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Introduction

This Report analyses the information submitted by Member States in response to COCOM Questionnaire (document COCOM07-47 Final) on the implementation of the European emergency number 112. The purpose of this exercise was to gather as complete data as possible on the functioning of 112 in the Member States, as one of the follow-up measures to the Written Declaration of the European Parliament on 112, adopted on 6 September 2007. Following discussions at the 27th COCOM meeting in October 2007, the Questionnaire was distributed to COCOM delegations on 5 December 2007 and Member States were invited to reply by 1 March 2008, except as regards questions in Part II of the Questionnaire on call handling, for which the deadline was 1 May 2008.

An intermediate draft Report, based on the replies provided by 24 Member States, of which a number also included information on call handling questions under Part II of the Questionnaire, was discussed at the 30th COCOM meeting on 23 April 2008. A complete draft Report was presented at the 31st COCOM meeting on 11 June. The present final version of the Report integrates the last comments submitted by Member States delegations following the 11 June meeting.

The Report summarises the information from the Member States replies, outlining the main implementation trends and highlighting best practice. A more detailed overview of the information provided by each Member State is available in the comparative Tables 1-5 that can be found in the Annex to the Report. The findings of this Report serve as a basis for the Commission website on 112, launched on 3 June 2008 with the aim of informing citizens about the functioning of 112 across the Member States.

The Report consists of five chapters.

Chapter 1 presents general information on the overall emergency call statistics, the share of hoax/false calls and measures adopted to reduce the number of these calls. It then describes the structure of Public safety answering points (PSAPs) responsible for receiving and handling emergency calls as well as the arrangements for routing of emergency calls to PSAPs.

Chapter 2 deals with the access to emergency numbers, focusing on access over mobile networks and by users of VoIP services. It also outlines the measures taken by Member States to facilitate access to emergency services by disabled users.

Chapter 3 presents the information characterising the quality of call handling, including information on the performance of telecommunications providers (unsuccessful call attempts and call set-up time) and on the relevant call handling aspects attributable to the operation of PSAPs (response time, handling of calls in foreign languages and follow-up actions to emergency calls).

Chapter 4 discusses the issue of caller location for emergency calls, analysing separately location for fixed and mobile emergency calls and describing in particular the system used and the time needed to provide caller location information to emergency services.

Finally, **Chapter V** provides an overview of measures taken by the authorities, NGOs and telecommunications operators in the Member States to raise public awareness about 112, including specific measures targeting travellers.

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1. GENERAL ISSUES

1.1. Emergency numbers

In most of the Member States, the European emergency number 112 is an additional number to national emergency numbers. According to the Universal Service Directive[1], Article 26(1), firstly a national emergency number should be specified as such by the national regulatory authority and, secondly, calls to this number should be free of charge for users.

Three Member States (**Denmark**, the **Netherlands** and **Sweden**) have replied that no other emergency numbers exist and 112 is, accordingly, their *sole* emergency number. In addition, 112 is presented as the *official/single* emergency number in **Malta** although prior (legacy)[2] national numbers for the police, ambulance and civil protection can still be used.

The remaining majority of Member States can be divided into three groups as regards the system of emergency numbers:

First, there are three Member States with a *single additional* national emergency number to be used for all emergencies – **Ireland**, **Cyprus** and the **United Kingdom.**

Second, six Member States have *one additional* national emergency number for one of the main emergency services[3]. These are **Germany**, **Estonia**, **Luxembourg, Slovenia** and **Finland** with a national number for the police and **Portugal** with a national number for fire emergencies (available in the continental territory only). Moreover, Portugal has indicated that its legacy general emergency number can also still be used.

Finally, the remaining 14 Member States – **Belgium, Bulgaria**, the **Czech Republic**, **Greece, Spain**, **France**, **Italy, Latvia**, **Lithuania**, **Hungary, Austria, Poland, Romania** and **Slovakia** have specific national emergency numbers for each of the three main emergency services.

In addition, some of these countries have reported additional national numbers for other specific emergency services. Among those, **Belgium**, **Austria** and **Poland** appear to have the longest list of distinct numbers for specific emergency services. Moreover, **Spain** has several different numbers for certain emergency services that are managed at national, regional or local level. In the case of **Latvia**, its two-digit national emergency numbers are only available from fixed networks and, accordingly, 112 is the sole emergency number for mobile networks. The situation is similar with the two-digit emergency numbers in **Lithuania**, but it also has additional three-digit emergency numbers for use on mobile networks; moreover these numbers are different depending on the mobile network.

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1 Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive), OJ L 108, 24.04.2002, p. 51.

2 It is assumed that these 'prior' (legacy) emergency numbers differ from 'ordinary' national emergency numbers by the fact that they are no longer publicly advertised as emergency numbers but are only kept in operation for public safety purposes.

3 While a few Member States have indicated specific numbers also for other emergency services, an overwhelming majority has indicated national emergency numbers for the following three main emergency services (their denomination in English translation often varying from one Member State to another): (1) **Fire brigade/rescue/civil protection**; (2) **emergency medical service/ambulance**; (3) **police** (with a distinction between national/municipal police in some cases).

As regards reform plans, which Member States were also invited to indicate in their replies to the Questionnaire, **Bulgaria**, which is currently in the process of introducing 112 nationwide, as well as **Lithuania, Hungary** and **Romania** indicated their intention to withdraw their existing national numbers, including in the context of reforming their systems for emergency response. Also **Estonia** indicated an intention to revise the system of emergency numbers.

A detailed overview of the Member State responses concerning national emergency numbers is available in Table 1 in the Annex.

1.2. Call statistics

To provide an insight into the practical usage of 112 as compared with the national emergency numbers, Member States were invited to provide monthly statistics about the number of calls to 112 and national numbers, where applicable.

Among the countries with national emergency numbers, usage statistics separately for 112 and national emergency numbers were provided by the **Czech Republic**, **Germany**, **Lithuania**, **Luxembourg**, **Hungary**, **Austria**, **Portugal**, **Slovenia, Slovakia** and **Finland.**

Usage statistics for 112 and some of the national numbers were provided by **Greece**, **Spain, France, Italy** and **Poland**. Statistics on the use of 112 only were provided by **Bulgaria** (concerning capital region only), **Estonia, Romania** and **Slovenia**. **Latvia** provided information about the total number of calls to 112 and one of the national emergency numbers.

