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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

on the effectiveness of the implementation of the single European emergency number '112'

1. INTRODUCTION

This report reviews the effectiveness of the implementation of the single European emergency number '112' in line with Article 109(4) of the European Electronic Communications Code[1] (EECC). The report is based on the responses of Member States and Norway, to the questionnaire[2] submitted to the Communications Committee (COCOM)[3] on the implementation of emergency communications and the European emergency number '112' and the reports submitted by Member States under Articles 7(1) and 8 of the Delegated Regulation 2023/444. This data-gathering was the sixteenth such exercise conducted by the Commission services since 2007.

Under Article 109(4) EECC the Commission is required to submit by 21 December 2020, and every two years thereafter, a report to the European Parliament and to the Council on the effectiveness of the implementation of the single European emergency number '112'. The second such report was published on 16 December 2022[4].

The data gathering for the current report relied on specific questions that serve to assess the level of implementation of EU law requirements and the improvement of the national Public Safety Answering Point (PSAP) systems. The reporting period for the quantitative data[5] (e.g. number of emergency calls to '112') is 1 January 2023 to 31 December 2023. When assessing the availability of a system (e.g. deployment of a caller location solution, application, etc.) the latest information available is reflected in this report. Member States and COCOM observers from Candidate and EEA Countries were invited on 4 April 2024 to submit their responses by 7 June 2024.

Member States were called on to develop their measuring tools for monitoring a number of indicators in order to provide accurate data on the functioning of their emergency communications systems. Throughout the report, where Member States are not mentioned with regard to a qualitative or quantitative assessment, it means that relevant data was not provided to the Commission services.

2. CALLS TO '112'

In 2023 calls to the single European emergency number '112' increased by 15% to 176 million compared to 2021. Meanwhile, the total number of emergency calls, including to the national emergency numbers, where these are still in use, increased by 6% to 285 million. Calls to '112' represented 62% of all emergency calls in 2023.

[1] Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (OJ L 321, 17.12.2018, p. 36).
[2] COCOM24-01
[3] Communications Committee established on the basis of Article 118 EECC.
[4] https://digital-strategy.ec.europa.eu/en/library/2022-report-implementation-112-eu-emergency-number
[5] The quantitative data is gathered every second year, and concerns only the year immediately preceding the report, in order to ease the administrative burden on reporting authorities.

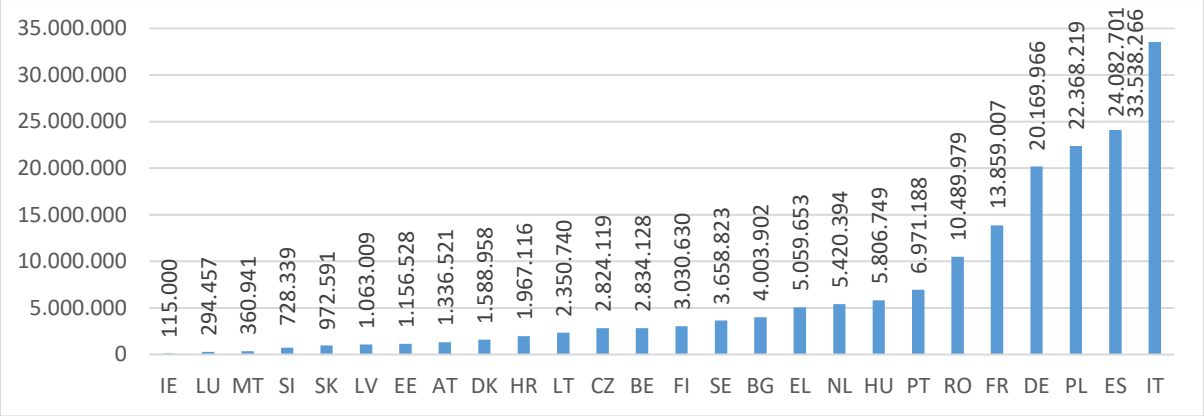

Figure 1. Number of calls to '112'

'112' is the single emergency number in Denmark, Estonia, Finland, Malta, the Netherlands, Portugal, Romania and Sweden. However, only 19% of calls to '112' in the EU are placed in these countries. The large majority of calls to '112' are placed in Member States where national numbers are still in use. In these Member States, the use of the single European emergency number varies largely, from 5% in Ireland to 97% in Bulgaria.

