

Public Safety Answering Points Global Edition

–December 2021–



Understanding PSAPs
around the world has never
been easier

eena
EUROPEAN EMERGENCY NUMBER ASSOCIATION

2021

Abstract

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 sixth 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 58 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 2021 edition includes everything covered by previous editions, as well as information on the upgrade towards NG112 and details on the cooperation with Third-Party Services (TPS).

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 15 December 2021.

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

Report information	4	Malta	391
Call handling models	6	Mexico	402
EENA knowledge hub	10	Moldova	412
Albania	11	Montenegro	422
Argentina	19	Nepal	431
Australia	31	Netherlands	440
Austria	45	New Zealand	452
Belgium	56	Nigeria	465
Bosnia and Herzegovina	68	Norway	474
Bulgaria	77	Poland	485
Canada	89	Portugal	496
Croatia	101	Qatar	507
Cyprus	114	Romania	516
Czech Republic	124	Serbia	531
Denmark	134	Slovakia	540
Ecuador	147	Slovenia	551
Egypt	161	Spain	563
Estonia	169	Sweden	591
Finland	181	Switzerland	605
Finland (Åland Islands)	194	Thailand	614
France	203	Turkey	626
Georgia	216	United Arab Emirates	637
Germany	225	United Kingdom	653
Greece	235	United States of America	665
Hungary	246	Annex 1: Number of PSAPs per service	678
Iceland	256	Annex 2: Direct emergency numbers to PSAPs	684
India	268	Annex 3: Number of calls per service	689
Ireland	282	Annex 4: Number of calls per network type	697
Israel	293	Annex 5: Technologies available in the PSAPs	702
Italy	305	Annex 6: NG112	708
Kosovo	319	Annex 7: Mobile Caller Location	713
Kuwait	327	Annex 8: Landline Caller Location	719
Latvia	336	Annex 9: Advanced Mobile Location	725
Lithuania	348	Annex 10: Apps & SMS	731
Luxembourg	360	Annex 11: Accessibility	737
North Macedonia	372	Annex 12: Public Warning	742
Malaysia	380		

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.

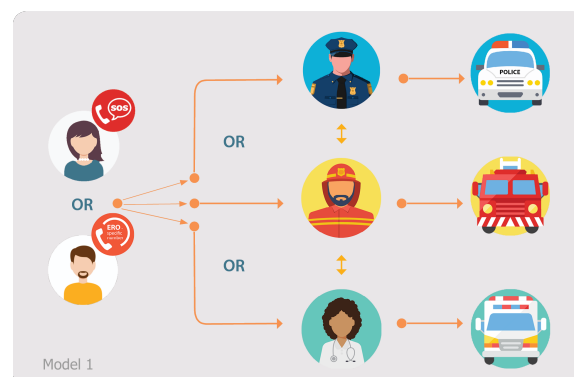
If the intervention of a different emergency response organisation is required, the call and/or data about the emergency situation are forwarded to the most appropriate ERO.

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

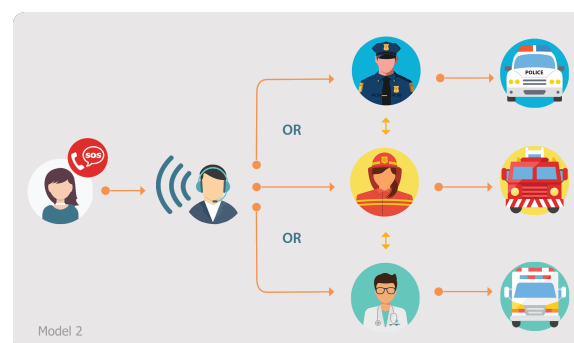
Emergency call handling is organised over two levels: there is an independent organisation in charge of the first reception of the call and then the call is forwarded to the most appropriate local emergency response organisation.

