

Public Safety Answering Points Global Edition

-December 2019-



Understanding PSAPs
around the world has never
been easier

eena
EUROPEAN EMERGENCY NUMBER ASSOCIATION

2019

Abstract

Welcome message

Since 2011, EENA's annual publication "Public Safety Answering Points (PSAPs) in Europe" became 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 the "**PSAPs around the Globe**".

The time for the fourth 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 2019 edition includes everything covered by previous editions and adds more details in several sections and more consistent answers across the countries.

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 12 December 2019.

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.

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112 Models

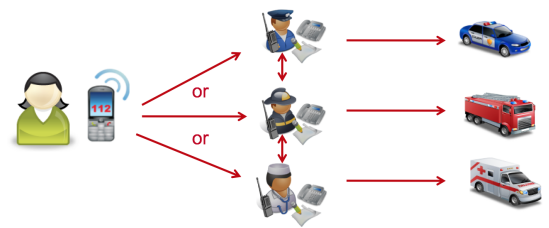
This section provides a short explanation of the 112 models as they are used in this publication.

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

This has been prepared by EENA based on several sources and is continuously amended.

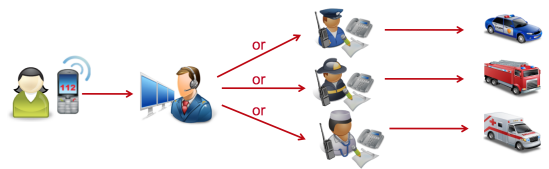
■ Model 1: EROs handling emergency calls

- Calls to national numbers and 112 redirected to Emergency Response Organisations (EROs).
- If the intervention of a different ERO is required, call and/or data about the emergency situation are forwarded to the most appropriate ERO.
- Dispatch from the intervention resources done by the ERO operators.
- In a variant, two EROs are colocated and contacted via the same number



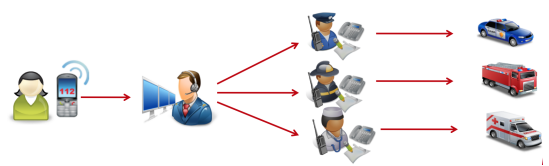
■ Model 2: Filtering Stage 1 PSAP and resource dispatching stage 2 PSAPs

- Independent Stage 1 PSAP receives all emergency calls and then forwards it to a local ERO.
- Call-takers only ask the caller with which emergency service he/she wants to be connected to.
- Stage 1 PSAP forwards the call to the appropriate local ERO. Detailed data gathering and dispatch of the intervention resources are done by the emergency response organisation.



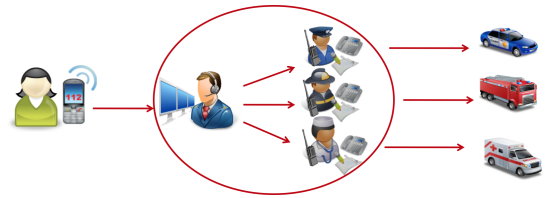
■ Model 3: Data gathering by Stage 1, resource dispatching by Stage 2

- Also in two levels. The difference is the role played by the independent organisations.
- Civilian call-takers classify the call and makes a parallel dispatch of the calls to EROs. In some cases police, EROs' specialists are available to support the call-takers.
- Dispatch of the intervention resources done by EROs.



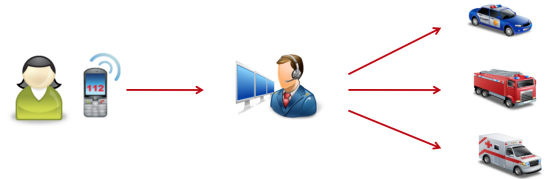
■ Model 4: Data gathering by Stage 1 PSAP, resource dispatching by Stage 2 in an integrated control room

- Also in two levels but civilian call-takers and EROs are in the same location.
- Civilian call-takers are in charge of classifying the call and make a parallel dispatch of the calls to the most appropriate EROs if needed. In some cases, EROs' specialists are available to support call-takers.
- Dispatch of the intervention resources done by EROs.



■ Model 5: ERO independent PSAP

- Civilian call-takers handle both call-taking and intervention resources' dispatch. In some cases, EROs' specialists are available to support.
- The same PSAP is in charge of classification of calls, data collection and dispatching the intervention resources to the incident.

