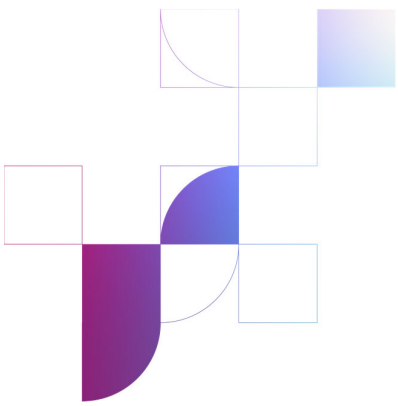
BEREC
Body of European Regulators for Electronic Communications

BoR (22) 142

BEREC Opinion on the draft Commission Delegated Regulation 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'



14 October 2022

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1. Introduction

Article 109(8) of the European Electronic Communications Code[1], stipulates that "*in order to ensure effective access to emergency services through emergency communications to the single European emergency number '112' in the Member States, the Commission shall, after consulting BEREC, adopt delegated acts in accordance with Article 117 supplementing paragraphs 2, 5 and 6 of this Article on the measures necessary to ensure the compatibility, interoperability, quality, reliability and continuity of emergency communications in the Union with regard to caller location information solutions, access for end-users with disabilities and routing to the most appropriate PSAP. The first such delegated act shall be adopted by 21 December 2022. Those delegated acts shall be adopted without prejudice to, and shall have no impact on, the organisation of emergency services, which remains in the exclusive competence of Member States. BEREC shall maintain a database of E.164 numbers of Member State emergency services to ensure that they are able to contact each other from one Member State to another, if such a database is not maintained by another organisation.*

In line with the above provisions, on 5 August 2022 the European Commission (EC) sent the draft *Commission Delegated Regulation 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'* (hereinafter: draft delegated regulation) and the accompanying Staff Working Document to BEREC. BEREC was requested to provide its formal opinion on the draft delegated regulation by 14 October 2022.

In Chapter 2, BEREC expresses general remarks related to the EC's proposal, in Chapter 3 contains an analysis of the legislative proposal, while in Chapter 4 BEREC articulates detailed opinions around caller location identification, access to emergency services for end-users with disabilities and routing to the most appropriate PSAPs. In view of possible future EC's delegated acts, in Chapter 5, BEREC proposes some forward-looking considerations that might help make emergency communications in Europe more effective and reliable.

2. General Remarks

BEREC received the draft delegated regulation on 5 August 2022 and was requested to adopt its opinion by 14 October 2022.

In this regard and taking into account the importance of the topic at hand, BEREC stresses the need for a multi-stakeholder approach and interaction with relevant bodies, such as CEPT ECC NaN3, EENA, ETSI, ATIS, EDF etc. In particular, CEPT ECC NaN3 consists of experts from regulators, who could provide technical regulatory insights and relevant harmonising tools within Europe.

BEREC highlights that its constituent members have different competencies on this matter. A BEREC survey conducted among its members has shown that, regarding caller location information only 37% of the respondents hold full competences; regarding access to

[1] Directive (EU) 2018/1972 of the European Parliament and of the Council establishing the European Electronic Communications Code, OJ L 321, 17.12.2018, p. 36.

emergency services for end-users with disabilities only 17% of the respondent NRAs declared to have full competences while, concerning routing issues, only 33% of the respondents hold full competences. This highlights that NRAs, collectively, have limited competencies regarding access to emergency services, which limits BEREC's ability to adopt a deep and exhaustive opinion.

BEREC therefore limits the scope of the present opinion, only to those areas falling within BEREC members' competences.

BEREC recognises that the draft delegated regulation follows a principle-based/high level approach, and that detailed technical aspects may be addressed according to Article 109 (8) by means of further delegated acts. BEREC also notes that the current legal framework (EECC, Roaming Regulation) provides sufficient guarantees to maintain an environment for effective emergency communications. However, clarifications on some technical aspects, setting standards for the processes as well as settling certain existing technical issues would be important in areas such as CLI, in particular with a view to effectively providing CLI when the caller is roaming internationally or is using a nomadic voice over broadband service. Other important areas for further technical reflection are identified below.

