

First of Two Parts

# Emergency Telecommunications for Citizens in the European Union: Contacting the Authorities in Case of Emergency

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In the context of emergencies and disasters, emergency telecommunications cover communication from citizens to authorities, between authorities, from authorities to citizens and between affected citizens. This article covers the existing situation in all the areas mentioned above from a citizen's perspective and contains some proposals for action in view of ensuring further developments in this field. Part one contains an introduction and deals with the communication of citizens with authorities.

Communicating during emergencies, crises and disasters is not a new issue. Aeschylus writes that fire signals transmitted from mountaintop to mountaintop were used in the 12th century BCE, to inform the city of Argos about the Greek victory over Troy within one hour after the event (Smyth, 1926, Uzunoglu 2006). In 490 BCE, messenger Pheidippides run to Athens to bring news of the victory of the Athenians at Marathon. When he reached the agora some two to three hours later, he gasped "We have won" and dropped dead. The modern Marathon race commemorates his feat.

Today, news about major disasters take only a few minutes to reach major news networks and, immediately afterwards, millions of households in all continents receive live pictures in their living room TV screen. In case of personal emergencies (accidents, fires, interpersonal violence, etc.) people can call emergency services to get help as soon as possible. However, this almost instantaneous transmission of information from distant disasters gives a rather false impression about the performances of modern emergency telecommunications, which still face major challenges in order to ensure that in every emergency and disaster, affected individuals get timely and high-quality help.

## Definitions

The UN defines emergencies as sudden and usually unforeseen events that call for immediate measures to minimize their adverse consequences (UN-DHA, 1992). Logically, the term *emergency telecommunications* should thus refer to the telecommunications necessary to deal with emergencies. However, the International Telecommunications Union considers that emergency telecommunications are related only with major disasters (ITU, 2005). In 2002, the Emergency Telecommunications Group of the European Telecommunications Standards

Institute (EMTEL-ETSI), established a new and more general definition (ETSI-EMTEL, 2004), based on earlier proposals by the European Commission (Alevantis, 2001, 2002).

This definition has also been endorsed by the 8th and 9th Global Standards Collaboration meetings (GSC, 2003, 2004). Thus, Emergency (Tele)communications can be partitioned into concerns covering (Tele)communications (see Figure 1):

- From citizens to authorities and/or organizations providing emergency services,
- Between such authorities,
- From such authorities to citizens
- Amongst affected citizens

However, at the 10th Global Standards Collaboration meeting (GSC, 2005), the term "citizens" in the above definition was replaced by the

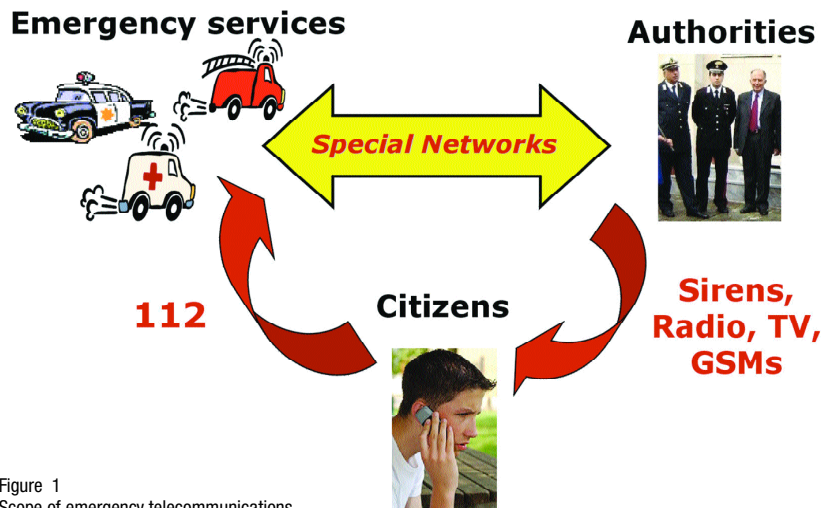


Figure 1  
Scope of emergency telecommunications.  
Figures and Table courtesy of EENA.

