



EENA Operations Document

Assessing meaningful response times

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Table of contents

1	Introduction.....	4
2	Background	5
3	Glossary of terms	6
4.	Performance Management Cycle.....	7
5.	Measuring the response time	8
a.	Call Processing Time.....	8
b.	Mobilisation Time.....	9
c.	Driving Time.....	9
d.	Emergency Intervention	10
6.	Measuring the response time - What should be measured and why	11
7.	EENA Recommendations.....	12
8.	Annex A - Table of response times (sample)	13



1 Introduction

The aim of this document is to provide a general overview of why response times are needed and why the quality of those interventions from the citizen's perspective need to be robustly and transparently measured. It discusses the types of interventions that need to be evaluated and provides a rationale for doing so. The document also presents recommendations for emergency response organisations (EROs) to adopt allowing benchmarking exercises to be undertaken whilst reinforcing the interests of the citizen at the centre of the work.

The defining principles regarding intervention times are:

- the equal right of all people to receive a prompt, effective and appropriate response;
- the provision of high quality responses through appropriate training and continuing education of emergency response professionals;
- the need for flexible operational strategies and structures to ensure that expedient, efficient and effective responses can be provided where and when it is most needed;
- cost effective use of resources.

When considering setting and measuring intervention times, it is appropriate to consider the type of incident, the risk assessment, severity and location of the incident with the available resources and the location of those resources. For example, an incident in a rural environment, perhaps many kilometers from the dispatching centre, will intuitively take longer to provide the appropriate response than a similar incident in an urban environment. Whilst all citizens deserve equal rights when receiving the emergency response, in practical terms it is more challenging, both operationally and economically, to ensure that the responses provided are equally matched.

This document does not wish to describe what the actual response times should be as this is the competence and duty of national governments, public authorities, emergency service organisations and the appropriate regulatory and oversight authorities.

However, the measurement of response times is crucial and it should be carried out independently and transparently to provide the citizens with the comfort and knowledge that should an emergency arise, a meaningful measurement programme is in place.

Response times should be set that are appropriate to the emergency situation/priority and are based on the best outcomes for the citizen. For example, response times for fire services are sometimes based on old research and should be revised to consider how fires now develop much faster in modern homes with modern furniture.

Any targets that are set and measured should be underpinned by the most up-to-date research and comparative measurements, risk assessment/prioritisation procedures and available evidence. Setting response times that are so long that they are easily achieved are of no benefit to the citizen and should be avoided at all times.

2 Background

When a citizen calls the emergency services, he or she may be in the worst situation of their life. By the very nature of a citizen calling the emergency services, they are requesting help with a situation that they are unable to deal with. It is therefore the ERO's responsibility to respond to that need, obtain the correct information to respond to the request and be able to respond in a manner appropriate to the circumstances.

A key component of the success or failure of any Public Safety Answering Point ("PSAP") or ERO (and the individuals working within them) in achieving this is the speed, quality and effectiveness of the tasks associated with the role they undertake, the analysis of those processes and the actions undertaken to improve those processes. "Their role" includes each component part of the activity they undertake from receiving the call through to passing that call to the next stage of intervention (dependant upon the type of ERO) as both an organisation and an individual. In the emergency response environment the speed, quality and effectiveness of this process can truly mean life or death for an individual.

Therefore, each PSAP or ERO must define a Mission/Quality Statement, a set of Quality Objectives and a set of response time standards to identify what it is seeking to deliver, how it is going to deliver it, in what timeframe and how the overall performance is going to be evaluated and measured. The aim of this is to determine the continuous key objectives and performance standards for the PSAP or ERO and to provide a baseline to evaluate against allowing for ongoing personal and organisational improvement.



This must include a set of specific and quantifiable standards to measure the management of their processes and the effectiveness of those processes internally, in turn allow the benchmarking of those processes against domestic and international (comparative) organisations with the aim of improving the service being delivered.



3 Glossary of terms

All definitions of terms and acronyms related to 112 are available in the 112 Terminology EENA Operations Document <http://www.eena.org/view/en/Committees/112operations/index/generalframework.html>.

For the purposes of this paper the following definitions apply:

Evaluation is a systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards. It can assist an organization to assess any aim, realisable concept/proposal, or any alternative, to help in decision-making; or to ascertain the degree of achievement or value in regard to the aim and objectives and results of any such action that has been completed.^[1] The primary purpose of evaluation, in addition to gaining insight into prior or existing initiatives, is to enable reflection and assist in the identification of future change.^[2]

Responses are defined, in this context, as an action that helps or assists the caller or to identify and then deliver the assistance required (to the extent that the PSAP is commissioned to do).