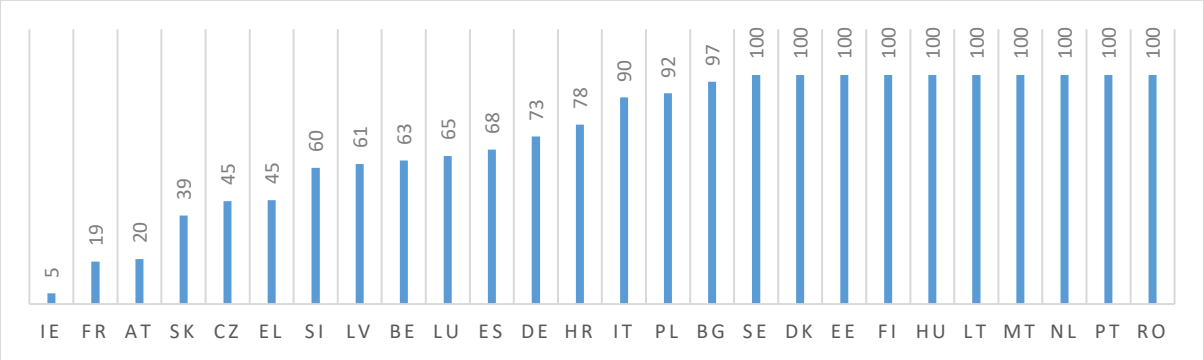

Figure 2. Percentage of calls to '112'

Calls to '112' from mobile phones largely outweighed the number of calls from fixed phones. On average, 82% of the calls in 2023 were placed from mobile phones. However, the use of mobile phones for emergency communication purposes varies across Member States, from 65% in Germany and 77% in Italy to 98% in Czech Republic and 99% in Latvia.

The ratio of false calls[6] to the total number of emergency calls still varies considerably among the Member States[7], reaching 72% in Portugal. Some Member States do not allow calls from SIM-less phones in order to decrease the risk of false calls that may potentially burden the PSAP system. However, access to emergency services from SIM-less phones is mandated in the majority of Member States (19)[8].

[6] False calls are calls that are not followed up with intervention or assistance from the PSAP or the emergency services. Calls that report an emergency event that have already triggered intervention or assistance from the part of the PSAP, therefore not triggering separate intervention or assistance will not be considered false calls.

[7] 20 Member States provided information on false calls.

[8] AT, CY, CZ, DK, EE, EL, ES, FI, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, SE.

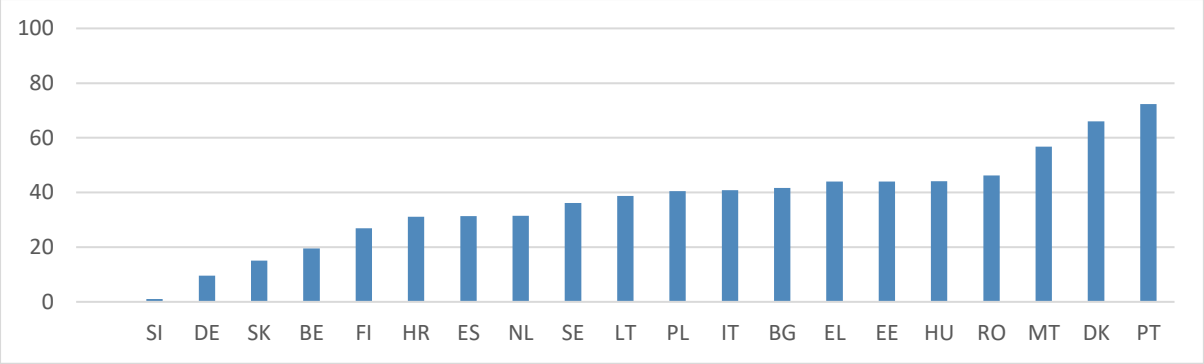

Figure 3. False calls to emergency numbers (%)

17 Member States mandated SMS-based emergency communications for all end-users[9]. In 13 Member States[10] the emergency SMS is sent to '112'. The number of emergency communications through SMS varies significantly depending on the level of promotion of this type of emergency communication, from a few to tens of thousands. 14 Member States[11] confirm that the provision of emergency SMS is ensured free of charge.

