PEMEA CONSORTIUM

Connecting internet apps to emergency services

Guidelines for including PEMEA in tenders

PEMEA-CONS-Tenders-001

V1.0

July 2022

Table of Contents

1. Introduction

The Pan-European Mobile Emergency Application (PEMEA) provides a framework allowing users of applications (Apps) to make emergency multi-media calls across Europe. The calls are delivered to the most appropriate PSAP no matter where the caller is or the nature of the IP network being used by the App.

Apps, based around WebRTC services, represent a significant and growing percentage of all communications in use today, both with enterprises and by the wider public. The inherent ability of Apps to provide advanced services, such as video calling and text services including automatic translation, without the need for service enablement in the core transport network makes them ideal for providing disability services and for the speedy introduction of new services. PEMEA enables all of these functions and supports seamless roaming while maintaining strong security and privacy.

This document presents the current recommended functionality and capabilities that can be included in tenders for new equipment and solutions where the inclusion of PEMEA and App connectivity is desired.

2. Terms and Definitions

The following terms and definitions are used in this document:

App	Application
AP	Application Provider
ASP	Aggregating Service Provider
EENA	European Emergency Number Association
EMTEL	Emergency Communications
ETSI	European Telecommunications Standards Institute
GDPR	General Data Protection Regulation
PEMEA	Pan-European Mobile Emergency Application
PIM	PSAP Interface Module
PRA	PEMEA Registration Authority
PSAP	Public Safety Answering Point
PSP	PSAP Service Provider
SIP	Session Initiated Protocol
tPSP	Terminating PSP
TS	Technical Specification

3. References

3.1 Normative References

[NR.1] "Emergency Communications (EMTEL); Pan-European Mobile Emergency Application", ETSI TS 103 478

[NR.2] "Emergency Communications (EMTEL); PEMEA ESInet Shared Services", ETSI TS 103 755.

[NR.3] "PEMEA GDPR Conformance Statement ", EENA.

[NR.4] "User Information Conveyance in PEMEA", PEMEA Consortium PEMEA-CONS-Spec-UserInfo

[NR.5] "PEMEA Discovery Capability", PEMEA Consortium PEMEA-CONS-Spec-DiscoCap

[NR.6] "Emergency Communications (EMTEL); PEMEA Instant Messenger Extension", ETSI TS 103 756

[NR.7] "Real-Time Text (RTT) Protocol for PEMEA", PEMEA Consortium PEMEA-CONS-Spec-RTT.

3.2 Informative References

None

4. Core PEMEA components and services

4.1 Core Components

Core PEMEA components are described in detail in TS 103 487 [NR.1] and provide the ability of an application to pass location and user information to a PSAP through a PEMEA gatekeeper node referred to the Application Provider (AP). Service roaming is support through two nodes, a regional routing node referred to as the PSAP Service Provider (PSP) and an inter-regional routing node referred to as an Aggregating Service Provider (ASP). Further to this, a specific PSAP Interface Module (PIM) may be used to provide easy integration between a PSAP CAD and the PEMEA network to avoid encumbering a terminating-PSP where it services multiple PSAPs with multi-media capabilities.

PEMEA node identification and security is provided through a PEMEA Entity file distributed through a central security node referred to as the PEMEA Registration Authority (PRA). This service is currently provided by the PEMEA Consortium.