Quality is defined, in this context, as the degree of excellence in achieving the processes such as:

- How well does an individual follow the processes;
- How satisfied was the caller with the intervention provided;
- Meeting international and domestic quality Standards;
- Compares well with national and international peer groups.

Effectiveness is defined, in this context, as producing the desired effect such as:

- Sufficient information was requested and provided to enable the citizen to be located against the defined standards;
- Sufficient information was requested and provided to enable the right response to be dispatched against the defined standards;
- Sufficient resources (vehicles and human resources) with the right competencies, capacity and capabilities were on duty to deal with the demand.

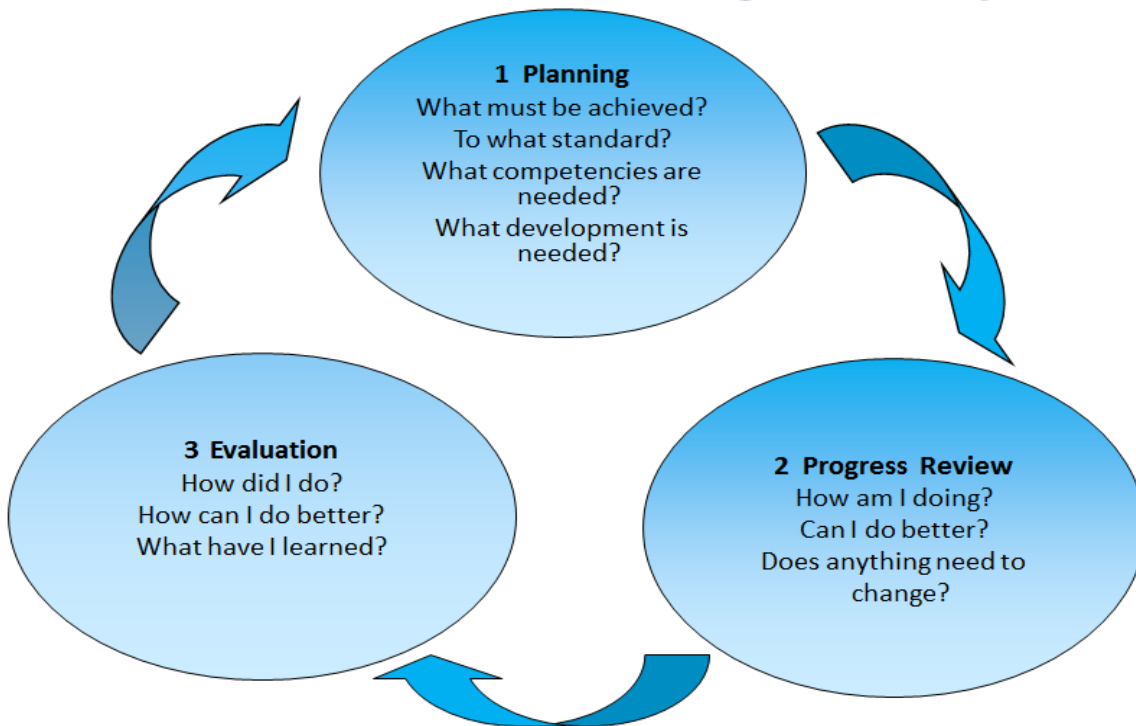
4. Performance Management Cycle

It goes without saying that an organisation continually reviews, evaluates and develops its staff members and therefore why would it be any different for a set of processes.

The use of evaluation techniques to evaluate interventions in turn allows an organisation to undertake Performance Measurement (PM). This ensures that goals are consistently being met in an effective and efficient manner. Performance management can focus on the performance of an organization, a department, employee, or even the processes to build a product of service, as well as many other areas.

The performance management cycle below is a graphical example of how such Performance Management tools can assist to meet the overall quality objectives of the PSAP.