Countries with a single additional national emergency number (**Ireland**, **Cyprus** and the **United Kingdom)** did not distinguish in their statistics the number of calls to 112 and the relevant national number. Calls to 112 and to the relevant single national number in these countries are handled by the same PSAPs and are subject to the same routing procedures. However, the **United Kingdom** indicated that only about 1% of genuine emergency calls are 112 calls.

In countries with one additional national emergency number, 112 calls represent a large majority of all emergency calls in **Luxembourg**, **Portugal** and **Finland** and more than a half in **Slovenia** but less than 50% in **Germany**.

In countries with several national emergency numbers, 112 is the most frequently used number in **Spain** (73.7% of all emergency calls), **Slovakia** (more than 50% of all calls) and in the **Czech Republic, Lithuania** and **Hungary** (but 112 calls constitute less than 50% of all emergency calls in these three countries). 112 has lower usage than at least one of the other national numbers in **Greece, France** and **Austria**.

A detailed overview of calls statistics is available in Table 1 in the Annex.

1.3. Hoax/false calls

1.3.1. Introduction

The question on hoax/ false calls was included in the Questionnaire because these calls may overload emergency services and hamper their ability to provide a response to genuine emergency calls. Moreover, it has been reported that 112 was more affected by this problem than the national emergency numbers.

Hoax/false calls may be, in particular, inadvertent calls (accidental pressing of buttons on mobile handsets or erroneous dialling), intended calls that are not related to an emergency or deliberate time wasting calls. A breakdown of these calls in different categories was provided by **Belgium** and **Spain** (both distinguishing between 'hoax' and 'false' calls), **Hungary** (distinguishing between 'fake', 'false' and calls to a wrong number) and **Finland** (distinguishing between 'hoax', 'silent' and 'false' calls). Moreover, according to the explanation provided by the **United Kingdom**, silent 112 calls can also have purely technical reasons without any unintentional or intentional human action being involved – namely, faults in the terminal or access network can generate "1" or "2" in network switches thus triggering a 112 call.

1.3.2. Share of hoax/false calls

Among the respondent countries where 112 is the sole emergency number or that provided separate statistics for 112, the share of hoax/false 112 calls was the highest (85 - 95%) in **Bulgaria, Hungary, Romania** and **Slovakia.** The share was also very high (50 - 80%) in the **Czech Republic**, **Spain**, **Latvia**, **Poland**, the **Netherlands** and **Sweden** and 27% in **Finland,** while the lowest share specifically for 112 was reported in **Luxembourg** (21.47%).

In countries that did not distinguish hoax/false calls to 112 and national numbers, the overall share of hoax/false calls was the highest in **Belgium** (up to 90% false calls during certain periods), **Ireland** (up to 80%), **Lithuania** (50-60%), **Germany** (10 - 50%) and **Slovenia** (less than 10%). Finally, the overall share of hoax/false calls is negligible in **Estonia** (1-2%). Finally, **Greece** indicated the share of false calls for calls to one of the national emergency numbers, which was 15%.

The **Czech Republic**, **Germany, Hungary, Slovakia** and the **United Kingdom** indicated that the share of hoax/false calls was higher in the case of 112 compared to national numbers. **Germany, Sweden** and the **United Kingdom** said that the share of hoax/false calls was higher for mobile calls, in particular because of the large numbers of inadvertent calls due to careless handling of mobile handsets. **Spain** and **Slovakia** highlighted that hoax/false calls were mainly made from SIM-less handsets. In **Germany**, they are the reason for the planned disabling of SIM-less 112 calls. Finally, **Sweden** reported that 98% of 112 calls lacking calling line identification (SIM-less, no roaming agreement or other reasons) were hoax/false.

A detailed overview of the share of hoax/false calls in the Member States is available in Table 1 in the Annex.

1.3.3. Measures against hoax/false calls

The measures to reduce the number of hoax/false calls indicated by the Member States could be divided into two main groups.

First, technical and organisational measures have been taken in a few countries to prevent hoax/false calls from reaching the PSAP in the first place. The **United Kingdom** handles the problem of inadvertent calls from mobile handsets by introducing keypad lock changes - one manufacturer's handsets re-set the keypad lock 5 seconds after it has been removed if the call is not sent within this period. There are also network filters if extra digits after the emergency number are received (which are taken as an indication of accidental pressing of the handset). It involves a 4 second wait after 112 is detected to check for extra digits, which if received cause the call to be discontinued. **Slovakia** is testing an application to automatically distinguish mobile 112 calls using valid SIM cards from calls made from SIM-less handsets and to filter the latter calls in a similar way as in the United Kingdom. In **Sweden**, a project is under way with the purpose of routing 112 calls without calling line identification to a specific call centre. The real emergency calls will be immediately forwarded to the emergency centre, while the false calls will be treated according to simplified routines. It is intended that all network operators will support this functionality. Call filters are also applied in **Lithuania**.

Second, there are both technical and legal measures to deal with individual cases of abuse. The **Czech Republic**, **Denmark**, **Germany, Spain** and **Lithuania** have indicated the possibility, in the case of repeated hoax/false calls from one number, to put the caller (temporarily) on a 'blacklist'. The **Netherlands** plans to introduce this facility for mobile calls in 2008. **Spain** and the **Netherlands** operate automatic warning messages and the Netherlands issue warnings also via SMS. **Belgium** is in the process of introducing warning calls and temporary black listing. **Germany** and **Slovenia** have indicated the possibility of calling back to warn and dissuade offenders. Disconnecting lines from which hoax/false calls are made repeatedly is legally possible in **Austria**, but this has not been applied in practice due to the complicated procedure. The **United Kingdom** has introduced procedures including supplemental questions to callers to identify hoax/false calls.

The **Czech Republic**, **Germany, Ireland**, **Spain,** the **Netherlands**, **Slovenia, Slovakia** and **Finland** have indicated that court prosecution is possible and penal sanctions may be imposed on offenders (in serious cases). In particular, the penalty is up to 3000€ or two weeks detention in the **Netherlands**, while the penalty normally imposed in practice is about 300€.