BEREC is of the view that the main objective of the delegated regulation is to support the practical implementation of a harmonized approach in Europe on emergency communications. Such harmonised approach is crucial for the effective implementation by the industry and it is sometimes hindered by outstanding technical issues. In this opinion, also considering the timing constraints and the absence of standardization or standards with too many options, BEREC refrains from providing specific technical solutions but, nonetheless, deems it important to identify areas and issues where future work would be needed.

Finally, BEREC would like to flag some editorial remarks in relation to the draft delegated regulation: the notion of "effective emergency communication" is defined in Article 2, but is not used in the draft delegated regulation. Article 7(2) mentions a roadmap to be covered/developed under Article 10, but there is no Article 10 in the text. As Article 7 concerns reporting matters, BEREC considers that it is more suited to be included in Chapter 5 rather than Chapter 4.

3. Analysis of the legislative proposal

According to the Explanatory Memorandum of the EC proposal, the draft delegated regulation sets measures necessary to ensure the compatibility, interoperability, quality, reliability and continuity of emergency communications in the Union with regard to caller location information solutions, access for end-users with disabilities and routing to the most appropriate PSAP. The objective of the delegated regulation is to ensure effective access to emergency services through emergency communications to the single European emergency number '112' in the Member States.

The draft delegated regulation consists of 6 chapters and 9 articles.

Scope

The scope of the draft delegated regulation is restricted to the access to emergency services through emergency communications to the single European emergency number ‘112’ with regard to caller location information solutions, access for end-users with disabilities and routing to the most appropriate PSAP. The organisation of emergency services as such remains under the exclusive competence of Member States and falls outside of the scope of the mentioned regulation.

In general, emergency communications consist of two overall parts, the telecommunication side and the PSAP-side; in other words, the sending/transit side and the receiving side. Whilst the EECC and the draft delegated regulation primarily focus on the sending/transit side, it cannot be stressed enough that, indeed, the receiving part must be able to make use of the communication.

Caller location information

The draft delegated regulation intends to set out parameters that need to be taken into account by the competent regulatory authorities when setting the criteria for accuracy and reliability of caller location information. The draft delegated regulation stipulates that, for fixed networks, the accuracy criterion should be expressed through the caller location information related to the physical address of the network termination point, such as a street address, apartment, flat, floor or similar information; for mobile networks it should be expressed in metres to indicate the maximum radius of the horizontal search area that is presented to the emergency services for intervention purposes, including - if applicable - the elevation or vertical accuracy. As regards the reliability criterion, the regulation provides that it should be the success rate, expressed as a percentage, of the technical solution or mix of technical solutions to establish a caller location corresponding to the accuracy criterion.

Access to emergency services for end-users with disabilities

The draft delegated regulation establishes functional equivalence requirements for emergency communications to be used by end-users with disabilities for accessing emergency services. To ensure functional equivalence, the draft delegated regulation requires: two-way interactive communication, seamless access across the Union, free-of-charge access, appropriate answering and handling, provision of caller location and awareness. These functional equivalence requirements mirror the functional aspects of the mainstream voice-based communication, i.e., a call to ‘112’, available to other end-users. These functionalities must be replicated in all Member States, subject to technical feasibility. To ensure that seamless access across the EU is technically feasible, the draft delegated regulation calls on Member States to cooperate with the EC to identify common interoperability requirements, which would enable routing of the mobile-application-based emergency communications to the most appropriate PSAP when roaming.

Routing to the most appropriate PSAP

According to the draft delegated regulation, emergency communications must be routed to the most appropriate PSAP without delay. The regulation also establishes that the emergency communication has to be routed to the most appropriate PSAP that is technically capable to

convey without delay the contextual information to the emergency services. To ensure the access to emergency services by emergency communications to the most appropriate PSAP in the context of the technological migration to all-IP networks, the draft delegated regulation requires Member States to draft and send the EC a roadmap for upgrading the national PSAP system to be able to receive, answer and process emergency communications through packet-switched technology. The roadmap must indicate a timetable for the expected deployment of voice, text or video-based emergency communications through packet-switched technologies.

Reporting

The draft delegated regulation introduces reporting obligations for the Member States.