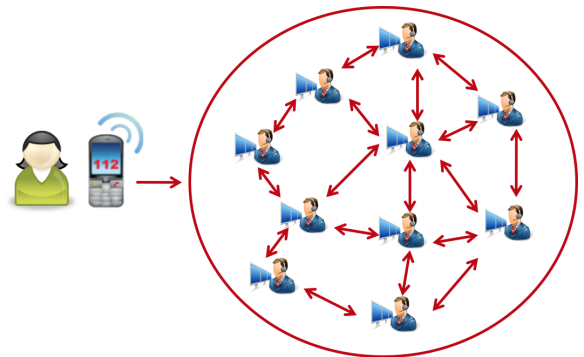


■ Model 6: Variant: "Interconnected PSAPs"

PSAPs of different regions can be interconnected. If no call-taker is available, the call can be redirected to another PSAP.

Source

[Emergency calls handling systems simplified models \(EENA\).](#)



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](#)
- [EENA Annual reports](#)
- [EENA finances](#)
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- [Location](#)
- [NG112](#)
- [PSAP Operations](#)
- [PSAP Technology](#)
- [Public Warning](#)
- [SMEM](#)

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

10.2 million
Population

447,435 km²
Area

3,197 K
Calls

2018
Year of reference



Organisation handling 112 calls

SOS Alarm Sverige AB



National legislative / regulatory acts on 112 references

- The Electronic Communications Act (Chapter 5, section 7), only in Swedish:
www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-2003389-omelektroniskkommunikation_sfs-2003-389
- PTS (Swedish Post- and Telecom Agency) regulation on emergency calls, only in Swedish:
pts.se/globalassets/startpage/dokument/legala-dokument/foreskrifter/telefoni/ptsfs-2011-4-lokaliseringsuppgifter.pdf
- Law (1981: 1104) Concerning the Activities of Certain Regional Alarm Centers, only in Swedish:
www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-19811104-om-verksamheten-hos-vissa_sfs-1981-1104



Report applies to

- 112 Centres, FRS, EMS, Police, Sea/Air Rescue, Coast Guard, Mountain Rescue, Social Welfare, Priest on Duty, Poison Control Information
- All of Sweden

112 Model

112 calls are handled by civilian call takers ("SOS-operators") at SOS Alarm. The operators are highly trained to handle both 112 call taking and dispatching of intervention resources. Depending on the type of emergency, the SOS-operators are supported by indexes and interview support adjusted to the incident type protocol. In most cases fire and rescue or medical specialists are available to support the call takers.



Most of the county councils/regions have agreements with SOS Alarm, often stating that medical evaluation (triage) and prioritization has to be done by a registered nurse in a certain percentage of the total amount of medical cases or in all cases. Three county councils (Uppsala, Västmanland and Sörmland) run their own stage 2 PSAPs/Dispatch centers. 112-calls concerning only medical cases in those counties are transferred by SOS Alarm to the concerned EMS PSAP which then takes over the call. Of the twenty-one Swedish county councils, SOS Alarm thereby handles prioritizing and dispatching for eighteen.

Dispatching of Fire Rescue Services are mostly done by SOS Alarm, but in several municipalities dispatching is done by FRS own dispatch centers, for example in the big city regions. They are connected with SOS Alarm through an interconnected operational platform.

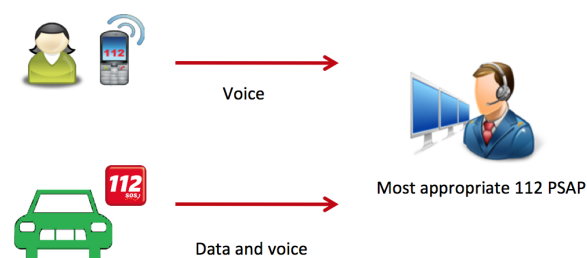
Dispatching of Police resources is done by regional police dispatch centers. Likewise are dispatching of sea and air rescue some by the Joint Rescue Coordination Center (JRCC) and the Coast Guard by their own dispatch center, located together with the JRCC.

The Swedish authority Myndigheten för samhällsskydd och beredskap, MSB (Swedish Civil Contingencies Agency) is responsible for matters related to protection of the population in case of all types of emergencies emergency management, and civil defence. This responsibility applies to measures taken before, during, and after the occurrence of emergencies, crises and disasters. The MSB mandate spans the entire spectrum of threats and risks, from everyday accidents up to major disasters.

