Public Safety Answering Points
Global Edition

-February 2023-

Understanding PSAPs around the world has never been easier

eena
EUROPEAN EMERGENCY NUMBER ASSOCIATION

2022

Abstract

10 February 2023

Welcome message

Since 2011, EENA's annual publication "Public Safety Answering Points (PSAPs) in Europe" has become one of the most anticipated documents in the emergency services field. In order to provide readers with an even more comprehensive guide, the document evolved to a global overview and, for the first time ever, in 2016 EENA published "**PSAPs around the Globe**".

The time for the seventh global edition is finally here! Find details about PSAPs' functioning, understand the complexity of different national structures and get a clear view of the context in which PSAPs operate – **in 57 countries worldwide**!

Every year, the report adds new questions and topics to make sure the latest information on new technologies and developments is available to you. The 2022 edition includes everything covered by previous editions, as well as information on the plans for 2G/3G shutdown and information about the PSAPs using AED registries and maps.

Enjoy your reading!

The EENA team

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For more information, please contact Jerome Paris at jp@eena.org.

Report information

Last updated on 10 February 2023.

Use of symbols

- "-" and "*No information provided*" are used when no answer was provided in a questionnaire response
- "*Not available*" is used when a questionnaire response indicates that the data is not available
- "*n/a*" is used when a question is not applicable

List of acronyms

A definition of all acronyms related to 112 can be found in the 112 Terminology EENA Operations Document. It is updated with the terminology used in the EENA Operations and Next Generation 112 documents.

Questions or comments? Please contact Jerome Paris at jp@eena.org.

Contents

Call handling models

This section provides a short explanation of the call handling models as they are defined in the publication "Emergency call handling service chain description" and as they are used in this report.

Please note that the following models do not introduce all the PSAPs Organisation models in the world but present the major concepts with voluntarily simplified descriptions. The models do not cover the entire call handling model but rather try to highlight their major characteristics.

Definitions

Emergency Response Organisation (ERO): organisation handling specific type of emergencies, e.g. the police, fire and rescue, emergency medical services, coast guard, etc.

Public Safety Answering Point (PSAP): organisation under the responsibility of a public authority or a private organisation under public mandate in charge of first reception of emergency calls.

General emergency number: phone number that citizens can use for any type of emergencies e.g. 112, 911.

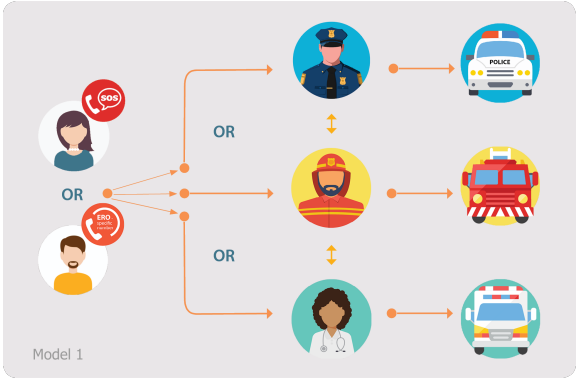
ERO emergency number: a specific number for an emergency service, for example, one number for police, another number for medical emergency services and another for fire and rescue services.

General emergency number PSAP: organisation in charge of handling all types of emergency calls. Its responsibilities and tasks may differ from one country to another.

Legend

Model 1: EROs handling emergency calls

General description



Many emergency numbers co-exist in the country. Emergency calls made to the general emergency number (i.e. 112 in the European Union) are redirected to one of the emergency response organisations, e.g. police, fire and rescue, or medical emergency services.

If the intervention of a different emergency response organisation is required, the call and/or data about the emergency situation are forwarded to the most appropriate ERO.

Examples: Austria, Germany, France.

