vehicles as of today, it is also designed for the use in other classes of vehicles as well as for personal devices. The current eCall is initiated automatically in case of an incident or manually by a person pushing a button on the emergency device. The EMYNOSeCall offers a third option for triggering. Based on predefined thresholds, a sensor detects a critical situation (e.g. a temperature sensor detects that the cargo area temperature of a dangerous goods transport is increasing and exceeds the threshold). In this case the SIP client initiates an automatic EMYNOSeCall. Status information is transferred in an extended dataset to the PSAP. This extended dataset allows also the sending of sensor data (static and real-time). The emergency device can also gather data from additional sensors and sends them to the VoIP client via the sensor interface. The combined sensor data are sent as a part of the MSD or as part of the RTD via the communication channel to the PSAP to provide additional information to the emergency services. The PSAP operator can monitor

	the situation using the sensor data stream and inform the emergency service about relevant changes at the emergency location.
Real time text emergency call	A deaf person detects a fire in his house and sets a textual emergency call to the fire brigade on his tablet, which is provided with the EMYNOS software client. The call is represented with the text written by the caller as well as location information at the PSAP side. The call taker can also answer in written form in parallel to the audio connection, enabling him to hear sound from the emergency scene.
Emergency call via Website (WebRTC)	An internet user without access to legacy PSTN and therefore unable to call 112 goes to the EMYNOS emergency service website. The web application determines the caller's location by using the browser's Geolocation API or a HELD enabled LIS. The user verifies the location and initiates an audio emergency call.
Information mining via social media	In a disaster situation the MCC managing the event gets aggregated information about specific aspects of social media postings. Reports on the occurrence of words (in and out of keyword lists) and the spatial and temporal frequency of postings holding these keywords are presented to the MCC. Crowd streams are detected and visualized to the MCC. Due to the impossibility of simulation of disaster situation in real social services this uses case processes historical data of non-disaster events.
AT-Use case	In an emergency situation, a 112 call is made by a disabled person, e.g. after a stroke, having troubles communicating (not able to speak or write but able to understand some simple speech and able to communicate using a symbol communication application). User's disability profile data along with location are sent to PSAP. The PSAP operator can ask relevant voice questions to the caller. The caller answers the questions and describes his status using the symbol application that transfers symbols into text that is sent as real time text messages from the EMYNOS caller client.
PSAP overload situation (IVR)	Because of a disaster event, the local PSAP cannot be reached any more. A person making an emergency call to this PSAP is redirected to an Interactive Voice Response (IVR) system. Here he gets basic information of the underlying problem and can choose whether he wants to report the emergency at another PSAP or whether he wants to contribute new information about the initial event e.g. via access to social media channels.

9. Overview of Mission Critical Services in 3GPP

3GPP has just published an article summarizing past and ongoing developments related to Mission Critical Services.

A platform for mission critical (MC) communications and MC Services has been a key priority of 3GPP in recent years and is expected to evolve into the future by taking more requirements, from different sectors of the global critical communications industry, on board.

This article provides an overview of what was achieved so far in the MC domain within 3GPP and also gives an outlook of what can be expected in the near future. We plan to create a more detailed paper on MC Services, which will summarize the use cases and functional aspects of Rel-13, Rel-14 and upcoming Rel-15, later this year.

Driven by the 3GPP release schedule, the mission critical related functionalities have been phased across them, each release encompassing a complete set of standards for equipment vendors and operators to phase their implementations and deployments, based on market demands.

[Click here](#) to access the full article.

10. Success of the ETSI Mission-Critical Push To Talk Plugtests Event

On 23 June 2017 took place the ETSI Mission-Critical Push to Talk (MCPTT) Plugtests event, gathering 140 participants from 19 different vendors. The event took place at the ETSI headquarters in Sophia Antipolis, France. The test sessions were observed by seven government and public safety network operator organizations from Belgium, Finland, France, Norway and the UK.

More than 1000 tests were conducted, with a success rate of 85%. The tests are based on 3GPP, ETSI and IETF standards. For this first session, a test specification has been developed for the 3GPP Release 13 MCPTT, comprising 47 test cases.

