EENA Operations Document

KEY PERFORMANCE INDICATORS FOR EVALUATION OF A PSAP OPERATION

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1 Introduction

The goal of this document is to present a general overview of why performance measurement is extremely important for emergency services. Today, emergency services are facing a rich variety of social, technological, economic and even global challenges, requiring adaptation and evolution continually.

Furthermore, it explains why performance indicators are needed and how these can be defined. Depending on the mandate of the Public Safety Answering Point (PSAP), different type of measure applies. The level of complexity and degree of implementation of those KPIs depend on many factors. Some of them are: emergency services organisation (national, regional or local), procedures in place and historical development of the 112 service and budget. One of the main aspects to be taken into account is what 112 model applies[1] as it will explain for example what organisation is responsible for handling the calls and/or dispatching the units.

In July 2014, EENA also published a document on the "Assessing meaningful response times" and that document can be read in conjunction with this publication.

Additionally, as in all EENA Operations document, recommendations and examples are detailed.

Given that there are no clearly defined KPIs in operation to measure the performance of the emergency services across Europe, EENA intends to go deeper into this topic in 2015 and will set KPIs for the handling of emergency calls and incidents. This document is the first step towards that objective.

2 Abbreviations, glossary and references

All definitions of terms and acronyms related to 112 are available in the 112 Terminology EENA Operations Document.[2]

References:

- David Hoyle: ISO 9000 Quality Systems Handbook Fourth Edition
- UK Dept for Trade and Industry: From Quality to Excellence
- F. John Reh: Internet Articles about management
- Office Of The Legislative Auditor State Of Minnesota: 9-1-1 Dispatching: A Best Practices Review, March 1998
- STS Romania: Introduction to Several Performance Indicators of the Romanian 112 System, EU Emergency Services Workshop 2013 Riga, Latvia
- http://kpilibrary.com/ - Internet site

[1] 112 Service Chain Description Operations Document www.eena.org/uploads/gallery/files/operations_documents/2011_06_10_112_service_chain_description.pdf
[2] http://www.eena.org/uploads/gallery/files/operations_documents/2012_10_16_112terminology.pdf

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3 PERFORMANCE MEASUREMENT

3.1 Why measure performance?

"When you can measure what you are speaking about and express it in numbers, you know something about it".
"You cannot manage what you cannot measure"
Attributed to Lord Kelvin, Edwards Deming.

It is an old management saying that is accurate today. Unless we measure something we don't know if it is getting better or worse. We can't manage for improvement if we don't measure to see what is getting better and what isn't.

Performance measurement is a fundamental building block of total quality management (TQM). Measurement, analysis and improvement processes are vital to the achievement of quality. Until we measure using "devices" of known integrity, we know little about a process or its outcomes. But if we measure using "instruments" that are unfit for purpose, we will be misled by the results. With the results of valid measurement we can make a judgment on the basis of facts. The facts will tell us whether we have met the target. Analysis of the facts will tell us whether the target can be met using the same methods or better methods or whether the target is the right target to aim for. Measurements without a target value to compare results of measurement are measurements without a purpose. The target value is therefore vital. Targets should always be focused on purpose so that through the chain of measures there is a soundly based relationship between targets, measures, objectives and the purpose of the organisation, process or product.

Measurement tells us whether there has been a change in performance. Change is a constant. It exists in everything and is caused by physical, social or economic forces. To understand change we need to understand its cause. Some change is represented by variation around a norm and is predictable – it is a natural phenomenon of a process and when it is within acceptable limits it is tolerable. Other change is represented by erratic behavior and is not predictable but its cause can be determined and eliminated through measurement, analysis and improvement.

Reviewing the performance of a PSAP organisation is also an important step when formulating the direction of the strategic activities. It is important to know where the strengths and weaknesses of the PSAP lie, and as part of the 'Plan –Do – Check – Act' cycle, measurement plays a key role in quality and productivity improvement activities. The main reasons it is needed are:

- To ensure requirements - targets have been met
- To be able to set sensible objectives and comply with them
- To provide standards for consolidations and establishing comparisons
- To provide visibility and a "scoreboard" for people to monitor their own performance level
- To highlight quality problems and determine areas for priority attention
- To provide feedback for driving the improvement effort

3.2 How To Use Measurements

There are four key steps in a performance measurement framework - the strategic objectives of the organisation are converted into desired quantifiers of performance, metrics are developed to