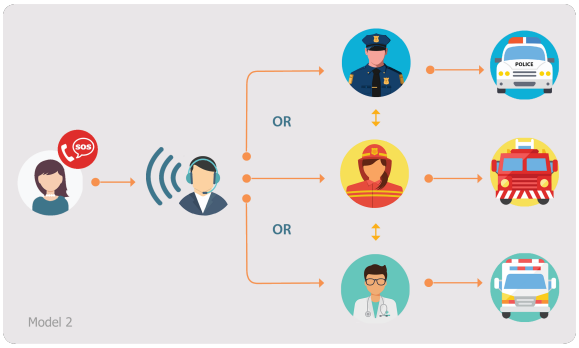
Emergency call handling chain

Calls are handled by a PSAP operated by one emergency response organisation:

1. Reception of the call by a PSAP operated by an emergency response organisation
2. Dispatch to other emergency services (e.g. a 112 call is answered by the police but the citizen needs an ambulance): the call is forwarded by the operator
3. Dispatch of the intervention resources done by the ERO operators

Model 2: Filtering Stage 1 PSAP and resource dispatching stage 2 PSAPs

General description



Emergency call handling is organised over two levels: there is an independent organisation in charge of the first reception of the call and then the call is forwarded to the most appropriate local emergency response organisation.

Examples: United Kingdom, Ireland

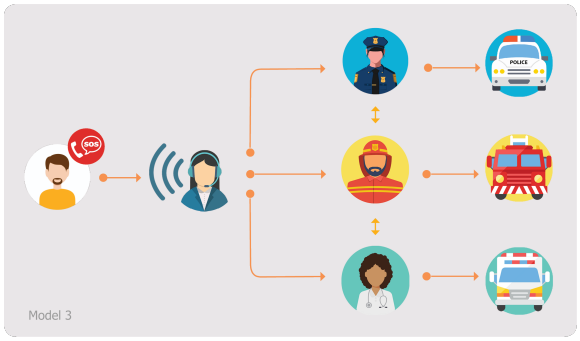
Emergency call handling chain

The general emergency number calls handled by a general emergency number PSAP:

1. General emergency number (e.g. 112, 999) calls handled by civilian operators
2. Stage 1 PSAP: Filtering tasks. The call-taker locates the caller and where the emergency is. He or she asks the caller with which emergency service he/she wants to get in contact (e.g. “What do you need? police, ambulance, fire and rescue services?”). The detailed gathering of data is not done by the stage 1 call-taker.
3. Transfer to medical / fire and rescue / police services: stage 1 PSAP forwards the call to the appropriate local emergency service
4. Detailed data gathering is done by the emergency response organisation operator
5. Dispatch of the intervention resources is ensured by the emergency response organisation

Model 3: Only one emergency number. Data gathering by stage 1, resource dispatching by stage 2

General description



As in the previous model, the handling of emergency calls is organised in two levels. The difference between the “Filtering Stage 1 PSAP and resource dispatching stage 2 PSAP(s)” and this model is the role played by the independent organisation. In this case, the call- taker is in charge of the classification of the call and makes a parallel dispatch to the most appropriate EROs. In some cases, police, fire and rescue and medical specialists are available to support the call takers.

Example: Romania

Emergency calls handling chain

The general emergency number calls handled by a general emergency number PSAP:

1. Classification and data gathering done by the stage 1 PSAP call-taker: the operator asks what is happening and decides which EROs should be contacted depending on the information given by the caller. The operator gathers detailed data about the location and emergency situation of the caller.
2. Parallel dispatch to medical emergency / fire and rescue / police services if needed
3. Dispatch of the intervention resources done by emergency response organisation

Model 4: National emergency numbers routed to EROs. General emergency calls routed to civilian PSAP

General description

General emergency number (i.e. 112) co-exists with national numbers. Emergency calls made to the general number are routed to civilian PSAPs, calls to national numbers are routed to EROs.