The Performance Management Cycle

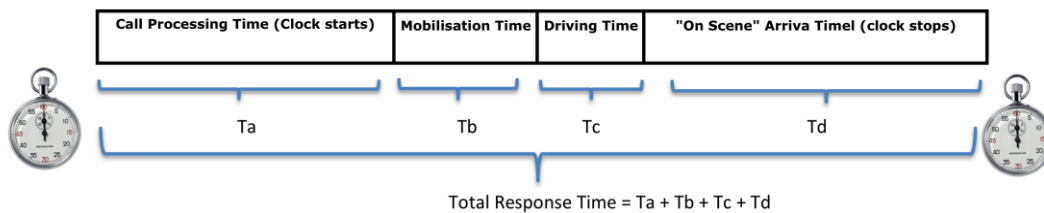


5. Measuring the response time

In total the emergency response time should include several inputs when measuring the overall total response time. The different blocks, which make up the overall response time are outlined below. Whilst different emergency organisations may be involved in the different steps below, the total response time should be viewed from the perspective of the citizen. In other words, the citizen will only determine the expediency of the response from the time she/he makes the emergency call to the time the emergency vehicle arrives on site.

In some EU countries, the Emergency Service models that are in use involve a "call filter" when the first PSAP to answer the call obtains basic information from the caller and then passes the call to the appropriate ERO. In some countries, the PSAP who answers the call also dispatches the necessary resource¹. Regardless of the model in use, the total response time taken should include the entire processing time even if there are different PSAPs or EROs involved in the intervention.

What is also relevant is the time period for measuring the performance against the specified target. Whilst an annual target is sometimes quoted and some ERO's and PSAPs measure it daily or even hourly for resource planning reasons, it is more meaningful if the time period is measured and reported at least on a monthly basis.



a. Call Processing Time

The processing time actually starts as soon as the emergency call is received by the call-taker and this also marks the "clock-start time". From the citizen's perspective, this should begin when they hear the ringing tone of the emergency call. In this way any queuing time is measured, captured and taken into account.

Under normal operational procedures, the call-taker will determine the callers' location and the chief complaint/incident and determine the action required by the emergency organisation such as the category of resource (i.e. paramedic, advanced paramedic, armed police response, traffic police) and vehicle choice which should be dispatched (i.e. road ambulance, helicopter, motorbike etc). This may include the requirement to involve multi emergency organisations.

The call processing time has many inputs and variables; such as the appropriate level of staff required to meet the expected demand and meet the call answering time targets as well as the internal procedures and tools to assist the call-taker to make the decision regarding the appropriate responses. For example, if the call-taker uses a priority dispatch system to determine the chief complaint which is often used in Emergency Medical Services ("EMS"). Other factors to be considered during the call processing time is the time taken to receive location information and the time taken to allocate the appropriate resource to the emergency situation (e.g. having the appropriate skills and emergency vehicle available to match the priority of the emergency incident). It is worth highlighting here that some of the inputs to the call processing time (such as the location information provided, the caller's telephone number or the ability to extract the chief complaint information from the caller i.e. caused by language barriers) are often outside the control of the

¹ See the EENA document regarding the [112 Service Chain description and PSAP Models in Europe](#).



call-taker/dispatcher. However, from the citizen's perspective this is largely irrelevant to him/her and is an "internal" matter for the management of the PSAP.

In some cases, particularly the fire and rescue services, there may not be an actual emergency call received but rather there is an alert received via an automatic fire alarm at the PSAP/dispatching centre. This could also be the same for the police service when automatic alarms are received from strategic buildings such as banks, government buildings etc.

In summary, the call processing time should be measured from the time the emergency call arrives at the PSAP. Any call waiting time² before the emergency call is answered by the emergency operator should be measured and included. As stated and reported by the [Communications Committee 7th 112 Implementation Report](#) (COCOM 14-01), the call answering time can vary from country to country: ("*21 Member States reported less than 10 seconds for the answer time needed to get in contact with the emergency services. The best performing Member States where more than 90% of the calls are answered in 10 seconds are: Bulgaria, Croatia, Czech Republic, Estonia, Finland, Ireland, Latvia, the Netherlands, Portugal, Romania, Slovenia, Spain, United Kingdom. Iceland reported that 91% of the calls are answered within 8 seconds. A pre-recorded message is played before getting in contact with an operator in: Cyprus, France, Greece, Hungary and Spain*").

b. Mobilisation Time

The mobilisation time is the time taken for the allocated resource to prepare and depart the base and begins when the notification to mobilise is sent by the emergency dispatcher. In some cases and depending on the structure of the emergency organisation, there may be a time delay to send and ultimately receive this instruction. If there is a delay between the dispatcher sending the instruction and it being received by the responding unit because of a delay in the telecommunications network/interface (i.e. GSM), it should still be noted and recorded. Regardless of this, the overall mobilisation time is something mostly within the control of the emergency organisation and should be measured, reported and analysed on a regular basis.