In addition to the possibility to access emergency services by calling '112', 19 Member States[12] deployed national or regional applications available to all end-users[13], which enable emergency communications. These means of access, depending on their design, enable end-users to share additional information with the PSAP, provide handset-derived location information or ensure a text-based communication with the PSAP. Belgium, Cyprus, Finland, Germany, Poland and Sweden confirmed that the data traffic generated by the emergency application is provided under zero-tariff.

eCalls are routed to the eCall PSAP in case of an accident. A total of 658,392 eCalls were reported by 27 Member States in 2023, 56% more than in 2021, when 421,000 eCalls were reported.

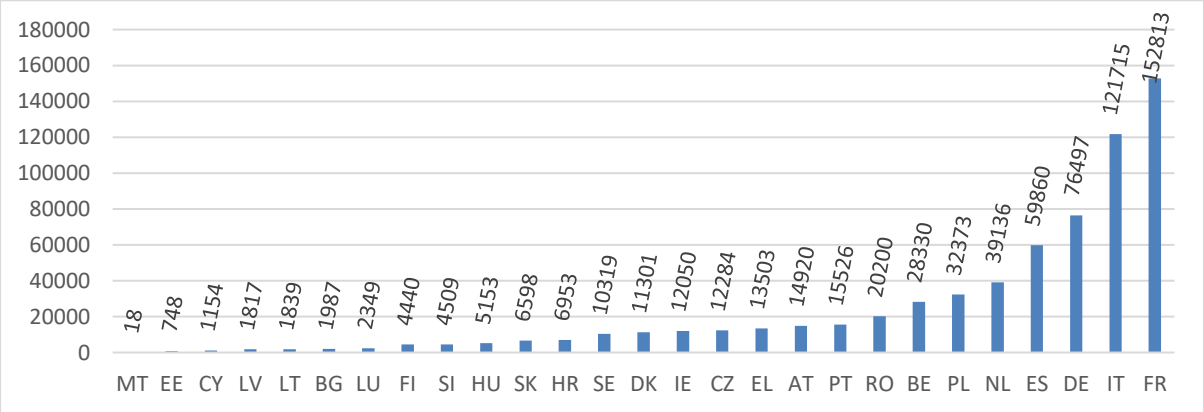

Figure 4. Number of eCalls placed in the EU

[9] SMS communication is deployed in some Member States exclusively for end-users with disabilities, as indicated in section 8.
[10] CY, EE, EL, FI, HR, HU, IE, LT, LU, LV, NL, SI, SK.
[11] AT, BE, CY, EE, EL, HR, HU, IE, LT, LU, LV, NL, SI, SK.
[12] AT (regional), BE, CY, CZ, DE, DK, ES, FI, HU, IT, LT, LU, LV, NL, MT, PL, RO, SE, SK.
[13] Application-based communication is deployed is some Member States exclusively for end-users with disabilities, as indicated in section 8.

3. ANSWERING TIME[14]

22 Member States reported 10 seconds or less for the average answering time needed to get in contact with the emergency services.

