Next-generation emergency call handling

Preparing for the EU-mandated integration of new technologies into public safety answering points

This Frequentis white paper examines how emergency communication organisations can best address new legal requirements around accessibility and outlines the steps they can take towards compliance. The new requirements in question are part of a broader movement to create a more inclusive and equitable society in which communication—and not only in the emergency domain—extends beyond voice calls.

Equal accessibility to public services is a fundamental human right, and the EU has mandated that control rooms be ready to handle multimedia emergency communication (NG 112) by 2027. Similar requirements exist elsewhere, for instance in the United States (NG 911) and in the UK (NG 999).

Conventional systems for handling emergency calls are typically unable to accommodate the latest advances in telecommunications technology. Choosing a standards-based approach will make it faster, easier, less costly and less disruptive to comply with the new requirements. A standards-based approach will also protect existing and future-proof new investments, improve services for citizens without requiring them to download applications, facilitate ongoing evolution, and enable network providers to generate valuable new revenue streams.

FREQUENTIS

What's changing for public safety control rooms?

To align with the European Accessibility Act (EAA, EU directive 2019/882,) emergency communication networks, government organisations and control rooms, and all public safety answering points (PSAPs) across the EU must be ready for next-generation emergency call handling (NG112) implementation by 2027. This requirement is part of a broader move from emergency voice calls to emergency communication which also includes non-voice communication methods (under European Electronics Communications Code Article 109). Article 109 is designed to ensure equivalent access for all people, regardless of any temporary or permanent physical impairments, using handset-derived location information and the ability to make and receive emergency communications in the form of Real-Time Text (RTT) conversations.

Accessibility is a fundamental human right, fostering an inclusive and equitable society for everyone. Extending beyond voice calls is also important for groups such as victims of physical violence within families, for whom a spoken conversation may represent a safety risk. Emergency communication is the first domain in which non-voice communication will be mandated; telco operators, public safety organisations and other government bodies will also need to support multimedia communication in other contexts.

In addition, the legal requirements are only one part of the story. For public safety organisations and members of the public, NG112 represents an opportunity to improve communication between the public and the emergency services using voice, text, video and location sharing.

App-based versus native approaches

There are already several smartphone apps that permit text and other forms of non-voice communication with public safety services. However, these require users to download them, register with the application provider and learn the application interface. In an emergency scenario where a smartphone user is unable to speak—perhaps because of the risk of endangering themselves—they must hope that they remembered to download, set up and maintain the app, and grant it the appropriate data permissions. Next, they must navigate to the app and hope that they remember how to use it (and that their smartphone OS has not removed it from the active application list to save storage space).

Figure 1: From yesterday's conventional to today's multimedia emergency communication

All smartphones already allow instant access to emergency services voice calls even when the phone is locked. For non-voice users—for example, people with severe hearing impairment—the lack of equivalent support for emergency text messages from the lockscreen represents a clear infringement of equivalent-access legislation. And even for users who are normally able to make voice calls, the need to rely on an app for non-voice emergency communication is inconvenient and potentially risky.

Standardisation for future-proofing

Since Android and iOS already support real-time texting from the lockscreen, if control rooms and mobile network operators supported this native route it would immediately provide this capability to all smartphone users—without any need to download an app. Additionally, the native messaging option would facilitate travel to other countries, where proprietary apps might not work.

In general, standardised components, services and interfaces provide the foundation for reusability, extensibility, and interoperability. Adhering to standards enables vendors to independently integrate additional services and capabilities and paves the way for future innovations in emergency services.

To ensure truly future-proof solutions for NG112, the whole public safety industry should unite around the existing underlying technical standards: telco operators can already provide RTT and video calls from the native dialler app on smartphones. A standards-based approach is inherently technology-agnostic, scalable, and offers investment security. It also makes it faster, easier, less costly and less disruptive to comply with new requirements.

Alongside standardisation, extensive testing of interoperability is vital. There should be an open ecosystem, based on NG112 standards, without technological silos or monopolies, to avoid vendor lock-in. This requires leading industry players to participate in interoperability and conformance testing events worldwide.

New workflows under NG112

In an NG112-compliant environment, any person with a smartphone will be able to initiate a voice, RTT or video emergency communication from their Android or iOS native dialler. No additional app will be required, and the smartphone will automatically transmit the person's location information. With this automated, standardised approach, the Emergency Services IP Network (ESINet) will securely direct the request for assistance to the nearest and most suitable control centre.

At this point, the control centre operator will receive the emergency communication and engage with the person seeking assistance using RTT, for example. The location information provided by the mobile device will be displayed on a continuously updating map, helping the operator determine the person's position and know where to dispatch assistance.