The core PEMEA components and basic architecture is provided in

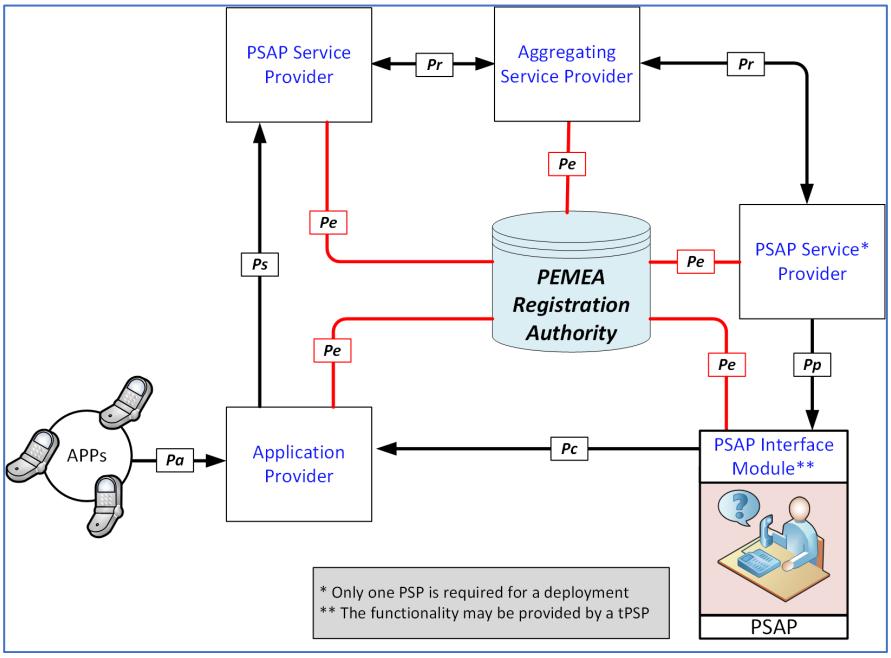

Figure 1: PEMEA core components

4.1.1 Recommended core component requirements

[R.1] The solution shall provide a PSAP Service Provider (PSP) node and a Aggregating Service Provider (ASP) node as defined in TS 103 478 [NR.1].

[R.2] The solution shall provide either a tPSP or a PSAP Interface Module (PIM) capable of interfacing with the PSAP CAD in order to:

- Notify the CAD of the arrival of a new PEMEA emergency request
- Notification of acceptance of the emergency request by the CAD
- All PEMEA associated signalling related to emergency request acceptance

[R.3] All PEMEA nodes shall be registered with the PRA and shall connect to the PRA at least daily to acquire the latest valid PEMEA entity list.

[R.4] All PEMEA nodes shall comply with the PEMEA GDPR Conformance Statement [NR.3]

[R.5] All PEMEA nodes should be provided in a high-availability configuration.

[R.6] The PSP should support service-level routing based on caller's requested service type based on TS 103 755 [NR.2]

Where and application is to be included in the tender.

[R.7] The solution shall provide an Application Provider (AP) node as defined in TS 103 478 [NR.1].

4.2 Core Services

PEMEA core services include:

- Location updates
- Subscriber/User information
- Basic Medical information

[R.8] The tPSP/PIM shall support the Location_Update capability using the HELD_Deref protocol value as specified in TS 103 478 [NR.1].

[R.9] The AP shall support the Location_Update capability using the HELD_Deref protocol value as specified in TS 103 478 [NR.1].

[R.10] The tPSP/PIM shall support both the EmergencyCallData.SubscriberData format described in TS 103 478 [NR.1] and the PEMEA UserInfo format specified in PEMEA-CONS-Spec-UserInfo-001 [NR.4]

[R.11] The AP shall support one or both of the PEMEA UserInfo format specified in PEMEA-CONS-Spec-UserInfo-001 [NR.4] or EmergencyCallData.SubscriberData format described in TS 103 478 [NR.1]. (To avoid interoperability issues encountered with EmergencyCallData.SubscriberData, the UserInfo format is recommended).

[R.12] The AP shall only provide EmergencyCallData.SubscriberData or UserInfo by reference in an emergency request.

[R.13] The tPSP/PIM shall support both the EmergencyCallData.SubscriberData format described in TS 103 478 [NR.1] and the PEMEA UserInfo format specified in PEMEA-CONS-Spec-UserInfo-001 [NR.4]

There is no current formal specification for Medical information. However, the following very basic information is being used and a separate specification for this in the PEMEA Consortium is forthcoming.

[R.14] Where basic medical information is provided it shall be provided as a capability and accessed by reference. It should include:

- Organ Donor
- Blood Type
- Recurring medication

[R.15] Where the PSAP network also supports an ESInet and a secure application gateway, the then tPSP/PIM should support the SIP_Request capability as defined in TS 103 478 [NR.1].