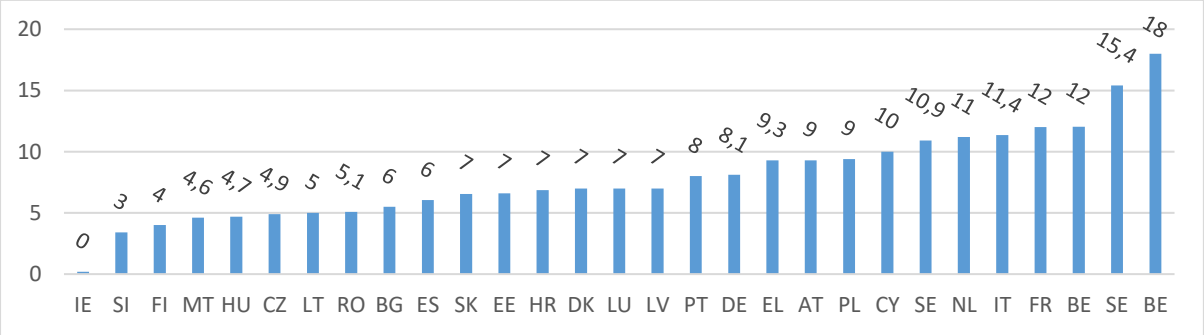

Figure 5. Average answer times to emergency calls (seconds)

4. CALL ABANDON RATE

27 respondents reported[15] on the calls that are presented to the PSAP switches but terminate prior to an answer by a human operator. Call abandons may be caused by network problems, call congestion, technical faults, handling capacity, caller disconnect (possibly dialling by mistake), etc. While involuntary calls and caller disconnect are not under the control of the PSAP system operators, the lack of handling capacity is pointing towards the failure to adequately answer and handle calls to '112' in the national PSAP system.

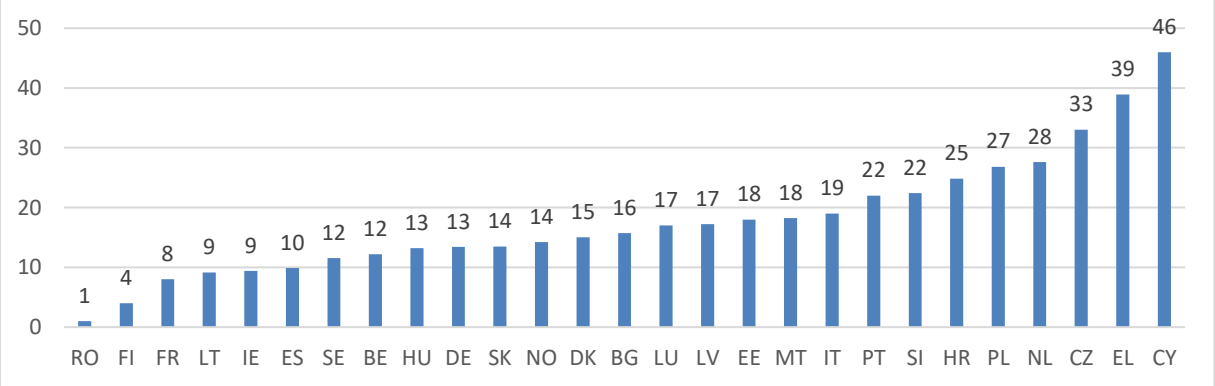

Figure 6. Percentage of abandoned calls to emergency numbers

5. AVAILABILITY OF CALLER LOCATION

Article 109 EECC makes mandatory the availability of both, network-based and the more accurate handset-derived[16] location information, to the most appropriate PSAP.

In most of the reporting Member States[17], the lack of availability of network-based caller location information occurs in less than 3% of the calls. Higher rates of failure to provide

[14]The time between the moment the emergency call is presented to the 1st level PSAP switch and the moment the call is being answered by a PSAP human operator.
[15]Austria did not report this data
[16]While the accuracy of network-based location may vary from 50 m to 40,000 m, handset-derived location provides a much more accurate location up to 5 m.

caller location were reported for the Hungary (4%), Ireland (5%), Estonia (6%), France (7%), Spain (11%), Denmark (15%), Latvia (21%).

15 Member States, in particular where the Advanced Mobile Location (AML) solution[18] is deployed, reported on the rate of availability of handset-derived caller location. Even where the national PSAP system is upgraded to receive AML, still a significant number of calls do not benefit from this very accurate location (up to 60% of calls). In addition to locating the end-user that places a call to '112', Member States could also enable AML for the SMS type of emergency communications.