Example: Spain – some regions

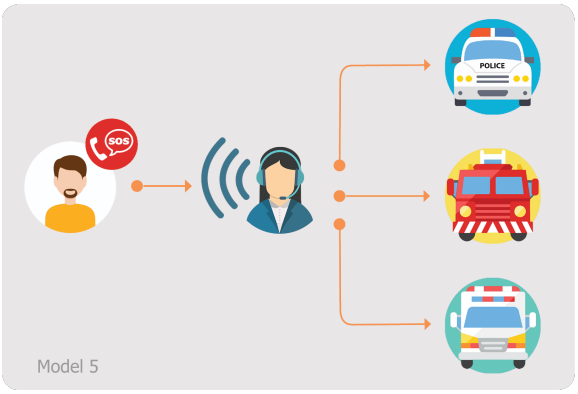
Emergency calls handling chain

For the emergency calls made to the generalist emergency number, the emergency calls handling chain is the same as model 3.

For emergency calls made to the national specific EROs numbers, the emergency calls handling chain is the same as model 1.

Model 5: Civilian Call-Taking & Dispatching

General description



Emergency calls made to the general emergency number (i.e. 112) are handled by civilian operators. The operators are highly trained and handle both call-taking and dispatch of intervention resources. In some cases, police, fire and rescue and medical specialists are available to support the call-takers.

Example: Finland

Emergency call handling chain

The same PSAP is in charge of all tasks: classification of calls, data collection and dispatching the intervention resources to the incident.

Source

Emergency call handling service chain description

EENA knowledge hub

EENA is committed to knowledge-sharing in our effort to improve public safety and the work of emergency services. We **regularly publish documents on numerous topics about**:

- 112 General Information
- Access to 112
- AED
- Apps
- Case Studies
- Drones
- eCall
- Legislation
- Location
- NG112
- PSAP Operations
- PSAP Technology
- Public Warning
- Social Media in Emergencies

View all our **documents** and **webinars** under the knowledge hub available at the **EENA website**.

AML DEPLOYED

Netherlands

17.4 million	41,500 km^2	2021
Population	Area	Year of reference

Organisation handling 112 calls

- Police (1st stage)
- Fire and Rescue Services, Emergency Medical Services, Police and Royal Netherlands Marechaussee (2nd stage)
- The Ministry of Justice and Security is responsible for policy 112

National legislative / regulatory acts on 112 references

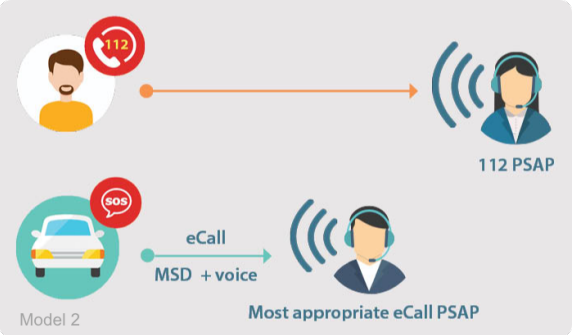
Telecommunications legislation

Report applies to

- 112 Centres, FRS, EMS, Police
- All of the Netherlands

Emergency call handling model

The 112 calls are handled in one national stage 1 PSAP and a number of regional stage 2 PSAPs. The call-takers identify, validate and locate the call and forward it to the applicable regional emergency organization (stage 2 PSAP). The process of the national stage 1 PSAP is executed on two locations and fully redundant. The national stage 1 PSAP is interconnected on a redundant dedicated digital network with 14 regional stage 2 PSAPs for FRS, EMS and Police.



eCall implementation

- Pan European eCalls are handled as all emergency calls. There is only one policy: No missed calls and an answering performance of > 90% within 10 seconds
- Third Party Service eCalls will be handled accordingly when transferred through the 1-1-2 network. A standard interface for data exchange is under construction
- Model 1 is used

✔ eCall has been implemented

112 BASED ECALLS IN 2021			
eCall Type	**Calls Received**	**Emergency Cases**	**Comments**
Manual	2,626	-	
Automatic	10,557	-	
Total	13,183	-	

PSAPs and dispatch centres

PSAPS & DISPATCH CENTRES (DCS)			
	PSAPs	**DCs**	**Comments**
112	1	-	1 Stage 1 PSAP, 2 locations
FRS	-	13	Co-located
EMS	-	13	Co-located
Police	-	13	Co-located
Other	1	-	Royal Netherlands Marechaussee
Several Forces	1	-	National Coastguard (Police, Rescue, Border Control)
TOTAL	**-**	**-**	

COMMENTS

The Dutch government decided in 2012 to reduce the number of PSAP's and Emergency Response Centres to ten (10). The transition will take place over a period from 2018 to 2023.