Table 1  
**Using the 1-1-2: What Every Citizen Visiting the EU Should Know**

When to call the 1-1-2	<p>Call the 1-1-2 only in real life-threatening emergencies like:</p> <ul style="list-style-type: none"> <li>• Serious medical problems (unconscious person, important injuries, chest pain, seizure, bleeding)</li> <li>• Any type of fire (house, car, business)</li> <li>• Life-threatening situations (crimes, fights, people with weapons, robbery in progress, etc.)</li> </ul> <p>Do not call the 1-1-2:</p> <ul style="list-style-type: none"> <li>• To test your mobile phone—you may block a real life-threatening emergency call</li> <li>• To laugh at the operators or to just hang up—respect operators who work under stress to help save lives, do not block real emergency calls by blocking lines</li> <li>• For non life-threatening emergencies or non-emergencies like property damage accidents, break-in to vehicles, theft of property, vandalism—especially when the suspect is gone—cars blocking the street. Call directly the local police</li> </ul> <p>However—when in doubt, dial it out—1-1-2. You could save someone's life!</p>
Stay calm	Stay safe—avoid having an accident yourself.
What to say	<ul style="list-style-type: none"> <li>• Where is the assistance needed (location)?</li> <li>• Your name and telephone number?</li> <li>• What happened (nature of the emergency) and if it is happening now?</li> <li>• Who needs help or is involved and how many (victims, suspects, etc.)?</li> <li>• Why is the emergency happening (i.e. depression) and any obstacles to the arrival of emergency services?</li> <li>• Are weapons involved (knives, hand-guns, automatic weapons, suspected bombs or explosives)?</li> </ul>
Stay calm	<ul style="list-style-type: none"> <li>• Wait for instructions. And follow them carefully—your assistance could mean the difference between life, death or serious injury</li> <li>• Do not hang up until the operator tells you to!</li> </ul>
Be prepared	<p>To launch a 1-1-2 call—observe and exercise mentally</p> <ul style="list-style-type: none"> <li>• Get training in your company or in the context of your community as a first aid helper or as a first responder—you will be able to help yourself and your neighbors</li> <li>• Remember—prevention is always better and more efficient.</li> <li>• Report problems with the use of the 1-1-2 at <a href="http://www.eena.org">www.eena.org</a></li> </ul>

more generic word “individuals,” to cover *inter alia* tourists and people who may not have the status of citizen of a given state. Although this definition is certainly broader, EENA prefers using the term “citizens,” as this is stronger from a legal and constitutional point of view at national and EU level.

This article deals with the challenges linked with all aspects of emergency telecommunications in the European Union from a citizen's per-

spective and contains some proposals for action in view of ensuring further developments in this field. Many of the problems described are similar for other non-EU regions. And they certainly concern people outside the EU as Europe is one of the top tourist destinations in the world.

### Citizens Communicating with Emergency Services

#### Existing Situation

Thousands of emergency communications centers all over the European Union (the Public Safety Answering Points or PSAPs) receive some 200 million calls annually from citizens in distress (CGALIES, 2002). This estimation correlates well with statistics on the leading causes of death and disease for the European region (WHO, 2000), which include heart attacks, strokes, road traffic injuries, self-inflicted violence, drowning, interpersonal violence, fires, falls and poisoning. For all of these emergencies, the timely arrival of an ambulance can make the difference between life and death or permanent disability.

Timely intervention in the case of fires may reduce their cost which amounts to approximately 1 percent of Europe's GDP (WFSC, 2005). Although EU-wide statistics on criminal acts against life and property or about terrorist activities are not available, media coverage tends to consider such events as primary reasons for the increasing feeling of insecurity amongst Europeans, especially the mobile ones. This is a major issue considering that every year more than 130 mil-

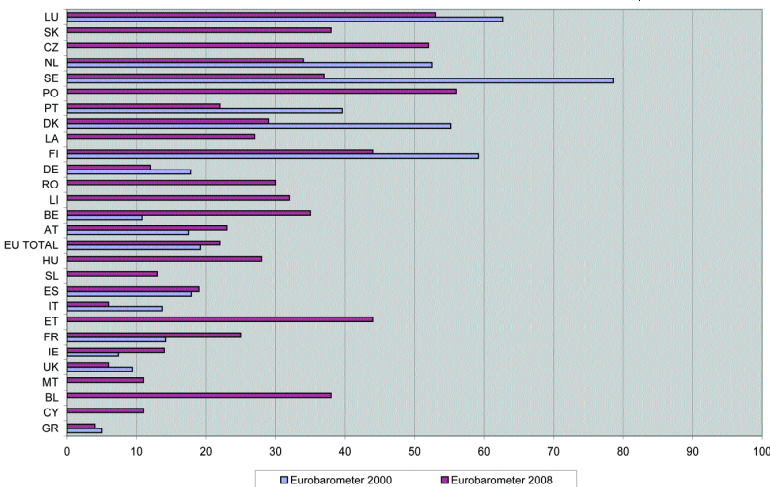


Figure 2  
 Knowledge of the 1-1-2 by European Citizens (Eurobarometer 2000, 2008).

lion Europeans cross the internal EU borders for leisure, business or simply because they live in cross-border areas. Over a period of five years, two-thirds of the population of the EU (i.e. more than 330 million people) may be in another European country and may need emergency assistance (Räddningsverkets, 2002).