Roaming end-users, visiting other Member States, might potentially be in a more vulnerable situation in case of emergency as they may not be able to describe their location precisely. While AML is deployed in 25 Member States, Iceland and Norway, only 8 Member States confirmed that handset-derived location is available for roaming end-users[19].

6. CALLER LOCATION ACCURACY AND RELIABILITY

Article 109(6) EECC requires Member States to lay down accuracy and reliability criteria for the caller location information. Delegated Regulation 2023/444[20] sets out the parameters that that need to be taken into account by competent authorities when laying down the criteria for the accuracy and reliability of caller location information. These criteria should ensure, within the limits of technical feasibility, that the end-user's position is located as reliably and accurately as is necessary to enable the emergency services to usefully come to the end-user's assistance.[21]

Article 8 of the Delegated Regulation obliges Member States to report on the adoption of the criteria and to explain how they have taken into account the parameters established in the Delegated Regulation no later than by 5 March 2024.

Under Article 8(1)(a) of the Delegated Regulation, 17 Member States[22] reported criteria on caller location accuracy and reliability. Of these Member States, all report that for fixed networks caller location is provided in terms of the physical address of the network termination point, the reliability of which varies from 60-100%. For mobile networks, 8 Member States[23] report an accuracy of 50 m for 80% of mobile communication. Other Member States report accuracy criteria up to 100 m and reliability between 55-80%, except for the Netherlands, which reported 5000 m as criterion. An overview of the criteria for the accuracy and reliability of caller location information reported by Member States can be found at Annex I.

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[17] 15 Member States have provided relevant data: BG, CY, CZ, DK, EE, ES, FR, HR, HU, IE, IT, LT, LV, MT, NL, PT, RO and SE.

[18] https://ec.europa.eu/digital-single-market/en/news/112-112-day-locating-emergency-calls-aml-technology-rise

[19] BE, DK, EE, EL, FI, PT, RO, SE

[20] Commission Delegated Regulation (EU) 2023/444 of 16 December 2022 supplementing Directive (EU) 2018/1972 of the European Parliament and of the Council with measures to ensure effective access to emergency services through emergency communications to the single European emergency number '112'

[21] Case C 417/18; Judgment of the Court (Fourth Chamber) of 5 September 2019, AW and Others v Lietuvos valstybė.

[22] BE, BG, CZ, DE, DK, EE, FI, HR, IE, IT, LT, LV, NL, PL, PT, RO, SE

[23] BG, DK, FI, HR, IE, IT, LT, SE

The Advanced Mobile Location (AML) solution that derives the caller location solution from the handset is implemented on the territory of 25 Member States[24] and Norway.

7. AVERAGE TIME NEEDED FOR RECEIVING THE CALLER LOCATION BY THE 112 OPERATOR

Due to the implementation of the "push" system or the automatic "pull" system all Member States reported near instant times (up to 10 seconds) for the provision on *network-based caller location*.

Due to its inherent architecture, *handset-derived location* technologies rely on the speed of the handsets to derive relevant location parameters from GNSS or Wi-Fi signals. On the basis of the reports from 22 Member States, it was confirmed that the provision of handset-derived location could range from near instant to up to 28 seconds.

8. ACCESS TO EMERGENCY SERVICES WHILE ROAMING IN THE EU

All Member States and Norway reported the availability of access to '112' and network-based caller location information in case of roaming calls.

16 Member States[25] provided information on the number of calls placed by roaming end-users to '112'. These Member States account for over half of emergency calls to '112'. On the basis of such data, it may be extrapolated that 2.7 million emergency calls were placed by roaming end-users to '112' in the EU, which represents 1,56% of all calls to '112'.