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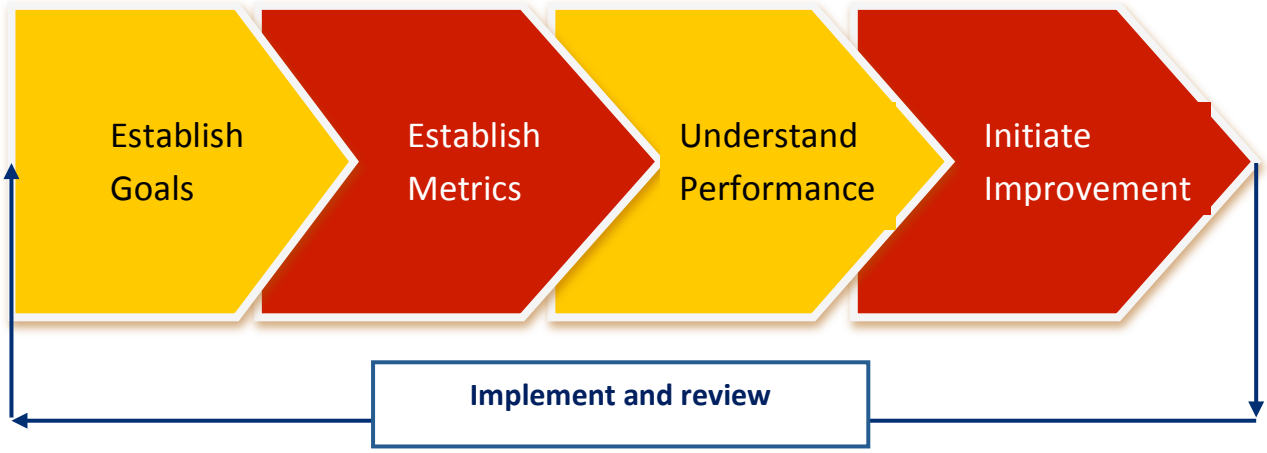
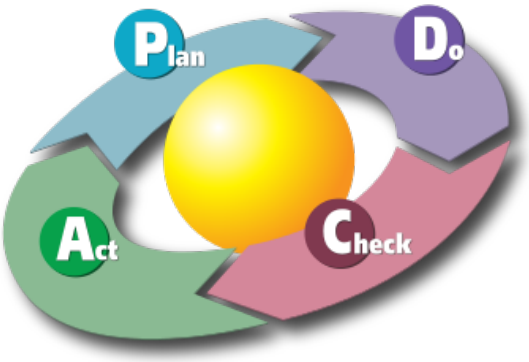
compare the desired performance with the actual achieved results, gaps are identified, and improvement actions initiated. These steps are continuously implemented and reviewed.

The measurements should be used as part of a Continuous Improvement Plan. Similar plans are used by many companies in different industries and given different names, but the goal is the same - to measure the key factors and improve them.



Here we have in fact just an implementation of the famous Shewhart cycle like in other areas of quality management: P(lan) D(o) C(heck) A(ct) or, better to say, its Deming modification: P(lan) D(o) S(tudy) A(ct) which ephasizes the necessity to analyse and study performance prior to initiating the improvement actions.

And here comes the crucial question for every organisation:



3.3 What exactly to measure and how to measure?

We should measure those activities or results that are important to successfully achieving our organisation's goals. The key point is to identify the processes, which are vital for the PSAP functioning. PSAP then uses **Key Performance Indicators**, also known as **KPI** or **Key Success Indicators** (**KSI**), to evaluate its success, or to evaluate the success of a particular process - activity in which it is engaged. KPIs help an organisation to define and measure progress toward its goals. Sometimes success is defined in terms of making progress toward strategic goals, but often success is simply the repeated, periodic achievement of some level of operational goal. Here we come to the relations between KPI and Service Level Agreement (SLA), which is going to be discussed later.

How we measure is as important as what we measure. For example, we want to measure percentage of 112 calls answered in the first 20 seconds. We can measure the number of calls by several more or less manual techniques or we can do it by a software program that counts the number of incoming calls, measures how long it takes to answer each, records who answered the call, and measures how long the call took to complete. These measurements are current, accurate, complete and unbiased.

Collecting the measurements in this latest way enables the manager to calculate the percentage of 112 calls answered within the 20 seconds. In addition, it provides additional measurements that help him or her manage toward improving the percentage of calls answered quickly. Knowing the call durations lets the manager calculate if there is enough staff to reach the goal. Knowing which

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operators answer the most calls identifies for the manager expertise that can be used to share calls more evenly among the operators.

Accordingly, choosing the right KPIs relies upon a good understanding of what is important to the organisation. A very common way to choose KPIs is to apply a management tool such as the balanced scorecard, which considers financial measures, but also customer, business process, and learning measures.

4 KEY PERFORMANCE INDICATORS

4.1 Definition of KPI

Key Performance Indicators are quantifiable measurements, agreed to beforehand, that reflect the critical success factors of an organisation. They will differ depending on the organisation, its mission and its objectives.

The KPI can be thought of as a measurement that tells the management the precise state of operations at any given point of time and is an indicator when the service level agreed either exceeds or fails to meet the stated level.

KPIs are ways to periodically assess the performances of any organisation, business units and their divisions, departments and employees. Accordingly, KPIs are most commonly defined in a way that is **understandable**, **meaningful**, and **measurable**. A KPI should follow the SMART criteria:

- **Specific** purpose for the business:
- **Measurable** to really get a value of the KPI:
- The defined norms have to be **Achievable:**
- The improvement of a KPI has to be **Relevant** to the success of the organisation:
- **Timely** ,which means the value or outcomes are shown for a predefined and relevant period.

There are 4 components to any KPI.

1. What is being measured (including a defined forumla)?
2. Who is measuring it?
3. At what interval is it being measured?
4. How frequently is the information being transmitted for evaluation?

KPIs differ depending on the organisation. A business may have as one of its KPIs the percentage of its income that comes from return customers. A PSAP may have as one of its KPIs the percentage of customer calls answered in the first 20 seconds or how quickly the correct chief complaint is arrived at for example. A KPI for a software development organisation might be the number of errors per certain number of lines of their code.

It may be needed to measure several things to be able to calculate the metrics in KPIs. To measure progress toward its goals, the PSAP will need to measure (count) how many calls it receives and distinguish the genuine emergency calls from false calls. It must also measure how long it takes to answer each call. Then the PSAP Manager can calculate the percentage of customer calls answered in the first 20 seconds and manage toward improving that KPI. Clearly there many inputs to this example but what is clear is that in order to obtain the correct value, the KPI needs to be clearly defined with a formula, the time period clearly stated and known and needs to be quality checked.

