



EENA Operations Document

SMS Access to 112

Title:	SMS access to 112		
Version:	1.0		
Code:	2012_06_18_2.1.1_SMS_v1.0.doc		
Revision Date:	18-06-2012		
Status of the document:	Draft	For comments	<u>Approved</u>



Contributors to this document

This document was written by members of the EENA Operations Committee:

Members	Country / Organisation
Bergstrom, Gunnar	SOS Alarm, Sweden
Bousema, Alexander	The Netherlands
Bovim, Egil	KOKOM, Norway
Bruck, Charles	Rescue Services Agency Civil Protection Division, Luxembourg
Gislason, Tómas	112 Iceland, Iceland
Jakel, Alina	Rescue Department, Estonia
Maroscikas, Tadas	Emergency Response Centre, Lithuania
Medland, John	BT, UK
Mertka, William	Motorola Solutions
Nieminen, Marko	ERC Administration, Finland
O'Brien, Tony	Comisión for Communications Regulation, Ireland
Palm, Per	SOS Alarm, Sweden
Lumbreras, Cristina	EENA
Skoglund, Björn	SOS Alarm, Sweden
Tamm, Kaili	Estonian Emergency Response Centre, Estonia
Terpstra, Tjerk	Tjeter
Van Hunnik, Chris	KLPD, The Netherlands
Vandedrink, Jan	Federal Internal Public Service, Belgium
Yigit, Esra	Antalya 112 Emergency Call Center, Turkey



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1 Introduction

The European emergency number 112, which is used to contact emergency services free of charge all over the EU, is currently not accessible by other means than voice calls in the majority of countries. It is crucial that local citizens and foreign travelers are able to access appropriate emergency services whenever they need them, and to have confidence that they will be able to do so. This is even more important if we take increasing mobility of people within the EU and the growth of the European Union into account.

Voice communication between citizen in distress and emergency services is not always possible. The Silent, hang up and abandoned calls EENA Operations Document¹ details circumstances where it can happen that producing any sound to communicate to emergency services can put the person in an even worse situation. Silent communication like SMS could in these cases save lives.

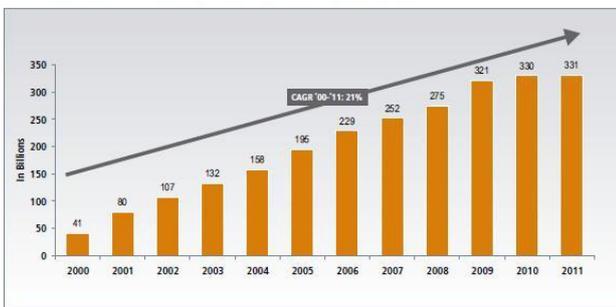
Furthermore, people with hearing and speaking disabilities are likely to face great barriers to communicate with emergency services in case of need. In 2009, the revised Universal Service Directive invited Member States to ensure that access for disabled end users to emergency services is equivalent to that enjoyed by other end users. SMS cannot be considered as a full equivalent access solution but can be suitable for people with disabilities to access emergency services.

The document reviews needs of non-voice communication between citizen and emergency services, available SMS technology, its strengths and weaknesses and implementations in European countries in order to share best practices and experiences.

2 General use of SMS

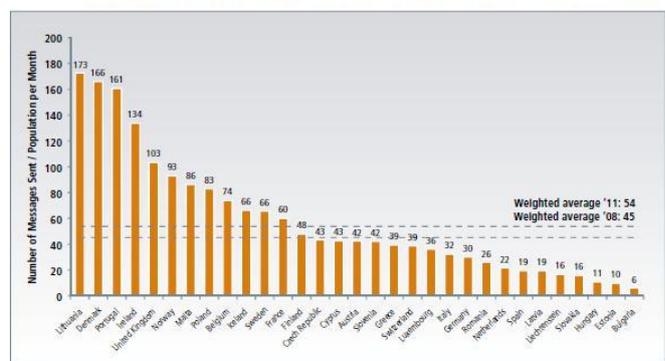
More than 330 billion SMS and MMS messages are sent per year². The growth in mobile messaging traffic was very strong until 2010, with growth of 23% per annum from 2000 to 2009. This represents on average 54 mobile messages sent per head of population per month. The vast majority of citizens send text messages as communication tool.

Numbers of SMS and MMS Sent per Year in the EEA



Source: Quantifika, IDC

Number of SMS and MMS Sent per Head of Population/Month in EEA Countries, 2011



Source: Quantifika, IDC

There are significant differences in patterns of use across countries. In Lithuania mobile users send an average of 173 SMS messages per month, while the level in Bulgaria is only 6 SMS messages per month.

Public services are also taking advantage of the use of mobile services and applications. They are already helping citizens to monitor and improve their wellbeing through designated applications and services. SMS alert services to remind patients about medical and dental appointments and display results are improving the efficiency of health services.

Despite the remarkable growth of mobile email, Web, applications, instant messaging, social media and multimedia messaging, the use of SMS remains very high. Europe is a mature market segment³ for SMS services and people feel comfortable using them.

