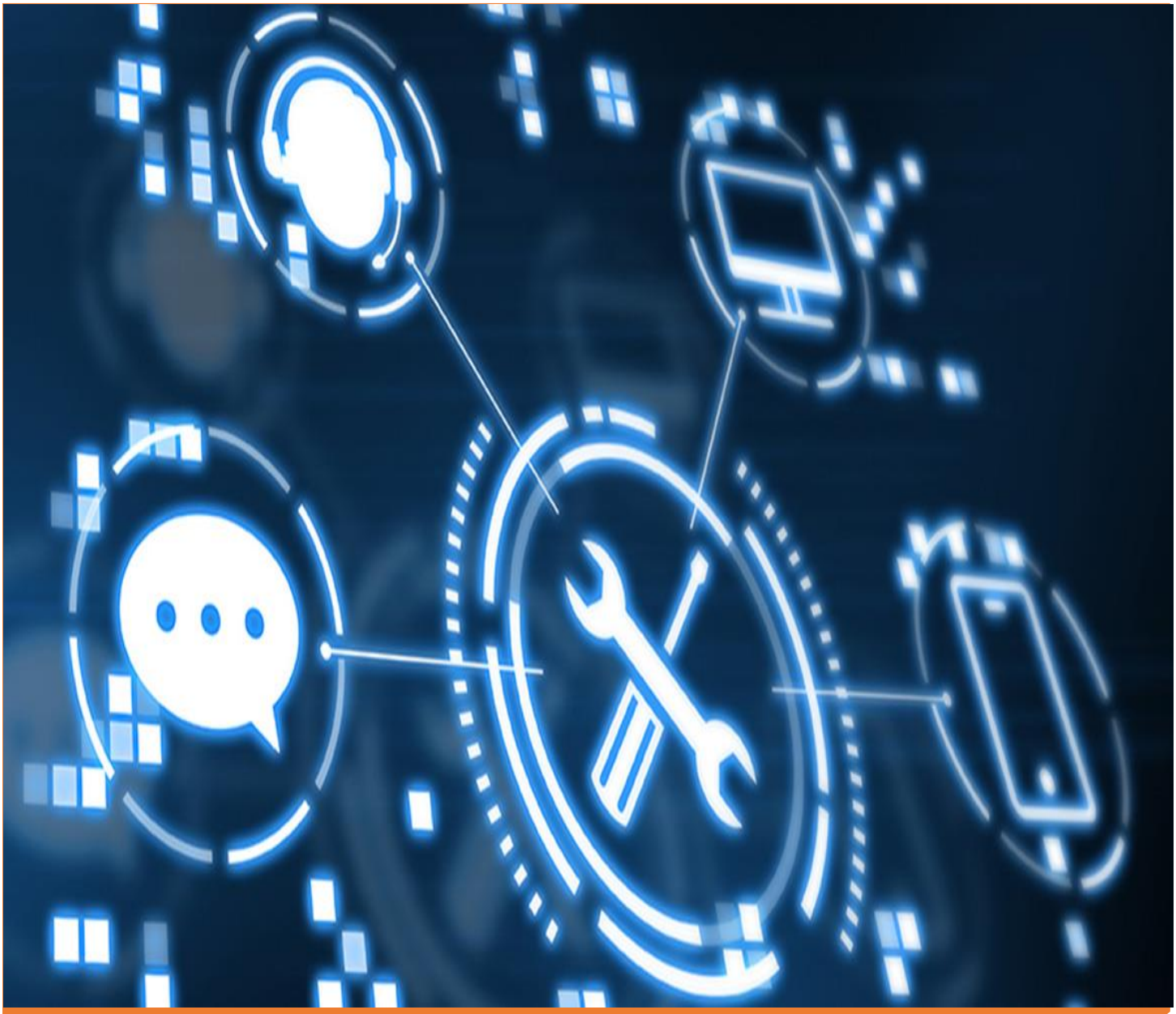

EENA TPSP Project

Final Report

EUROPEAN EMERGENCY NUMBER ASSOCIATION

EENA TPSP Project

Final Report

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Table of Contents

Executive Summary

EENA TPSP Project: Final Report

This report summarises the findings and recommendations of a special project, spearheaded by EENA, on the role of Third-Party Service Providers (TPSPs) in emergency communications and their integration with Public Safety Answering Points (PSAPs) across Europe. The report defines TPSPs as entities that make emergency calls seeking assistance on behalf of others on a regular basis as part of their service offering. The project identified several barriers to seamless TPSP integration, including a lack of standardised data exchange, inconsistent contact procedures, and a lack of agreements.