Emergency Numbers

EMERGENCY NUMBERS ANSWERED BY PSAPS		
PSAPs	**Number**	**Comments**
112	112	
FRS	112	
EMS	112	
Police	112	
Other	112	
Several Forces	112	

Non emergency numbers

- 0900-8844: Police
- 0900-0904: Fire
- 0800-1351: Covid information line
- 144: Animal in distress
- 0800-0113: Suicide prevention

Emergency calls in 2021

EMERGENCY CALLS			
	Calls	**Forwarded Calls**	**Comments**
112	3,300,000	1,900,000	40% misuse
FRS	-	6.6%	Approximately
EMS	-	38.4%	Approximately
Police	-	53.8%	Approximately
Other	-	1.2%	Approximately
TOTAL	-	-	

Emergency calls per type in 2021

Mobile Telephone Networks

90.3%

Fixed telephone networks (landlines)

9.4%

Campus/private company networks

< 1%

IP networks

< 1%

Technology and equipment used in the PSAPs

Do all PSAPs use the same technology in your country?
No, the telephone solutions of the stage 2 PSAPs are different. Different systems in two categories: approximately 50% IP based and 50% older telephone solutions.

How are the PSAPs interconnected?
Voice and data interconnection for all PSAPs. Voice and data interconnection for all PSAPs. Data is transferred on a separate dedicated network to the CAD systems of the regional PSAPs and correlated with the transferred voice connection.

In case of data interconnection, are these data exchanged thanks to a common network?
Yes. Data is transferred on a separate dedicated network to the CAD systems of the regional PSAP and correlated with the transferred voice connection.

Do the interconnected PSAPs use common databases?
No. Databases are regionally organised, but common data is periodically synchronised.

TECHNOLOGIES AVAILABLE IN THE PSAPS	
Geographic Information System (GIS)	Available in all PSAPs
Computer Telephony Integration (CTI)	Available in all PSAPs
Computer-Aided Dispatch (CAD)	Available in all PSAPs
Workforce Management System	Available in some PSAPs
Business Intelligence System	Available in all PSAPs

Next Generation 112 (NG112)

Do you consider upgrading towards Next Generation 112?
Not yet

Have you established a multi-stakeholder working group to plan the migration to NG112?
Not yet

Have you established a plan for the migration to NG112?
Not yet

Are you aware of any plans to shutdown 2G/3G mobile telecommunications networks?
Yes, it is established and PSAPs are involved

COMMENTS

KPN (website): Phasing out 3G by March 31, 2022. The 2G network will remain available until December 2025.
Vodafone (website): Phasing out 3G by February 2020. The 2G network will remain available from Vodafone anyway until the end of 2024.
TMobile (website): As of June 1, 2021, T-Mobile has begun phasing out its 2G network. 3G unknown.
Authority Consumer & Market (ACM) (website): 112 is now available from all telecom providers in the Netherlands via voice technology via 4G (voice over LTE) and calling via WiFi. … It is important that 112 receives identity and location information when someone calls. That, too, is well taken care of in most cases.

Caller Location in support of emergency services

MOBILE CALLER LOCATION			
Type	**Time needed**	**% of calls**	**Comments**
Cell-ID	< 1 sec	70%	
AML	< 20 sec		
Handset-derived location via App			Available, no further information provided

Landline caller location

Time needed

< 1 sec

How often are the subscriber number addresses being updated?