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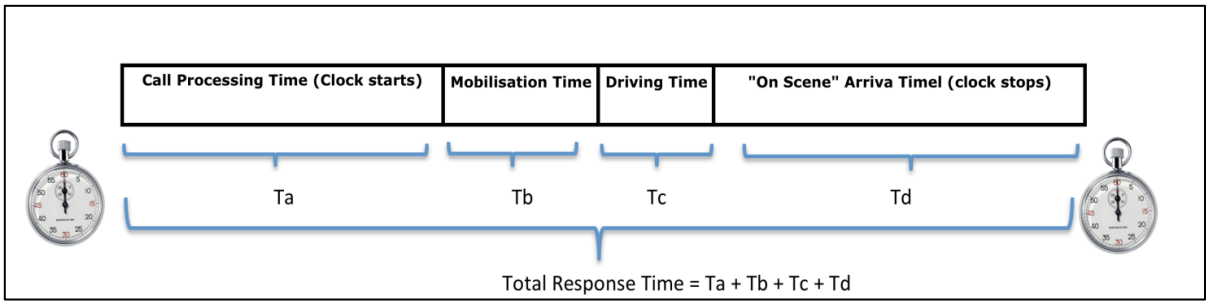
4.2 The Relationship Between KPIs and SLAs

While a KPI is a measure of performance, the Service Level Agreement (SLA) is the ideal state of those measurements. For instance the average response time of an emergency service often promised publicly to the citizens in the form of a Charter. For example for life-threatening cases such as cardiac arrest, a response time of 8 minutes for 90% of cases is often committed to. This is SLA. Emergency services measure constantly its performance by using KPIs. KPIs examples are given below (Source: EENA "Assessing meaningful response times" document, July 2014):



KPIs are consolidated and calculated at the end of predefined periods and compared against the SLA. When the KPI measurements results deviate from the desired SLA, a management reaction is required to understand the root cause of the deviation and to implement any remedial action that might be needed. Such deviations could be caused by external influences outside the control of the PSAP but regardless of such, the cause and affect should be understood and managed.

SLAs are about expected and agreed quality of a service provided to a customer; however KPIs are about desired operation efficiency and organisation goals. **It is important to measure both service level compliance and key performance indicators in order to keep promises and to excel service quality.**

4.3 Lagging and Leading Indicators

Lagging indicators are typically "output" oriented, easy to measure but hard to improve or influence - they present the success or failure *post hoc.* Leading indicators are typically input oriented, hard to measure and easy to influence - they can predict the outcome of a process.
Let's go back to the previous example. The "agreed" SLA for the PSAP is: Overall response time is 8 minutes for 90% of the difficult cases. Lagging KPI is easy to measure: we either match the requested time or not. A Leading KPI can be the precision and speed of receiving the caller location information (that directly influences the mobilising and driving times) or number of the operators in the shift, which will directly influence the call processing time. When we start measuring these KPIs on a daily/hourly/quarterly basis and focus on improving these KPIs, it is extremely likely to see an overall improvement in SLA compliance.

4.4 How to Define Key Performance Indicators

The common mistake is to define too many "KPIs" and especially too many financial "KPIs" (as measures of the efficiency). Very often, quality managers request root reports, which go in to the detail behind the KPIs and in doing so want to drill-down to the root of everything. Due to the complexity level, it often takes too long to consolidate all the data so the KPI reports distributed are out of date. Sometimes "KPIs" are defined to pass the "blame" for missed targets and milestones. As we stated above, the KPIs need to SMART so care should be taken to set and measure the most appropriate KPIs and to use the data and information to influence quality improvements.

Typically, the first step in measuring performance is articulating the PSAP's mission. The mission

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defines the fundamental purpose of the agency and its programs. The mission provides a foundation from which the PSAP's goals, processes, objectives, and performance indicators flow. Here is one possible mission statement:

The 112 Centre serves as the vital link between the citizens and public safety agencies. We strive to collect and disseminate all requests for service in a prompt, courteous, and efficient manner for all our citizens. Through our actions, we help save lives, protect property and assist the public in their time of need.

The next step is setting goals. Goals are broad statements that describe outcomes the PSAP hopes to achieve. For instance, two major goals might be defined as follows:

1. To provide 24-hour per day availability for receiving 112 calls and either (a) dispatching law enforce meant, fire protection, and emergency medical and ambulance services as needed or (b) transferring calls to the appropriate public agencies. This goal emphasizes the need for emergency communications to be available to callers at all times, day or night, throughout the year.

2. To provide an effective and efficient system that processes incoming calls and, as necessary, dispatches response units in an accurate and speedy manner.
This second goal focuses on two essential features of dispatching: doing the job well and doing it quickly.

Together, the mission and goals determine the priorities for a PSAP. Developing the mission and goals can be a time-intensive process, not reflected in the brief attention we give it here. Once it adopts a mission and goals, a PSAP can establish processes and set objectives to describe what results it expects. Here are the examples of identified processes, common for most of the stage two PSAP organisations.

Operational:

1. Call taking
2. Resource Dispatching
3. Developing, using and maintaining standard operating procedures (SOP).
4. Work force planning

Support:

5. Train and support work force.
6. Maintain adequate communications and network equipment.
7. Keep records and measure performance.

System functionality:

8. Providing overall system availability and reliability
9. Business continuity planning
10. Providing functionality of subsystem components (Caller ID, Caller location, GIS and AVL)
11. Defining the SLAs with third party providers of services.

External

12. Promote information exchanges among public safety response agencies.
13. Educate the public on the 112 system and services.

Although all processes should be continuously measured and evaluated, not all results should be considered as Key Performance Indicators. As said at the beginning of this chapter, having too many KPIs is one of the common mistakes. It is suggested that from all activities that are to be taken, around 20% of the activities should be selected that have the biggest impact on defined

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goals (often referred to as the 80/20 rule or 'Pareto principle').