The stakeholders involved in the chain of communication—including mobile networks and potentially more than one control centre—will need to adapt to the demands of NG112. Mobile network providers must enable support for IP-based voice, RTT, and video conversations. For their part, control centres must establish agreements on whether existing or new public safety service providers will provide the ESINet. They will also need to upgrade their control room solutions and provide training for operators to handle the new forms of communication. This may include the introduction of support for video callers using sign language.

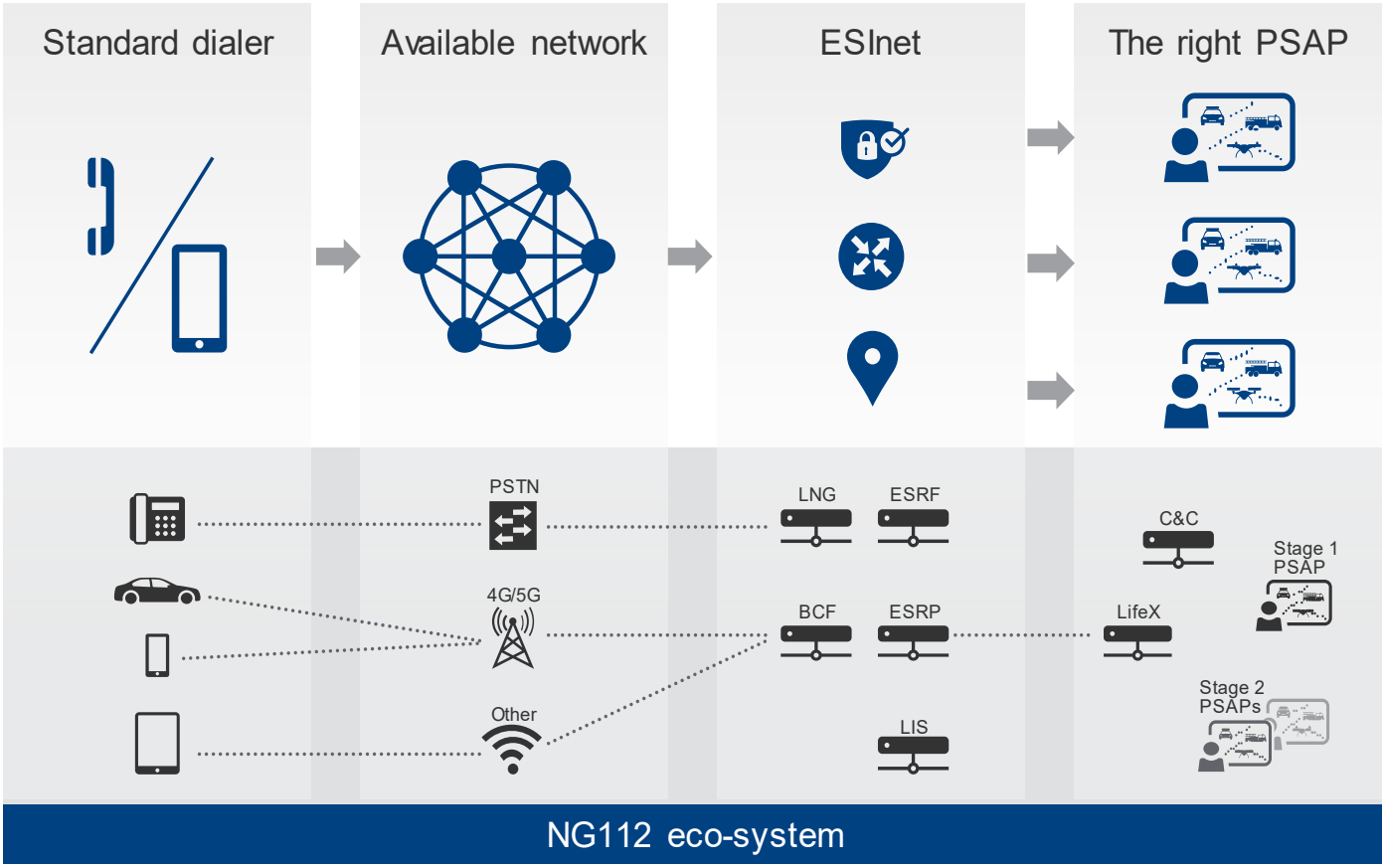

Figure 2: New workflows under NG112

Change management

Under NG112, operators in control rooms will need the skills to manage text conversations alongside voice calls. Given widespread use of abbreviations, slang and emojis, this may require operators to undergo training in the typical grammar and vocabulary of text messages.