In response to emergency calls, PSAPs dispatch ambulances, fire fighter teams or police squads to help the callers. However, only ±40 percent of the calls to PSAPs are “real” emergency calls and generate a response. The rest come from people seeking information, people testing their mobile phones, children playing, etc. Furthermore, half of the “real” calls originate from mobile telephones and this proportion may be much higher in some countries. For 15 percent of mobile calls, emergency services have difficulty or are incapable of sending help because they lack, partially (8.75 percent) or totally (6.25 percent) relevant information about the location of the caller (CGALIES, 2002). An estimate indicates that implementing caller location information could save some 5,000 lives annually and ensure economies of approximately 5 billion euros for emergency services (Nuttall, 2003).

The percentage of emergency calls resulting in no help may be even greater in case the caller speaks a foreign language. An evaluation of the 1-1-2 service-chain conducted in Portugal in the context of the preparations for the Euro 2004 football championship, showed that 20 percent of calls in French and 29 percent of calls in English do not receive help at all (DECO, 2004). This applies even to 15 percent of calls in Spanish and Portuguese—something that is consistent with the CGALIES estimations mentioned above.

## 1-1-2

In the EU, the single emergency call number is the 1-1-2 (the U.S. 9-1-1). This number was established in 1991 and the relevant legislative provisions have been subsequently improved (EC Civil Protection site). Today, Article 26 of the Universal Service Directive (Directive 2002/22/EC) obliges Member States to ensure that:

- 1-1-2 is available in addition to any other national emergency call numbers, free of charge, to all end users of publicly available telephone services including users of public pay telephones.

- Calls to the 1-1-2 are appropriately answered and handled in a manner best suited to the national organization of emergency systems and within the technological possibilities of the networks.

- For all calls to the 1-1-2, public telephone network operators make caller location information available to authorities handling emergencies, to the extent technically feasible.

- Citizens are adequately informed about the existence and use of the 1-1-2.

Article 7 of the same Directive also stipulates that Member States shall “take specific measures for disabled end-users in order to

ensure access to and affordability of publicly available telephone services, including access to emergency services, (...) equivalent to that enjoyed by other end-users.”

Available information from the European Commission and the EENA shows that the implementation of the 1-1-2 within the EU is still quite erratic. Most importantly, the 1-1-2 is still unknown to the majority of Europeans. Eurobarometer surveys conducted in 2000

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and 2008 showed that only one in every five citizens would call the 1-1-2 if faced with an emergency while visiting another EU country (see Figure 2, page 32). Intermediate surveys conducted in 2005 and 2006 showed a better knowledge of the 1-1-2 but were dismissed as unreliable (Eurobarometer, 2000, 2006, 2007, 2008).

From both of the surveys the situation is quite preoccupying for Germany and the UK as tourists from these countries represent respectively 31 percent and 26 percent of the EU total (with France, The Netherlands, Italy and the Scandinavian countries following suit) (Schmidt, 2005). With knowledge of the 1-1-2 by only 12 percent of Germans and 6 percent of British, this means that some 22 million German and 14 million British tourists are every year unaware of the 1-1-2 when on holiday.<sup>1</sup>

Answering and handling emergency calls is highly problematic in several Member States because implementation has not been ensured on the basis of commonly accepted standards. Some countries (Denmark, Finland, the Netherlands, Portugal and Sweden) have established 1-1-2 as the single emergency call number at the national level (Eurobarometer 2006). In some countries calls to 1-1-2 are answered in several languages, but in others only in the spoken regional language. In some countries calls are handled by multidisciplinary 1-1-2 communications centers, while in others, calls are routed to the communications centers of one emergency service, which may not always be able to transfer the calls to the appropriate emergency service (EENA Internet site). Finally, caller location information (especially for calls from mobile telephones) is available to the emergency services of very few Member States and regions. Citizens cannot rejoice either when they know that very few countries have established legislation concerning obligatory minimal response and intervention times in emergencies, while only Portugal has evaluated the quality of the complete 1-1-2 service-chain (DECO, 2004).