4.5 KPIs Measurement Frequency and Reporting Intervals

At the end, we should not forget how often we do the measurements of KPIs and reporting and reviewing the results. It is important that these intervals are carefully defined keeping in mind the operational and technical capabilities. Some KPIs are measured constantly (by software) but it is very important how often we take the samples. Care must be taken to provide statistical relevance of data (sufficient number of measurements) but having too many results can slow down the analysis and processing speed and reduce the relevance of the measurement. Furthermore one must take care of the seasonal influences (e.g. number of 112 calls is higher in some periods of the day/week than in the others, it may be higher if there are big events – festivals in the city etc.). This is where statistical analysis of the results can provide good feedback for new KPI measurements in the next period.

Measuring the wrong KPI or measuring the right KPI in the wrong manner can cause more harm than good to the organisation that is measuring it.

4.6 How to Set Targets for KPIs?

Setting up realistic targets for the KPI is another challenge – targets are quantified goals, or SLAs between the PSAP and public, or SLAs that are imposed by public administrations. Many KPIs can lead to a single goal, some KPIs may be important for more goals. Setting up mathematical models supported by software, that can show how achieving particular goals and overall performance depend on different processes and their KPIs, can be a good practice. Also, as aforementioned, targets must be related to the frequency of measurements and need to take seasonal influences and external influencers (cause and effect) into account.

4.7 Typical KPIs Examples for PSAP Organisation

Although most of the PSAP have similar missions and goals, the processes, and the KPIs may vary significantly. PSAP type (Stage 1, Stage 2, Integrated, National), specific characteristics of the country, legal regulation, level of communications infrastructure, technology; this all can make every PSAP a very unique organisation. In the following table, which is taken from the **EENA Certificate of Quality standard**[3], we try to give some examples for KPIs without considering to establish rules or to cover all possible indicators. This is the task of PSAP management.

Criteria	Definition	Acceptable range
Call abandoned rate	% of calls not answered by the PSAP	up to 12%
Number of complaints per annum.	Complaints that the PSAP is wholly or partially responsible for.	no more than 1 complaint per 300,000 calls handled.
Number of calls routed to the incorrect emergency service PSAP.	% of handled calls which were misrouted to the incorrect emergency service	up to 8%

[3] http://www.eena.org/pages/Certification - .VGyOwotQfHg

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	PSAP by the call-taker	
Time to answer	Average length of time to answer an emergency call	less than 12 seconds.
Average length of time to assign a resource vehicle.	Average length of elapsed time from the time the decision to dispatch the vehicle was taken to the vehicle was assigned	In line with an evidence-based target[4] based on the incident priority which is being met.
Average length of time taken for the emergency response vehicle to depart after receiving the order to dispatch.	Average length of elapsed time from the time the order was made to dispatch and the time it rolled.	In line with an evidence-based target based on the incident priority, which is being met.
Average arrival time for the first emergency response vehicle.	Average elapsed time from the time the vehicle is order to dispatch to the time it advises that it has arrived on site.	In line with an evidence-based target based on the incident priority which is being met.

In relation to the above and with reference to Annex A, the Estonian Emergency Response Centre uses the following KPIs as an example:

- Population awareness of 112
- Population reliability with Emergency Response Centre
- Number of emergency calls
- Population satisfaction with processing emergency messages
- % of calls answered within 10 seconds
- % of empty calls of calls to emergency number 112
- Labor turnover
- Co-operation partners satisfaction with processing emergency services
- Average answering time on 112
- % of non-time critical calls of calls to emergency number 112
- % of justified complaints of processed emergency messages

[4] For resource-response targets, the PSAP should have in place an evidence-based quantitative target based on research such as controlled trials, case studies, multiple time-series studies or documented clinical opinions.

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6 EENA Recommendations

Stakeholders	Actions
European Authorities	European Authorities should set guidelines for the overall policy when setting response time targets and measurement systems, including the specification of the appropriate formula, timeframe and measurement methodology. The European Authorities should also publish the performance data at least annually and take implementation measures against Member States who do not provide data.
National Government	National Governments should ensure that their citizens receive the best emergency response service possible. In doing so, they should provide the necessary resources and legal framework to achieve this objective including the setting of meaningful and appropriate SLAs for each emergency response organisation. The targets should be verified, published and audited independently.
National / Regional Authorities	Public authorities should implement a programme for regular measuring emergency response targets and verify the results on an ongoing basis. Such results should be made public. Citizens should also be in a position to provide feedback to the PSAP/ERO regarding their experience.
Emergency services	The emergency services should ensure that the necessary structure, processes and resources are in place to measure and meet the targets set. In addition, the emergency services should continue to encourage their national authorities/Governments to undertake regular and relevant research to ensure that targets are meaningful, up-to-date and ensures the best outcome for citizens. The constant improvements of response times, quality of service, reliability and availability, personnel education must be the goal of every PSAP management.
National telecommunication regulators/ Network operators	National telecommunication regulators should ensure that the telecommunication network providers present the emergency call without delay and provide the most accurate and reliable caller identification and caller location information as soon as the call reaches the emergency service.

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ANNEX A – Key Performance Indicators reporting table

Using the following bullet points below, the reports of some Key Performance Indicators are given per each country in the following table. The data is taken from the EC COMMUNICATIONS COMMITTEE report on implementation of the European Emergency Number 112, **COCOM 14-01**.[5] The following indicators are measured:

- Number of calls to 112
  - % of total emergency calls
  - False calls
- Alternative means of access for disabled users
  - No. of communications to 112
  - No. of communications to other numbers
- Average answer time in seconds
  - % of calls answered within 10 seconds
- Call abandon rate
- % of total calls when automatic or non-automatic request is unsuccessful
- Caller location accuracy and reliability
  - Fixed networks
  - Mobile networks
- Average time needed for receiving the caller location by the 112 operator
- Availability of EU roaming call to 112
- Availability of caller location of EU roaming calls
- Awareness level
  - national
  - EU

It is worth mentioning that reference values and formulae do not exist within the COCOM framework. EENA plans to look deeper into this topic during 2015.