Within 24 hours after change

Advanced Mobile Location (AML)

AML DEPLOYMENT

- deployed for 112

WORKS WITH

- Android
- Apple

AML TRANSMISSION

- via SMS

ADDITIONAL FEATURES

- AML for emergency SMS

Read about Advanced Mobile Location (AML)

Apps

Total Conversation app (Tolkcontact)

- → Provides GNSS based location
- → National coverage

112NL app

- → Provides GNSS based location
- → Provides name, language, hearing/speaking disability, which ERO needed (police, fire, ambulance)
- → National coverage

Approx 100 per week

Accessibility for people with disabilities

ACCESSIBILITY SERVICES		
Service	**Registration***	**Comments**
SMS	Yes	Registration only to prevent misuse
Smartphone App	No	PSAP can chat (Real Time Text) with a caller via the 112NL app
Video calls	No	Total Conversation, via Sign Language Service. See comments
Real Time Text	No	Total Conversation. See comments
Total Conversation		See comments

**Registration required*

COMMENTS

***Video calls**: In order to make use of the telecom interpreter service with Total Conversation you need to register as a user of the service, because they have to invoice you per call and minute. For 112 it's free. Also, you have to request funding from health care insurance for the software license of the nation's biggest Total Conversation software supplier. It is only after this electronic paperwork you can use the Total Conversation app of this biggest supplier. The telecom interpreter service has limited opening hours: 07.00 – 20.00 hrs. So it's not available at evening and in nightly hours.*

***Real Time Text service**: Total Conversation. You can call 112 and communicate in text with a 112-operator directly. For use of the software, same as with video calls, health insurance and request for use. You won't have to register for use of the telecom interpreter service. But in that case you would only have the Total Conversation software (license) for being able to contact 112.*

SMS service for all citizens

→ SMS service is not available

112 available from handsets without SIM cards?

Yes

Cooperation with Third-Party Services (TPS)

THIRD-PARTY SERVICES		
Third-Party Service	**Cooperate** *	**Comments**
Security Services (Alarm/ CCTV Monitoring, Guard services etc.)	✔	
Personal Safety/Alerts – personal security or panic button services	✔	
Fire monitoring services in domestic or commercial premises	✔	Security Services provide obligatory fire monitoring services in some commercial premises (mostly care homes, hospitals, and correctional facilities). These security services transfer the fire alarm to us by direct alarm transmission
Medical alert or Telehealth	✔	
Calls from Satelite Telephony Service Providers	✔	
Counselling and mental health services (e.g. crisis text or phone lines)	✔	
eCall TPSPs	✔	

TPS cooperates with emergency services

Use of social media

Social media/networks are used to

- → Monitor potential incidents
- → Share prevention tips with citizens and build public preparedness
- → Share information about incidents towards citizens
- → Fight fake news

Virtual Operations Support Team (VOST)

Setting up a VOST is not considered

Public warning *(Alert to citizens)*

Public warning by

- Sirens
- Radio
- TV
- Cell Broadcast
- Social media

Organisation Responsible for public warning

The responsibility for crisis communication and the use of warning systems for citizens in case of large emergencies is positioned on the governmental level of the safety regions.

Use of RPAS *(Remotely Piloted Aircraft Systems)*

Drones are used by Emergency Services Organisations (ESOs).

Emergency Services Organisations (ESOs) using RPAS

- FRS
- Police

Use of AEDs *(Automated External Defibrillator)*

Ambulances are equipped with AEDs. The PSAP can also send First Responders such as the police with AED and or the fire department to the incident.

In The Netherlands we have HartslagNu (HeartbeatNow). HartslagNu is the national call system for resuscitation. The PSAPs are connected to this system. When someone calls 112 with the suspicion of a cardiac arrest, the system automatically summons civilian first responders nearby the incident. These civilian first responders are instructed to perform CPR or pick up the nearest AED that has been registered with the system. This way, the victim gets the right help quickly while the ambulance is on its way.