9. ACCESS TO EMERGENCY SERVICES FOR END-USERS WITH DISABILITIES

Pursuant to Article 109(5) EECC, Member States are obliged to ensure that end-users with disabilities benefit from access to emergency services equivalent to that enjoyed by other end-users. Article 4 of the Delegated Regulation sets out the functional equivalence requirements. The implemented accessibility solutions should replicate (be equivalent to) two-way voice communication ensured in the case of a call to '112', including in roaming. By virtue of equivalence, Member States should also ensure that caller location is available to the most appropriate PSAP to enable emergency services to intervene effectively.

To comply with this obligation, Member States have deployed a broad range of accessibility solutions dedicated to end-users with disabilities, including real time text, total conversation[26], SMS, emergency applications, web services, relay services and access from special devices.

The technology that is most deployed is SMS, which ensures a two-way, text-based interaction between the person alerting the emergency services and the PSAP. SMS is available for end-users with disabilities in 23 Member States[27] and Norway.

[24]AT, BE, BG, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PT, RO, SE, SI, SK

[25]BE, BG, CY, CZ, DE, DK, EE, HR, HU, IE, IT MT, PT, RO, SE, SI.

[26]As defined in Article 2 EECC: (35) 'total conversation service' means a multimedia real time conversation service that provides bidirectional symmetric real time transfer of motion video, real time text and voice between users in two or more locations.

[27]AT, BE, CY, CZ, DK, EE, EL, ES, FI, FR, HR, HU, IE, LT, LU, LV, MT, NL, PT, RO, SE, SI, SK.

Emergency applications are deployed in 17 Member States[28] and Norway. Depending on the design, they may rely on initiating emergency calls or SMS communications but may also serve as a platform to provide real time text and total conversation communications. In addition, applications may provide accurate handset-derived location based on GNSS/Wi-Fi positioning data (5-100m).

Relay services for end-users with disabilities may also relay a communication to access emergency services. However, user location is not always available for this means of access in Member States.

The European Accessibility Act[29] (EAA) requires that, in addition to voice, emergency communications is available by real time text or, where video is available, synchronised as total conversation[30]. Member States reported under Article 7(1) of the Delegated Regulation 2023/444 the expected deployment of real time text emergency communications as presented in Annex III.

An overview of the alternative means of access for end-users with disabilities currently deployed in the EU is presented in the Annex II.

10. PSAP UPGRADES IN MEMBER STATES

It is acknowledged in the Delegated Regulation 2023/444[31] that the migration from circuit-switched to packet-switched technologies in electronic communication networks would trigger the deployment of new means of emergency communications. Packet-switched technologies provide for versatile emergency communications adapting to the needs of end-users and emergency services alike. Voice services will run through IP Multimedia Subsystem (IMS)-based fixed and mobile managed VoIP technologies such as Voice over Long Term Evolution (VoLTE), Voice over New Radio (VoNR in 5G) and Voice over Wi-Fi (VoWiFi). Meanwhile, this migration would enable text and video-based services like real time text and total conversation, as mandated by the EAA. Key contextual information, like caller location or the minimum set of data for eCall, could be complemented under the new technology with other life saving information available on the device, through various sensors, or in the network.

The potential of the digital technologies could be fully realised only if both the electronic communication services and the national PSAP systems are able to leverage the technological developments.

EU legislation already mandates the upgrade of the national PSAP systems to be able to handle specific emergency communications running on packet-switched technology. Under the EAA the national PSAP systems will have to support and handle real time text or total conversation by 28 June 2025, or by derogation, by 28 June 2027[32]. These emergency communication services may be only deployed on packet-switched technology.

[28] AT, BE, BG, CY, CZ, DE, ES, FR, HU, IT, LT, LU, LV, MT, NL, PL, PT.
[29] Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services
[30] EAA Article 4(1) and Annex I, Section IV, point (a)
[31] Recital 2 of Delegated Regulation 2023/444
[32] EAA Article 4(8) and Annex I, Section V

The legal deadline for upgrading the national PSAP systems to be able to handle IMS-based eCall is provided in the Commission Delegated Regulation 2024/1084.[33] Accordingly, the national PSAP infrastructures will have to be upgraded by 1 January 2026.