Examples: United Kingdom, Ireland

Emergency call handling chain

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

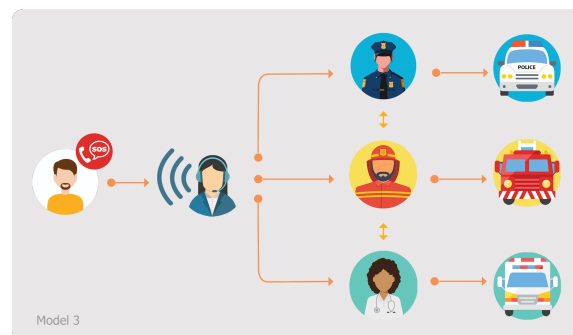
1. General emergency number (e.g. 112, 999) calls handled by civilian operators
2. Stage 1 PSAP: Filtering tasks. The call-taker locates the caller and where the emergency is. He or she asks the caller with which emergency service he/she wants to get in contact (e.g. “What do you need? police, ambulance, 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.

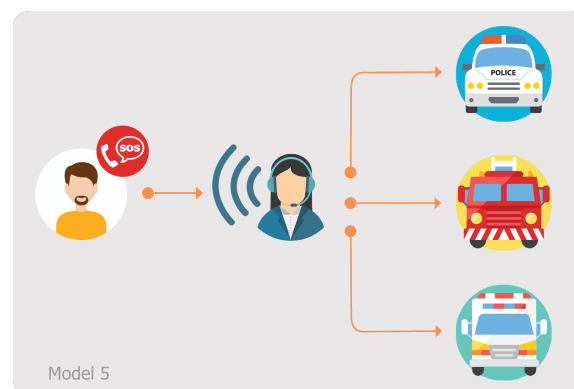
Example: Finland

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**.

11.5 million

Population

30,528 km²

Area

4,981 K

Calls

2020

Year of reference



Organisation handling 112 calls

10 call-centres 112 (Fire services and medical emergency services)



National legislative / regulatory acts on 112 references

- Law of 13 June 2005
Defines that users of any mobile telephone, fixed line and public telephone can call the emergency services for free through the European emergency number 112 and through the other emergency numbers
- Royal Decree of 2 February 2007
Defines emergency numbers and obligations for operators in relation to routing emergency calls
- Royal Decree of 27 April 2007
Defines enhanced caller location provision for mobile emergency calls
- Law of 29 April 2011
Defines the creation of the 112 call-centers and the 112 agency
- Royal Decree of 17 October 2011
Defines the creation of the 112 call-centers and the 112 agency
- Law of 14 November 2011 3.6
Defines that people who are deaf, hearing impaired or have a speech impediment and who are unable to contact the emergency numbers via voice call, can contact the emergency services via text message (SMS), free of charge.



Report applies to

- 112 Centres, FRS, EMS, Police
- All of Belgium

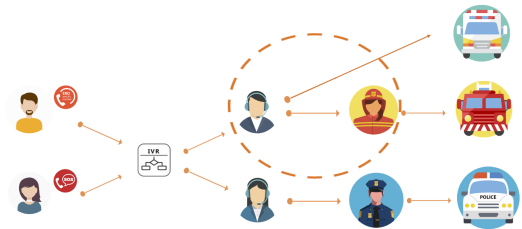
Emergency call handling model

There are three regions:

- The Flemish Region, subdivided into five provinces
- The Walloon Region, subdivided into five provinces
- The Brussels-Capital Region

Callers who call 112 are directed to an IVR robot where they have to indicate whether they want an intervention of medical / fire services or an intervention from the police services.

Callers who don't choose quickly enough end up together with the callers who have selected the medical / fire services in one of the 10 provincial PSAPs (every province except Brabant Wallon), responsible for medical and fire interventions (these centres also treat calls to the national emergency number 100, for fire and rescue services and emergency medical services). Callers who choose police assistance are transferred to the call-centres of the integrated police (the SICAD or Communication and information service of the district, treating the traditional 101-calls in Belgium).

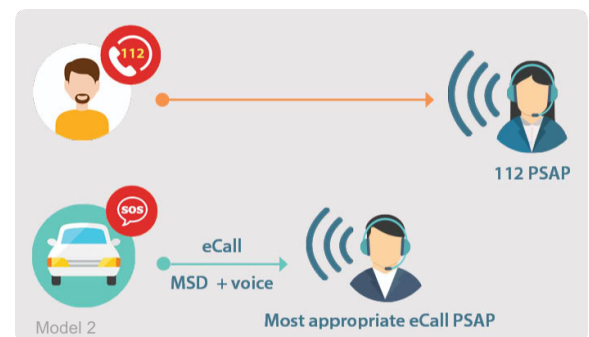


eCall implementation

Public eCalls are sent directly to a PSAP 112 that will review the call and send help if necessary.