[5] http://ec.europa.eu/digital-agenda/en/news/implementation-european-emergency-number-112-%E2%80%93-results-seventh-data-gathering-round

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Country	1.1 Number of calls to 112 1.2 % of total emergency calls 1.3 False calls	2.1 Alternative means of access for disabled ed-users 2.2 No. of communications to 112 2.3 No. of communications to other numbers	3.1 Average answer time in seconds 3.2 % of calls answered within 10 seconds	4. Call abandon rate
Austria	1.1: 230.959 1.2: 13,25 % 1.3: N/A	2.1: SMS-to-Fax transmission via non-emergency number (0800-133-133) 2.2: none 2.3: N/A	3.1: 9,6 s 3.2: 76,3 %	4.1: N/A
Belgium	1.1: 1.412.038 (112+100 = 3.090.967) 1.2: 45,7 % (excluding police calls to 101) 1.3: Estimated number of false calls (including all non-urgent calls) to 112/100 is higher than 45% (measured in 2 of 10 call-centers). Statistics show that in Belgium about 28% of all calls to the emergency numbers 100 or 112 are 'ghost calls'. This percentage includes accidental or unintentional calls to 100 or 112.	2.1: Fax 2.2: N/A 2.3: N/A	3.1: 7,1 s 3.2: 85 %	4.1: N/A
Bulgaria	1.1: 6.939.549 1.2: 78.31% 1.3: 42.42%	N/A	3.1: 4,33 s 3.2: 99.50%	4.1: 14.48%
Croatia	1.1: 2.992.688 1.2: N/A 1.3: 52,1%	N/A	3.1: 4,91 s 3.2: 93,97%	4.1: 9,37
Cyprus	1.1: N/A 1.2: N/A 1.3: approx 8%	2.1: Tefelax machine, SMS 2.2: N/A 2.3: N/A	3.1: 15-16 s 3.2: 0% There is a pre-recorded message notifying that the call is recorded which lasts 10 sec.	4.1: N/A

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Country	1.1 Number of calls to 112 1.2 % of total emergency calls 1.3 False calls	2.1 Alternative means of access for disabled ed-users 2.2 No. of communications to 112 2.3 No. of communications to other numbers	3.1 Average answer time in seconds 3.2 % of calls answered within 10 seconds	4. Call abandon rate
Czech Republic (did not report for 2013, data from 2012 taken)	1.1: 2.694.624 1.2: 44% of all calls (6 064 889 calls to any emergency number 1.3 75% of false calls to 112	2.1: Relay services, local SMS services 2.2: N/A 2.3: N/A	3.1: 0,46 s 3.2: 100 %	4.1: 39 %
Denmark	1.1: 513.450 1.2: no other emergency numbers are in use. 1.3 N/A	2.1: 112-København via SMS 2.2: N/A 2.3: N/A	3.1: 13 s 3.2: 43,89 %	4.1: 30%
Estonia	1.1: 987.273 calls to 112 1.2: 65% of total emergency calls 1.3: N/A	2.1: SMS 2.2: 8 2.3: N/A	3.1: 5.6 s 3.2: 91 %	4.1: <0.1%
Finland	1.1: 3.553.858 1.2 :112 is the single emergency number 1.3: 32 %	2.1: SMS to local numbers of ERCs 2.2: N/A 2.3: N/A	3.1: 4 s 3.2: 94 %	4.1: 14 %
France	1.1: 24.000.000 (total of 65.000.000) 1.2: 37% 1.3: 28% (45% for 112, 23% on national numbers)	2.1: "114" for the deaf people 2.2: 112: 7524 cases (each case requires an average of 22 SMS or 11 faxes) 2.3: N/A	3.1: 14 sec, including 6s compulsory automated message 3.2: 28%	4.1: 44%
Germany	The responsibility for the collection of these data is with the local governments. These numbers are, the only collected sporadically.	The responsibility for the collection of these data by the local governments. These numbers are, the only collected sporadically.	The responsibility for the collection of these data by the local governments. These numbers are, the only collected sporadically.	The responsibility for the collection of these data by the local governments. These numbers are, the only collected sporadically.
Greece	1.1: 3.143.455 (total 10.163.613) - 112: 3.143.455 - Police: 3.759.037 - Emergency Medical Service: 3.000.000 - Fire Brigade: 259.964 - Coast Guard: 1157 1.2: 30,9% 1.3: to Coast Guard: 1,2% To Police: 0,79% To 112: 99%	2.1: SMS (currently not available for 112 calls) 2.2: N/A 2.3: 145.199	3.1: 9 s automated message is applicable to "112" service, in order to inform the caller that he has dialled this particular service and that the conversation will be recorded. 3.2: N/A	4.1: < 2 % (data refer to 112 only)