Under Article 7 of the Delegated Regulation 2023/444, by 5 November 2023, Member States had to report to the Commission a roadmap for upgrading the national PSAP system in order to receive, answer and process emergency communications through packet-switched technologies. 23 Member States[34] and Norway provided the relevant information. In some Member States, the migration to packet-switched technologies has already taken place. From the data reported, emergency communications through packet-switched should be enabled across Member States by 2027 at the latest. Member States also reported on when PSAPs will be capable of handling real time text. While this means of access is already available in some Member States, by the end of 2027 at the latest all PSAPs in the EU should be capable of handling real time text. Further details on Member State's roadmaps for upgrading the national PSAP systems can be found at Annex III.

11. CONCLUSIONS

The main findings of this report are the following:

- The share of emergency calls to the single European emergency number '112' increased significantly compared to 2021 and represented 62% of all emergency calls: out of a total of 285 million emergency calls placed in the EU, 176 million were '112' calls. It is estimated that 2.7 million emergency calls were placed by roaming end-users to the single European emergency number 112, representing 1,56% of all calls to 112.

- The implementation of handset-derived caller location continued to improve in the EU. As of September 2024, 25 Member States, Iceland and Norway ensure that their PSAP system is AML enabled. However, only 8 Member States confirmed that handset-derived location is available for roaming end-users.

- End-users with disabilities do not yet benefit from fully equivalent means of access to emergency services, especially when roaming. When these end-users are not able to place a call to '112', they have to rely on nationally fragmented solutions. However, this situation is expected to change as Member States are preparing their PSAP systems to handle and electronic communication service providers are preparing to deploy interoperable real time text by June 2025 in line with the requirements of the European Accessibility Act

- National PSAP systems are being upgraded to packet-switched technology. This is mandated by EU legislation for real time text communications and eCall, with implementation deadlines in 2025, 2026 and 2027. It is expected that PSAP infrastructures are becoming more versatile and redundant, accommodating various types of emergency communications.

[33] Commission Delegated Regulation (EU) 2024/1084 of 6 February 2024 amending Delegated Regulation (EU) No 305/2013 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the harmonised provision for an interoperable EU-wide eCall

[34] AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, HR, IE, IT, LT, MT, NL, PL, PT, RO, SE, SI, SK

ANNEX I – ARTICLE 8(1)(A) CRITERIA FOR THE ACCURACY AND RELIABILITY OF CALLER LOCATION INFORMATION

	Mobile Network		Fixed network	
	Accuracy criterion (metres)	Reliability criterion (%)	Accuracy criterion (information related to the physical address of the network termination point)	Reliability criterion (%)
AT	N/A	N/A	N/A	N/A
BE	N/A	N/A	Yes	94%
BG	50 m	80%	Yes	90%
CY	N/A	N/A	N/A	N/A
CZ	100 m	55%	Yes	100%
DE	N/A	N/A	Yes	N/A
DK	50 m	80%	Yes	N/A
EE	50 m	60%	Yes	60%
EL	N/A	N/A	N/A	N/A
ES	N/A	N/A	N/A	N/A
FI	50 m	80%	Yes	100%
FR	N/A	N/A	N/A	N/A
HR	50 m	80%	Yes	N/A
HU	N/A	N/A	N/A	N/A
IE	50 m	80%	Yes	99%
IT	50 m	80%	Yes	82%
LT	GSM: 750m UMTS: 550m LTE: 350m 5G SA: 150m AML: 50 m	GSM, UMTS, LTE, 5G SA: 67% AML: 80%	Yes	95%
LU	N/A	N/A	N/A	N/A
LV	N/A	N/A	Yes	100%
MT	N/A	N/A	N/A	N/A
NO	N/A	N/A	N/A	N/A
NL	5000 m	85%	N/A	N/A
PL	N/A	N/A	Yes	100%
PT	100 m	60%	Yes	95%
RO	N/A	N/A	Yes	95%
SE	50 m	80%	Yes	99%
SI	N/A	N/A	N/A	N/A
SK	N/A	N/A	N/A	N/A