Model 2 is used for public eCall.

- ✓ eCall has been implemented



112 BASED ECALLS IN 2020

eCall Type	Calls Received	Emergency Cases	Comments
Manual	9,402	-	
Automatic	12,514	-	
Total	21,916	-	

PSAPs and dispatch centres

PSAPS & DISPATCH CENTRES (DCS)

	PSAPs	DCs	Comments
112	10	-	
FRS	same as 112	34	There are 35 emergency rescue zones that have the responsibility to dispatch fire services. But they also have the freedom to choose how they organize this. Some rescue zones have their own dispatching service. Others work together and rely on a dispatching service that dispatches several rescue zones.
EMS	same as 112	-	Medicals services are dispatched by the operators of the 112 PSAP
Police	11	-	Police calls are dispatched by the 101 PSAPs.
Other	-	-	
Several Forces	same as 112	-	Fire and EMS
TOTAL	21	34	

COMMENTS

No plans to increase or reduce the number of PSAPs.

Emergency Numbers

EMERGENCY NUMBERS ANSWERED BY PSAPS

PSAPs	Number	Comments
112	112, 100, 1722, 1733	The calls to the number 112; the fire and medical emergency number 100; the calls to the non-urgent fire and medical numbers 1722 and 1733
FRS	112, 100, 1722, 1733	
EMS	112, 100, 1722, 1733	
Police	101	The calls to the police emergency number 101
Other	n/a	
Several Forces	112, 100, 1722, 1733	The calls to the number 112; the fire and medical emergency number 100; the calls to the non-urgent fire and medical numbers 1722 and 1733

■ Non emergency numbers

- 1722: non-emergency number, receiving calls for non-urgent assistance of the fire services (for example: clean up a fallen tree, pump out basement, etc.). This number is only activated and accessible during stormy weather conditions
- 1733: non-emergency number, receiving calls for non-urgent medical assistance. This number is only activated outside the usual opening hours of general practitioners
- 0800/14.689: non-emergency number, receiving calls with information questions concerning COVID-19. (This number is no longer active)

Emergency calls in 2020

EMERGENCY CALLS			
	Calls	Forwarded Calls	Comments
112	2,123,051	-	The traditional number 100 is no longer promoted. Calls to 100 are calculated as 112 calls (because they are treated the same way)
FRS	-	-	The traditional number 100 is no longer promoted. Calls to 100 are calculated as 112 calls (because they are treated the same way)
EMS	-	-	The traditional number 100 is no longer promoted. Calls to 100 are calculated as 112 calls (because they are treated the same way)
Police	2,422,228	-	
Other	436,216	-	99,604 calls to the number 1722 and 336,612 calls to the number 1733
TOTAL	4,981,495	-	

Emergency calls per type in 2020

Mobile Telephone Networks

61%



Fixed telephone networks (landlines)

39%



Campus/private company networks

Not known



IP networks

Not known



Technology and equipment used in the PSAPs

- ➔ **Do all PSAPs use the same technology in your country?**
Four 112-PSAPs and all the 101-PSAP's use CAD-ASTRID technology, five 112-PSAPs use AEG / CityGIS CMS technology, one 112-PSAP already made the switch to our new technological platform: NACA2 / CityGIS C&D technology.
- ➔ **How are the PSAPs interconnected?**
Some are interconnected via data, others only voice interconnected.
- ➔ **In case of data interconnection, are these data exchanged thanks to a common network?**
Yes
- ➔ **Do the interconnected PSAPs use common databases?**
No

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	Not available
Business Intelligence System	Not available

Next Generation 112 (NG112)

- ➔ **Do you consider upgrading towards Next Generation 112?**
Yes, in the next 5 years
- ➔ **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

Caller Location in support of emergency services

MOBILE CALLER LOCATION			
Type	Time needed	% of calls	Comments
Cell-ID	0.5 sec		
AML	5 sec		5 sec from when the call-taker picks up the call; before this step, location data are requested as soon as the caller ends up on the IVR
Handset-derived location via App	0.5 sec		

Landline caller location

Time needed

0.5 sec



How often are the subscriber number addresses being updated?