Project Overview

The project was divided into two phases:

- **Phase 1:** Virtual workshops were held to address specific thematic workstreams, including:
  - **Workstream #1:** Vehicle telematics and eCall via TPSPs
  - **Workstream #2:** Access to emergency services for end-users with disabilities via TPSPs
  - **Workstream #3:** Automated non-voice emergency communications via TPSPs

Each workstream focused on a specific set of challenges and opportunities related to TPSP integration with PSAPs. The workshops were structured around three main objectives:

  - **Describing Technical and Operational Requirements:** Participating companies presented their service offerings and outlined the technical, operational, and administrative requirements for integrating with PSAPs.
  - **Establishing Frameworks for Agreement:** A moderator-led discussion explored the rights and obligations of TPSPs and PSAPs to determine a basis for agreement frameworks.
  - **Addressing Specific TPSP Use Cases:** TPSPs presented their use cases and discussed the challenges and opportunities associated with integrating with PSAPs for the different use cases.

- **Phase 2:** Pilot projects will be conducted to test the findings of Phase 1 and to develop practical solutions for TPSP integration with PSAPs.

This report summarises the work carried out in Phase 1.

Summary of the key takeaways from Workshop #1- Vehicle telematics and eCall via TPSPs

- There is a need for better coordination between PSAPs and TPSPs to ensure that TPS eCalls are always routed consistently and correctly. This includes standardising the routing protocols and data formats for TPS eCalls.
- There is a need for a single contact point for TPSPs to integrate with PSAPs in each country and a need for a central directory of contact information for authorities/departments in each

country. This would make it easier for TPSPs to find the information they need to connect with PSAPs in each country and to better understand the process and requirements for connecting with PSAPs.

- There is a need for a standardised interface for bi-directional transfer of data between TPSPs and PSAPs. This would allow for more efficient and effective communication of emergency information.
- The use of a language indicator is beneficial for TPSPs to transfer initial communications to a call taker with the appropriate language skills. TPSP call takers should also be capable of communicating with PSAPs in the PSAP's preferred local language.
- It should be standard practice for TPSPs to hand over all information obtained during pre-qualification of an emergency incident to the PSAP electronically. This is important to avoid duplication of effort and ensure that the PSAP has all of the necessary information to respond to the emergency incident.
- Every effort should be made to ensure that location information is conveyed automatically. Manually communicating location coordinates poses a high risk of human error.
- Any PSAP-TPSP agreement should specify that all laws/requirements in the PSAP jurisdiction related to call recording, privacy, data protection and data retention are complied with.
- Next Generation 112 (NG112) is the next generation of emergency call infrastructure, and it will allow for the transmission of voice, video, messaging, and eCalls over IMS. This will make it easier for TPSPs to integrate their services with PSAPs by providing standardised interfaces and processes for routing emergency communications and contextual data to the most appropriate PSAP.

Summary of the key takeaways from Workshop #2- Access to emergency services for end-users with disabilities via TPSPs

- Relay services are communication platforms that allow people with disabilities to communicate with others using different modes of communication, such as text, sign language, and speech. They are not available in all European countries but where they are available, they play a crucial role in enabling access to emergency services for end-users with certain disabilities.
- National relay services should be implemented/adapted to comply with available standards.
- There are gaps in the current provision of relay services, including support for international communication, geolocation, and call answering KPIs.
- Harmonisation of relay services across borders is needed to ensure seamless and accessible emergency communications. The use of NG112 Forest Guide capabilities could provide a solution in PSAP ESInets to facilitate international relay service provision.
- There is a need to develop a minimum set of data to be sent to PSAPs with an emergency communication received via a relay service.
- Bilateral agreements between relay service providers and PSAPs are not common. Agreements between relay service providers and PSAPs could address more specific needs.

Summary of the key takeaways from Workshop #3- Automated non-voice emergency communications via TPSPs

- The following benefits of non-voice access to emergency services, via TPSPs, were identified:
    - **Filtering function:** TPSPs can filter out non-emergency requests, ensuring that only real emergencies are dispatched to PSAPs.