Website: hartslagnu.nl

Quality of service

Call handling evaluation	✔ Call handling service is evaluated *Regular HR procedures for evaluating employees on the job.*
Use of quality improvement systems	✔ Yes
Use of key performance indicators	✔ Yes
Use of protocols by call-takers/dispatchers	✔ Yes
Use of questions and decisions tree by call-takers/dispatchers	✔ Yes
Established processes or certifications for ensuring cybersecurity	✔ Yes
Quality certification(s)	✔ ISO, see comments *The Police Information Security Policy applies to the Service 1-1-2.This policy is anchored by law through the 'Regeling Informatiebeveiliging Politie' (Police Information Security Regulations) and is further elaborated in the Police Information Security Framework (IBKP) and various implementation guidelines. This Information Security Policy is based on ISO / IEC 27001: 2013 and ISO / IEC 27002: 2013*

Projects, reforms, upgrades

- Reduction number of PSAPs
- Tender new CAD system
- Implementation new NL-Alert system
- Continuous development 112app
- Improvement/Automated routing of 112-calls to stage2 PSAPs (small steps)

Technology providers

- KPN
- Avaya

Annex 1: Number of PSAPs per service

		Stage 1		FRS		EMS		Police		Other		Several forces		TOTAL	
Country	Data	PSAP	DC	PSAP	DC	PSAP	DC	PSAP	DC	PSAP	DC	PSAP	DC	PSAP	DC
Netherlands	2021	1	-	-	13	-	13	-	13	1	-	1	-	-	-

Annex 2: Direct emergency numbers to PSAPs

Country	Stage 1	FRS	EMS	Police	Other	Several
Netherlands	112	112	112	112	112	112

Annex 3: Number of calls per service

Country	Data	Stage 1	FRS	EMS	Police	Other	TOTAL
Netherlands	2021	3,300,000					
	112:: 40% misuse | **FRS:**: Approximately | **EMS:**: Approximately | **Police:**: Approximately | **Other:**: Approximately						

Annex 4: Number of calls per network type

Country	Data	Mobile	Fixed	Private	IP
Netherlands	2021	90.3%	9.4%	< 1%	< 1%

Annex 5: Technologies available in the PSAPs

Country	GIS	CTI	CAD	WFMS	BIS
Netherlands	All PSAPs	All PSAPs	All PSAPs	Some PSAPs	All PSAPs

Annex 6: NG112

Country	Consider upgrading?	Established Working Group?	Established Plan?	2G/3G Shutdown Plan?
Netherlands	Not yet	Not yet	Not yet	Yes, it is established and PSAPs are involved

Annex 7: Mobile Caller Location

	Cell-ID		Sector-ID		AML		HTML 5 Geolocation		App	
Country	**Time**	**Calls %**	**Time**	**Calls %**	**Time**	**Calls %**	**Time**	**Calls %**	**Time**	**Calls %**
Netherlands	< 1 sec	70%			< 20 sec					

Annex 8: Landline Caller Location

Country	Time needed	Update Frequency
Netherlands	< 1 sec	Within 24 hours after change

Annex 9: Advanced Mobile Location

Country	Deployed	Works with	Transmission	Features
Netherlands	✓	→ Android → Apple	→ SMS	→ AML for emergency SMS

Annex 10: Apps & SMS

Country	Apps	SMS Service for all citizens
Netherlands	→ Total Conversation app (Tolkcontact) → 112NL app	✕ Not available

Annex 11: Accessibility

Country	Fax	SMS	App	Video call	Real Time Text	Other
Netherlands		✓	✓	✓	✓	→ Total Conversation

Annex 12: Public Warning

Country	Sirens	Radio	TV	Cell Broadcast	LB SMS	Other
Netherlands	✓	✓	✓	✓	✕	→ Social media

Annex 13: AED Mapping

Country	AED registries or maps	Comments
Netherlands	-	Ambulances are equipped with AEDs. The PSAP can also send First Responders such as the police with AED and or the fire department to the incident. In The Netherlands we have HartslagNu (HeartbeatNow). HartslagNu is the national call system for resuscitation. The PSAPs are connected to this system. When someone calls 112 with the suspicion of a cardiac arrest, the system automatically summons civilian first responders nearby the incident. These civilian first responders are instructed to perform CPR or pick up the nearest AED that has been registered with the system. This way, the victim gets the right help quickly while the ambulance is on its way. Website: hartslagnu.nl