The final tests of the MCPTT Plugtests event included pre-arranged and chat mode Group Calls, which involved several MCPTT clients, a Control Room, a LTE cab radio and a TETRA radio. Adrian Scrase, ETSI CTO, said during the event that “the value of the Plugtests is not only for the vendors in testing their implementations, but also in finding issues in the 3GPP specifications, which will be fed back to the 3GPP working groups.”

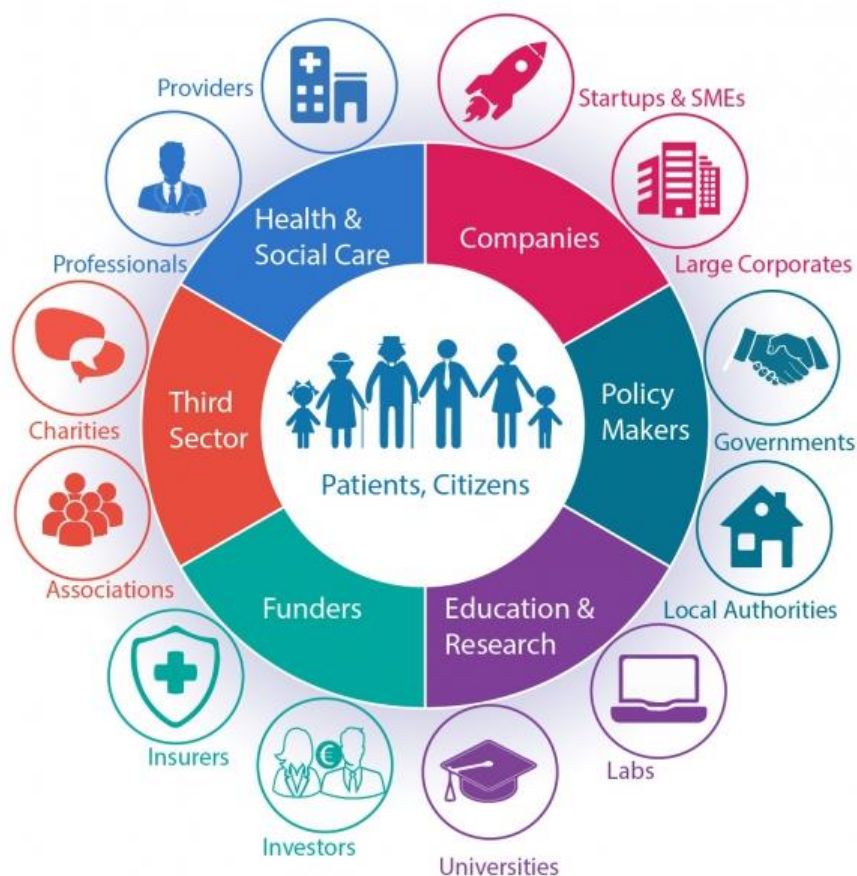
Supported by the European Commission, these sessions are the first in the world to test the interoperability of MCPTT products and services, and are conducted to ensure that equipment from different vendors designed to support mission-critical users will work together. The full report on these Plugtests will be posted on the ETSI website in due course. The next MCPTT Plugtests sessions are planned for Q2 2018.

Push-to-Talk (PTT) is a standard feature of narrowband Professional Mobile Radio (PMR) technologies developed specifically for mission-critical communications. PTT enables near instantaneous group communications – a critical requirement in an emergency situation. To ensure that such capability is built in to LTE services, 3GPP has been catalyzed by the work of the TCCA to ensure that LTE supports mission-critical communications, with MCPTT now specified in 3GPP Release 13.

Although the PMR market shows no signs of slowing, mission-critical broadband LTE will offer complementary capabilities, and its market is expected to grow at a compound annual growth rate of 20 per cent, from \$1.1 billion in 2015 to \$2.6 billion in 2020, according to IHS Markit. Planned nationwide rollouts in the United States, South Korea, the UK, the Middle East and Asian countries are expected to trigger significant large-scale investments in mission-critical LTE.

11. The Digital Health Society Declaration

The Ministry of Social Affairs of Estonia is launching the Digital Health Society Declaration as a call for actions about “Health in the Digital society and the Digital society for health”. It will integrate inputs from all the stakeholders interested in the development of Digital health.