¹ Silent, hang-up and abandoned calls EENA O.D.: <http://www.eena.org/view/en/Committees/112operations/index/psaps.html>

² European Mobile Industry Observatory 2011: <http://www.gsma.com/documents/download-full-report-pdf-2-73-mb/21097>

³ "Operators' SMS Revenues Will Peak in 2003, And SMS Volumes Will Stagnate In 2004, Forrester Contends": <http://www.forrester.com/ER/Press/Release/0,1769,709,00.html>.



3 Use of SMS for emergency services

3.1 Emergency SMS for people with communication disabilities

Some countries (see Annex I and II) have decided to open SMS access to emergency services only to people with communication disabilities. To be able to employ this service, users may have to be pre-registered in the PSAP database and, this way, be identified by the emergency services operator when their call or SMS arrives to the emergency call centre. The procedure to register is normally to fill a form (sometimes on-line). Name and phone number of the person with communication disabilities is then recorded.

If a citizen with communications disabilities needs help from emergency services, (s)he sends an SMS. This SMS is routed to the most appropriate PSAP and, in most cases, a chat between the emergency services operator and the person in distress takes place.

3.2 Silent emergency situations

In the majority of emergency circumstances, a voice call will be adequate to warn emergency services. It is the more direct and interactive way of communication. However, there are cases where to produce any noise can put the person in distress in an even more dangerous situation. Kidnapping, eyewitnesses reporting are examples of these kind of situations (see Emergency Silent, Hang-Up and Abandoned 112 Calls EENA Operations Document).

3.3 Public Warning systems based on SMS

Another use of SMS technology is the public warning. See Public Warning EENA Operations Committee.⁴

3.4 Strengths and opportunities of the use of SMS

As described in section 2 of this document, SMS is a very common way of communication. One of the most important advantages is that citizens have no need to use a different device, they can just contact emergency services with their mobile phones. No special software or hardware is needed.

In wilderness areas where the signal strength may be weak, make a voice call to 112 might not be possible, but sending an SMS to 112 could still work.

3.5 Weaknesses and threats of the use of SMS

Voice communication when possible should be the primary way of interaction between the person in need of help and the call-taker. Communication with text messages is slower and abrupt, and call-taker is not able to make conclusions from breathing voices etc. When assessing the situation becomes harder because of the lack of background noises there is a higher risk of needless dispatching.

112 SMS is an economic issue for PSAPs as well. As described in the annexes of this document call-taker involvement time in average in handling a 112 SMS has been even 7-8 times longer than handling a 112 call. In a worst case scenario, PSAPs would need much more resources to keep up the present service level.

Furthermore, 112 SMS must not become a shortcut to the emergency services and all different types of contacts to 112 should be treated equally and in the same queue.

Malicious action towards emergency services is already a big problem in almost every country, so 112 SMS service should not increase this problem. Pre-registration could minimize this risk as persons willing to use the service could be forced to go through the terms of use and a learning package. Limiting the service for only persons with disabilities minimizes the risks even more.

112 SMS handling process in overflow situations must also be solved.

⁴ <http://www.eena.org/view/en/Committees/112operations/index/psaps.html>

4 Implementing SMS channel for emergency services access

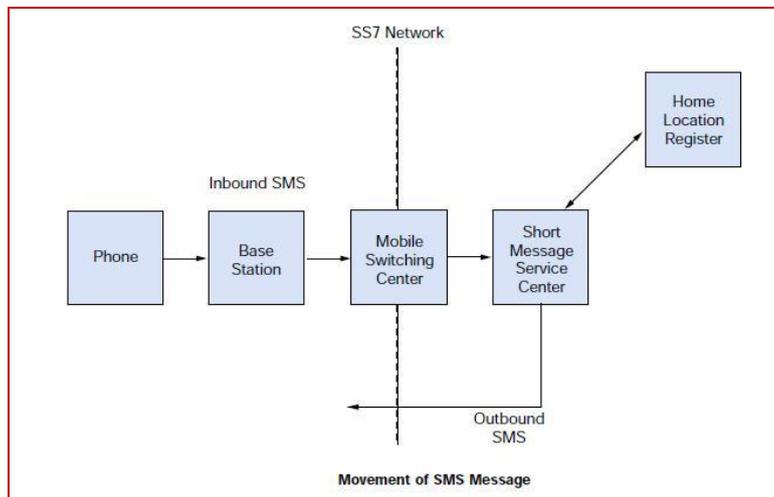
4.1 SMS overview

Any mobile subscriber with a phone and a service that support SMS can send or receive SMS messages. In this section SMS services main characteristics are described⁵:

- **Length and type:** Each message can contain up to 160 alphanumeric characters. Some non-text-based formats, such as binary, are also supported for specialized uses such as ringtones and images.
- **Storage and forwarding:** Messages can be stored and forwarded because they are not sent directly from sender to receiver, but pass through an SMS message center.
- **Confirmation:** Information about message delivery is always received, whether the message is delivered or not.
- **Simultaneous traffic:** Because the mechanism for transmitting SMS messages is separated from the voice path of any particular call, short messages can be sent and received at the same time as voice, data, and fax calls. For this reason, SMS users usually do not receive busy signals.
- **Increased length** — Methods for concatenating several short messages and compressing messages are defined and incorporated in the standard.

