



REACH 112 - REsponding to All Citizens needing Help

REACH112

Improving Accessibility for the Deaf and Hard of Hearing and Communications between All Citizens and Emergency Services

Executive summary

For years, people with disabilities, in particular deaf and hard of hearing citizens, have been unable to access emergency services. In 2007, the MeAC report indicated that only seven EU Member States claimed to provide an accessible 112 service. In 2009, the amended Universal Service Directive invited the Member States to ensure an equivalent access to 112 for all citizens. EU countries are now looking into efficient and reliable solutions to comply with EU legislation and improve inclusion of citizens with disabilities. This document intends to present and compare existing solutions for emergency services accessibility. It also recommends the use of Total Conversation so that to ensure a maximum level of equivalence in the access to 112.

People with disabilities in Europe

It is estimated that there are 80 million people with disabilities in Europe in the European Union. Among these, 44 million citizens are deaf or hard of hearing, thus about 9% of EU's total population. While a majority of hard of hearing citizens can use voice to communicate with emergency operators, a large number of deaf citizens and people with severe hearing impairment have to use other means to be able to communicate.

What is needed to ensure an equivalent access to emergency services?

Today's emergency services are almost voice-only capable and only a marginal share of data and multimedia is used by European Public Safety Answering Points (PSAPs). Inherently, improving access to 112 for deaf and hard of hearing citizens induces enabling PSAPs to handle their modes of communications such as text and sign-language and thus implementing access to 112 through text and video.

In order to offer a highly accessible 112 service, it is important to keep in mind the following aspects:

- **Speed:** Is the access time to the PSAP and the duration of the emergency conversation reasonable?
- **Reliability:** Are we able to ensure availability of the service?
- **Mobility:** Can or could citizens use the same solution everywhere in their country and the EU and not only at local level?
- **Generalisability:** Is the application used or potentially used by a majority of concerned citizens? Or is it an "emergency only" solution?
- **Cost:** Is the cost of the application and its use acceptable and in line with the EU requirements for 112 (call free of charge)? Is the cost acceptable for emergency services?



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Solutions deployed in Europe

In several EU countries such as the Netherlands, Sweden and the United Kingdom, legacy text phones provided access to emergency services usually via dedicated long emergency numbers. The text is then interpreted to voice by a relay service so that the PSAP can dispatch the necessary resources. This is however a costly provision and is based on use from homes and public locations.

Fax is also used in several EU Member States such as France and Belgium. In practice, deaf and hard of hearing citizens were provided with A4 sheets to be faxed in case of an emergency. The process is recognised as slow and, once again, can hardly be used outside homes.

Location-based solutions have also been trialled. Citizens can send a pre-registered message to 112 along with GPS coordinates in an emergency. Unfortunately, this involves carrying an additional dedicated device with the sole purpose of emergency and assistance while deaf and hard of hearing citizens want to use the same phones they would use for person to person communications (e.g. mobile phones).

Another range of proprietary solutions have been implemented, usually at regional or local level. They comprise proprietary chats and web services that are usually developed under the leadership of emergency services. While these tend to use modern means of communications, they are often unfamiliar to the end-users who wish to use standardised daily communications. Moreover, these services only function in specific areas.

Smartphone Applications in case of emergency are being deployed quickly on the market. They can easily be downloaded by end-users and are part of the quick development of the smartphone market in Europe. Unfortunately, they are usually working only in specific regions/areas and they tend to use proprietary technologies, thus they usually do not provide access to emergency services all over Europe.

Emergency SMS is functioning or being implemented in several EU countries such as Luxembourg, Estonia, Sweden and the United Kingdom. Person to person SMS is widely used by deaf and hard of hearing citizens, thus it is easily implementable and usable. However, several concerns have been raised concerning the network delay of transmission for SMS as well as the duration of emergency conversations (10 to 18 minutes). The availability of location data for 112 SMS has also been reported as lacking in most cases. Registration to a national emergency SMS service is needed in most cases and a foreigner visiting a country where the service is implemented would not be able to send an SMS to 112 unless he has previously registered. For these reasons a majority of emergency communications experts consider it as no more than an interim solution.