4. BEREC's observations

4.1. Caller location information

BEREC notes that the draft delegated regulation bears provisions around CLI that represent an important step forward; nevertheless, an even more proactive approach could be considered. In this respect, BEREC would like to suggest including in the draft delegated regulation a roadmap aimed at reaching an ambitious formulation with a view to answering to the EU citizens' needs, as outlined in this section.

As to the accuracy and reliability of CLI, BEREC believes that missing the present chance to share solutions with a view to the accuracy and reliability of caller location could lead to ever more divergent approaches in Member States. BEREC suggests that the draft delegated regulation envisages the elaboration of detailed guidelines, with the aim of sharing solutions and consequently providing advice to Member States for possible future improvement and further harmonisation around CLI, without currently requiring Member States to set specific values. The improvement of accuracy and reliability of network-based CLI should indeed be carefully evaluated considering the implementation of AML and also the relative investments required. BEREC remains available for any follow up in this respect.

Concerning the provision of accurate CLI when this is available, the experience - as also reported by the media - suggests that, when insufficiently accurate caller location information is provided, interventions in case of emergency may be not effective. Since technologies which provide more accurate CLI are available, in particular based not only on network information, but also on information drawn from handsets (e.g., AML), BEREC suggests that in the above-mentioned roadmap to be developed in the draft delegated regulation, a reference is inserted to the usage of such technologies in a harmonised way in the EU.

A path for the harmonisation in Europe using such technologies appears to be relevant and may have a positive impact also on manufacturers, fostering their trust and accordingly investment in such technologies. Some manufacturers provide limited capabilities in this respect, also due to the lack of standards as well as of harmonised decisions by countries.

According to the EECC, Member States must ensure the availability of CLI and this obligation shall be maintained also in case of roamers, when information is originating from the handset. Consequently, the identified harmonised solution(s) should work at least for major handset operating systems (Android and iOS), guaranteeing that the conveyance of such information

(via IP and/or via SMS) shall be free of charge. Currently, where the solution in place involves conveying CLI (via SMS and/or IP) also via the home country (in addition to the country where the emergency call is placed) without any coordination, it is not guaranteed that the communication will be free of charge. In the interest of achieving harmonised solutions in the EU, BEREC suggest that the draft delegated regulation clarifies what means could be used and how the information in question shall be conveyed to the PSAPs and, if possible, for the sake of consistency a single harmonised solution in the EU should be identified. Without such specifications, every Member State is likely to choose its own solution and without specific definition or standard, currently, the free of charge conveyance of CLI may not be guaranteed. If required, manufactures of the major operating systems for handsets (Android and iOS) may collaborate together with standardisation bodies (e.g. ETSI) to develop practical solutions. In fact, the current standard is open to various options and in view of harmonised solutions in the EU, the determination of a range of suitable option(s) may be appropriate, e.g., based on best practices in AML and, for the future, inserting location information in the SIP signalling for call to 112.

Therefore, BEREC suggests that the draft delegated regulation should aim at the harmonized implementation of AML in the EU, assuring that the current regulation is respected. In this respect, in BEREC's view, the involvement of providers of major handset operating systems (Android and iOS) and, possibly, standardisation bodies (i.e. ETSI) is essential to achieve greater harmonization. BEREC remains available to assist and cooperate with other relevant bodies in this respect.

Since the caller location from fixed networks is typically determined via the installation address or street/mailing/billing address of the calling party, it might also be useful to start defining a plan to determine CLI in case of nomadic communications (possible also in fixed networks), which may have an impact on determining to which country the information should be sent. In fact, caller line identifier may be used as a reference key to determine the location of an end-user calling emergency numbers by consulting a database. However, the caller line identifier is not an effective solution for emergency communications originating in fixed networks in cases where it is usable for nomadic services. In fact, the location where the call is originated could not be the address the caller line identifier is associated with. Furthermore, with the development of virtual PBX or cloud services, caller location information may be unknown. Therefore, BEREC suggests that the draft delegated regulation addresses the need to search for solutions around localization of nomadic services, e.g., by involving also ETSI.