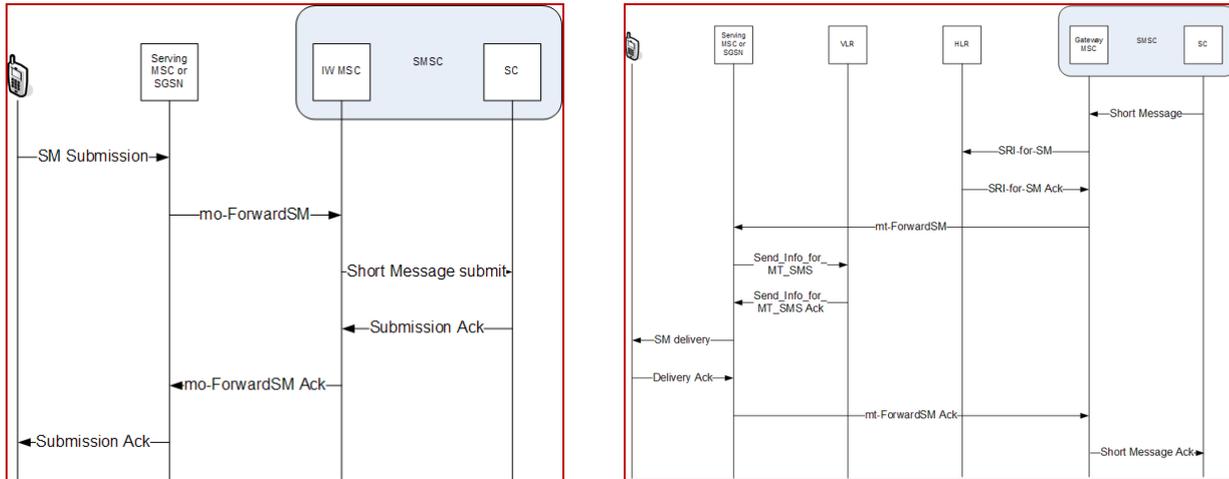
When an SMS message is sent from an SMS-capable cell phone, the message is handled no differently than a normal call setup: it moves from the cell phone to a base station to a Mobile Switching Center (MSC).

From the mobile switching center, the SMS message moves inside the SS7 network to the Short Messaging Service Center (SMSC), a standard part of the network. The SMSC queries the Home Location Register (HLR) to find out where the recipient of the message is and whether or not he or she is switched on to receive a message. If not, the SMSC stores the message until it can be delivered. Storage time may differ from one mobile service provider to other.



The diagram depicts a simplified call flow for a successful submission of a mobile originated short message.^[1]

⁵ SMS Messaging in SS7 Networks: Optimizing Revenue with Modular Components:
http://www.dialogic.com/~media/products/docs/signaling-and-ss7-components/SMS_Messg_SS7_Net_Opt_Rev_Mod_Comp.pdf



MSC – Mobile Switching Center
 SMSC – Short Message Service Center
 HLR – Home Location Register
 VLR – Visitor Location Register

4.2 Technical differences between SMS and 112 emergency voice calls

Communication of emergency situation through SMS differs from 112 emergency voice calls from a technical point of view:

- Difficulties to route to the most appropriate PSAP
- Long time of call: not real-time communication.
- Network: from a network perspective, SMS messages to 112 are not defined as an emergency communication, like voice calls to 112 are.
 - o Total prioritisation of SMS not possible
 - o Possible technical delays (e.g. bad weather, big disasters, big planned events etc.).
 - o Delivery confirmation: the SMS has arrived to the device, no confirmation that has been read
 - o Positioning and location of SMS not available in most cases
 - o "112" as short code not always available
 - o SMS to 112 may not work (depending of the countries) if the phone is out of credit and despite the fact that the SMS to 112 is free to the citizen.
- Device
 - o Working SIM card needed
 - o Available memory of the phone needed
- Difficulties to be free of charge

4.3 Roaming

To send a SMS is only possible if international roaming has been activated by the user. As 112 calls are treated as emergency calls, they can be made even if roaming has not been activated by the customer. This will not be the case for 112 SMS.

If a foreign mobile phone is roaming on a foreign country network, an SMS to 112 they send is handled within their own "home" network and the message will not get delivered to the foreign country "host" network. Even if the foreign mobile phone is roaming (for voice), an SMS to 112 is not delivered. (e.g. Icelandic phone in Spain sending SMS to 112 may end up in Reykjavik). This is the reason why "112" code for foreign phones is not always accessible: it requires the short-code 112 or an alternative number being made available.



National roaming not available: If a national mobile has no coverage signal from its mobile operator, 112 calls will still be made using another mobile operator's network with coverage for the caller's location. This is not the case for SMS.

4.4 Localisation

Automatic caller location is not included in the standard for SMS. The citizen must normally provide this information during the SMS transaction with the first PSAP call-taker. Location could be, however, possible via other localisations method for the device.

To avoid the lack of SMS location, in some countries or regions (e.g. in some regions of Spain), the person with communication disabilities in distress starts communication with the emergency centre making a 112 call, and this way, the call is routed to the most appropriate PSAP and located. After this, the interchanging of SMS begins. In UK the SMS arrives at the PSAP with location information after a specially provided request on the LBS of the MNO's using same protocol as for voice calls.