    - **Increased efficiency:** TPSPs can streamline the process of delivering emergency communications to PSAPs, which can lead to faster response times.
    - **Improved situational awareness:** TPSPs can provide additional data to PSAPs, such as location information and sensor data, which can help first responders make better decisions.

- The following challenges of non-voice access to emergency services, via TPSPs, were identified:

    - **Lack of standardisation:** There is no single standard in Europe for delivering non-voice emergency communications, which can make it difficult for different TPSPs and PSAPs to interoperate. A single standard for delivering non-voice emergency communications would be beneficial.
    - **Security concerns:** Non-voice emergency communications often contain sensitive personal information, which can make them a target for cyberattacks. Implementing stronger security measures to protect non-voice emergency communication are needed.
    - **Lack of Agreements:** TPSPs and PSAPs need to reach agreements on how non-voice emergency communications will be delivered and routed.
    - **Transmission of location data:** There is no standardised format for transmitting location data to PSAPs for non-voice emergency communications.
    - **Routing to the most appropriate PSAP:** In countries with decentralised PSAP infrastructure, it can be difficult to route non-voice emergency communications to the most appropriate PSAP. A centralised database of geofences for PSAP jurisdictions would help ensure appropriate routing of non-voice emergency communications.

- The workshop also discussed how the use of artificial intelligence (AI) in TPSP operations can be beneficial. For example, AI can be used to triage calls more quickly and efficiently, provide greater situational awareness to PSAPs and detect potential threats.

Recommendations

The report made the following recommendations which are grouped under category headings:

TPSP-PSAP Agreements

- Encourage the adoption of existing TPSP-PSAP agreement templates, such as those provided by EENA and the EU eCall standardisation set, to ensure consistency and clarity. EENA will update its current agreement template based on the findings of this project.
- Clarify the rights, obligations and responsibilities of TPSPs and PSAPs in agreements. This includes defining what constitutes a false alarm and the consequences for TPSPs that violate the agreement.
- Clearly define and implement minimum call answering times and pre-qualification timelines for emergency incidents. This will ensure that TPSP call handling KPIs align with PSAP call handling KPIs. These should be included in TPSP-PSAP agreements.
- Clearly stipulate in TPSP-PSAP agreements that all applicable laws, regulations, and standards related to call recording, privacy, data protection, and data retention are strictly adhered to in the PSAP's jurisdiction.

- Create a clearinghouse solution to provide information on the differences between agreements in different jurisdictions. This would help TPSPs to avoid errors or misinterpretation of the provisions of agreements in different countries.
- For equivalence of access to emergency services through relay services, minimum requirements for service availability should be specified. This is to maintain a high level of consistency for domestic and roaming end-users relying on these services.
- Develop a central directory containing contact information of PSAPs/PSAP authorities so that TPSPs know who to contact in each country in order to establish agreements.

Standards

- Develop a single European standard for integration of TPSPs and PSAPs. This should specify the interfaces and protocols needed for conveyance of emergency communications and contextual data. The standard should take account of, and be consistent with, the standards and plans used by European countries in the move to next generation emergency communications. It should also be aligned with the Emergency Incident Data Object (EIDO) standard for transmitting additional data with emergency communications.
- The use of APIs to enable bi-directional data transfer between TPSPs and PSAPs, incorporating both MSD and ESD for enhanced situational awareness and faster pre-qualification should be investigated with a view to standardising minimum data sets for different scenarios. All such data sets should include a language indicator to ensure accurate routing of calls to call takers with the appropriate language skills.
- For relay services, the adoption of existing standards like ETSI EN 301 549 v3.2.1, ETSI ES 202 975, and ITU-T Recommendation ITU-T F.930 should be encouraged to ensure interoperability and consistency of service provision across countries.
- Define a minimum sets of data elements for relay services to be included when emergency communications are relayed to PSAPs, including geolocation and additional relevant information.
- Define a standard for sending geolocation data from computers to enhance emergency response accuracy, particularly in packet-switched environments.
- Develop a standardised approach for TPSPs to provide support to callers outside their home countries, including language/sign language translation across different dialects.

TPSP Certification

- A European TPSP certification process should be established that includes IT security, redundancy, and resilience requirements. This would be beneficial for the sector. Meeting the criteria for such a process could be included in TPSP/PSAP agreements. Different TPSP scenarios would need to be provided for. For example, compliance with EN 50518 for alarm monitoring TPSPs could be a requirement.
- Implement a mechanism to designate or certify TPSPs at national or European level that would enable them to engage with all PSAPs within a jurisdiction to implement services

Technical & Operational

- Address the challenge of conveying location coordinates verbally by prioritising automatic data transfer mechanisms.
- Ensure that TPSP call takers have adequate language proficiency to communicate with PSAPs in the PSAP's preferred local language.

