

Issue: No.5
May 2014

Contents

FAREWELL LETTER	1
PROJECT NEWS.....	2
TECHNOLOGY INSIGHT	5
ACHIEVEMENTS.....	7



Farewell Letter

Dr Fidel Liberal (Project Coordinator)



Due to the complexity of the emergency communication and operation environment (involving security, resilience and privacy), the idea of using VoIP technologies over general purpose infrastructures for providing mission critical communication services was not popular among the public safety community until 2011.

Traditionally, most emergency bodies rely upon their own private communication networks and interoperability has never been one of their top priorities. However, due to the combination of demands of enhanced emergency services, the economical crisis, unacceptable market entry barriers and the growing obsolescence of traditional PMRs, a perfect storm had arrived that led the whole emergency industry to IP-based technologies.

On 22/02/2012, President Obama signed the “Middle Class Tax Relief and Job Creation Act of 2012” into the law, including provisions to fund and govern a Nationwide Public Safety Broadband Network in the U.S. that would use LTE as the underlying radio technology and bring a \$7bn budget for initial deployments and tests. The UK’s ESMCP is also considering the adoption of LTE as the next generation public safety network technology. Such a trend was something we dreamed at the beginning of our humble project, but did not expect it to happen this soon, putting our project outcomes at the same level as some proposals from the biggest telecommunications companies.

In the first GERYON newsletter, I mentioned two words in the welcome letter, which were used to define the aims and objectives of the project: convergence and uncertainty. Convergence in the sense of legacy Private Mobile Radio systems and next generation general-purpose cellular technologies merging into a rich ecosystem of next generation advanced emergency services, and uncertainty regarding the near future evolution of emergency networks due to spectrum scarcity, digital dividend issues and our too-long crisis. I would like to think that the second word would be no longer necessary and I proudly replace it by “Mission accomplished”.

Also, I would like to take this opportunity to thank GERYON partners for their commitment and support.

Dr Fidel Liberal, University of the Basque Country (UPV/EHU)

Project News

GERYON General Meeting

With the aim of providing project updates and planning for the next stage of the project, a regular project meeting was held at Cosmote, Athens, Greece on 12-13 March 2014. A total of 11 people from all project partners participated in the meeting. Dr Fidel Liberal initiated the 2-day meeting with a demonstration of the overall project status, followed by progress updates on the deployment of GERYON basic and enhanced services. The statuses of a number of planned dissemination activities, including the GERYON end-user evaluation events, were also discussed. This provided a clear picture of where the project is currently at, ensuring the project can be smoothly completed to a high standard by the end of May 2014.

Dissemination Activities

During the last six months, the GERYON consortium made a significant amount of effort on the dissemination activities, including attending workshops, organising GERYON Days, producing deliverables and scientific publications. Details of these dissemination activities are described below.

With the purpose of demonstrating the project outcomes to the Public Safety Answering Point community, GERYON was presented at the annual EENA Conference 2014, held in Warsaw, Poland during 02-04 April 2014. The EENA Conference 2014 was aimed to bring together key stakeholders in the emergency services, public authorities and industry representatives to showcase best practices in the field. In total, over 400 participants attended the conference. Several videos were displayed by the GERYON stand to introduce the GERYON concept and approach, demonstrate the potential of GERYON applications for solving real-life emergency problems, and present the GERYON emergency control room. In addition, various leaflets were created to explain the GERYON project from both conceptual and technical perspectives. Photos of the GERYON stand at the EENA Conference 2014 are presented within below.



Figure 1: GERYON stand at EENA Conference 2014.

With the aim of bringing the project's outcomes to the largest professional audience possible within the telecommunications/multimedia ecosphere, GERYON was showcased at CEBIT 2014, the world's largest and most international computer expo. Considered as a barometer of the state of the art in information technology, the fair is larger both in area and attendance than its Asian counterpart COMPUTEX and the no-longer held American equivalent COMDEX. The GERYON booth was located in Hall 6 "Web & Mobile Solutions". A picture of the booth is presented in Figure 2 (on the left). Over the 5 days of the event, more than 20 visitors were introduced to the GERYON project and a selection of them is depicted in Figure 2 (on the right). Strong feedback and interest were expressed by the visitors, particularly in the following areas: a) Recurrent important interest in emergency telecommunications across various domains (pediatrics, first-aid, remote medical monitoring); b) High expectations towards Media Gateway instalment; c) Enhanced quality of services and communications.



Figure 2: GERYON booth at CeBIT 2014 (left) and a number of visitors (right).

In order to demonstrate various GERYON services to end-users and obtain their opinions towards these services, three GERYON days have been organised in Greece, Spain and the UK. Three user cases were devised to include different GERYON services in a realistic and interesting manner: user case 1 - River overflow alarm initiated emergency communication (Spain), user case 2 - Threatened Person Activates Red Button Services (Greece) and user case 3 - Group Call and Remote Patient Data Collection (UK). Also, a wide range of end-users were invited, including police, fire brigade, ambulance services, emergency call service 112, researchers and press. Interesting discussions were formed and comprehensive feedback obtained from the end-users on each of the GERYON services (both basic and enhanced services). A collection of photos that were taken on these GERYON days are depicted in Figure 3.