Some providers give subscribers the possibility of sending an SMS from a website. Of course location information is completely impossible then. The CLI (mobile number) of the subscriber is sent with the SMS so a pull query on a LBS system could be used for these situations.

4.5 Integration in PSAP interface

SMS 112 functionality should be integrated in the PSAP network system (communication channels and principles of sending/receiving data/messages from Mobile Operator to the PSAP technical solution/gateway). Functionality for handling SMS112 should be integrated into the PSAP case handling software and records generated as emergency voice calls. 112 SMS and 112 calls should be treated equally according to queue time.

5 Procedures in emergency services

5.1 Procedure of pre-registration (if needed)

In most countries registration is mandatory to use the 112 SMS service. In the majority of them only people with disabilities are allowed to register. In this section different pre-registration procedures are described:

- Registration by SMS: The citizen can register by simply sending an SMS with the word "register" to 112. A response message is sent indicating that the user's mobile phone number is now registered. This message also encourages citizens to proceed to a dedicated page on the website whereby they can provide further information. In the event that an SMS is received, the information here can be used to assist the emergency services following a "look-up" by the call taker. This procedure is being used in Ireland⁶. The Irish112 SMS system is open to all citizens.
- Registration by SMS and disclosure signature: It is similar to the previously described procedure but a disclosure is sent to the user. In some countries, it recommends the user to continue to seek help in any other possible ways until the SMS is acknowledged by the PSAP. After the disclosure is agreed by the citizen, a confirmation SMS is sent to the user to inform that the service is ready to use.
- On-line registration and agreement signature: To be able to use SMS emergency service a pre registration is needed using a Web page. In some countries, after registration an agreement is sent to the user for signing. In others, conditions have to be read and agreed by the user in the same web site. Once the procedure is completed, a confirmation SMS is sent to the user to verify that the service is ready to use. This procedure (or similar) is being used in Sweden, Spain (in some PSAPs) and others.

Registration of user has some disadvantages:

- SMS users may feel that they are not treated as voice call users, i.e. in order to make a 112 call it is not necessary to register. Furthermore people do not like to be registered as a special group in a society.
- If the citizen changes his/her mobile phone number, he/she must register this new number again. Consequently this can cause inconsistencies in the database. However, if the citizen switches mobile phone network provider (and retains his/her mobile phone number, re-registration is not required).
- Administrative work has to be done to keep the database up-to-date.

⁶ www.112.ie



- One of the most important problems with this system is registration of travellers.
- The need for communication via SMS may arise unexpected for individuals with not disabilities, e.g. in hostage situation, or other circumstances where speech is either not possible or not feasible.

Registration of user has also advantages:

- To prevent irrelevant SMSs to 112 and thus minimize the risks of malicious SMS messages
- The user is informed in what situation SMS to use and how to communicate with the call-taker with SMS messages, which improves the call-handling time.
- Accidental SMS messages meant for other numbers (including spamming SMSs) are prevented
- By actively agreeing on the terms of use the expectation is that misuse will be kept to a minimum
- By actively asking to register and informing for which group the service is primarily meant, the number of people not meant to use the service (those that can use voice) will stay at a minimum
- The user is informed of the limitations that the SMS services has like delays and non receiving so can take this in consideration when in need of emergency assistance.

5.2 Handling an SMS call

The handling of the SMS should be equivalent as much as possible as for emergency voice calls. 112 SMS must not become a shortcut pass the 112 call queue. The PSAP operator shall be warned when a SMS arrives to (her) his workstation. The SMS "session" with the citizen shall be considered as a conversation, i.e. the operator should generally not receive other calls till the exchange of SMS with this citizen ends.

Multilingual voice calls to emergency services are an important issue for PSAPs (see Multilingual calls EENA Operations Document⁷). SMS can also be in different languages. PSAPs operators may have also difficulties in understanding meaning of words in other languages written in other alphabet (e.g. using Russian alphabet). Furthermore, people with hearing or speech impairments might have different typing technique and shortenings.

Consequently, a specialised training for PSAP operators handling emergency SMS is required.

5.3 Pre-configured messages

SMS is a not real-time way of communication. In order to try to decrease the time of conversation, people who may need to rely on 112 SMS in case of emergency are encouraged to save draft messages in their cell phones with information that may be important when emergency occurs. PSAPs shall also have pre-registered messages prepared with the most commonly used questions in their systems, so they can quickly access to them and handle the call more easily according to protocols.

IT system in ERCs should have pre-configured messages for speeding up the call handling and risk assessment according to protocols.

Examples of these pre-configured messages are:

- Information about medical condition.
- Contact information about a friend or a relative that is to be contacted in case of emergency
- Exact addresses where the person may be at
- Nature of possible emergencies
- Language(s) known by the person

If possible, the position data should be connected to the phone's GPS device, submitting the location automatically.