### Improvements Needed

Member States need to ensure that all EU citizens know about the existence and proper use of 1-1-2. Unfortunately, although this is a legal obligation, some countries that run separate emergency call numbers hesitate to publicize 1-1-2, fearing that all emergency calls will then be directed to 1-1-2 communications centers, which often have limited capabilities. However, a better informed user population will ensure less false calls to the PSAPs,

resulting in the optimal use of available resources (see Table 1, page 32). Member States must also ensure that all the EU territory is properly covered by mobile or fixed operators. Several countries justified their decision to reduce telephone booths on the basis of the expanding penetration of mobile telephony—but several remote areas of the EU are not (well) covered by mobile operators and people in distress may face “network not available” messages when calling 1-1-2.

On another level, emergency services should ensure that a common front-end handles all incoming emergency calls to 1-1-2. Two types of front-ends have been implemented in the EU. In one, independent dispatching centers run by the telecommunications operator (e.g. like in the UK and Ireland), transfer emergency calls to the PSAP of the appropriate emergency service(s). The second type is based on the use of common coordination centers which incorporate representatives of all the emergency services, or are run by independent “specialized” emergency services (e.g. Sweden, Denmark and Spain). Of course the option of keeping separate emergency call numbers and ensuring that one of the corresponding PSAPs acts as the 1-1-2 front-end can still be practiced, but experience has shown that such a solution creates more problems than it solves (tensions between emergency services, allocation of resources, technological incompatibilities, etc.).

Emergency services should also ensure that the call to 1-1-2 is “*appropriately answered and handled*.” This includes firstly the possibility of multilingual support. Answering emergency calls in many languages does not necessarily imply the use of multilingual operators. In France, operators can establish a three-way online conference with the caller and an on-duty interpreter, accessible via mobile phone (FNTU site). Implementing multilingual support depends more on political will rather than modern technology—although the latter can clearly be of help.

Appropriate answering and handling of calls also involves the use of standardized verbal communication protocols. The Portuguese evaluation clearly demonstrated that operators may not follow a standard protocol when answering emergency calls (e.g. sometimes they hung up before getting the exact name and address of the caller). A workshop on the effective handling of emergency calls held in 2002 in Sweden (Räddningsverkets, 2002) demonstrated that the training requirements of 1-1-2 operators

vary from country to country (in Finland for example training lasts 57 weeks for a fully operational operator). This also is clearly a matter of political will. Improving the quality of the 1-1-2 service-chain implies the establishment of a standardized maximum intervention/response time. Today, few countries (Netherlands, United Kingdom and Germany) are known to practice maximum intervention/response times in emergencies (different for urban and rural areas). Establishing a pan-European maximum intervention/response time will certainly influence the long-term global costs of emergencies and may be worth the additional resources required to implement it. This was one of the conclusions of the 2nd European 1-1-2 Conference and Exhibition (EENA, 2004), and it was again on the agenda in the context of the 1st European Security and Safety Summit in June 2007 (EENA site).

Member States should also *implement caller localization*. This legal obligation is already met in some but not in all the Member States, as it is not a simple matter. In some cases the technology of the existing communications centers is too old to handle location information. In other cases progress is hampered because of incompatibilities between existing and required products (e.g. GIS, localization techniques). The problem seems to concern mostly the infrastructure of the emergency services rather than the capability of operators to transfer location data. Back in 2002, the European Commission requested ETSI to develop a common interface between operators and emergency services to facilitate the transmission of localization data, but this work has not yet been completed. Since 2005, the Commission has launched several actions in the field of caller localization (see *The role of EENA and the future*).

Finally, another issue is the implementation of overall quality criteria and the evaluation of the quality of the 1-1-2 service chain. Currently, only Portugal has conducted such an overall quality evaluation. EENA believes that the quality of the 1-1-2 service chain will improve only when the European Commission starts conducting periodic quality evaluations by independent organizations in all the Member States. Special care should be taken for people with hearing and vision disabilities who need special terminals in order to be able to make emergency calls. The needs of increasing numbers of people accessing the PSAPs over the internet (VoIP) should also be addressed.

Considering the previous evidence pre-

sented, it is clear that improving the 1-1-2 service chain is a complex issue requiring the involvement of many actors, especially political authorities. Technology seems not to be the major issue, although it plays an important role in the equation. The European Commission has a very important role to play by obliging Member States to fully implement legislation in force. Failing to improve the quality of the 1-1-2 could reduce the safety level of citizens. An initiative (e-call) aims to equip all new cars in the EU with the capability of automatically calling 1-1-2 in case of accident by 2009 (IP/134, 2005). However, if the PSAPs are not properly equipped and organized, spending for the establishment of the new system and buying the new gadget for the car will not necessarily increase the chances of survival in case of a car accident. The injured driver will be waiting for help requested via the e-call, which will never arrive because the PSAP will not be able to process the automated call received.