- **BEREC suggests that the draft delegated regulation envisages the provision of detailed guidelines, with the aim of sharing solutions and consequently providing advice to Member States for possible future improvements and possible harmonisation, without currently imposing specific values.**
- **BEREC suggests the draft delegated regulation should aim at the harmonized implementation of AML in the EU, assuring that the current regulation is respected.**
- **BEREC suggests that the draft delegated regulation formulates the ambition to search for solutions around the localization of nomadic services, e.g., by involving also ETSI.**

4.2. Access to emergency services for end-users with disabilities

Generally, BEREC supports the specifications in Article 4 on the functional equivalence requirements. This will be useful to guide Member States in the equivalence access assessment.

More specifically, the limitation of "subject to technical feasibility" has been introduced in Article 4. BEREC takes note that mentioning this limitation explicitly is unnecessary because it is already part of the principle of proportionality , and it can lead to the implementation of different solutions in different countries, based on national stakeholders' technical expertise and legacy network set up, rather than optimal service implementations based on international developments in technologies and standards.

Furthermore, the European Accessibility Act provides detailed provisions, both for electronic communication services and for emergency services. BEREC is of the opinion that, in order to promote consistency, a link to the Accessibility Act including RTT and total conversation should be mentioned in the article, and not only in the recital. Relevant obligations and timelines in the Accessibility Act may be also usefully reflected in the text, to help Member States when considering accessibility measures for electronic communication towards PSAPs.

BEREC also draws the EC's attention to the BEREC Report on measures for ensuring equivalence – BoR (22) 90[2] - in particular Chapter 8 which concerns access to emergency services. BEREC concludes in the report that "*Member States could benefit from actively investigating the non-activated accessibility functionalities in smartphones and the features and functions at network level needed for their activation. A multi-stakeholder approach and interaction with both handset operating system providers and mobile network operators may prove to be beneficial".*

Both in the US and in Canada, RTT is activated by MNOs and by Google and Apple. BEREC would like to invite the EC to use the draft delegated regulation to ensure that accessibility solutions that are dormant in handsets are activated in Member States. Otherwise, there is a chance that the rollout of RTT in Europe will be fragmented and suboptimal. In this regard, BEREC also draws attention to RTT elements of the EC draft Implementing Decision on a standardisation request to the European standardisation organisations as regards the accessibility requirements of products and services in support of Directive (EU) 2019/882 of the European Parliament and of the Council. Even though European RTT-standards are not in place, GSMA IR. 92 and NG.114 have RTT specified for VoLTE and 5G. Both specifications are based on 3GPP TS 26.114. The equivalent of ETSI in US is ATIS. ATIS has three RTT-specifications that to a large extent can be reused in Europe.

Several countries have implemented SMS to emergency services. SMS is a handset native service and is easily accessible. The service can be a valuable alternative for end-users with

[2] https://www.berec.europa.eu/sites/default/files/files/document_register_store/2022/6/BoR%20%2822%29%2090_Draft%20BEREC%20Report%20on%20measures%20for%20ensuring%20equivalence%20of%20access%20and%20choice%20for%20disabled%20end-users.pdf

disabilities and BEREC invites the EC to investigate this further. However, the issue of SMS to emergency services short numbers ("shortcodes") for roaming end-users has not yet been solved.

BEREC underpins its preference for solutions that are native in handsets and/or networks, although it is important to leave room to the Member States to implement the system considering their specificities, as long as the equivalence criteria are met. Application-based solutions should be considered as a supplement and not the primary solution. There are advantages with Application-based services, especially in terms of flexibility and positioning, but there are also clear disadvantages. Application-based services need to be pre-registered and downloaded; the end-user must remember to use them during an emergency; the worldwide international interoperability is limited; they do not represent an equivalent service since regular services are native, the app-vendors are often outside of a regulatory domain and PSAPs need to invest in software and hardware (gateways, adapters, APIs towards incidents solutions for control rooms etc.) and this needs to be receptive for new apps. Not to mention that for interoperability in the EU, an EU application taking into account all different languages and national implementations at PSAP sides is needed.

If the EC considers taking up the challenge for an EU-wide application, BEREC advises to push for a European harmonized application or a set of applications for all kinds of end-users, including disabled end-users, which would allow for routing of mobile-application-based emergency communications to the most appropriate PSAP at home and when roaming. Timely availability of such a European application(s) might also alleviate problems when accessing emergency services with voice over LTE when 2G and 3G networks are being phased out.