⁷ Multilingual 112 Calls EENA Operations: Document http://www.eena.org/ressource/static/files/2012-02-25_3-1-4_mic-v-1.pdf



6 Recommendations

Stakeholders involved in managing emergency calls

Stakeholders	Actions
National Regulator	Supervision of the creation and functioning of the 112 SMS service: <ul style="list-style-type: none"> • short code availability • free of charge
Mobile network Operators	Creation of a 112 shortcode Route 112 SMS to the most appropriate PSAP
European authorities	Mandatory use of 112 SMS shortcode
Emergency services authorities	Adaptation of PSAPs: <ul style="list-style-type: none"> • Integration in the information and telecommunication system • Creation of procedure to handle this type of calls • Training to PSAP operators
Associations of people with disabilities	Be involved in the adaptation of the 112 SMS service to their needs

7 EENA Requirements

Requirements	
112 accessible using SMS	Compulsory
SMS call handled as "session"	Compulsory
Pre-registration procedure (if needed)	Maximum one day of registration time
SMS handling procedure described	Compulsory
SMS handling procedure included in PSAP operator's training	Compulsory



ANNEX I Examples of implementations

Estonia

- SMS 112 Project in Estonia
 - o The project started in 2011
 - o Deadline is 2012
- Potential users
 - o People with hearing impairment – 8-10% of population (around 130 000)
 - o Capable of working - 12 000 –15 000
 - o Deaf people amongst working – 750 –1000
 - o People with speech impairment – 400
- Current system
 - o Fax as a main communication channel for disabled people
 - o Disadvantages:
 - The lack of mobility
 - No communication channel outside the home
- Requirements for SMS112 users
 - o Registration in SMS112 system
 - o Provide main information about state of health and disabilities
 - o Provide information about main possible locations (home, school, work address)
 - o When project started in co-operation with disabled people, they said they are aware about the disadvantages of SMS because they are using this service every day but it is for sure more comfortable and mobile way than fax.
- Requirements for registration system
 - o Registration via ID digital card or Mobile ID
 - o Registration is open for all people, but promoted mostly amongst people with disabilities (at the beginning).
 - o User validation upon registration
 - o Users phone numbers validity check
 - o Mobile phone belonging check (sending SMS with control number)
 - o Users input saving
 - o Blocking or disabling user account
 - o Creating and managing groups (one group of people with disabilities is managed by one supervisor)
 - o All actions must be logged and kept for at least 6 months
 - o Automatic user validation once a year.
- SMS112 in dispatcher system interface: In Estonia new case-handling software is in the process of development with the SMS 112 logic and interface integration in mind.
 - o SMS sign appearance and sound signalling upon receiving
 - o Time and phone number included
 - o If dispatcher accepted the SMS, it becomes inactive to other dispatchers
 - o One central case-handling system for all 4 PSAP and SMS is sent to the central system.
 - o Regional PSAP sees SMS received from its local region. Also possible to see all SMS112 messages all over the country or different combinations of regions.
 - o Integrated chat window in case-handling system (SMS history + new arrived SMS)
 - o Drag-and-drop questions from medical questionnaire to the chat window.
 - o Upon receiving first SMS112 preconfigured information (from registration system) about sender is shown.
 - o Sending message to the sender with time information (period of arrival) about the dispatched resource (depends on the priority of the case)
- SMS112 backup solution:



- Smart phones or alternative handheld devices in every PSAP that would receive SMS112 in case of unavailability of case-handling system. (one possible solution)
- SMS message template
 - Upon registration user receives minimum three templates. For each general type of emergency: EMS, rescue; Police. That could be saved and used in case of emergency.

Iceland

- 2008 statistics
 - 257.597 112 calls processed
 - 0,5% SMS
 - 191.410 emergency incidents (74%)
 - Police 67%
 - Ambulance services 16%
 - Assistance from Fire Brigades 3%
 - 628 to Commisnons for Child Protection
 - Average time to answer 3,8 sec.
 - 95% answered within 8 sec.
 - 80% of F1 dispatching processed in 90 sec. or less time
- 112 SMS "calls"
 - SMS has been used to dispatch response units for 10 years
 - The 112 SMS service was developed in cooperation with representatives from the deaf and hearing impaired association
 - The requirement analysis and PTT work began in May 2005
 - The service was opened on April 6th 2006
 - No charge for 112 SMS in the networks
- 112 SMS technical solution
 - The 112 system communicates directly with the mobile operators SMS service
 - The 112 dispatcher can select which mobile service provider to send through
 - We receive delivery confirmation from the network 2-5 seconds after sending the SMS
- 112 SMS - how it works
 - When a SMS is received a sound and an alert message is displayed on the dispatchers workstation
 - The incoming SMS is registered in the 112 system just like a phone call
 - When the dispatcher opens the SMS message the system displays on the screen all the same database information as for a phone call
 - Location is however unknown
 - The dispatcher responds to the SMS message and receives a delivery confirmation when it is received by the cell phone
 - If the location is not communicated by the caller it can be determined by a call from a landline phone or by a call from the cell phone.
 - The dispatcher has all the same possibilities to help the caller as in a telephone call.
- 112 SMS
 - To speed up the text communication the dispatcher can select from a number of predefined responses to send to the caller.
 - Such as:
 - What is your emergency?
 - Where are you?
 - Are you at home?
 - This is 112, do you need assistance?
 - People who may need to rely on 112 SMS in case of emergency is encouraged to save draft messages in their cell phones with information that may be important when emergency occurs.
 - Such as:



- Information about medical condition.
- Contact information about a friend or a relative that is to be contacted in case of emergency.
- Exact addresses where the person may be at.
- Nature of possible emergencies.