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Country	1.1 Number of calls to 112 1.2 % of total emergency calls 1.3 False calls	2.1 Alternative means of access for disabled end-users 2.2 No. of communications to 112 2.3 No. of communications to other numbers	3.1 Average answer time in seconds 3.2 % of calls answered within 10 seconds	4. Call abandon rate
Hungary (did not report for 2013, data from 2012 taken)	Emergency number # of calls Ratio 112 1.551.512 35,00% 104 842.249 19,00% 105 1.750.992 39,50% 107 288.138 6,50% 4.432.891 Total number of calls are estimated due to lack of data provided by EMS and Fire-fighters. False calls are about 75% of the total. We only know about police where only 7% of the calls initiated real actions.	Yes by SMS and e-mail only, but not promoted and practically not used	3.1: 55 s which includes a 21 sec warning about voice recording 3.2: N/A	N/A
Ireland	1.1: 2.755.274 1.2: 112 is the single emergency number 1.3: 65.1%	2.1: SMS and Minicom 2.2: 16612 2.3: None	3.1: 0.59 s % 3.2: 99,62% within 5 seconds (within 10 s N/A)	4.1: 5.33%
Italy	1.1: 15.920.951 1.2: 75% for the Lombardia Region 10% for the National Territory. except the Lombardia Region 1.3: 60.61% for the 112 NUE service in the Lombardia Region 10% for the National Territory except the Lombardia Region	2.1: SMS, Fax, e-mail Experimental voice responders and text messages managing devices have been setup in specific areas 2.2: N/A 2.3: 15 SMS from users with special needs	3.1: 6-10 s 3.2: 83,5/90% (national territory/Lombardia Region)	4.1: 20,26 % relating to the Lombardia Region; 10% in the remaining national territory

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Country	1.1 Number of calls to 112 1.2 % of total emergency calls 1.3 False calls	2.1 Alternative means of access for disabled end-users 2.2 No. of communications to 112 2.3 No. of communications to other numbers	3.1 Average answer time in seconds 3.2 % of calls answered within 10 seconds	4. Call abandon rate
Latvia	1.1: 1.903.517 1.2: N/A 1.3: N/A	2.1: SMS to 112. 2.2: 38. 2.3: None	3.1: 6 s 3.2: 98 %	4.1: 21%
Lithuania	1.1: 2.982.201 1.2: 58,71 % 1.3: 30-50 % of false calls of the total number of emergency calls	2.1: 112 SMS under implementation 2.2: N/A 2.3: N/A	3.1: 6,05 s. 3.2: N/A	4.1: 15-20 %
Luxembourg	1.1: Administration des services de secours (112) : 448.179 calls Police (113) : 164.626 calls 1.2: 73,13% 1.3: Administration des services de secours: N/A Police : 53,34%	2.1: Administration des services de secours : SMS and Fax Police : SMS 2.2: Administration des services de secours : 68 SMS and 2 Fax 2.3: Police : 4.027	3.1: Administration des services de secours : 3,2 sec Police : 13 sec 3.2: Administration des services de secours : 91,28% Police : 57%	4.1: Administration des services de secours : N/A Police : 21,08%
Malta	1.1: 521.812 1.2: 112 is the single emergency number 1.3: 30.55%	2.1: it is planned to introduce new technologies such as real-time video, relay services and other services as described in the Reach 112 programme Currently, the Malta Police Force make use of SMS facility through number : 0356 79777119 which is used for instant reporting. 2.2: None 2.3: N/A	3.1: 6 s 3.2: 36.67%	4.1: 28.30%
Netherlands	1.1: Mobile: 3.573.763 calls Fixed: estimated 900.000 1.2: 112 is the single emergency number 1.3: Mobile: 67,7% false calls Fixed: estimated 25	2.1: Since July 2012 a digital text service available with direct access to 112. Analogue devices can call 0800-8112. 2.2: N/A 2.3: N/A	Mobile calls: 3.1: Average answer time in seconds: 3,3 sec. 3.2: 95,3% of calls answered within 10 seconds Fixed regional lines: No tool available.	Mobile calls: Due to technical issues from MNO's over 20 % of the calls are disconnected before they reach the Automatic Call Distribution. 4.1: After a ring time of 15 seconds

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	% false calls			the number of abandoned calls is < 1 % Fixed regional calls: N/A

Country	**1.1 Number of calls to 112** **1.2 % of total emergency calls** **1.3 False calls**	**2.1 Alternative means of access for disabled end-users** **2.2 No. of communications to 112** **2.3 No. of communications to other numbers**	**3.1 Average answer time in seconds** **3.2 % of calls answered within 10 seconds**	**4. Call abandon rate**
Poland (only for the period starting from 1st June 2012 till 31st January 2013)	1.1: 27.182.065. 1.2: 46%. 1.3: N/A	2.1: N/A 2.2: N/A 2.3: N/A	3.1: N/A. 3.2: N/A	4.1: 24%
Portugal (Did not report in 2013. 2012 data is used. Data collected at South Centre – PSAP's of Leiria, Santarém, Castelo Branco, Portalegre, Évora, Beja and Faro. Other PSAP's have no such tools)	Number of 112 calls in absolute number and as % of total emergency calls if other emergency numbers are in use. 2.057.704 % of false calls to the total number of emergency calls 79,5% % of false calls to 112 79,5%	Report alternative means of access SMS (+351 961010200), operated at National Guard Headquarter. Number of communication through alternative means of access N/A	3.1: 6 sec. 3.2: 93,7%	4.1: 19,3%
Romania	1.1: 18.009.181 1.2: 112 is the single emergency number 1.3 False calls : 69,39 %	N/A	3.1: 3,66 s 3.2: 94,31 %	4.1: 5 %
Slovakia	1.1: 1.607.635 1.2: N/A 1.3: N/A	N/A	3.1: 10,24 s 3.2: 68,21 %	4.1: 19,84%.
Slovenia	1.1: 640 000 1.2: N/A 1.3: N/A	2.1: WAP112, SMS112 2.2: WAP112 – 7; SMS112 - 981 2.3: N/A	3.1: 6,47 sec 3.2: 90,72%	4.2: N/A