Total Conversation & 112 for all



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The way forward: Total Conversation to 112

Total Conversation is a universal and standardised set of communications enabling citizens to communicate with voice, video and real-time text that was developed and supported by deaf and hard of hearing stakeholders. It permits person to person communications either directly or indirectly using a relay service that serves as a interpreting service between voice, sign-language and real-time text. Not only deaf and hard of hearing citizens can communicate with each other but they can also connect to the mainstream community and services through direct communications or relay services.

In addition, Total Conversation can be implemented in a large number of devices such as PCs, laptops, smartphones, videophones, tablets and is able to bridge with legacy devices such as textphones.

The REACH112 project (2009-2012) was funded by the European Commission to provide an efficient and reliable access to 112 in five countries: France, Sweden, Spain, The Netherlands and The United Kingdom using Total Conversation. In these Member States, citizens are provided with devices and software clients while PSAPs were equipped with hardware and software to handle these emergency communications. All deployments are based on a large set of recognised international standards by ETSI, the ITU or IETF so that to ensure European and international interoperability.

In the project, tests and deployments show that emergency conversations are quick and reliable. As opposed to emergency SMS, citizens "call" 112 and get an instant response from emergency operators. A conversation follows with text (every letter typed is seen instantly by the recipient in real-time) and/or with video using a sign-language interpreting service or a lip speaker (for hard of hearing people). The immediacy of the emergency conversation can therefore be preserved.

Providing emergency services with valuable media and data

Total Conversation is a major component of the Next Generation 112 (NG112) service that promotes emergency services over IP and thus to enable PSAPs to be contacted all media such as text and video. The concepts are recognised and standardised by the IETF-ECRIT, a leading international standards development organisation.

Total Conversation does not only serve people with disabilities but every citizen willing to communicate with emergency services using multimedia. We can see the demand for this in the practice of posting video recorded on mobile phones at emergency and disaster scenes. The REACH112 project demonstrates that live video stream from mobile and other devices can be



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provided today to emergency call-takers. Video facilitates communication between citizens and emergency services and enables the transmission of live video streams in case of an incident. In locations where signal strength is a problem, the smartphones can still deliver voice and text conversation with emergency service call takers. Real-time text only can be used in specific situations (e.g. hostage situations) to contact emergency numbers and engage a quick and reliable conversation. Important data such as the caller-ID and the location information can also be provided to PSAPs.

How can Total Conversation be implemented?

At PSAPs, installing Total Conversation requires an IP-connection, either integrated in the emergency service IP-network or separate. Standard Total Conversation contact centre clients are easily implementable in a standalone console but can also be integrated or semi-integrated with the standard call-taking interface used by the PSAP. Call-takers can be warned of an incoming Total Conversation call via easily customisable warnings (pop-up, light, ring, etc...). Conversations can be recorded as per the PSAP policy. Location data can be provided by the Internet Service Provider (depending on national deployments and regulations). Emergency services authorities can customise the Total Conversation or access to 112 in many ways: direct calls to 112, calls to 112 and direct invocation of relay service, calls to 112 and invocation of relay services when needed, calls to relay service and then to 112, and so on.

Citizens can subscribe to Total Conversation services for a few euros per month allowing person-to-person calling as well as relay and emergency service access from a wide range of devices. Clients can usually be downloaded on the internet and are easily set up. Typically a regular fee (e.g. monthly) is required as for any other subscription (e.g. mobile phone contract). In some countries, the service is subsidised by authorities and public agencies. It should be noticed that in all cases calls to 112 are free of charge as per the EU regulations. If relay services are available, citizens can then contact anyone using them and the related fee is either on a "pay per use" or subsidised model. Emergency services also cooperate with them to ensure a high-quality access when the caller connects to 112 via a relay service.

More information?

The REACH112 website will provide you with further information. You will find some demos, videos, technical specifications and contact information. Please visit www.reach112.eu