The database with the subscriber number addresses is updated at least daily. Nevertheless it might happen that the update of a specific subscriber number takes more than a day.



Advanced Mobile Location (AML)

AML DEPLOYMENT

- deployed for 112
- deployed for 101



WORKS WITH

- Apple



AML TRANSMISSION

- via both SMS



ADDITIONAL FEATURES

- International roaming
- AML for emergency SMS



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

Apps

■ APP 112 BE

- Provides GNSS based location
- Provides medical data
- Provides ICE
- National coverage

Since June 2017, people can contact the PSAP's using the "official app 112 BE". Everyone in Belgium can use this (national) app. People who are deaf, hearing impaired or have a speech impediment can mention this in the registration and can use chat/SMS via the app.

Accessibility for people with disabilities

ACCESSIBILITY SERVICES		
Service	Registration *	Comments
Fax	No	
SMS	No	No registration needed but they have to use a specific number
Smartphone App	No	App 112 BE
Real Time Text	No	APP 112 BE has a chat option for people who are deaf, hearing impaired or have a speech impediment. (this option can be activated by the emergency operator)

*Registration required

SMS service for all citizens

→ SMS service is not available (available only to a well-defined target group)

112 available from handsets without SIM cards?

No

Cooperation with Third-Party Services (TPS)

THIRD-PARTY SERVICES		
Third-Party Service	Cooperate *	Comments
eCall TPSPs	✓	Cooperate with eCall third-party services (TPS). Specific legal framework was elaborated

*TPS cooperates with emergency services

Use of social media

■ Virtual Operations Support Team (VOST)

"Team D5" is a VOST-team for SMEM from a perspective to inform the population. In addition, an additional VOST team is being created to support crisis management and facilitate situational awareness using social media.

Public warning *(Alert to citizens)*

■ Public warning by

- Radio
- TV
- Location Based SMS (Alert-SMS)
- Social media (BE-Alert)
- Voice calls (BE-Alert)
- SMS (BE-Alert)
- Email (BE-Alert)

Warnings to all citizens are always possible via radio and TV, but the BE-Alert project introduced by the Federal Crisis Centre was officially launched the 13th of June 2017.

The BE-Alert platform can be activated at the municipal, provincial and federal level and uses different communication channels: voice calls on fixed phones or mobile phones, SMS, e-mails, social medias like Facebook and Twitter. This address-based system functions by selecting an area on a map and by sending a warning message to the recipients registered with an address in this area.

In parallel, the Federal Crisis Centre have developed with the Mobile Network operators a new service (Alert-SMS) for warning messages on mobiles, without registration. This location-based system functions by selecting an area on a map and by sending a warning message to the mobile users identified by mobile operators.

■ Organisation Responsible for public warning

Federal Public Service Home Affairs - Federal crisis centre (Belgium))

✂ Use of RPAS *(Remotely Piloted Aircraft Systems)*

Drones are used by Emergency Services Organisations (ESOs).

■ Emergency Services Organisations (ESOs) using RPAS

- FRS: 12
- Police: 93
- Civil protection: 9
- Customs: 4

☆ Quality of service

Call handling evaluation	<p>✓ Call handling service is evaluated</p> <p><i>Calls are regularly relistened for evaluation purposes. The interval is different from PSAP to PSAP; but this happens in every PSAP on a regular basis.</i></p>
Use of quality improvement systems	<p>✓ Yes</p>
Use of key performance indicators	<p>✓ Yes</p>
Use of protocols by call-takers/dispatchers	<p>✓ Yes</p> <p><i>Yes. There is a manual for medical regulation and a manual for fire regulation. Police and Fire/Medical have their own processes and in order to optimise collaboration and information exchange between disciplines, multidisciplinary protocols exist.</i></p>
Use of questions and decisions tree by call-takers/dispatchers	<p>✓ Yes</p>
Established processes or certifications for ensuring cybersecurity	<p>✓ Yes</p> <p><i>On a regular basis cybersecurity audits are conducted by an external party.</i></p>
Quality certification(s)	<p>✗ No quality certifications</p>