### The Role of EENA and the Future


In 2004, EENA lodged with the European Commission a series of complaints against several Member States for non-implementation of 1-1-2 legislation. In 2005, on the 14th anniversary of the introduction of 1-1-2 and following the advice of the European Ombudsman, EENA introduced a petition with the European Parliament (EENA, 2005, 2006). This, in combination with pressure from the car manufacturing industry, led the European Commission to formally recognize in September 2005 the importance of the emergency services component of the 1-1-2 service chain for the implementation of the e-call system (COM/431, 2005; IP/1137, 2005). Then, in October 2005, the European Commission organized a conference on the implementation of 1-1-2 (IP/1239, 2005; Speech/596, 2005) during which Commissioner Viviane Reding declared that 1-1-2 had become a Commission priority. In parallel, the Commission accepted publicly that it could not launch a pan-European information campaign because it was not satisfied with the implementation of the 1-1-2 by Member States (something it also accepted in the European Parliament, see Ries 2006).

Since 2006, the Commission opened infringement proceedings against several Member States for non-transmission of caller localization to emergency services. Some of these proceedings were subsequently closed as national authorities maintained that although emergency services were incapable of using caller location information transmit-

ted automatically for every call ("push"), they could request this information when required ("pull"). The Commission also postponed infringement proceedings against some countries concerning the answering and handling of calls to the 1-1-2 because these countries were in the process of upgrading the whole emergency chain. Finally, the Commission publicly recognized in the context of the 12th report on the implementation of the telecommunications regulatory framework that "while the availability and quality of the basic service now appear to be ensured quite widely, the

Commission's powers in this regard are limited under the current framework. Any improvement will depend on strong support in particular from the co-legislators in the regulatory review process." (COM/155, 2007). Several members of the European Parliament aware of this launched a written declaration which was signed by 530 members of the European Parliament, requesting that the 1-1-2 should be given a higher priority (EENA site).

In November 2007, the Commission presented proposals for reforming the telecommunications legislative framework including



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the provisions covering the 1-1-2 (COM/698, 2007). The proposals are currently being discussed in the European Parliament and the Council and will hopefully be adopted sometime in late 2008. They provide for the follow-up of the promotion of the 1-1-2 by the soon to be established European Electronic Communications Market Authority. The new proposals aim at reducing the scope of implementation of 1-1-2 to traveling citizens. However, such an approach is counter-productive as it establishes discriminations, which are incompatible with the single market. The proposals make localization mandatory (in “push” mode) and provide for the information of users about the possibility or not to make calls to emergency services (something useful for VoIP-based services). Then, on February 11, 2008, several Members of the European Parliament, the European Commission and the EENA celebrated the “European 1-1-2 Day” through articles, interviews and other promotional activities (EENA site; IP/198, 2008).

However, action at the institutional front is not enough. In addition to the three conferences EENA has already organized on the 1-1-2 (2003, 2004, 2007), it has become evident that action is needed at regional and local levels to raise awareness of PSAPs and decision makers and establish human networks. They should better grasp technology and get inspiration from their colleagues in other EU Member States in order to get organized and better formulate their needs. In this line of thinking, EENA created an advisory board with the participation of several high level politicians (such as two Vice-Presidents of the European Parliament), professional users (namely NENA, WADEM, WHO, IAEM, etc.) and industry representatives. They have outlined several objectives for the year 2008 including: launching projects to inform and educate citizens on the 1-1-2, promotion of the allocation of increased budgets for the emergency services in view of improving response to daily emergencies and the setting up of several 1-1-2 excellence centers in the EU. **ENPM**

*Olivier Paul-Morandini is the Founder and President of the European Emergency Number Association, not-for-profit association (Brussels, Belgium). For more information on EENA, e-mail info@eena.org or visit the Web site at www.eena.org. An abridged version of the first edition of this article was published in the June 2005 issue of the European Journal of Navigation (see www.gitc.nl).*

Part two will deal with communications between authorities and from authorities to citizens and contains some proposals for action.

**Notes**

1. Calculations based on population data for 2004, tourism data for 2003 (EU-25) and knowledge of the 1-1-2 data for 2008 (EU-25).

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