1.4. Structure of Public safety answering points (PSAPs)

Member States were invited to outline the structure of Public safety answering points (PSAPs) responsible for answering and handling emergency calls. An overview of the information submitted by each Member State is available in Table 1 in the Annex. Below is a summary of the responses, which shows a variety of administrative and organisational models.

While there appear to be just one PSAP handling 112 calls in **Greece**, **Luxembourg** and **Malta** and two in **Ireland**, most of the respondent countries have several PSAPs handling 112 calls, normally on a territorial basis.

In countries where 112 is the sole or official emergency number (**Denmark**, **Malta,** the **Netherlands** and **Sweden**) and in countries with a single additional emergency number (**Ireland**, **Cyprus** and the **United Kingdom)**, all emergency calls are handled by the same territorial PSAPs that coordinate the intervention of the relevant emergency services. In **Sweden**, the emergency centres handling emergency calls are managed by a company jointly owned by the State, regional and local authorities. In the **United Kingdom**, the 'Stage 1' PSAPs are, in principle, operated by two large telecommunications operators.

Moreover, also in **Finland** calls to 112 and to the national emergency number are handled by the same territorial PSAPs. There are '112' coordination centres handling all types of emergencies in **Slovakia** while in **Spain** common '112' centres handling all emergency calls have been set up in some areas.

However, in the majority of Member States with one or several additional emergency numbers there are distinct systems of PSAPs for different emergency services. In these countries, the handling of 112 calls is usually assigned to the PSAPs of one of the emergency services. Thus, the responsibility for handling 112 calls lies with the PSAPs of the fire and rescue service in the **Czech Republic**, **Germany**, **Estonia**, **Latvia** and **Luxembourg,** whereas it is the responsibility of the police in **Cyprus** (reform of the system has been launched), **Lithuania** (except the capital city area where a unified PSAP has been set up for all emergency calls), **Hungary**, **Malta**, the **Netherlands** and **Austria.** In **France,** in one third of the departments the PSAPs of the ambulance service are responsible for handling 112 calls while in the majority of departments the PSAPs of the fire service have been assigned the handling of 112.

As regards co-ordination between the PSAPs handling 112 calls and the PSAPs of other emergency services, **Germany** has indicated that in several areas the PSAPs handling 112 calls and the PSAPs handling calls to the national emergency number (for the police) are collocated. Moreover, **Germany, Estonia, Latvia, Luxembourg** and **Slovenia** have specifically highlighted the fact that their PSAPs handling 112 calls can, where necessary, put the call through to the PSAP of another emergency service which is competent to deal with the call concerned.

1.5. Call routing

An overview of the information submitted by each Member State as regards emergency calls routing is available in Table 1 in the Annex. Since the main interest for including this question in the Questionnaire was to highlight the measures aimed at ensuring that emergency calls reach the PSAPs in the case of technical failure or other problems the summary below will only highlight these elements of the replies.

The **Czech Republic** has indicated that its system of PSAPs handling 112 calls is connected to the telephone network at three sites and an automatic back-up facility is in place in the event that connection fails at one of these sites. The system also reroutes calls to another PSAP in case of overload. Automatic forwarding of calls to another PSAP is ensured in **Estonia**. In **Latvia** and **Hungary**, in the event of overloading or technical failure at a district PSAP, 112 calls are rerouted to the central PSAP located in the capital. Similarly, calls can be rerouted to a back-up PSAP in **Malta**. **Spain** has indicated the existence of back-up emergency centres in some regions and **Sweden** has highlighted the fact that PSAPs coordinate their work in case of major accidents. In **Belgium** and the **United Kingdom**, routing of emergency calls is prioritised over normal voice calls.

2. ACCESS TO EMERGENCY NUMBERS

2.1. Introduction

As regards access to emergency numbers, the Questionnaire focused on the possibility to reach emergency services over mobile networks and using VoIP services. In addition, it included a specific question on access to emergency services for disabled users. An overview of the information submitted by Member States concerning availability of emergency numbers from mobile networks and using VoIP is available in Table 2 in the Annex.

An important aspect in evaluating the implementation 112 in this respect is comparing the availability of 112 with that of national emergency numbers, where such exist. The Member States concerned were therefore invited to provide information also regarding access to their national emergency numbers, in order to allow for comparison. The information received does not reveal any instance of access to 112 being denied in circumstances where other national emergency numbers would remain accessible. On the contrary, a number of Member States reported that, in certain circumstances, in particular such as use of mobile handsets without SIM cards, 112 is the only available emergency number.

2.2. Availability over mobile networks

2.2.1. Users of mobile roaming services

All Member States confirmed that the availability of 112 was ensured for users of international mobile roaming services from other Member States and third countries. Moreover, **Hungary** offers a specific service to roaming visitors from the USA who can reach emergency services also by dialling 911.

2.2.2. Availability over another available mobile network

There may be situations where a mobile user is not able to use the mobile network to which he or she has subscribed, because of lack of coverage or technical problems, but it could still be possible to call emergency services by using another available mobile network. The Questionnaire therefore inquired whether Member States have placed any specific obligation on mobile network operators to carry emergency calls in such situations or, alternatively, if it is made possible through mutual arrangements between operators such as national roaming.

With the exception of **Belgium**, **Cyprus**, **Romania** and the **United Kingdom** (which is currently considering the issue), all other respondent countries indicated that it is possible for a mobile user to call emergency services in such a situation by using another available mobile network. **Italy** indicated that this can only be made possible by a commercial national roaming agreement between operators.

A number of Member States indicated that this facility was not a consequence of a legal obligation or a mutual agreement between network providers but rather of the fact that it is possible to call emergency numbers from a mobile handset without a SIM card. According to these replies, regardless of the reason preventing the mobile telephone from logging on to its home network, an emergency call will still be connected using the best available mobile network.

However, the existence of special arrangements was indicated by some countries. Thus, there is a national roaming agreement among mobile network providers to carry 112 calls in **Greece** while in **Spain** one mobile operator has agreements to guarantee access to emergency services from other mobile networks and another mobile operator allows other operators' clients in case of no coverage to call emergency services by using their network. In **Denmark**, a roaming agreement has been concluded between the emergency authorities and mobile network operators. The existence of a national roaming obligation for emergency calls was indicated by **France**, **Lithuania**, **Luxembourg, Hungary, Slovenia** and **Slovakia. Germany** plans to introduce such an obligation as from the 2nd half of 2008, at the same time as the existing SIM-less emergency call facility is removed.