One of the country's top priorities for the Presidency programme is the development of the Digital Single Market (DSM) and the Digital Economy in Europe, bringing more services and benefits to EU citizens, including health and social care services. Thus, the Estonian 2017 EU Presidency aims to enhance the deployment and the implementation of Digital health across Europe.

The Digital Health Society Declaration

In preparation of this, the Ministry of Social Affairs of Estonia has appointed the European Connected Health Alliance (ECHAAlliance) as its International Strategic Partner in order to develop the agenda of activities around the concept of the Digital Health Society (DSH) and launch a large collaborative work, an ecosystem, with the main EU key stakeholders representing policy-makers, citizens, health professionals, scientists, companies and payers. This multi-stakeholders group is producing the [Digital Health Society Declaration](#), expressing the current main challenges for the Digital health deployment and drawing ways and initiatives from each category of stakeholders to achieve it.

In addition to that, DHS Task Forces have been created, gathering high-level experts from whole Europe which focus on:

- Convergence on interoperability standards and Digital Tele healthcare protocol
- Data donors and citizen-controlled data governance
- Legal framework facilitating the free flow of data and the 2nd use of data
- Digital transformation & change management in health and social care organisations

Each DHS Task Force and its leaders and experts will publish its conclusions in September 2017, including a call for commitments & actions for all stakeholders willing to move forward on these specific topics. People interested to be informed about one or several Task Force(s) can apply to the emailing list within the [Consultation questionnaire](#).

The Conference

The conclusions and results of this collaborative work will be presented at the conference [Health in the Digital Society. Digital Society for Health](#), co-organised by the Ministry of Social Affairs of Estonia, ECHAlliance and HIMSS Europe, in Tallinn, on 16-18 October 2017. The event will focus on how digital technologies and wider use of health data are changing our lives and the ways of healthcare. The programme is built around 3 mantras:

- Building citizen-driven demand in eHealth
- eHealth supporting the value driven and sustainable health and social services
- eHealth as a driver of innovation and economic development

The sessions will present discussions around a broad range of topics, technologies and concepts such as: citizens access and control of their own health data, personalised health, Internet of Healthy things, blockchain, virtual reality, behaviour changes, smart cities, mHealth, cybersecurity, mental health, big data, interoperability and standards, prevention.

This multi-stakeholders conference will bring together the EU policy-makers (including Member State ministers responsible for health and social affairs and regions), patients/citizens organisation representatives, large IT and healthcare companies and start-ups healthcare professionals, hospital managers, researchers, insurers.

12. European Parliament votes for a "reverse 112" system

European institutions are currently debating the European Electronic Communications Code (EECC), a massive legislative file that will update telecoms rules within the EU.

ITRE (Industry, Research & Energy) is the text's lead Committee in the European Parliament, with IMCO (Internal Market & Consumer Protection) being responsible for the part of universal service and consumer protection.

On Monday 4 September, IMCO voted massively in favor of an amendment involving the establishment of a compulsory public warning system to be implemented in every EU country. The ball is now in the court of the European Commission and the Council.

The purpose of this system, also known as "reverse 112", is to communicate information regarding potential hazards (man-made or natural) to EU citizens via their phones, through a geolocalised message-sending technology. This type of warning should allow citizens to evacuate or avoid a danger zone more quickly thereby reducing the chances of casualties.

It is the first time that consensus is reached in this particular domain. The initiative has been supported by the vast majority of the political groups that compose the European Parliament. There is no question that the latest tragic events in London, Paris and Barcelona played their role to convince Member States in engaging in this direction.

The reverse 112 is not yet adopted as it was not planned in the EC proposal nor discussed yet at the Member States level. That will be a point of discussions in the coming months.

The amendment is available [here](#).

The EMYNOS Consortium

The EMYNOS framework will be implemented by partners with complementary expertise (telecom/satellite operators, VoIP provider, eCall testers, end users), which together form the chain for the provision of emergency services and which will deliver the EMYNOS demonstrator that will be validated in operational environment.

The EMYNOS consortium covers a wide set of complementary capabilities, expertise, background and understanding in dealing with Crisis management.



Contact: Marie-Christine BONNAMOUR

Public Safety Communication Europe (PSCE)

Rue des Deux églises 39

1000, Brussels, Belgium

Tel. +32 (0)2 738 07 63

Email: secretariat@psc-europe.eu

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