Figure 3: A collection of GERYON Days activities

During the last three months, the GERYON consortium has produced a total of six deliverables and they have been submitted to the EU on time. These deliverables describe the key achievements of the project from various angles. D6.1 demonstrates the integration of GERYON systems and components (i.e. the combination of GEMS, GEGW, GSGW, GMGW and GERYON terminals); D6.2 discusses the deployment of GERYON advanced emergency services (e.g. red button, Push to Talk over 4G); D6.3 describes the trials and evaluation of both the basic and enhanced GERYON services based upon the results obtained from GERYON days. The final reports for dissemination, industry-related events and standards, and business plan are included in Deliverables D7.3, D7.4 and D7.5 respectively.

Despite a busy period of finalising the development and integration of various GERYON system components, the consortium managed to produce a number of conference papers. Four papers were submitted and accepted (one by the ITU Kaleidoscope 2014 conference and three by the IEEE ICC 2014 conference) and they will be published next month. A paper was contributed to the ITU Kaleidoscope 2014 conference - Living in a converged world - impossible without standards, and will also be published in next month. Also a paper titled "An IMS-based Interoperable Architecture for Heterogeneous Emergency Services" has been accepted for publication by the IEEE International Conference on Telecommunications and Multimedia (TEMU), Crete, Greece, 28-30 July 2014. In addition to the GERYON own produced papers, the consortium also formed collaborations with other EU projects (i.e. Freesic, HITGATE and PPDR-TC) within the emergency communication domain and generated a paper on the topic of interoperability of PPDR communication systems.

Technology Insight

In this final instalment of the GERYON key system components - the GERYON terminal will be presented. The GERYON terminal is designed to assist users by utilising the GERYON services in emergency situations. A detailed description about the GERYON terminal is demonstrated in the following section.

GERYON Terminal

In order to allow users to access both GERYON basic and enhanced services regardless of their network capabilities, the GERYON terminal has been designed and developed. In order to increase the potential impact of the project towards its commercial exploitation, the design and development of the GERYON terminal was based upon common handheld devices and not on proprietary hardware. Hence, the installation of the GERYON application can be undertaken on any typical mobile device, allowing widespread deployment of the GERYON enabled emergency services for people who require assistance in emergency situations, such as people with special needs and victims of natural disasters.

In general, the GERYON terminal is composed of a software client implementing traditional IMS signalling and a number of GERYON compliant operations (e.g. security, location and specific support). The GERYON terminal was developed with an open source approach and a generic GERYON IMS LTE architecture is depicted in Figure 4. The architecture is based on One Voice Profile (later adopted by GSMA under the VoLTE denomination) which outlines minimum requirements for a wireless device and network in order to guarantee an interoperable and high quality IMS based telephony service over LTE network access during implementation.

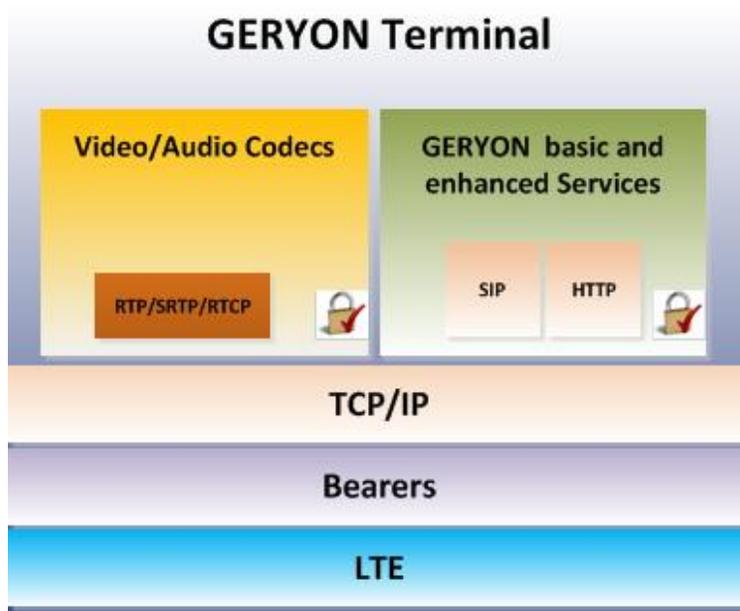


Figure 4: Generic GERTYON IMS LTE terminal architecture

As illustrated in Figure 4, the GERYON terminal architecture has a number of layers:

- Application layer: is the place where all GERYON basic and enhanced services (e.g. Red button and location retrieval) are implemented. Session Initiation Protocol (SIP) and Hypertext Transfer Protocol (HTTP) are utilised as the signalling communication protocols for call setup and management. The media data (e.g. voice and video) is coded and encrypted in the form of Real-time Transport Protocol (RTP) and Secure RTP (SRTP) packets.
- Transport layer: the payload from the Application layer (either RTP or SRTP) is encapsulated at this layer as User Datagram Protocol (UDP) packets and will be delivered over radio access bearers.
- Bearers layer: provides services for user data transfer and control signals between various terminals.
- LTE layer: consists of LTE MAC, PDCP and RLC protocols implementations.