2.2.3. Mobile handsets without SIM card or with restricted SIM cards

The Questionnaire included a question on access to emergency services from handsets without a SIM card, with a blocked SIM card, with an expired (pre-paid) SIM card and with a foreign SIM card that does not allow for international roaming.

According to the replies, it is possible to call emergency services from a mobile handset without a SIM card in all respondent countries except **Belgium**, **France**, **Cyprus**, **Romania, Slovenia** and the **United Kingdom**. **Germany** has indicated that SIM-less calls will be disabled as from the 2nd half of 2008.

In the **Czech Republic, Germany, Greece, Slovakia** and **Finland** the SIM-less call facility is available for 112 calls only.

The situation is similar as regards access to emergency numbers from handsets with blocked or expired SIM cards or foreign SIM cards that are not authorised to roam. All Member States in which it is possible to call 112 from a mobile handset without a SIM card also reported that it was possible to call 112 with handsets equipped with any of the above-mentioned restricted SIM cards. For this reason, the overview Table 2 in the Annex has grouped together in a single column the responses concerning availability of 112 with a blocked SIM card, with an expired (pre-paid) SIM card and with a foreign SIM card that does not allow for international roaming. The one exception from this regime was **Italy** where emergency calls are possible with blocked or expired SIM cards but not with foreign SIM cards not authorised to roam in Italy.

However, in their response to the question about emergency calls from handsets with 'expired' SIM cards, a few countries (the **Czech Republic, Germany** and the **United Kingdom**) indicated that emergency calls would be possible with pre-paid SIM cards without call credit, which was not actually the intended purpose of this question. In fact, it is assumed that emergency calls should always be available for pre-paid mobile users without call credit, in view of the fact that such calls are free of charge and, accordingly, no call credit should be necessary to make them. Instead, while the question on 'blocked' SIM cards related to a temporary restrictive measure, for example, blocking of out-going calls or all calls for non-payment, the question on 'expired' SIM cards rather aimed at situations where a post-paid mobile contract has been terminated or a pre-paid card has expired, i.e. it is no longer good even to receive in-coming calls and cannot be recharged.

Despite the fact that different interpretations of this term have been used by some Member States, it nevertheless appears that these questions on access to 112 with 'expired' and other specified types of restricted SIM cards are only relevant for those Member States where SIM-less calls are not authorised.

Indeed, among these countries, **France** has indicated that it is possible to call 112 from a handset with a 'blocked' SIM card but not with an 'expired' SIM card and with a foreign SIM card that is not authorised to roam in France. In the case of the **United Kingdom**, emergency calls are possible with 'barred' SIM cards (as may happen in case of non-payment), but are not possible for 'terminated' SIM cards and SIM cards not authorised to roam in the United Kingdom. **Belgium** reported that emergency calls are possible with 'expired' SIM cards. On the other hand, **Romania** and **Slovenia** have indicated that emergency numbers can be called with SIM cards that are blocked, expired or not authorised to roam whereas **Cyprus** has indicated that emergency numbers are not accessible with any of these restricted SIM cards.

2.3. Availability over VoIP

An overview of the situation in the Member States as regards access to emergency services for users of VoIP services is available in Table 2 in the Annex.

Emergency numbers were reported to be unavailable in the case of all VoIP services only in **Hungary.** The **Czech Republic**, **Ireland** and **Poland** have indicated that access to emergency services over VoIP depends on the service provider. Access is possible in **Slovenia** and in **Bulgaria** and will be possible as from 2009 in **Germany**. The obligation of VoIP service providers to ensure access to 112 and national emergency numbers is subject to technical feasibility in **Greece**.

Other Member States stated that access to emergency services over VoIP telephones is subject to certain conditions or criteria.

With regard to legal criteria, in **Denmark**, **Austria**, **Romania**, **Finland**, **Sweden** and the **United Kingdom** access to emergency services is provided for customers of VoIP operators that enable their subscribers to make outgoing calls to telephone numbers in the national numbering plan. On the other hand, **Belgium**, **Italy, Lithuania**, **Malta,** the **Netherlands** and **Slovakia** indicated that access to emergency numbers is possible with VoIP services considered as PATS. Finally, in **Spain** and **Portugal**, access to emergency numbers is provided by VoIP services that provide their users with numbers from the national numbering plan and which may include nomadic VoIP services.

In **Estonia**, **France** and **Luxembourg** emergency access over VoIP is possible only for customers using specific equipment (depending on equipment, access may be possible also for nomadic VoIP users in France). Nomadic VoIP services are under regulation to ensure access to emergency services in **Italy** whereas **Cyprus** has specified that emergency access is only available for VoIP services provided at a fixed location.

2.4. Access by disabled users

In **Belgium**, **Germany**, **Estonia**, **Spain**, **France** and **Luxembourg** it is possible for people with disabilities to contact emergency services by fax. Sending emergency SMS to 112 is possible in **Greece** (SMS can also be sent to one of the national emergency numbers)**, Spain**, **Luxembourg, Poland** (SMS can be handled by some Polish PSAPs) and **Sweden** (as a trial service). In **Finland**, emergency SMS currently can be sent to a separate mobile number for each PSAP but it is planned to enable the use of 112 as the sole SMS emergency number. In **France,** disabled users can contact emergency services also by minitel and through ICT services. A translation system voice-text-voice and an SMS system have been implemented in one emergency centre in **Spain.** In the

Netherlands, disabled users have at their disposal a service that triggers a 112 call if an alarm button is pushed. This service includes transmission of GPS coordinates and the identity of the registered caller.

In the **Netherlands** and **Sweden** as well as, partially, in **Italy** it is possible to reach 112 using text telephones. In addition, in Sweden the text relay service is also available through a web interface, which replaces or complements the text telephone. A trial service supports text telephony using any combination of analogue text telephones, mobile phones and computers with Internet access. It is also possible to call 112 using a relay service for video telephony. This service involves a sign language interpreter relaying calls between sign language and speech. Moreover, it is possible to call 112 using a speech-to-speech relay service, which involves an interpreter who can interpret speech that is difficult to understand.