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Spain	1.1: 30.251.577 (total: 45.835.774) 1.2: 66% 1.3: 33.26%	2.1: Report alternative means of access SMS, Assisted calls (Chat), Fax 2.2: Less than 500. 2.3: Less than 100.	3.1: 4.76s PSAPs use automated messages (4s - 10s) to filter false calls. 3.2: 94.05%	4.1: 9.67%
Sweden	1.1: 3.702.101 1.2: 112 is the single emergency number 1.3: 45,9 %	2.1: SMS112 - Text telephone calls received by PSAP - Calls through relay services 2.2:. - SMS112: 168 - Text telephone to 112: 111 - Calls through relay services: 142 2.3: N/A	3.1: 8,6 sec. 3.2: 76,6 %	4.1: 7,7%

Country	**1.1 Number of calls to 112** **1.2 % of total emergency calls** **1.3 False calls**	**2.1 Alternative means of access for disabled end-users** **2.2 No. of communications to 112** **2.3 No. of communications to other numbers**	**3.1 Average answer time in seconds** **3.2 % of calls answered within 10 seconds**	**4. Call abandon rate**
United Kingdom	1.1: 1.108.317 This is calls that originate on BT lines for which it's possible to distinguish if caller dialled 112 or 999 (not possible on all other networks, eg many mobile phones translate 999 and 112 automatically to an Emergency Call category, so the dialled number is unknown by the network.). 1.2: 2.5% (based on % of all calls connected to the emergency services that originate on BT network that are 112s). 1.3: 51.70% - this is the proportion of	2.1: a. via 112 or 999 SMS and text relay service – requires simple pre-registration of handset. b. via text relay using appropriate terminals using ITU v21 over the PSTN (with access code 18000). 2.2: Just over 3100 emergency SMS conversations made in the year. 18000s are not recorded separately. 2.3: For eSMS there were now 62,000 registrations (up from 31,000 in 2012), and around 2500 new registrations a	3.1: N/A 3.2: 98.63% were answered within 5 and 99.92% within 20 seconds.	4.1: N/A There is evidence of calls to 999/112 being immediately terminated by the caller, either as (a) they realise they have accidentally called, or (b) to activate emergency battery life on some mobiles. [The mobile manufacturer for case (b) has now ceased this with a software update.]

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	calls to 112 and 999 not sent to an emergency service.	month.		
Iceland	1.1: 199.718 1.2: 112 is the single emergency number 1.3: 30%	2.1: SMS is available for all users, although primarily implemented for the hearing impaired 2.2: 1303 2.3: 0	3.1: 4,8 seconds 3.2: 91% of all calls answered within 8 seconds	4.1: 1,54%

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Country	5. % of total calls when automatic or non-automatic request is unsuccessful	6 Caller location accuracy and reliability 6.1 Fixed networks 6.2 Mobile networks	7. Average time needed for receiving the caller location by the 112 operator	8.1 Availability of EU roaming call to 112 8.2 Availability of caller location of EU roaming calls	9. Awareness level 9.1: national 9.2: EU
Austria	5.1: N/A	6.1: residential address, see http://www.rtr.at/en/tk/TKG 2003 6.2: Cell/ID (base station number) or location of base station (geographic data). If technically available some mobile operators offer sector information additionally	7.1: N/A	8.1: Yes 8.2: Yes	9.1: 35% 9.2: 52%
Belgium	5.1: N/A	6.1: registered installation address by the operator reliability fluctuates due to irregular update of changed data by operators. 6.2: Cell ID together with installation address of antenna of operator; reliability is high. Nomadic services remain problematic location data are rarely provided and reliability is highly questionable.	7.1: Fixed: real time if emergency services have access to installation database ; mobile: near real time. (automated pull system)	8.1: Yes 8.2: No	9.1: 65% 9.2: 61%
Bulgaria	5.1: 0.337%	6.1: address of the calling party, based on calling party number 6.2: coverage of the Cell	7.1: Push method (instant)	8.1: Yes 8.2: Yes	9.1: 88% 9.2: 70%
Croatia	5.1: N/A	6.1: public address book. 6.2: Cell Id and angle of coverage	7.1: 10-50 s on a GIS map - not statistically measured.	8.1: Yes 8.2: Yes	9.1: 80% 9.2: 65%
Cyprus	5.1: 0	6.1: address 6.2: around 30m	7.1: 20 sec. Longest 30 sec. Quickest 11sec.	8.1: Yes (95%) 8.2: Yes	9.1: 37% 9.2: 37%

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Czech Republic	5.1: 0 %	N/A	7.1: N/A	8: N/A	9.1: 59% 9.2: 61%
Denmark	5.1: very few	6.1: N/A 6.2: Cell ID: 75% within a range depending on the mobile network infrastructure from 500 m to 5000 m. 112 app is accuracy: 10-60m.	7.1: Instantly. 112 App – up to 20-40 sec depending on the phone and network.	8: N/A	9.1: 93% 9.2: 41%
Estonia	5.1: N/A From October 2013 pilot project of GIS-112 started. During the pilot project an estimated 50-60% of calls to emergency number 112 are available with caller location. In the first quarter of 2014 live project of GIS - 112 will be implemented.	6.1: N/A 6.2: N/A	7.1: 2 s	8.1: Yes 8.2: Yes	9.1: 94% 9.2: 49%
Finland	5.1: N/A	6.1: street address information from the commercial directory services database 6.2: Cell ID/Sector ID and more accurate information based on the best available calculation method (depends on the operator)	7.1: 6 s	8.1: Yes 8.2: Yes	9.1: 97% 9.2: 61%
France	5.1: N/A Manual process at the request of PSAP is being automated.	6.1: Mailing Address 6.2:Cell ID	7.1: several minutes (estimated)	8: N/A	9.1: 16% 9.2: 33%