- Employ Forest Guide capability within PSAP ESInets to facilitate peer-to-peer connections between TPSPs and PSAPs in different countries.
- PSAPs should maintain eCall in-band modems even during the transition to next-generation technologies to accommodate legacy traffic for as long as is necessary.
- Explore the use of third-party PSAP connector services to facilitate routing to the most appropriate PSAP. These services could be provided by private companies (e.g. BEVUTAIT in Germany and RescueTrack in the DACH region) or by national public authorities.

Use of Artificial Intelligence in TPSP-PSAP operations

- Investigate the use of AI in TPS applications to help triage calls more quickly and efficiently. This could involve using AI to analyse video imaging, audio recordings, and other data from emergency communications.
- Develop guidelines for the use of AI in TPSP operations. These guidelines should ensure that AI is used in a responsible and ethical manner.
- Educate PSAP staff on the use of AI in TPSP operations. This will help PSAPs to understand the capabilities and limitations of AI.

Table of Acronyms

Acronym	Explanation
3GPP	3rd Generation Partnership Project
ACM	Authority for Consumers and Markets (National Telecommunications Regulatory Authority in The Netherlands)
AI	Artificial Intelligence
AML	Advanced Mobile Location
ANSI	American National Standards Institute
API	Application Programming Interface
ATSPs	Alarm Transmission Service Providers
CAD	Computer-Aided Dispatch
DACH	D — Deutschland (Germany), A — Austria, CH — Confœderatio Helvetica (Switzerland)
DTMF	Dual Tone Multi-Frequency
E.164	In reference to ITU-T Recommendation defining the structure of the international telephone numbering plan.
EAA	European Accessibility Act
ECRC	Emergency Call Relay Centre
EECC	European Electronic Communications Code
EENA	European Emergency Number Association
EIDO	Emergency Incident Data Object
ESInet	Emergency Services IP Network (see ETSI TS 103 479)
ESD	Extended Sets of Data
ETSI	European Telecommunications Standards Institute
EU	European Union
GIS	Geographical Information System
GNSS	Geo-Navigation Satellite System
HTTPS	HyperText Transfer Protocol (Secure)
ICT	Information and Communications Technologies
IEC	International Electrotechnical Commission
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISO	International Organization for Standardization
ITU	International Telecommunications Union
IVS	In-Vehicle System
KPIs	Key Performance Indicators
LiDAR	Light Detection and Ranging
MARCs	Monitoring and Alarm Receiving Centres
MLP	Mobile Location Protocol
MSD	Minimum Set of Data
NG112	Next Generation 112
NG eCall	Next Generation eCall
OEM	Original Equipment Manufacturer
PIDF-LO	Presence Information Data Format-Location Object
PSAP	Public Safety Answering Point
PTS	Swedish Post and Telecommunications Authority
RFAs	Requests For Emergency Assistance
RTT	Real Time Text
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
SMS	Short Message Service
TPS	Third Party Service
TPSP	Third Party Service Provider
TTY	Teletype Services
VRS	Video Relay Service

1. Introduction

In May 2022, EENA's Technical and Operations Committee published a report[1] titled "Emergency Communications from Third-Party Service Providers (TPSPs)". The report explores the role of TPSPs in facilitating emergency communications and proposes a harmonised approach to integrate them seamlessly with Public Safety Answering Points (PSAPs) across Europe.

The report defines TPSPs as entities that make emergency calls seeking assistance on behalf of others on a regular basis as part of their service offering. These entities play a crucial role in extending emergency assistance, for example, to vulnerable populations or in situations where traditional means of contacting emergency services may not be feasible. Despite the valuable contributions of TPSPs, the report acknowledges the presence of barriers that hinder their seamless integration with PSAPs in Europe.

These barriers include:

- **Lack of standardised data exchange:** Absence of a common minimum set of data exchanged between TPSPs and PSAPs can lead to data discrepancies and communication gaps.
- **Inconsistent contact procedures:** Varying contact protocols for TPSPs to reach PSAPs in different emergency scenarios can cause confusion and delay in response.
- **Lack of agreements:** The absence of agreements between TPSPs and public authorities responsible for the PSAPs can hinder the establishment of clear and consistent operating protocols.