All 112 PSAPs are interconnected.

eCall implementation

All eCalls are flagged with eCall and manually or automatically. They terminate in the same call queue as regular 112 calls and to the most appropriate 112 PSAP. Call taker can label the call as relevant eCall to get interview and decision support. NB: in case of silent automatically triggered eCall, dispatching is done, while in silent manually triggered no action takes place – this is regarded as a false call.



- ✓ eCall has been implemented
- ✓ Cooperate with third-party services (TPS). Only communication by voice at this stage.

112 BASED ECALLS

eCall Type	Calls Received	Emergency Cases	Comments
Manual	133	3	Data for 2018
Automatic	79	5	Data for 2018
Total	209	8	Data for 2018

PSAPs and dispatch centres

PSAPs & DISPATCH CENTRES (DCS)

	PSAPs	DCs	Comments
112	15	14	
FRS	-	4	
EMS	-	3	
Police	-	7	
Other	-	-	
Several Forces	-	2	Joint Rescue Coordination Centre (JRCC) for air/sea rescue and Coast Guard
TOTAL	15	30	

COMMENTS

112 PSAPs increased in autumn 2019 from 14 to 15 (re-opening one)

Emergency Numbers

EMERGENCY NUMBERS ANSWERED BY PSAPS

PSAPs	Number	Comments
112	112	112 is the single emergency number in Sweden
FRS	n/a	
EMS	n/a	
Police	n/a	
Other	n/a	
Several Forces	n/a	

Emergency calls in 2018

PSAPS & DISPATCH CENTRES

	Calls	Forwarded Calls	Comments
112	3,196,642	-	112 is the single emergency number in Sweden
FRS	-	-	No calls forwarded since SOS Alarm (PSAP stage 1) performs the interviews
EMS	-	93,852	Forwarded by SOS Alarm stage 1 PSAP to three regions with own interview/dispatching
Police	-	744,850	Forwarded by SOS Alarm stage 1 PSAP to the Police for interview/dispatching
Other	-	-	
TOTAL	3,196,642	-	

Emergency calls per type in 2018

Mobile Telephone Networks

2,761,514



Fixed telephone networks (landlines)

385,599



Campus/private company networks

Not available



IP networks

49,529



Technology and equipment used in the PSAPs

- **Do all PSAPs use the same technology in your country?**
 All stage 1 PSAPs (SOS Alarm) use same technology. This varies for the stage 2 PSAPs – dispatch centers: the 4 FRS dispatch centers use same as stage 1, the Police use their own and the 3 regions with own EMS dispatch centers also their own. JRCC uses a similar technology as stage 1.
- **How are the PSAPs interconnected?**
 Voice and data interconnection for all PSAPs stage 1. Voice and data between stage 1 PSAP and FRS dispatch centers. Currently only voice between stage 1 PSAP and the Police and JRCC respectively, but ongoing work to interconnect data also.
- **In case of data interconnection, are these data exchanged thanks to a common network?**
 Yes (PSAPs stage 1 only)
- **Do the interconnected PSAPs use common databases?**
 Yes. There is one national database located in two nodes. SOS Alarms PSAPs are connected to a national network which allows all SOS Alarms PSAPs to use free geographical seating. SOS Alarm uses different models of answering 112-calls; local, regional or national which means that a 112 call from any part of Sweden can be answered in any of the PSAPs. A backup system with mirrored database allows redundancy: allows seamless transition in case of failure in primary system.

The National Operational Coordinator (NOS), located in Stockholm, constantly monitors both internal and external activities.

In the same place is SOS Alarms Crisis Management Unit is located. By agreement with the Swedish Civil Contingency Agency (MSB), this unit constantly monitors events and accidents in Sweden and concerning Swedish interests abroad. The common database is a valuable tool for this task. The concerned Swedish authority/authorities with a Duty Officer is alerted in case of a crisis. SOS Alarm also has a Duty Officer around the clock.

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 all PSAPs
Business Intelligence System	Available in all PSAPs (SOS Alarm)

Caller Location in support of emergency services

MOBILE CALLER LOCATION			
Type	Time needed	% of calls	Comments
Cell-ID	Estimated time ~1 sec	100%	
Base station sector-ID	Estimated time ~1 sec	100%	
AML	-	-	Deployed in 2019
HTML 5 Geolocation	Not measured	Not measured	

■ Landline caller location

Time needed

Estimated time ~1 sec



How often are the subscriber number addresses being updated?