NG112 will enable—but not require—public safety agencies to take responsibility for the routing of emergency communications to the most appropriate control room. In most countries today, the former network operator monopolies—whether fixed or mobile—are responsible for this routing. Where agencies choose to take on the routing, they will be able to make more detailed routing decisions based not only on location but also on skills, incident assignments or general availability within the networked PSAPs.

With NG112, governments can choose to create new, dedicated infrastructures for next-generation emergency call routing. This will enable them to take back control and design digitally inclusive solutions that precisely meet the needs of citizens and the emergency rescue services. In economic terms, NG112 will open the way for further deregulation in the telecommunications market, as the incumbent networks gradually lose their protected status as operators of critical services.

The benefits of standardisation

Choosing a standardised, device-native approach to NG112 will give equivalent access to hearing-impaired people as well as providing a better, more flexible service to everyone. The ability to use the native smartphone dialler, rather than having to download a proprietary app, means that members of the public can contact the emergency services without delay or the inconvenience of maintaining access to this app. People will be able to choose between video, voice call or text messages when contacting the emergency services, and their communications will be automatically routed to the most appropriate control centre by proximity and availability.

PSAP/Agency

Are you ready to receive 112 video and RTT calls by 2027?

Benefits:

- Free up capital—no need to invest in proprietary solutions
- Enhanced service drives public satisfaction
- Access accurate location information

PS Service Provider

Are you ready to provide an ESInet to your customers by 2027?

Benefits:

- Satisfy your customers by removing the NGx burden from them
- New revenue streams through additional services

Regulator

Are you including EU directives 108 and 109 in your regulatory roadmap?

Benefits:

- Multimedia access to PSAPs and other government bodies drives public satisfaction
- Easy implementation based on existing standards

Mobile operator

Are you ready to enable RTT and video (IR91 and IR94) in your network by 2025?

Benefits:

- Ensure compliance with telco regulations and generate new business from non-PSAP organisations
- Gain relief from the NGx burden and deploy a future-proof standardised solution

Conclusion: planning for NG112

1. Organisations planning for NG112 should choose suppliers that work with standardisation bodies such as ETSI and NENA and that have a track record of engaging in ETSI Next Generation 112 PlugtestsTM and NENA Industry Collaboration Events. These Plugtests and Industry Collaboration Events are a cornerstone of interoperability, giving participating vendors the opportunity to integrate with each other's technologies, discuss the standards and validate their mutual understanding to further improve both the standards and interoperability.

2. For optimal compliance with NG112 legislation in Europe and beyond, organisations should choose a vendor that does not require proprietary apps on mobile devices or the use of company-specific service frameworks. The goal should be an approach to NG112 that relies on existing native support in smartphone operating systems, and standard RTT and video functionality on mobile networks.

3. Organisations should choose a vendor that regards NG112 as part of a broader non-voice communication capability and whose solutions go beyond just supporting NG112. Emergency services control centres not only deal with emergency contact requests, but also must respond to, and prioritise reports coming from, other communication channels such as webchat, social media chat channels, radio, non-emergency lines, SMS and so on. This implies the need for a control room solution that allows for the harmonised handling of all these communication channels, enables managers to dynamically distribute load across operator resources, and that promotes operator efficiency by removing the need to navigate between different communication applications.

In general terms, choosing a standards-based approach helps guarantee future-proof solutions and protect past and tomorrow's investments. Organisations can then implement support for NG112 using components from multiple suppliers, reducing vendor dependencies, and making it easier to add new functionality. Developing a standardised ecosystem and infrastructure will also result in improved scalability and resilience in case of major events.

Frequentis: leading the way in next-generation emergency communication

During the past decade, Frequentis has established itself as a reliable supplier of ESInet and NG112-ready control room solutions. We are a renowned partner for standards-based control room solutions based on our 3020 LifeX and ASGARD product lines. Existing LifeX users can simply upgrade to a new product software release under the Evergreen™ maintenance setup to enable next-generation emergency communication.

Frequentis is taking the next step in this journey by delivering NG112 core services in a European country. This includes the adoption of two distinct deliveries of these services: one as a native cloud-hosted solution, and the other as an on-premises deployment. Naturally, this journey also represents new terrain for our customers, and the project is providing valuable experience that feeds into Frequentis' status as a trusted advisor and global expert on the topic.

For more information on how Frequentis can help public safety agencies adopt NG112, contact us today. In the meantime, learn more about this topic through insights from our experts by clicking on the video icon below.

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