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Germany	The responsibility for the collection of these data by the local governments. These numbers are, the only collected sporadically.	6.1: For calls from fixed networks, the technical specifications state that an exact address must be given as the location. This requirement should have largely been implemented by the end of 2014 (including nomadic use of the telephone service provided by the network operator); the only exemptions from the implementation requirement are: a) telephone connections to exchanges using ISDN technology (in view of the foreseeable end of the service life of that technology) and b) mixed types of nomadic uses for which solutions at EU level are to be standardised. 6.2: Cell ID	7.1: a) mobile networks 0 seconds (100% 'push' system) b) fixed networks: 0 seconds in the case of emergency calls from networks in which the 'push' system is already being used; in cases where the 'push' system has not yet been introduced: approx. 70 seconds with the 'pull' system which based on the telephone number is still being used until the 'push' system is introduced; trend: the time needed is decreasing.	8.1: Yes 8.2: Yes	9.1: 84% 9.2: 42%
Greece	5.1: 5,88%	6.1: physical address for fixed telephone connection; in case of Nomadic VoIP systems, the registered subscriber address 6.2: Cell ID, depending on the network: Cell Area, Cell Set, Cell ID, Base station Address, Azimuth, and maximum coverage distance	7.1: 38min and 48sec	8.1: Yes 8.2: Yes	9.1: 5% 9.2: 49%

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Hungary	5.1: N/A	N/A	N/A	N/A	9.1: 49% 9.2: 45%
Ireland	5.1: 4.26%	6.1: 99.14% of fixed lines have location information. This is broken down as follows: Installation Address Co-ordinates - 21.38% STD Code match - 7.12% County only match - 36.89% Townland & County match - 33.74% 6.2: Cell ID	7.1: Instant	8.1: Yes 8.2: Yes	9.1: 31% 9.2: 33%
Italy	5.1: 14,01% relating to the Lombardia Region; 18-20% in the remaining national territory	6.1: 80 % 6.2: 23%	7.1: 3-5 s	8.1: Yes 8.2: Yes	9.1: 58% 9.2: 33%
Latvia	5.1: N/A	6.1: address provided by network operator. 6.2: Cell ID	N/A	8.1: Yes 8.2: Yes	9.1: 82% 9.2: 47%
Lithuania	5.1: Up to 5 %	6.1: Subscriber's billing address, database renewal – every two months 6.2: Cell ID, 95% of mobile location data must be provided within 20 seconds from call set-up moment.	7.1: 1-2 s	8.1: Yes 8.2: Yes	9.1: 85% 9.2: 41%
Luxembourg	5.1: Administration des services de secours : < 1% for fixed caller < 1% for mobile caller (cell ID)	6.1 Administration des services de secours : High accuracy High reliability No data for VoIP caller 6.2	7.1 Administration des services de secours : < 1 seconds for fixed and mobile caller Police : N/A	8.1: Yes 8.2: Yes	9.1: 93% 9.2: 80%

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	No data available for VoIP caller Police : N/A	Administration des services de secours : Cell ID High reliability			

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Malta	5.1: N/A Currently the Caller Localisation System is under development and currently Malta is in the testing phase by means of a prototype.	6.1: Address of Registered Line as available in the Service Provider database 6.2: Cell ID	7.1: 5-10 minutes	8.1: Yes 8.2: Yes	9.1: 63% 9.2: 34%
Netherlands	5.1: N/A	6.1: N/A 6.2: N/A	7.1: 1 s for MNO's. 3 s for fixed	8.1: Yes 8.2: Yes	9.1: 97% 9.2: 57%
Poland	5.1: N/A	6.1: detailed address of a network termination point installation Fixed caller location information is obtained from the relevant operator and a centralised location information database. 6.2: Cell Id/Sector ID/timing Advance: 100m - 1 km. Geographic location of publicly available telecommunications services user's terminal. Specific requirements laid down by NRA are under consideration – NRA is authorised to settle specific requirements in decision for an operator.	7.1: 73 s (estimated)	8.1: Yes 8.2: Yes	9.1: 74% 9.2: 70%

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Portugal	5.1: Mobile – 0,1% (estimated) Fixed – N/A	6.1: N/A 6.2: N/A	7.1 N/A	8: N/A	9.1: 92% 9.2: 34%

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Romania	5.1: 1,1 %	6.1: 98.35% from fixed networks receive address information with accuracy (updating databases monthly) 6.2: 98.86 % from calls have a valid network cell ID and sector ID	7.1 Average time: 10 (sec)	8.1: Yes 8.2: Yes	9.1: 95% 9.2: 71%
Slovakia	5.1: 14,24%, (but the request is usually repeated with positive result)	6.1: N/A 6.2: N/A	7.1: N/A	8.1: Yes 8.2: Yes	9.1: 81% 9.2: 69%
Slovenia	5.1: 0%	6.1. Address 6.2. Cell ID	7.1: 4s	8.1: Yes 8.2: Yes	9.1: 86% 9.2: 46%
Spain	5.1: 16,78% (Includes cases where location information is available but cannot be processed by the PSAP or is not sufficiently accurate).	6.1: Subscriber's address. 6.2: POSIC112 provides the physical location of the base station corresponding to the cell where the caller is located, as well as the sector or sectors of most probable location (Cell ID, Sector ID).	7.1: 1.26s	8.1: Yes 8.2: Yes	9.1: 70% 9.2: 23%
Sweden	5.1: 8,6 %	6.1: N/A 6.2: N/A	7.1: 0,9 s	8.1: Yes 8.2: Yes	9.1: 97% 9.2: 48%
United Kingdom	5.1: N/A	6.1: N/A 6.2: N/A	7.1: <2 s	8.1: Yes 8.2: Only for some networks.	9.1: 7% 9.2: 18%

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Iceland	5.1: N/A	6.1: Correct location in 99,9% of calls. 6.2: Cell ID is generally provided reliably in probably 90% of all mobile calls	7.1: 10 s	8.1: Yes 8.2: Yes	9.1: 9.2:

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