In some cases, the mobilisation time also includes the time needed to alert the individual emergency responder and the time taken for her/him to reach the station where the emergency vehicle is located. This is typically the case when part-time / volunteer fire-fighters are "on call" but not at the fire station itself. Normally, such a part-time fire fighter will theoretically live within a certain radius of the fire station (e.g. 3-4 minutes) whilst the professional fire-fighter will be on-site and would be expected to be mobilised within 1-2 minutes. For other emergency services, such as police or medical services, the use of part-time emergency responders may not be the case.

The time starts when the dispatcher sends the notification to mobilise and ends when the resource vehicle has notified the dispatcher that it has left the base. Both notifications are sometimes done automatically from a data push from the vehicle or orally from a voice instruction from the vehicle itself.

c. Driving Time

In essence the driving time is the next step and normally begins from the time the resource begins its journey and stops when the resource arrives on site. Normally it is recognised by a standard "arrived on scene" message, which is sent by the vehicle/driver to the PSAP/dispatch centre again either from a data push message or orally from the vehicle. The driving time will vary considerably on the basis of the location of the emergency incident (either rural, semi-rural or urban area), the environmental conditions such as weather, traffic and also the type of vehicle (motorbike, car, large vehicle, helicopter etc) and if any driving/routing aids such as satellite navigation systems is available to the driver.

It is of course important to state that the safety of the emergency crew, the driver and the general public is of the utmost importance and the appropriate training and controls are in place for the safe arrival of the emergency vehicle to the incident location.

² Communications Committee definition: "The time period between the moment the emergency call is presented to the stage 1 PSAP switch and the moment the call is being answered by a PSAP human operator".



d. **Emergency Intervention**

This stage is the actual emergency intervention and execution of the intervention itself and is the time taken to provide whatever assistance is needed to the citizen (for example, the extraction from a crashed vehicle by the fire service, resuscitation by EMS, burglary response by the Police service etc).

Regardless of the incident type, the time taken here should be measured to ensure that the appropriate response is provided and to ensure that the appropriate resources are available.

In summary, what is essential is that there is a continued recording of the time elements that make up the total response time (i.e. $T_a + T_b + T_c + T_d$) and ideally this should be done centrally and digitally. This enables the accurate and consistent reporting of response times and allows the independent verification of the performance of the emergency response organisation. If the time recording is fragmented in any way or is not robustly recorded (i.e. using open systems that could be manipulated or misinterpreted), the citizen's confidence level in the response time system could be eroded.



6. Measuring the response time - What should be measured and why

Intervention:	Rational For Measuring	Risk of not Measuring
Time to answer call	To measure the expediency of the service; measure reaction times and also both system and operator availability	No visibility of the quickly calls get answered; increase level of abandoned calls as a result; drives correct behaviour of call-takers; reinforces efficiencies and not ignoring effectiveness/accuracy.
Time to gain address	Decision on the nearest available resource; may influence the type of response i.e. Helicopter Emergency Medical Service ("HEMS"), police motorbike response etc.	No idea about where the incident is;
Time to gain Chief Complaint	Calls are quickly prioritised; right intervention made. Will influence the type of response.	Urgent calls will not get prioritised quickly enough - outcomes will be worse.
Time to trigger next stage (resource dispatch or pass to next PSAP)	Evaluates how the process is working; provides feedback for call-takers/dispatchers.	No visibility of the decision-making process - misaligned processes will not be identified for change etc.
Mobilisation Time	Will make it visible how quickly and efficiently the resource is to mobilise the resource. It will also record what type of vehicle is mobilised and if the correct vehicle is available and used	Without measuring it, any possible delays in the readiness of the vehicle will be unknown.
Driving Time	Errors in maps or routing information can be tracked and the appropriate traffic-related information can be provided. Also the location of resources can be more clearly understood and made more dynamic if needed depending on the time of day and the forecasting of where incidents are likely to occur.	Without this data, planning of resources is made more difficult and time could be lost when responding to emergencies.