Two more Member States have taken measures to facilitate access to emergency services which involve users dialling specific numbers other than 112. In the **Czech Republic,** a special contact centre has been equipped with a special operator application and all types of terminals that can be used by a disabled user, such as text telephones, faxes, mobile telephones etc. and which has a team of operators specifically trained for communication with disabled people. This centre co-operates closely with the 112 PSAPs. In the **United Kingdom,** an emergency code 18000 is used for real-time text access through a relay assistant who will verbally relay the typed text to the emergency operator and then type any verbal response or question. About 2 000 emergency calls each month are made over this service.

A number of other countries have indicated that projects are under way to improve access for disabled users to emergency services.

3. CALL HANDLING

3.1. Introduction

Table 3 in the Annex provides an overview of the information received from the Member States concerning the quality of call handling. Several Member States indicated in their replies that the information requested in the Questionnaire was not available. Some others stated that the quality issues in the case of emergency calls were no different from those of the telephony network in general or that it was difficult to provide this information using ETSI standards. As a matter of fact, very few of the responses were based on ETSI standards EG 202 057-1/2/3, which were suggested in the Questionnaire with a view to making the results more easily comparable between Member States.

The questions on call handling can be divided into two main groups. First, there are questions regarding unsuccessful call attempts and call set-up times that aim at evaluating the performance of telecommunications operators and networks. Second, there are questions on response times to emergency calls, handling of calls in foreign languages and follow-up actions on calls that aim at evaluating the performance of PSAPs.

An important aspect in evaluating the implementation of Member States' obligations in relation to 112 is the provision of the same quality of call handling for 112 calls as is provided in the case of calls to the national emergency numbers, where such exist. The Member States concerned were therefore invited to provide responses also regarding the implementation of their national emergency numbers, in order to allow for comparison.

Although rather few of the responses from the countries concerned provided such comparative data, these do not reveal any instance of 112 calls being treated less favourably than calls to national emergency numbers. In fact, the information provided rather shows, in some instances, a better performance by telecommunications operators and PSAPs in the case of handling 112 calls compared to handling calls to the national emergency numbers.

3.2. Unsuccessful call attempts

'Unsuccessful call' was defined in the Questionnaire as a call attempt, properly dialled following dial tone, where neither called party busy tone, nor ringing tone, nor answer signal, is recognised at the access of the calling user within 30 seconds for fixed origination calls or 40 seconds for mobile origination calls from the instant when that last digit of the destination subscriber number is received by the network. The measurement method suggested for this criterion of call handling was the percentage of unsuccessful emergency calls together with the number of observations used and the absolute accuracy limits for 95% confidence calculated from this number.

The **Czech Republic** and **Denmark** indicated that the unsuccessful call ratio was 0% since all emergency call attempts were successful. This ratio was less than 1% in the **Netherlands** and **Spain,** 0.1 - 1.4% in **Slovenia,** 0.45 - 4% in **Portugal** and as high as 25% for operators storing this kind of data in **Lithuania. Germany** indicated that specific statistics for emergency calls were not available but referred to the overall ratio for all telephone calls, which is better than 3%. Moreover, **Germany, Spain** and **Finland** indicated that the ratio of unsuccessful emergency calls was lower for emergency calls than in the case of national calls overall.

3.3. Call set-up time

'Call set-up time' was defined in the Questionnaire as the period starting when the address information required for setting up the call is received by the network and finishing when the called party busy tone or ringing tone or answer signal is received by the calling user. Regarding this call handling criterion, it was suggested that data on the average call set-up time in seconds and the time in seconds within which the fastest 95% of emergency calls are set-up be provided.

Among the respondent countries where 112 is the sole emergency number or which provided separate statistics for 112, the **Czech Republic** reported that the performance of telecommunications operators was better in handling 112 calls compared to the handling of calls to the national numbers. The reported average call set-up time was below 1 sec. in the case of 112 calls and it was faster in the case of fixed 112 calls than in the case of mobile 112 calls. **Denmark** reported a 'few' seconds as the call set-up time for 112 calls, which is the same as for other calls.

The other countries that provided data concerning call set-up time did not distinguish between calls to 112 and national emergency numbers. It was estimated to be less than 0.5 sec. in **Bulgaria** and a 'few' seconds in **Slovakia**. In **Germany** and **Spain** the call set-up time was estimated to be the same as for local calls – about 2 sec. for PSTN calls and 6 sec. for mobile and VoIP calls in Germany, and 1.45 sec. for PSTN and 3.19 sec. for mobile calls in Spain. In **Slovenia**, the call set-up time was estimated to be 1.5-6 sec. in 80% of cases. **Portugal** indicated 1.16 sec. as the call set-up time for fixed and between 1 and 6.39 sec. for mobile calls. **Lithuania** reported up to 9 sec. as the call set-up time for

fixed operators storing this data. Finally, the maximum call set-up time is estimated to be 10 sec. in **Belgium** (for 112 and calls to two of the national emergency numbers).

3.4. Response time to emergency calls

As regards the performance of the PSAPs in call handling, the first relevant criterion was the 'Response time', which was defined in the Questionnaire as the duration from the moment when the address information required for setting up the call is received by the network to the moment when the PSAP human operator answers the call. According to the relevant ETSI standard, the Member States were invited to indicate, preferably, the percentage of emergency calls answered within 20 seconds.

Among the countries that used this methodology and provided separate statistics for 112, the **Czech Republic** indicated that all 112 calls are answered within 20 sec., while **Spain** reported that 97% of 112 calls are answered within 20 sec. with average response time being 6.5 sec for 112 calls and higher (14 sec.) for calls to other national emergency numbers.

Among the countries that used this methodology but did not provide separate statistics for 112, the **United Kingdom** reported that the two main 'stage 1' PSAPs answer respectively, 94.6% and 98.0% of emergency calls within 5 sec. and 98.1% and 99.9% of calls within 20 sec. In **Lithuania** all emergency calls are answered within 20 sec. according to those fixed network operators that store this data.

The countries where 112 is the sole emergency number used a different methodology - the **Netherlands** indicated that 90% of 112 calls are answered within 10 sec., while the reported average response time was 9.1 sec. in **Sweden** and 20-25 sec. in **Denmark.**

Among the countries with national emergency numbers that provided separate statistics for 112 but used a different methodology, **Greece** and **Romania** indicated 9 sec. as the average response time for 112 calls, while **Finland** indicated that 71% of 112 calls were answered within 10 sec. or less in 2006.