Projects, reforms, upgrades

■ **A supraprovincial architecture for the emergency centres 112 (competent for urgent medical assistance and assistance from the fire brigade).**

The emergency centres 112 are organized in a provincial manner in Belgium (just as the emergency centres 101). This small scale has advantages (amongst other things better knowledge of the territorial competent area and of the dialects that are spoken), but also disadvantages. The centres 112 cannot help one another when one of the centres suddenly is confronted with an influx of calls and when there is a large-scale incident, the territorial competent centre cannot only focus on the incident itself, but also has to ensure the treatment of other calls from that province that are not linked to the incident itself. Today, those other calls cannot be transferred to one or more other centres that then could treat these autonomously. The terrorist attacks of 22 March 2016 have shown that such a supraprovincial structure has an undeniable added value to be able to treat a mass of calls and to be able to manage a far-reaching incident.

To that end, the telephony systems and the CAD-systems are being moved to one (redundant) national system, with common databases.

■ **The national e-counter 1722**

It is a permanently activated additional tool to the number 1722 (only activated in case of heavy weather). The e-counter was launched in 2021 and will be further refined and expanded with other modules in the course of 2022.

Technology providers

- ASTRID
- Intergraph
- Proximus
- Telenet
- CityGis
- Tranzcom
- Cegelec

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
Belgium	2020	10	-	same as 112	34	same as 112	-	11	-	-	-	same as 112	-	21	34

Annex 2: Direct emergency numbers to PSAPs

Country	Stage 1	FRS	EMS	Police	Other	Several
Belgium	112, 100, 1722, 1733	112, 100, 1722, 1733	112, 100, 1722, 1733	101	n/a	112, 100, 1722, 1733

Annex 3: Number of calls per service

Country	Data	Stage 1	FRS	EMS	Police	Other	TOTAL
Belgium	2020	2,123,051			2,422,228	436,216	4,981,495
112:: The traditional number 100 is no longer promoted. Calls to 100 are calculated as 112 calls (because they are treated the same way) FRS:: The traditional number 100 is no longer promoted. Calls to 100 are calculated as 112 calls (because they are treated the same way) EMS:: The traditional number 100 is no longer promoted. Calls to 100 are calculated as 112 calls (because they are treated the same way) Other:: 99,604 calls to the number 1722 and 336,612 calls to the number 1733							

Annex 4: Number of calls per network type

Country	Data	Mobile	Fixed	Private	IP
Belgium	2020	61%	39%	Not known	Not known

Annex 5: Technologies available in the PSAPs

Country	GIS	CTI	CAD	WFMS	BIS
Belgium	All PSAPs	All PSAPs	All PSAPs	Not available	Not available

Annex 6: NG112

Country	Consider upgrading?	Established Working Group?	Established Plan?
Belgium	Yes, in the next 5 years	Not yet	Not yet

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 %
Belgium	0.5 sec				5 sec				0.5 sec	

Annex 8: Landline Caller Location

Country	Time needed	Update Frequency
Belgium	0.5 sec	The database with the subscriber number addresses is updated at least daily. Nevertheless it might happen that the update of a specific subscriber number takes more than a day.

Annex 9: Advanced Mobile Location

Country	Deployed	Works with	Transmission	Features
Belgium	✓	→ Apple	→ via both SMS	→ International roaming → AML for emergency SMS

Annex 10: Apps & SMS

Country	Apps	SMS Service for all citizens
Belgium	→ APP 112 BE	× Not available

Annex 11: Accessibility

Country	Fax	SMS	App	Video call	Real Time Text	Other
Belgium	✓	✓	✓		✓	

Annex 12: Public Warning

Country	Sirens	Radio	TV	Cell Broadcast	LB SMS	Other
Belgium	×	✓	✓	×	✓	→ Social media → Voice calls → SMS → Email