ANNEX II – ALTERNATIVE MEANS OF ACCESS TO EMERGENCY SERVICES IN EU MEMBER STATES AND EEA COUNTRIES

	Feature available
	Feature not available

	Means of access	Inter active	User location	No registration	Free	Roaming access	Free roaming	Number of access
AT	SMS to long number							580
	Application							294
BE	SMS to short number							N/A
	Application (112.be)							N/A
BG	RTT (over 112 Bulgaria application)							N/A
	Application (112 Bulgaria)							4
	Web based service							
CY	SMS to 112							N/A
	RTT (over 112 Cyprus application/IOS 11 Cyprus)							N/A
CZ	SMS to 112							739
	Application (zachranka)							N/A
	Web based emergency access							N/A
	General accessibility relay service							N/A
	Specialised emergency relay service							N/A
	Specialised devices from fixed locations							0
DE	Application							9671*
	General relay service							772
DK	SMS to long number							95
EE	SMS to 112							838
EL	SMS to 112							1478
ES	regional SMS to long numbers							338
	Specialised emergency relay service (video call)							200
	Application							200
FI	SMS to 112							5950
FR	SMS to 114							305,452
	Total conversation as network service							N/A
	Application							N/A
	Web based emergency access							N/A
	RTT as network service (www.info.urgence114.fr)							N/A
	RTT as application service (www.info.urgence114.fr)							N/A
	Specialised emergency relay							N/A

	Means of access	Inter active	User location	No registration	Free	Roaming access	Free roaming	Number of access
	service							
HR	SMS to 112							15
HU	SMS to 112							18890
	Application (112-SOS)							
IE	SMS to 112							1.279
IT	Application (Flag Mii)							N/A
	Application (Where ARE U)							N/A
	Specialised emergency relay service							N/A
LT	SMS to 112							39,464
	Application (112 app)							186
LU	SMS to 112							N/A
	Applications (GouvAlert, Echo 112)							N/A
LV	SMS to 112							N/A
	Application							N/A
MT	SMS to long number							4
	112.mt application							228
	112.mt web service							
	RTT over network (long number)							
	RTT over application							
	Report through 112.mt							
NL	RTT over application (112NL)							N/A
	Web based emergency access							N/A
	SMS to 112							N/A
	Specialised emergency relay service							N/A
	General accessibility relay service							N/A
PL	Application (Alarm 112)							1,836
PT	SMS to long number							N/A
	Emergency application							7
RO	SMS to 113							N/A
SE	SMS to 112							142
	General relay service							1,083
SI	SMS to 112							N/A
	Web based emergency access							N/A
SK	SMS to 112							N/A
NO	SMS 112							N/A
	Application, web service and relay (same site)							

*since 28.09.2021

ANNEX III – ARTICLE 7(2) ROADMAP FOR UPGRADING THE NATIONAL PSAP SYSTEMS TO PACKET-SWITCHED TECHNOLOGY

	Date of migration to packet switched emergency communication of the PSAP system	PSAP capable of handling real time text
AT	Q2 2025	Q2 2025
BE	Q1 2025	27 June 2027
BG	30 March 2026	30 March 2026
CY	1 January 2026	N/A
CZ	1 March 2025	1 October 2026
DE	PSAP migrated	N/A
DK	PSAP migrated	Summer 2027
EE	28 June 2025	28 June 2025
EL	PSAP migrated	Q2 2026
ES	July 2024	N/A
FI	PSAP migrated	Summer 2025
FR	N/A	N/A
HR	26 February 2025	28 June 2025
HU	Q4 2024	N/A
IE	2024	Q4 2024
IT	May 2025	N/A
LT	October 2026	March 2027
LU	N/A	N/A
LV	N/A	N/A
MT	PSAP migrated	Yes, for application
NO	N/A	N/A
NL	mid 2026-end 2027	Yes, for application. Native RTT as of mid-2026
PL	April 25	June 25
PT	May 2024	January 2025
RO	Q4 2025	Q4 2027
SE	PSAP migrated	Q3 2025
SI	Q1 2025	End of 2025
SK	Q3 2024	N/A