The other countries that provided data concerning call response time did not distinguish between calls to 112 and national emergency numbers and also did not apply the suggested methodology. The indicated average response time for all emergency calls ranged from less than 1 sec. in **Ireland**, up to 5 sec in **Bulgaria, Latvia** and **Slovenia**, a 'few' seconds in **Austria,** 5-10 sec. in **Hungary,** 6 - 19.73 sec in **Portugal** and 5-20 sec. rising up to 1 min. in case of saturation in **Germany** and **Slovakia.**

Greece additionally provided information about the call response time for two of its national emergency numbers. For the first national number, the response time was reported 1-5 sec. for 86% of calls and 6-20 sec. for 13% of calls, while it was a 'few' seconds in the case of the second national number.

Moreover, **Sweden** provided additional statistics concerning 'dropped' mobile calls to 112, classified by their duration - calls shorter than 3 seconds, between 3 and 5 seconds, and longer than 5 seconds. These statistics show the reasons for dropping for each call category, for example, whether these relate to hanging up by the calling party, network failure or hanging up by the PSAP operator.

3.5. Calls in foreign languages

The capability of authorities handling emergencies to answer 112 calls in several languages has been recognised in the Universal Service Directive (Recital 36) as an element for ensuring additional safety for European citizens using 112. Member States were therefore asked to indicate the ratio of emergency calls handled in foreign languages to the total of emergency calls made in a foreign language, as well as the foreign languages that are catered for by the PSAPs and for information on specific arrangements for handling calls in foreign languages.

While no reply included information on this ratio, a number of replies indicated the overall share of calls handled in foreign languages. This share was reported as just 2 calls on average per week in **Bulgaria**, 0.39% in **Luxembourg**, less than 1% in **Spain**, **Slovenia** and **Sweden**, 1% in **Germany**, 2% in **Slovakia**, 3% in the **Czech Republic,** 3-5% in **Hungary** (higher in tourist seasons), 4-5% in **Greece**, 5% in the **Netherlands,** 25% in **Lithuania** and as large as 50% in **Estonia**.

The foreign languages catered for by the PSAPs in individual Member States are indicated in the overview Table 3 in the Annex. English appears to be the language most commonly referred to, but the foreign language coverage depends on the specific circumstances of each Member State.

As regards measures taken to improve the capability of PSAPs to answer emergency calls made in foreign languages, a few Member States have indicated mandatory language knowledge requirements for the operators of PSAPs – English or German in the **Czech Republic** and English in **Sweden**. In addition to training of the PSAP personnel in language skills, a number of other organisational and technical measures aimed at improving the foreign language handling have been described in the replies. In particular, in the **Czech Republic** and **Romania** information about the foreign language skills of operators in other PSAPs is constantly available to all call handlers, which allows foreign language call to be transferred to an appropriate operator in another PSAP, where necessary. Also **Greece**, **Spain** and **Slovenia** have mentioned co-operation with other PSAPs in handling calls in foreign languages.

Interpretation services enabling call handling in more foreign languages can be used in **Spain**, **France**, the **Netherlands**, **Finland**, **Sweden** and the **United Kingdom**. In this respect **Finland** indicated that the interpretation service used for 112 calls provides larger foreign language coverage than the one used for calls to one the national emergency number. The **Czech Republic** also indicated the existence of language software to assist in formulation of questions in several languages. Finally, **Spain** and **France** have referred to automatic translation capabilities.

3.6. Follow-up actions to emergency calls

The main purpose of this question was to compare the follow-up given to 112 calls and to calls to other national numbers. The types of follow-up action mentioned in the Questionnaire as examples were dispatch of an emergency assistance team, provision of advice or no-follow up since the call is not considered to constitute an emergency.

Some statistical data concerning types of follow-up actions to emergency calls were provided by the **Czech Republic, Germany, Poland, Austria, Slovenia, Finland** and the **United Kingdom**. **Hungary** provided detailed statistics per emergency number about calls involving some follow-up action. **Sweden** and the **United Kingdom** indicated the

share of calls handled by ambulance, fire and rescue or police services. Details of the relevant replies can be found in Table 3 in the Annex.

4. CALLER LOCATION

4.1. Introduction

Based on the information submitted by the Member States, it appeared useful to structure the presentation of this chapter by the type of call – fixed or mobile – and to use partially different sets of criteria for these two types of calls. In addition, this chapter indicates those categories of calls indicated by the Member States for which caller location is not made available.

An overview of the relevant information drawn from the replies is available in Table 4 in the Annex. It includes information on the system used ('push' or 'pull'), usage statistics and the time needed to provide caller location information for both fixed and mobile calls as well as the source of caller location information and its updating in the case of fixed calls and the type and accuracy of caller location information for mobile calls. Since the commonly indicated type of caller location information provided for fixed calls was the registered address of the user's terminal, it is not specifically reflected for each Member State in this overview Table.

As in the case of call handling described in the previous Chapter, the Member States concerned were invited to provide responses regarding the implementation of caller location for both 112 and national emergency numbers, in order to allow for comparison. Although rather few of these countries provided such comparative data, the information received does not reveal any instance of 112 calls being treated less favourably than calls to national emergency numbers. In fact, this information rather shows that, in certain cases, caller location information is only provided for 112 calls and not for calls to national emergency numbers. Thus, in **Spain** and **Portugal** caller location is implemented only for calls to 112 but not for calls to other national numbers. In the **Czech Republic** caller location is only available for mobile calls to 112 and for a part of mobile calls to one of the national numbers, but not for the calls to other national numbers. In **Greece** the provision of caller location in the case of calls to national emergency numbers is subject to a more complex procedure (prosecutor's intervention).

It is noteworthy that in **Greece** the obligation to make available caller location also extends to SMS sent to 112.

4.2. Fixed caller location

4.2.1. System and usage

The system used to provide caller location information for fixed calls was reported as being 'push' (i.e. caller location information is automatically provided to the PSAP with every emergency call) in **Bulgaria**, **Denmark**, **Ireland**, the **Netherlands**, **Portugal**, **Romania** and **Sweden**.