Based upon the GERYON terminal architecture, a prototype of the GERYON terminal (i.e. GERYON-Droid – GDroid App) has been developed. By utilising the GDroid App, people can access various GERYON emergency services, including location services, group call, push to talk, red button, real time video transmission, and real time message interchange. A number of screenshots of the GDroid App are illustrated in Figure 5.

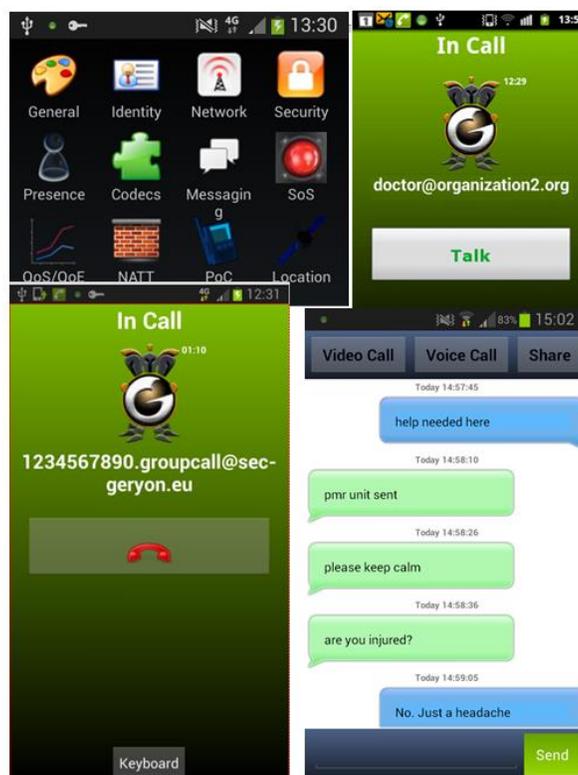
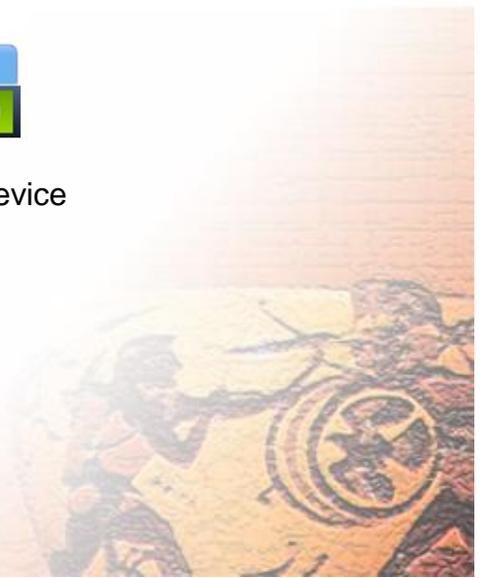


Figure 5: The GDroid App on an Android device





Achievements

Based upon the continuous effort and commitment by the GERYON consortium members over the 30-month project lifetime (i.e. 1 December 2011 – 31 May 2014), a fruitful set of achievements have been successfully accomplished in the following areas of research, development and dissemination.

A number of system components have been developed and prototyped for the GERYON eco emergency communication system, enabling access to various GERYON services for different users. These components are GEMS (central management system of the GERYON architecture), GEGW (specified as the GERYON enabler for non-IMS compatible emergency organisations), GSGW (responsible for cross-ciphering), GMGW (in charge of transcoding), GDroid and GERYON emergency call centre.

In total, 21 research papers (including 4 journal papers and 17 conference papers) have been produced by the GERYON consortium, covering various aspects of the emergency communication, such as interoperability, security, adaption and quality of experience. It is envisaged that researchers from the aforementioned domains would be benefited from these scientific publications. Specific details of these publications can be found through the GERYON website (URL: <http://www.sec-geryon.eu/Publications.html>).

With the aim of ensuring a high profile for the project within emergency communication systems, a huge amount of effort has been devoted to dissemination by the project members, including the creation of 4 press releases, 16 news articles, one leaflet with many distributions, one project website including both public and private interfaces, 5 newsletters and one YouTube channel containing 11 videos, demonstrations in 4 major international industrial events, hosting of GERYON days, conducting interviews on radio and TV, presenting presentations in various conferences, and liaison establishment with several other EU projects within the same field.

GERYON Newsletter editors:

Dr Fudong Li, Dr Nathan Clarke and Dr Lingfen Sun
Centre for Security, Communications and Network Research (CSCAN)
Plymouth University, Plymouth, United Kingdom, PL4 8AA