5. PEMEA advanced multi-media services

5.1 Overview

Multi-media services allow enterprise and general communications to use native communications mechanisms based around web technologies to communicate with PSAPs. The set of services available is expanding rapidly, so it is recommended that requested solutions be readily adaptable to support new capabilities. TS 103 478 [NR.1] defines an initial set of capabilities, however this list was not considered to be exhaustive. The currently recognized set of possible multi-media service that PEMEA can offer is:

- Audio_Video
- Audio
- Instant Messenger (Chat)
- Real-Time Text
- File Exchange

5.2 Service Discovery

PEMEA is not yet deployed ubiquitously across Europe, and not all PSAPs and application may support all functionality. As a consequence, it is recommended that the AP and tPSP/PIM support the PEMEA Discovery capability. The pre-standard version of this specification is specified in PEMEA Discovery Capability [NR.5]. This specification has been adopted into ETSI and will be published as TS 103 801.

[R.16] The AP and tPSP/PIM node should support the PEMEA Discovery capability [NR.5] and subsequent capability from TS 103 802 once published.

5.3 Audio_Video services

[R.17] The tPSP/PIM and AP shall provide Audio_Video capabilities through WebRTC.

[R.18] The Audio_Video service shall support full recording or all signalling and media streams

[R.19] The Audio_Video service shall support multi-party calls.

[R.20] The Audio_Video service shall allow the PSAP to perform media control functions, such as muting and unmuting participants as well as suspending media streams to participants.

[R.21] The Audio_Video capability shall support the ability to invite additional parties to the call.

[R.22] The Audio_Video capability shall indicate all participants in the call

[R.23] The Audio_Video capability shall allow participants to exit and re-join the call without the need for a new invitation.

[R.24] The signalling and media streams for the Audio_Video capability shall be secure and encrypted.

[R.25] Signalling communications from the App shall go via the AP and not directly to the tPSP/PIM

[R.26] The media streams for the Audio_Video service should go directly between the App to the tPSP/PIM.

[R.27] The Audio_Video service in the tPSP/PIm should support deployment in a high-availability configuration.

[R.28]

An application requesting Audio_Video services through PEMEA will not be making a PSTN-based emergency call in parallel. Consequently, there is no chance of the PEMEA emergency request being directed to the wrong PSAP. To aid in faster call response times, requests including the Audio_Video capability should be auto-answered by the tPSP/PIM.

[R.29] A tPSP/PIM receiving a PEMEA emergency request containing a supported Audio_Video capability shall immediately acknowledge receipt of the emergency request and invoke the preferred Audio_Video capability.

5.4 Audio services

[R.30] The tPSP/PIM and AP shall provide Audio capabilities through WebRTC.

[R.31] The Audio service shall support full recording or all signalling and media streams

[R.32] The Audio service shall support multi-party calls.

[R.33] The Audio service shall allow the PSAP to perform media control functions, such as muting and unmuting participants as well as suspending media streams to participants.

[R.34] The Audio capability shall support the ability to invite additional parties to the call.

[R.35] The Audio capability shall indicate all participants in the call

[R.36] The Audio capability shall allow participants to exit and re-join the call without the need for a new invitation.

[R.37] The signalling and media streams for the Audio capability shall be secure and encrypted.

[R.38] Signalling communications from the App shall go via the AP and not directly to the tPSP/PIM

[R.39] The media streams for the Audio service should go directly between the App to the tPSP/PIM.

[R.40] The Audio service in the tPSP/PIm should support deployment in a high-availability configuration.

An application requesting an Audio service through PEMEA will not be making a PSTN-based emergency call. Consequently, there is no chance of the PEMEA emergency request being directed to the wrong PSAP. To aid in faster call response times, requests including the Audio capability should be auto-answered by the tPSP/PIM.

[R.41] A tPSP/PIM receiving a PEMEA emergency request containing a supported Audio capability shall immediately acknowledge receipt of the emergency request and invoke the preferred Audio capability.

5.5 Instant Messenger (Chat) service

The PEMEA Instant Messenger service is specified in TS 103 756 [NR.6]. This specification describes all messages, formats and procedures required from the AP, tPSP/PIM. Further to this:

[R.42] A tPSP/PIM receiving a PEMEA emergency request containing IM/PEMEA capability should immediately acknowledge receipt of the emergency request.

[R.43] On acknowledgement of the emergency request the tPSP/PIM should wait for instruction from the PSAP Call-Taker or CAD prior to invoking the IM/PEMEA capability in the AP.