Automatic-pull/live feed from a national database register containing updated data on all landline subscribers, where the call taker receives the address of the caller when the register automatically matches the phone number with the subscriber



■ Accuracy & reliability criteria defined for all PSAPs

No accuracy or reliability criteria defined

Advanced Mobile Location (AML)

AML DEPLOYMENT

- deployed for 112



WORKS WITH

- Android
- Apple



AML TRANSMISSION

- via SMS



ADDITIONAL FEATURES

- No additional features



[Read about Advanced Mobile Location \(AML\)](#)

Apps

■ SOS Alarm App

- Provides GNSS based location
- National coverage

Deployed in autumn 2019. Will push Public Warning and events that takes place in the near vicinity of the user (within 500 metres). Also info on non-emergency numbers, what to do if accident or cute sickness, or connected to upcoming events like Christmas, New Year, stormy weather etc. The plan is to develop PEMEA functionality in the future.

Accessibility for people with disabilities

ACCESSIBILITY SERVICES			
Service	Available to	Registration *	Comments
SMS	People with disabilities	Yes	SMS sent to 112
Video calls	People with disabilities	No	Not directly to PSAP but to Video relay service 24/7. A project is planned to start in late 2019, where people with disabilities can call 112 through video and talk to the emergency call taker via a sign interpreter
Text Relay	People with disabilities	No	Not directly to PSAP but to Text relay service 24/7
PSTN text telephone direct call to 112	People with disabilities	No	Integrated in 112 PSAP handling system

*Registration required

SMS service for all citizens

→ SMS service is not available

112 available from handsets without SIM cards?

Yes

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
- Communicate with the public about general questions concerning emergency handling and the emergency system

■ Virtual Operations Support Team (VOST)

Setting up a VOST is not considered

■ Most followed social media accounts

- @polisen_sthlm
- @krisinformation
- @YB_Sodermalm
- @polisen_riks
- @SOSAlarmSverige

Public warning *(Alert to citizens)*

■ Public warning by

- Sirens
- Radio
- Text-TV
- SMS
- Voice message on fixed landlines
- Smartphone App
- RSS-flow (people living near any of the three nuclear plants in Sweden)

An authorised person from defined authorities, from the Fire and Rescue Service, nuclear plant or from certain industrial plants or similar handling dangerous goods, calls the national contact point, which is SOS Alarms Crisis Management Unit. They, in turn, forward the call to the national public service radio broadcaster, Sveriges Radio. In this three-part-call, the channels in which the public warning should be sent are decided as well as the content of the PW.

■ Organisation Responsible for public warning

- The Civil Contingencies Agency (MSB) are responsible for maintaining the system
- SOS Alarm and Sveriges Radio (the national public broadcasting radio) are responsible for handling the actual issuing of PWs

Use of RPAS *(Remotely Piloted Aircraft Systems)*

Drones are used by Emergency Services Organisations (ESOs).

■ Emergency Services Organisations (ESOs) using RPAS

- EMS around 10 (out of 21 county councils) are doing various tests. None of them are using drones in real operations (yet)
- FRS around 100, the number of users are developing rapidly and the exact number can vary
- Police 1 (There is only one national police organisation)
- Coastguard 1 (There is only one national coastguard organisation)
- Sea rescue 1. The Swedish Sea Rescue Society, a volunteer sea rescue organisation are using drones in missions instigated by JRCC (The Joint Rescue Coordination Center for sea and air rescue)