The 'pull' system whereby caller location information is provided to the PSAP upon request is, on the other hand, operational in **Belgium,** the **Czech Republic**, **Germany, Greece, France**, **Italy**, **Cyprus**, **Latvia**, **Lithuania**, **Luxembourg, Hungary, Malta**, **Austria, Poland, Slovakia** and **Finland.**

In the **United Kingdom,** caller location is automatically 'pushed' to location servers, from where it can be 'pulled' by emergency authorities. Both 'push' and 'pull' methods are being used in **Estonia**, **Spain** and **Slovenia**.

As regards ongoing work in this area, **Spain, Hungary, Poland, Slovenia** and **Slovakia** have indicated moving towards full implementation of the 'push' system.

Concerning the practical usage of the caller location facility, the Questionnaire asked Member States to indicate the ratio of emergency calls for which the caller location information is provided, to the total number of emergency calls.

As far as the application of 'pull' method is concerned, the answers by Member States provided different types of information. Thus, the **Czech Republic** and **Cyprus** indicated that caller location is obtained in, respectively, 96.23% and 99.9% of cases when request is made, without indicating the share of calls for which location information is requested. A few other countries provided information about the share of calls for which caller location has been requested, which is less than 1 % in **Germany** and **Hungary**, 0.4% - 2.8% (depending on the month) in **Latvia** and about 10% in **Lithuania**.

As to the performance of the 'push' system, **Spain**, **Portugal** and **Sweden** indicated that caller location information was provided for 100% of calls and this ratio was close to 100% in **Slovenia** in the case of 112 calls.

4.2.2. Time needed to provide caller location information

Member States were invited to indicate the average and maximum response time for providing caller location information, which was defined in the Questionnaire as the period starting when the public safety answering point human operator requests the caller location information and finishing when the calling location information is received for 'pull' systems; or the period starting when the address information required for setting up an emergency call is received by the network and finishing when the caller location information is received by the public safety answering point 'for' push systems.

An immediate or near instant response time for fixed caller location (less than 15 sec. on average and/or maximum) was reported by **Bulgaria**, the **Czech Republic**, **Denmark**, **Spain** (for PSAPs using 'push'), **France**, **Latvia**, **Lithuania**, **Luxembourg**, the **Netherlands**, **Slovakia, Finland**, **Sweden** and the **United Kingdom** (for PSAPs using electronic transmission).

Slightly longer response times (up to about 1 min. on average and/or maximum) was reported by **Estonia** (23 sec. on average), **Spain** (30 sec. for PSAPs using 'pull'), **Cyprus** (average 45 sec., max. 75 sec.), **Slovenia** (average 15 sec. and up to 1 min. when using 'push') and **Greece** (up to 1 min.).

The longest response times were reported by **Germany** (up to 3 min.), **Austria** (a 'few' min), **Poland** ('several' minutes), **Slovenia** (up to 15 min. when using 'pull') and **Hungary** (min 30-40 sec.; max 3-4 hours).

4.2.3. Source and updating of fixed caller location data

An important issue in the case of fixed caller location appears to be the comprehensiveness and the updating of the number and address database or databases used for determining the caller's address in the case of fixed emergency calls.

According to the replies, a central database is being used for fixed caller location in **Belgium**, the **Czech Republic**, **Denmark**, **Ireland**, **Greece, Spain**, **France**, **Latvia**, **Lithuania**, the **Netherlands**, **Austria**, **Portugal**, **Slovenia**, **Finland**, **Sweden** and the **United Kingdom**. In addition, **Bulgaria**, **Luxembourg** and **Poland** intend to set up such a central database. On the other hand, **Germany**, **Estonia, Italy, Hungary, Malta** and **Slovakia** rely on databases of individual operators (also a CD ROM inverse telephone directory is used in Germany).

The relevant databases are being updated at quite different intervals – once every two hours in the **United Kingdom**, daily in **Belgium**, **Denmark**, **Germany**, **Ireland**, **Latvia** and **Finland**, every few days in **France**, once a week in the **Czech Republic** and **Greece**, every 15 days in **Spain** and twice a year in **Slovenia**. In **Portugal**, operators are under obligation to provide updates whenever there is a change concerning their subscribers.

4.2.4. Exceptions

As regards types of fixed emergency calls for which caller location information is not available, **Ireland** reported that certain customers are not included in the database used for fixed caller location and, accordingly, it is not possible for emergency authorities to establish their location. In **France, Hungary** and **Malta**, caller location is not possible for fixed subscribers for which no calling line identification is transmitted to the PSAPs. Accordingly, the current caller location system in **France** is estimated to cover about 80% of fixed subscribers. However, it is planned to extend it to all fixed subscribers in the future. **Hungary** reported that caller location is possible for calls from public pay-telephones in only a few counties.

4.3. Mobile caller location

4.3.1. System and usage

In the case of mobile emergency calls, the ‘push’ system for caller location was reported to have been implemented in **Bulgaria**, the **Czech Republic**, **Denmark**, **Cyprus**, **Luxembourg** and **Portugal**.

The ‘pull’ system is operational in **Belgium**, **Germany**, **Ireland, Greece, France**, **Latvia**, **Hungary, Malta**, **Austria**, **Poland**, **Finland** and **Sweden**.

In the **United Kingdom,** caller location is automatically ‘pushed’ to location servers, from where it can be ‘pulled’ by emergency authorities and both ‘push’ and ‘pull’ systems are being used in **Estonia**, **Spain** and **Slovenia**.

As regards ongoing work in this area, ‘push’ is being implemented in **Spain, Latvia, Hungary,** the **Netherlands, Poland, Slovenia** and **Slovakia**. On the other hand, **Lithuania** and **Romania** are introducing systems including and combining both ‘push’ and ‘pull’ methods.

As far as the application of ‘pull’ method is concerned, **France** indicated that it is necessary to request caller location information for less than 10% of mobile calls, while this ratio is 2% in **Sweden,** 1% in **Hungary** and 0.4% in **Finland**.

As to the performance of the ‘push’ system, **Cyprus** indicated that location information is delivered for 99.9% of calls, while this ratio is 100% in the case of **Portugal** and close to 100% in **Slovenia** in the case of mobile 112 calls.