As mentioned, BEREC would favour pushing for the use of solutions that are native present in handsets and networks. One app or a set of European applications should only be considered as a supplement to the native and standardised handset and network services.

- **BEREC generally supports the functional equivalence requirements in Article 4**
- **In a forward-looking approach:**
  - **BEREC considers that a link to the Accessibility Act and the timelines in the article could be beneficial.**
  - **BEREC notes that RTT is already dormant in many handsets, but needs to be activated by mobile network operators in cooperation with handset or operative system providers.**
  - **BEREC considers that applications for end-users with disabilities may serve as supplementary services, but not as the primary solution for emergency communication. The primary solution should be standardized network and handset native services.**

4.3. Routing to the most appropriate Public Safety Answering point

BEREC notes that for native mobile voice calls generally, routing to the most appropriate PSAP has to a large extent been the common practice. The routing is typically based on information created by the mobile network when the call originates. BEREC agrees with the EC that this feature and the focus on it should remain when migrating to all-IP or when using application- or OTT-solutions.

BEREC is of the opinion that ensuring routing to the most appropriate PSAP without delay might not be possible in case of technological limitations such as:

a) Roaming end-users: there might be interoperability or compatibility issues that impede the communication with the most appropriate PSAP or the conveyance of caller location information.
b) Border areas: Routing problems might also arise in the case of end-users in border areas as they might be connected to the neighbouring country's mobile network and therefore 112 calls are not routed to the appropriate PSAP. In order to partially cope with this issue, it is suggested that the draft delegated regulation explicitly imposes on Member States to provide the information to the database of E.164 numbers of Member State emergency services to ensure that PSAPs located in different Member States are able to contact each other.

BEREC underlines that regarding number-based interpersonal communications through nomadic VoIP services, CLI is not available or not reliable in most cases, as already mentioned in Section 4.1.

BEREC understands that the EC is fully aware of the technical limitations that impede the possibility of routing to the most appropriate PSAP as they are described in the accompanying EC Staff Working Document. BEREC also understands that many of the relevant problems are expected to be solved in the future, as technical solutions have been proposed and are being discussed or are under development. As suggested in Section 4.1, a short or longer-term roadmap should be set-up by the draft delegated regulation in order to address all the envisaged problems. In particular, where at least one solution exists, BEREC is of the opinion that the draft delegated regulation should envisage a roadmap to harmonise the solutions throughout the Member States while, when such a solution does not exist, the draft delegated regulation should envisage the involvement of the competent standardisation bodies, e.g. ETSI, to develop one.

Furthermore, currently a considerable number of technical issues still exist in relation to ensuring the routing of emergency calls to the most appropriate PSAP without delay. BEREC proposes that the requirement in Article 5 be modified with the addition that the relevant provision will apply when this is technically feasible.

BEREC also notes that routing to the most appropriate PSAP for the countries using a one stage PSAP-system is based on the accurate information of the physical location of the caller and is already widely implemented in the EU except for nomadic VoIP calls where this

information is not available. Therefore (see Section 4.1) a prerequisite for efficient routing for nomadic VoIP calls is the solution of the location information problem.

Regarding the reporting obligation in Article 7(1), BEREC does not see any added value in the proposed reporting on the performance of the routing, as normally there are no difficulties, except for specific situations as mentioned above. Also, information is already collected on such matters through the COCOM questionnaire on emergency communications. Furthermore, there is no indication on how the performance of the routing to the most appropriate PSAP is going to be measured. Guidance on definitions of information to be collected is necessary in order to have harmonized and comparable information on this among Member States.

BEREC is not aware of any obligation set by EU legislation for Member States on the need for the roadmap to upgrade the PSAP- system. This is not necessary in all Member States and, in any event, it may represent an unnecessary burden. If such a roadmap is imposed, further guidance would be important for competent authorities. Finally, BEREC stresses that this requirement is outside the competence of the NRAs.