Ireland

- 112 SMS launched in Ireland in January 2012 following a Consultation by the Minister for Communications, Energy and Natural Resources. The use of SMS to 112 was the predominantly called-for initiative from the Deaf and Hard-of-Hearing community. The Pilot is targeted at this community but it is open to use for all citizens.
- All mobile operators were asked to participate in a six month Pilot to assess functionality and usage and 4 mobile operators have done so with the remainder due to participate in the Pilot shortly
- All 112 SMS are aggregated by a service provider service and then forwarded to the PSAP.
- Registration is mandatory and this can be achieved by simply send an SMS with the key word 'Register' to the dedicated short code 112, followed by acknowledgement of registration and acceptance of Ts & Cs.
- A consumer website (www.112.ie) carries all of the explanation required and outlines the associated terms and conditions of the 112 SMS Pilot and offers users the facility to submit additional personal and medical details.
- All such relevant personal and medical details are held on a PSAP database for cross-reference in the event that an emergency 112 SMS is received from the associated CLI.
- Over 500 people registered as of 31/1/2012.

Luxembourg

- Project: Accessibility for hearing impaired people
 - o First contact at the end of 2005, start in may 2006
 - o Meetings with the responsible persons from the national deaf and hearing impaired association
 - o Presentation of the SMS-system to all the concerned people (423 persons) during meetings
 - o Elaboration of a flyer (in french and german) to inform concerned people
- Technical functioning
 - o Transfer time between sending and receiving < 5 seconds
 - o No particular priority for 112-SMS in the networks
 - o The sender receives a confirmation «SMS transmis. Protection Civile-112»
 - o Percentage rate incoming phone calls –SMS calls: <0,01%

The Netherlands

- eSMS 112 Project in The Netherlands
 - o The project started December 2011
 - o Live date is July 2012
- Potential users
 - o The service is only promoted to the following user groups that cannot reach 112 because of their inability to communicate with 112 via regular two way speech.
 - o People with hearing impairment
 - o People with speech impairment
- Background to emergency SMS trial
 - o Real-time text service already exists in NL but this requires special terminals/software
 - o Wish from deaf users: we know the SMS limitations but want something that doesn't need specific devices or software.
 - o Wish from the ministry (Safety and Justice): create a contingency facility for the defined user groups (hearing and/or speech impaired people) when not at home, when mobile internet is not available for mobile RTT users or when mobile users do not have RTT capabilities on their mobile phone.
- Functionality
 - o Registration
 - o Managing white and blacklist



- User interface that looks alike the current user interface handling speech calls
 - Getting the best location possible through Cell ID, GPS, WIFI or any other means possible
 - Conversations must be recorded and retrievable (initially stored for 2 months)
 - Per defined text response buttons to prevent typing the same message over and over again
 - Sending an SMS to 112 will be free of charge
- Registration of users
 - To be able to use 112 SMS a pre registration is needed
 - We will work with pre-registration to limit use by those that have better options. Although we will (for now) not limit registration to people that have been checked to be part of the designated user group
 - This registration is done via a SMS sign up process
 - After signing up a disclosure is sent to the user that the user has to agree with. These disclosure holds instructions including telling the users they must continue to seek help in any other way possible until text is acknowledged by PSAP
 - A confirmation SMS is sent to the user to inform that the service is ready to use.
 - When a person sends a SMS without being registered it will get an automated response.
 - Technology
 - New software will be developed to make the SMS pop up on the incoming task list at the PSAP. And then give the call taker a integrated tool to handle the SMS conversation.
 - First there will be a version on a separate workstation to test the technology and process before integrating it with the live 112 platform based on Avaya technology
 - The system will work with a "white list" for people that are registered and a "black list" for people that have been actively excluded (for example because of improper use of the service).
 - There will be a interactive process to "learn" the system suggesting actions for example which department to contact
 - There will be an automated process handling predefined situations, for example empty SMS messages, to prevent unnecessary workload on the call takers in the PSAP
 - We will test if it is possible to use the phone's knowledge of it's location to pinpoint the location of the caller.
 - Challenges/future functionality
 - Manageable automated reactions by functional managers
 - Forwarding gathered information to the second line PSAP/responders
 - Combining SMS and data (location or other predefined information) in the same "conversation"
 - Extend storage of conversation when it is part of legal procedure
 - Combining speech and SMS in the same "conversation"
 - Smart phone application to support getting information to the PSAP

Sweden

Background

- PTS has a responsibility to ensure that crucial services related to e.g. telephony and Internet are available to persons with functional impairment.
- Objective of SMS 112: Enable people with hearing or speech impairment to contact emergency services in the event of an emergency, using text messages.

SMS 112 project and trials

- Project started in 2003.
- Service is open to people with speech or hearing impairment only.
- Prior registration is required to use the service.

Trial SMS 112 2006-2008 in Sweden

- During December 2006 –September 2008. 112 SMS was tested with real users and real emergencies.
- 1329 users, we expected about 20000.
- Handling time 14 minutes average, is more than expected.
- The number of emergencies was fewer than expected.
- 36 real 112 SMS calls during the test period.

Registration of users



- To be able to use 112 SMS a pre registration is needed
- This is done on a Web page
- After registration an agreement is sent to the user for signing.
- A confirmation SMS is sent to the user to verify that the service is ready to use.