☆ Quality of service

Recorded calls storage period	<p>Normally for three months by decision from the government.</p> <p>If a call contains medical issues, the call (and data) it is stored for 10 years. The reason for this is that the call is regarded to be a part of a patient's medical journal and therefore, according to Swedish law, must be kept for so long.</p>
Call handling evaluation	<p>✓ Call handling service is evaluated</p> <p><i>Every call taker has a yearly evaluation of at least 10-20 calls together with their immediate superior.</i></p>
Use of quality improvement systems	<p>✓ Yes</p> <p><i>Different CRM systems being used since about 20 years.</i></p>
Use of key performance indicators	<p>✓ Yes</p> <p><i>By agreement with the government:</i></p> <ul style="list-style-type: none"> • <i>112 calls shall have an average answering time of 8 seconds at most</i> • <i>92% of the 112 calls should be answered within 15 seconds</i> • <i>100% of the 112 calls should be answered within 30 seconds</i> • <i>100% of the calltakers and dispatchers shall be certified at any time They have to answer a number of question, specific for their tasks.</i> • <i>PSAPs infrastructure shall fulfil concerned regulations</i> <p><i>We also have other, internal KPIs for dispatching etc.</i></p>
Use of protocols by call-takers/dispatchers	<p>✓ Yes</p>
Use of questions and decisions tree by call-takers/dispatchers	<p>✓ Yes</p> <p><i>"Indexes" are used for the 112 interview as well as for the continuing interview in cases concerning EMS and/or FRS (separate indexes/decision trees).</i></p>
Quality certification(s)	<p>✓ ISO 9001:2008</p> <p>✓ ISO 27001:2013</p>

Projects, reforms, upgrades

Two major governmental investigations delivered their final reports to the Government in 2018; the investigation on 112 (on the 29 of March, 2018) and on fire/rescue service (on the 19th of June, 2018).

There has been no further decision from the Government on any of them this far.

Report from the investigation on Fire/Rescue Service to the government (in Swedish):

www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2018/06/sou-201854/

Report from the investigation on 112 (in Swedish):

www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2018/03/sou-201828/

■ Upgrade towards Next Generation 112

Considered in the future, within the next 4-5 years

Technology providers

- CAD, GIS: Carmenta
- Public warning system: UMS
- Business Intelligence System: Qlikview
- Interpretation services; Transvoice/Stockholms tolkförmedling
- Relay services: Bildtelefoni.net for video relay service, texttelefoni.se for text relay service
- Social media monitoring; Dataminr

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
Sweden	2018	15	14	-	4	-	3	-	7	-	-	-	2	15	30

Annex 2: Direct emergency numbers to PSAPs

Country	Stage 1	FRS	EMS	Police	Other	Several
Sweden	112	n/a	n/a	n/a	n/a	n/a

Annex 3: Number of calls per service

Country	Data	Stage 1	FRS	EMS	Police	Other	TOTAL
Sweden	2018	3,196,642					3,196,642
<p>112:: 112 is the single emergency number in Sweden FRS:: No calls forwarded since SOS Alarm (PSAP stage 1) performs the interviews EMS:: Forwarded by SOS Alarm stage 1 PSAP to three regions with own interview/dispatching Police:: Forwarded by SOS Alarm stage 1 PSAP to the Police for interview/dispatching</p>							

Annex 4: Number of calls per network type

Country	Data	Mobile	Fixed	Private	IP
Sweden	2018	2,761,514	385,599	Not available	49,529

Annex 5: Technologies available in the PSAPs

Country	GIS	CTI	CAD	WFMS	BIS
Sweden	All PSAPs	All PSAPs	All PSAPs	All PSAPs	All PSAPs (SOS Alarm)

Annex 6: Mobile Caller Location

	Cell-ID		Sector-ID		AML		HTML 5 Geolocation		App	
Country	Time	Calls %	Time	Calls %	Time	Calls %	Time	Calls %	Time	Calls %
Sweden	Estimated time ~1 sec	100%	Estimated time ~1 sec	100%	-	-	Not measured	Not measured		

Annex 7: Landline Caller Location

Country	Time needed	Update Frequency
Sweden	Estimated time ~1 sec	Automatic-pull/live feed from a national database register containing updated data on all landline subscribers, where the call taker receives the address of the caller when the register automatically matches the phone number with the subscriber

Annex 8: Advanced Mobile Location

Country	Deployed	Works with	Transmission	Features
Sweden	✓	→ Android → Apple	→ SMS	

Annex 9: Apps & SMS

Country	Apps	SMS Service for all citizens
Sweden	→ SOS Alarm App	× Not available

Annex 10: Accessibility

Country	Fax	SMS	App	Video call	Real Time Text	Other
Sweden		✓		✓		→ Text Relay Service → PSTN text telephone direct call to 112

Annex 11: Public Warning

Country	Sirens	Radio	TV	Cell Broadcast	SMS	Other
Sweden	✓	✓	×	×	✓	<ul style="list-style-type: none">→ Text-TV→ Voice message on fixed landlines→ Smartphone App→ RSS-flow