- **BEREC emphasizes that harmonization is important in addressing interoperability issues.**
- **BEREC also highlights that a short or longer-term roadmap should be set-up by the draft delegated regulation in order to address all the envisaged problems.**
- **BEREC is of the opinion that guidance regarding reporting is necessary.**

5. Additional measures to be considered

As described in the previous chapters, currently there are many challenges for harmonization and technological/standardization issues in ensuring at all times access and routing to the most appropriate PSAP without delay, the accuracy and reliability of caller location information, as well as the equivalent access for persons with disabilities.

Access to emergency services is in jeopardy for mobile users when 2G and 3G networks are being phased out. Calls to emergency services will then have to be done via VoLTE protocols. There are standardization and interoperability issues between VoLTE implementations in mobile networks and solutions for emergency communications in the handset software. BEREC is convinced that intervention of standardisation bodies is necessary to guarantee interoperability and compatibility among member states and networks.

CLI might not be reliable or even available if a nomadic VoIP communication is being established from a device that does not support this type of emergency communication or if the application that is being used is not compatible with the national PSAP requirements. The information retrieved via a database such as street address, apartment, flat, floor or similar information could indeed be wrong when geographic numbers are used nomadically. In some cases, technical solution to this problem is feasible, such as through PEMEA or the implementation of other relevant specifications. In other cases, the intervention of standardisation bodies is necessary to guarantee interoperability and compatibility among Member States and networks.

For mobile handsets, AML solutions exist and applications should only be considered as a supplement to standardised native handset and network native services. Applications could be used also for roamers. A roadmap for the use of a harmonised solution, from those available, could be determined, for guaranteeing that the communication is free of charge also for sending (via SMS and/or via IP) to the right PSAP the caller location information in a roaming context.

Significant difficulties also exist for persons with disabilities as applications used in their home country might not be compatible with the emergency services available when traveling in another country. Consequently, significant difficulties might arise in answering and handling the communication as well as caller location information provision in such case. Interoperability and compatibility have to be ensured when developing relevant application specifications. The harmonised use of AML may solve part of the issues also for persons with disabilities.

BEREC acknowledges the need to upgrade PSAPs so that they can support emergency communications using packet-switched technologies, in order to meet compatibility, interoperability and continuity of service requirements. Therefore, BEREC supports the preparation and submission of a roadmap for the transition to upgraded PSAPs, taking also into consideration that planning and implementation of such a project involves a significant number of decisions and actions by the Member States. BEREC notes the importance of the implementation of the PSAPs upgrades as well as the technological solutions to other difficulties that exist at this time in a harmonized and coordinated way among Member States, so as to ensure that emergency services are available to all, including visiting citizens from other countries.

A mechanism for Member States to agree on how to achieve interoperability for Total conversation, Positioning and Methodology for call handling between Member States will be needed.

BEREC stresses the importance of focusing on a harmonized European approach to the packet switched emergency communication. This is the only way to reduce the risk of fragmented European emergency communication services. BEREC advises the EC to drive this activity with the involvement of the relevant stakeholders in the EU.

- **BEREC highlights that harmonization and standardization are crucial in order to solve the problems that currently exist in emergency services.**
- **Coordination in handling interoperability issues among Member States is essential. Packet switched emergency communication could be one of the future goals in Europe.**

Annex

List of abbreviations

3GPP – 3rd Generation Partnership Project

AML – Advanced Mobile Location

API – Application Programming Interface

ATIS – Alliance for Telecommunications Industry Solutions

CEPT – European Conference of Postal and Telecommunications Administrations

CLI – caller location information

COCOM – Communications Committee of the EC

ECC NaN3 – Electronic Communications Committee Working Groups on Numbering and Networks

EC – European Commission

EDF – European Disability Forum

EECC – European Electronic Communication Code

EENA – European Emergency Number Association

ETSI – European Telecommunications Standards Institute

GSMA – GSM (Global System for Mobile Communications, originally Groupe Spécial Mobile) Association

IP – internet protocol

LTE – long term evolution

MNO – mobile network operator

NRA – national regulatory authority

OTT – over-the-top

PEMEA – Pan-European Mobile Emergency Application

PBX – private branch exchange

PSAP – Public Safety Answering Point

RTT – real time text

SIP – Session Initiation Protocol

VoIP – voice over IP

VoLTE – voice over LTE