Challenges

- Getting people to register for the service: Despite information campaigns, still low interest or lack of knowledge.
- Many people with speech or hearing impairment have sign language as their primary language and are not always fluent in the written language.

Technology

- New software was developed to give the call taker a tool to handle the SMS conversation. Today as a stand alone system, but we are planning to integrate the software in SOS Alarms operational system, Zenit.
- It was a hard job to get all telecom operators to implement a 112 SMS service.
- To secure the service, 2 PSAPS are selected to receive the 112 SMS.

Example of a 112 SMS conversation

17:06 Caller: Car accident on the exit of kopparvägen on the highway to inre ringvägen.
17:08 SOS Alarm: How many cars and people are involved?
17:08 Caller: 2 cars one is damaged in the rear.
17:08 SOS Alarm: How many people?
17:08 Caller: 3 people 2 cars.
17:08 SOS Alarm: Is there a need of an ambulance.
17:09 Caller: Everybody is out of the cars.
17:09 SOS Alarm: Is it on the highway?
17:09 SOS Alarm: We will send help.
17:10 SOS Alarm: Is it on the highway?
17:10 Caller: Yes
17:11 SOS Alarm: Is it on the north or south exit?
17:12 SOS Alarm: Ambulance and rescue service is on the way.

Information about the 112 SMS service

- Cooperation between many organizations for disabled.
- Good attention in media.
- Created a Webb page for this purpose.
- Meetings with local and national organizations for disabled to inform on how to use the service.

PSAP Training

- SOS Alarms call takers were trained by people from the national organization of deaf.
- This was very useful; we learned how to chat in a SMS styled used by people with hearing problems.
- People with multi handicap can be very difficult to understand, training was needed.

What we have learned

- It works
- The handing time of SMS calls is longer than we expected.
- Delays in SMS can create confusion, questions and answers can be mixed.
- Registration services, screens of misuse but gives fewer users of the service.
- SMS 112 is an important safety issue for people who can not use the normal 112 service.
- We have not found a way to make these SMSes free of charge.
- It is a simple and not a perfect service but it works
- Positioning was not a part of this trial , but we can position a 112 SMS user in the same way as any other mobile phone user.

End of the pilot, implementing the service

- The pilot ended in 2011
- The service is included in the agreement between SOS Alarm and the Swedish state from 2012-01-01
- The SMS service is thereby an official way of reaching 112
- May 2012: 2214 registered users
- 84 incoming calls. 43 real emergencies (2011)



- Average handling time 29 minutes (2011)
- Ongoing implementation of software for handling the SMS service in SOS Alarms operational system, Zenit.
- Service should be fully integrated in Zenit 2013.

UK

Background to emergency SMS trial

- Real-time text service already exists in UK – requires special terminals (modem based)
- Demand from deaf users : know SMS limitations but want something that fits with how they normally communicate
- Police services in some areas of the UK already had (different) SMS contact numbers
- Limitations and risks of SMS outweighed by user view that
 - o current situation is often even riskier (where a person can make no report by voice, and has to spend time searching for someone to make a voice call to report an incident)
 - o no current widely available alternatives to SMS
- Trial commenced 14 September 2009

Trial objectives

- Single national access mechanism for SMS messages to the 999 service for speech and hearing impaired users
- In addition to real time text service (modem based)
- Registration of users, to limit use by those that have better options (open registration in that users do not have to provide any personal details, only the telephone number is registered)
- Specific instruction when users register : users told they must continue to seek help until text is acknowledged by a PSAP
- Direct access to all the emergency service stage 2 PSAPs that should not need to make changes to their call handling equipment
- Access to same automated location systems that are available to voice and text phone calls
- Ability to bar nuisance callers from the service
- Ability to transfer text session to a second PSAP

Current Service (trial was successful)

- Registered Users – steadily increasing, currently 30,000 (3/2012)
 - o Registration allows conditions of use to be communicated and limits misuse of the service
 - o Promotion through Associations representing those with hearing or speech difficulties
- Use for genuine emergencies averages 2 incidents / day
 - o comfort message sent early (within 1 minute)
 - o average duration of message exchange ~12 minutes
- Inappropriate use (from registered users!) is around 7 sms contacts /day
 - o good intention, not an emergency accounts for 5 of the 7 inappropriate texts
 - o no clear problem/abusive
 - o nuisance texters
 - o hoax messages
 (Use “barring” of MSISDN from eSMS to further reduce misuse)
- Training
 - o Relay Assistants and PSAP call takers
 - o Processes developed / training guides circulated
 - o limit call takers if possible / develop local experts
- Summary

eSMS Trial with registered users in UK has demonstrated that such a service is helpful and practical to provide and it's now a longterm service which mobile networks have to provide as a regulatory obligation.