7. EENA Recommendations

Stakeholders	Actions
European Authorities	European Authorities should set guidelines for the overall policy when setting response time targets and measurement systems.
National Government	<p>National Governments should ensure that their citizens receive the best emergency response service possible.</p> <p>In doing so, they should provide the necessary legal framework to achieve this objective including the setting of meaningful and appropriate response times for each emergency response organisation. If the National Government is responsible for setting response times, the National Governments should be cognisant of the resources available to the emergency services and other factors such as rural, very rural or urban environments and ensure the targets are evidence-based.</p> <p>The response time targets should be verified, published and audited independently.</p>
National / Regional Authorities	<p>Public authorities, should implement a programme for measuring emergency response targets and verify the results on an ongoing basis. Such results should be made public.</p> <p>Every effort should be made to ensure that the targets are resource-driven (bottom-up) and evidence-based and when setting response time targets, the Public Authorities should be cognisant of the resources available to the emergency services. Citizens should also be in a position to provide feedback to the PSAP/ERO regarding their experience³.</p>
Emergency services	<p>The emergency services should ensure that the necessary structure, processes and resources are in place to measure and meet the targets set.</p> <p>In addition, the emergency services should continue to encourage their national authorities/Governments to undertake regular and relevant research to ensure that any response time is meaningful, up-to-date and ensures the best outcome for citizens.</p>
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 location information as soon as the call reaches the emergency service.

³ [See also EENA's Operations Committee document on Feedback from Citizens](#)



8. Annex A - Table of response times (sample)

Below is a sample of response times which are reflective of the target times set. This list is not exhaustive and may be updated by the relevant authority subsequent to this publication:

Country	Emergency Response Organisation	Category type + description	Response time indicator	Comments
England	EMS	Category A - immediate life threatening conditions	8 minutes in 75% of cases, regardless of location. A fully equipped ambulance should arrive within 19 minutes in 95% of the time, unless the control room decides an ambulance is not needed	
	EMS	Category B - serious but immediately life threatening	A fully equipped ambulance should arrive within 19 minutes in 95% of the time, unless the control room decides an ambulance is not needed	
	EMS	Category C - conditions that are neither serious or life threatening	These are set locally by each Trust.	
Scotland	EMS	Category A - immediate life threatening conditions	8 minutes in 75% of cases	A secondary target of 14, 19 or 21 minutes is set for the transport of the patient to a healthcare facility.
	EMS	Category B - serious but immediately life threatening	Target time of 14, 19 or 21 minutes in 95% of cases	
	EMS	All emergencies located on Scottish islands	8 minutes in 50% of cases	



Country	Emergency Response Organisation	Category type + description	Response time indicator	Comments
Northern Ireland	EMS	Category A - immediate life threatening conditions	8 minutes in 75% of cases	
	EMS	Category B - serious but immediately life threatening	Respond in 18 minutes to 95% of cases (rural areas) and 21 minutes (sparsely populated areas)	
	EMS	Category C - conditions that are neither serious or life threatening	Respond in 18 minutes to 95% of cases (rural areas) and 21 minutes (sparsely populated areas)	
Australia - Western Australia State	EMS	Priority 1 - an emergency call	15 minutes in 90% of cases	
		Priority 2 - an urgent call	25 minutes in 90% of cases	
		Priority 3 - non-urgent call	60 minutes in 90% of cases	
Canada - Ontario	EMS	Sudden cardiac arrest	8 minutes - (2 minute dispatch time + 6 minute sudden cardiac arrest first responder)	
	EMS	CTAS 1 ⁱ	10 minutes (2 minute dispatch time + 8 minute CTAS1 ambulance response)	
Canada - Toronto	EMS	Sudden Cardiac Arrest	To have a responder equipped and ready to use an AED within 6 minutes from the time ambulance dispatch conveys the call to the paramedic 60% of the time	
	EMS	CTAS 1	8 minutes from the time ambulance dispatch conveys the call information to the paramedic 75% of the time	
	EMS	CTAS 2, 3, 4, 5	CATS2 = 10 mins, CATS3 = 15 mins, CATS4 = 20 mins, CATS5 = 25 mins. All @ 75% of the time.	



Country	Emergency Response Organisation	Category type + description	Response time indicator	Comments
Norway	EMS		12 minutes (urban) or 20 minutes (sparsely populated areas).	
Hong Kong	EMS	Response 1 - critical or life-threatening calls	9 minutes in 92.5% of cases	
	EMS	Response 2 - Serious but not life threatening	12 minutes in 92.5% of cases	
	EMS	Response 3 - non-acute cases	20 minutes in 92.5% of cases	

ⁱ CTAS - Canadian Triage Acuity Scale