4.3.2. Time needed to provide caller location information

Immediate or near instant (less than 15 sec.) response time was reported by **Bulgaria**, the **Czech Republic**, **Denmark**, **Spain** (for 'push'), **Latvia**, **Luxembourg, Slovakia, Sweden** and the **United Kingdom** (for PSAPs using electronic transmission).

Slightly longer response times (up to about 1 min. on average and/or maximum) was reported by **Estonia** (23 sec. on average), **Slovenia** (average 15 sec. and up to 1 min. when using 'push') and **Finland** (up to 30 sec.)

The longest response times were reported by **Austria** (a 'few' min), **Cyprus** (average 67-88 sec., max. 6 min. depending on mobile operator and PSAP), **Poland** ('several' minutes), **Slovenia** (up to 15 min. when using 'pull' for 112 calls and up to 1 hour for calls to the national number), **France** (up to 30 min.), **Greece** (10-36 min.), **Germany** (up to 60 min. depending on the procedure applied), **Hungary** (min 30-40 sec.; max 3-4 hours).

Germany, France and **Hungary** indicated that caller location is obtained through manual contacts (telephone, fax) between the PSAP and the telecommunications operators rather than by electronic means. Moreover, in **Germany** PSAPs also use private organisations providing caller location services.

4.3.3. Accuracy of mobile caller location

An important issue in the context of mobile caller location is its accuracy. According to the replies, mobile network Cell ID or Sector ID is available as mobile caller location information in most of the countries. The location accuracy in these countries therefore depends on the mobile cell or sector coverage that varies between urban and rural areas. For example, **Bulgaria** has indicated that location accuracy is 500 m to 8 km in urban areas and up to 40 km in rural areas while in **Spain** it ranges from several meters in urban areas up to several kilometres in rural areas. A detailed overview of the responses concerning accuracy of the mobile caller location information is available in Table 4 in the Annex.

Some of the Member States have indicated the existence of additional network facilities to increase accuracy of mobile caller location. Thus, in **Finland** some mobile operators use technologies based on measurements and calculations and in the **United Kingdom** timing advance information is used on some networks to produce more accurate results. Moreover, **Estonia, Malta** and **Poland** have reported coordinates of the mobile handset as the available caller location information. On the other hand, in **France** the mobile caller location is the postal code rather than the location of the relevant mobile base station.

Some countries have described how the caller location information is displayed and presented to the PSAPs. On the other hand, **Ireland** has indicated that its PSAPs currently do not have location information technology capability. **Romania** has indicated that Cell ID is available and is used to ensure correct routing of the call to the appropriate PSAP. However, no indication is made about whether this location information is actually made available to the PSAP handling the call concerned.

Finally, it should be mentioned that **Denmark, Germany** and **Sweden** have indicated that PSAP can also obtain the address information corresponding to the mobile subscription.

4.3.4. Exceptions

Although it is likely that location of SIM-less mobile emergency calls might present difficulties also in other Member States, only **Italy** and **Hungary** specifically indicated that caller location is not possible for SIM-less mobile calls since they lack calling line identification. Moreover, **Hungary** stated that mobile caller location is only possible in the context of criminal investigation.

4.4. VoIP caller location

An overview of the Member States replies as regards caller location for VoIP calls is available in Table 4 in the Annex. Considering the great diversity of the situations that have been reported, it does not appear possible to summarise and draw conclusions from this information at this point. However, caller location for VoIP emergency calls is certainly one of the topics that will have to be taken up in greater detail in the future.

5. PROMOTION OF 112

5.1. Introduction

The Questionnaire included also a question about information and promotion activities undertaken in relation to 112. On 11 February 2008[4], the Commission unveiled the results of an EU-wide survey, which showed that only 22% of EU citizens were aware of the existence of 112 as the European emergency number[5]. A noteworthy finding of this survey was that, even in countries where 112 is generally known as the emergency number in the national context, still only a minority of the citizens were aware that this number can also be used when travelling abroad. For this reason, it would appear that a particularly important aspect of awareness-raising measures concerning 112 should be to emphasise its European dimension.

5.2. Measures targeting people domestically

First, the Member States were invited to indicate awareness-raising measures targeting their residents domestically. An overview of the different reported types of such measures is provided in Table 5 in the Annex where they are classified depending on whether they are carried out by national authorities and/or NGOs or are attributable to telecommunications operators. On the basis of the information provided it appears useful specifically to highlight the following reported practices.

As far as media work is concerned, a specialised magazine '112' and TV programme '112- when life in danger' is produced in the **Czech Republic**. There is a daily TV programme entitled "112 reports" also in **Latvia**. In **Cyprus**, the State and most private channels have transmitted a dedicated TV advertisement. Also **Sweden** has produced a special film on 112 for the elderly.

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[4] Commission Press release of 11 February 2008, also available on the Commission's 112 website.

[5] Flash Eurobarometer Survey "The European emergency number 112". Summary available on the Commission's 112 website.

As regards the display of 112 in public spaces, the practice of **Austria** and **Hungary** of displaying 112 on motorway signs should be particularly highlighted. Moreover, 112 is printed on drivers' licences issued in **Hungary**.

In relation to the activities undertaken specifically by the operators, one could mention that in **Cyprus** a bilingual leaflet on 112 has been distributed to all households together with telephone bills.

Finally, it should be pointed out that particular activities dedicated to 112 are traditionally held in **Finland** on the occasion of the '112 day' celebrated each 11 February and that similar activities on this date have also been launched in **Romania**.

5.3. Measures targeting travellers

A detailed overview of all the responses as regards the awareness-raising measures addressing in particular travellers is available in Table 5 in the Annex. Most of the countries indicated that 112 is advertised through specialised tourist brochures, websites and multi-language guides distributed at tourist sites such as airports, stations, tourism agencies and hotels.

In addition, **Spain** specifically mentioned that information on 112 is distributed at motorway toll points. **Luxembourg** reported that 112 is displayed on the transport used for tourists. In **Hungary**, visiting roaming mobile users are informed about 112 by SMS.

As regards information activities on the use of 112 abroad, **Sweden** has referred to activities undertaken with the aim of raising awareness about 112 among own residents travelling abroad and **Poland** has mentioned that its 112 website set up by the authorities provides information about 112 in Poland and also abroad.