ANNEX II COCOM FIFTH REPORT ON THE IMPLEMENTATION OF 112⁸

	AVAILABILITY of 112	AVAILABILITY OF 112 FOR DISABLED END-USERS		
	Access to 112 by means other than voice communication	Measures ensuring equivalent access to 112 for disabled end-users	Standards or technical specifications used by the MS to ensure that travelling disabled end-users from other MS can access 112	Possibility to obtain caller location information for mobile and fixed subscriber using other means of access to 112 than voice communication
Austria	No	There are no specific measures concerning 112, but there are separate numbers (e.g. 0043800133133) which are reachable via SMS or fax.	n/a	No
Belgium	Fax	No	No	No
Bulgaria	No	No	No	No
Cyprus	Telefax or SMS on incumbents' dedicated number	No	No	No
Czech Republic	No	The access of hearing or speech impaired users is possible by using special technical equipment through dedicated call center of operator Telefónica Czech Republic	n/a	No
Denmark	Text relay	Persons with disabilities such as deafness and impaired speech can be provided with a non-public telephone number by which they can send SMS directly to 112	n/a	Yes, for SMS
Estonia	disabled people can use fax and SMS (starting with end of 2011)	n/a	There is an opportunity to develop SMS-112 service after implementing so, that travelling disabled end-users can access 112 in Estonia	It depends on particular type of access
Finland	SMS using a different GSM number – advertised to	112 SMS system to be launched in 2015. 112	In order to serve travellers, it is	In case of emergency SMS

⁸ Implementation of the European emergency number 112 – Results of the fifth data-gathering round:

http://ec.europa.eu/information_society/activities/112/docs/cocom2012.pdf

Annex: http://circa.europa.eu/Public/irc/infso/cocom1/library?l=/public_2012/cocom12-01_2011pdf/_EN_1.0_&a=d

	disabled users	SMS messages are handled in the same queue as 112 calls or eCalls in the future. At the moment the plan is primarily to focus the service to persons with disabilities and require a pre-registration from the users.	anticipated that in 112 SMS system the emergency centres can handle the same languages as in case of emergency calls.	the CLI is always delivered to the emergency centre with the SMS message.
France	No to 112, but as of 14.09.2011 SMS and fax is available for deaf and hard of hearing people on a nationwide 114 number	Starting with 14 September 2011 a national relay centre for deaf people can be reached with SMS or fax to the 114 number.	The usage of 114 for users of non-national operators is not technically feasible.	No. But there is caller location for SMS sent to the 114 number.
Germany	Fax for disabled users	Message via Fax	No	No
Greece	No, but some mobile operators are technically ready to provide SMS access if required.	No	n/a	n/a
Hungary	Not to 112, but for disabled people there are SMS numbers for emergency services and there is e-mail addresses too, but not promoted and practically not used.	No	No	No
Ireland	Relay and SMS (end of November 2011)	SMS will be made available at the end of 2011 for hard of hearing users	n/a	n/a; for mobile: caller location for SMS is not technically possible in real time, but it can be achieved
Italy	No, but some trials are ongoing,		n/a	No
Latvia	No, but an SMS service for people with disabilities is planned to be rolled out.		No	No
Lithuania	No		n/a	No; n/a
Luxembourg	SMS and fax for disabled users		SMS or FAX services available also for travelling disabled end users from other Member Status	Yes, by SMS. For Tango, accuracy is identical as for Voice; no for fixed
Malta	No			No
Netherlands	Real time text since May 2011. For analogue text phone users a free of charge emergency number 0800-8112.		Travelling disabled end-users can reach 112 Netherlands in every member state if they are provided with internet access. Routing these	For mobile location: Not yet available for real-time text. To be realised Q4 2011. My SOS sends GPS location verbal. Location

			end-users to local PSAP doesn't make sense. Deaf users can't write foreign languages. Signlanguage is not suitable because every country uses his own.	information for eSMS is under investigation
Poland	under consideration		n/a	No
Portugal	SMS solution for deaf people through a specific number		n/a	n/a
Romania	No		n/a	n/a
Slovakia	No		n/a	n/a
Slovenia	WAP112 service is available - text emergency call to 112. Introducing SMS as well as video.		n/a	n/a
Spain	Most centres allow SMS , Chat or fax. Access via SMS or chat is directed to people with auditory disability.		n/a	No
Sweden	SMS service is intended for persons with disabilities. The users must be registered before using it.		n/a	For mobile: Yes, currently implementing this for the SMS 112 service to be ready in 2013. For Fixed subscriber: only voice services offered from number in the E.164 numbering plan.
United Kingdom	a. via SMS – requires preregistration b. via text relay using appropriate terminals using ITU v21 over the PSTN (with access code 18000)		Visitors to the UK can register for emergency SMS provided that they have a UK SIM card in their mobile handset. SIM cards are available from vending machines at airports and from retail outlets. The emergency SMS service uses the text relay service provided by BT, which is only offered in English. Voice calls to 112 in	112 can be contacted via text relay service, in which case the location accuracy is identical to an equivalent voice call Yes for mobile: Emergency SMS allows the cell the caller is in to be seen. This is the same as for voice calls.



			the UK that are made in languages other than English can have translators brought in.	
Croatia	No. Plans for SMS		n/a	n/a
Iceland	SMS		n/a	n/a
Lichtenstein	No			
Norway	SMS to number 208 which is not dedicated for but emergency SMS's to this number will be handled.		Travelling disabled end-users from other Member States, will most probably have to register to grant access to the SMS service for 112. The same requirement will be in place for requirement as for residents.	For fixed subscriber: Caller location information is also possible when using text phone. Other means of access to 112 is currently not provided, but the use of SMS may be possible within one year. For mobile subscriber: use of SMS may be possible within one year.