[R.44] The tPSP/PIM and shall log all messages into and out of the chat room so providing a transcript for later replay and analysis if required.

5.6 Real-Time Text (RTT) service

The PEMEA Real-Time Text specification is currently under standardization within ETSI under TS 103 801. This specification represents the adoption of the PEMEA Consortium Real-Time Text (RTT) Protocol for PEMEA [NR.7], which already has several deployments. This is a multi-party real-time text capability able to be extended to support pictograms if required. Further to the PEMEA RTT spec the following requirements are recommended.

[R.45] A tPSP/PIM receiving a PEMEA emergency request containing RTT/PEMEA capability should immediately acknowledge receipt of the emergency request.

[R.46] On acknowledgement of the emergency request the tPSP/PIM shall invoke the RTT/PEMEA capability in the AP.

[R.47] The tPSP/PIM and shall log all messages into and out of the RTT session providing a transcript for later replay and analysis if required.

5.7 File Exchange service

File exchanges during an emergency communication may be two-way. Files, such as video, photos or audio recordings, may be provided upstream from the caller to the PSAP. Similarly, instructions, directions , diagrams and maps, may be provided from PSAPs or First-Responders down to callers. The following requirements are recommended:

[R.48] File exchanges between Apps and the tPSP/PIM file exchange service shall go via the AP.

[R.49] All files exchange shall be scanned for viruses.

[R.50] All files exchanged shall be retained and stored against the emergency session for later replay or analysis.

[R.51] The file exchange service shall support multiple parties exchanging files.

[R.52] The tPSP/PIM and shall log when files are uploaded and by whom.

[R.53] The tPSP/PIM shall log when files are downloaded and by whom.

[R.54] The file exchange service should support a notification mechanism informing communication participants of the presence of a new file.

6. Operational considerations

6.1 New PEMEA nodes and PEMEA providers

PEMEA is a quickly expanding network, with new Apps and regions joining. The PRA, formal specifications and notion of PEMEA Consortium PEMEA providers goes a long way to ensuring seamless interoperability.

[R.55] PEMEA nodes should be provided by, or have been fully interoperability tested with PEMEA Consortium recognized PEMEA providers.

[R.56] The customer shall be able to provision new routes into PSP and ASP nodes through an easy to use console.

[R.57] The customer shall be able to load geospatial information (maps) for new PEMEA-enabled regions.

In some cases the operator of a platform may not wish to support emergency requests from, or answering by specific regions. The valid PEMEA entities file contains a list of all nodes considered "well behaving" and registered PEMEA entities. An AP, ASP, PSP or PIM should be able to refuse a connection from any of these nodes based on local operational considerations.

[R.58] The system should support an operator providing a blacklist of PEMEA entities to their platform tPSP/PIM, PSP and ASP nodes. Nodes to which the blacklist has been provided shall not accept connections from or pass information to entities contained in the black list. As opposed to a blacklist, the solution may support the provision of a whitelist to achieve the same outcome.

[R.59] The system should support an operator providing a blacklist of PEMEA nodes to the AP. The AP shall reject all emergency request responses from any node in the blacklist. As opposed to a blacklist, the solution may support the provision of a whitelist to achieve the same outcome.

6.2 Logging, recording and archiving

[R.60] The solution should log all ingoing and outgoing messages from the platform. Where not prudent to log the message contents due to GDPR or other privacy concerns, the time, direction and message type should be maintained and, where applicable, as associated with the emergency session.

[R.61] All recording and transcripts shall be associated with the emergency sessions and should be accessible to system operators should replay, an audit or further analysis is required.

[R.62] The system should provide an interface for access by a central archiving system to retrieve all log, recordings and transcripts for long-term storage.

6.3 Alerting and reporting

[R.63] The system should support the capture of key performance and traffic indicators such as:

- Emergency request arrival rates
- Emergency call durations
- Simultaneous multi-media sessions per types
- Session and call failures.

[R.64] The system should support a means of issuing alerts in the case of system errors or failures.

6.4 Extensibility

New capabilities are being proposed and implemented and tested in PEMEA. In addition, some regions are developing and deploying regional extensions. Any solution should be readily expandable to support new functionality as it gains in utility and popularity.

7. HISTORY

Document history		
V1.0	July 2022	Initial version