To address these challenges, EENA spearheaded a special project involving TPSPs, TPSP solutions providers, and European PSAPs.

The project aimed to:

- Establish a **standard minimum set of data** to be exchanged automatically between TPSPs and PSAPs, ensuring consistency and supporting an effective and comprehensive emergency response.
- Identify **optimal contact approaches** to help determine the most appropriate methods for TPSPs to reach PSAPs in different emergency scenarios, ensuring efficient and timely communication.
- Develop a **bilateral agreement template**: Create a standardised template for bilateral agreements between TPSPs and public authorities responsible for the PSAPs, facilitating clear and consistent operational guidelines.

The project garnered substantial interest, with participation from numerous companies and PSAP organisations.

[1] EENA Document, Emergency Communications from Third-Party Service Providers, May 2022.

PSAP Organisations		Companies
- STS (RO) - Notruf Niederösterreich (AT) - SOS Alarm (SE) - Politie (NL) - Stadt Dortmund Feuerwehr (DE) - Regione Piemonte (IT) - BT (UK)	- BT Emergency Call Answering Service (IE) - Emergency Management Agency (KV) - Ministère de l'Intérieur (FR) - Astrid (BE) - 112 Skubi Pagalba (LT)	- bevuta IT - Bosch - GM Onstar - Intrado - Lidar Saving Lives - nWise - RescueTrack - SS8

Table 1: Participating organisations in EENA's TPSP Project

This report now summarises the project's findings and recommendations, emphasising the need for harmonisation and formalisation of TPSP approaches. It also serves as a valuable resource for new TPSPs seeking to navigate the complexities of working with PSAPs across Europe.

The report also provides valuable insights into the role of TPSPs in enhancing emergency communications and proposes a harmonised approach to integrate them effectively with PSAPs.

By addressing the identified barriers and implementing the recommendations made, the emergency communications supply chain can be further strengthened for a more seamless emergency communications experience for citizens, TPSPs and PSAPs.

2. Project Overview and Work Stream Description

Given the diverse range of project participants and the multifaceted nature of TPSP use cases, the project was divided into two phases. The project structure was presented to project participants at a project kick-off meeting on 4 September 2023.

2.1 Phase 1: Virtual Workshops

The first phase focused on hosting three virtual workshops to address specific thematic workstreams:

Workstream	Subject Matter/Scenarios Covered	Workshop Date
Workstream #1	Vehicle telematics and eCall via TPSPs	13 September 2023
Workstream #2	Access to emergency services for end-users with disabilities via TPSPs	5 October 2023
Workstream #3	Automated non-voice emergency communications via TPSPs	25 October 2023

Proceedings at these workshops were structured around three main objectives:

1. **Describing Technical and Operational Requirements:** Participating companies presented their service offerings and outlined the technical, operational, and administrative requirements for integrating with PSAPs.
2. **Establishing Frameworks for Agreement:** A moderator-led discussion explored the rights and obligations of TPSPs and PSAPs to determine a basis for agreement frameworks.
3. **Addressing Specific TPSP Use Cases:** TPSPs presented their use cases and discussed the challenges and opportunities associated with integrating with PSAPs.

This report contains the findings of Phase 1 of the project. The findings of Phase 1 will also be presented at EENA 2024 (Valencia, Spain 24-26 April 2024).

2.2 Phase 2: Pilot Project

Phase 2 aims to "road test" the findings of Phase 1 by engaging interested companies and PSAPs in pilot projects. This phase will involve a technical implementation. A project timeline will be agreed upon with participating parties in due course with findings expected in H2 2024.

3. Workshop #1 report: Vehicle Telematics and eCall via TPSPs

Workshop #1 took place on 13 September 2023 from 13:30 to 17:00 CEST and covered TPSP scenarios involving the conveyance of emergency communications and/or related contextual data from vehicles to PSAPs.

The designated presenters in this workshop were Bosch Service Solutions and bevuta IT who provided presentations in two sessions.

3.1 Presentation by Bosch Service Solutions

Bosch, a multinational technology and services company, operates in four primary business sectors: Industrial Technology, Energy and Building Technology, Consumer Goods, and Mobility Solutions. With over 420,000 employees worldwide, Bosch is a leading provider of innovative solutions that enhance people's lives. Bosch Service Solutions, a division within its Energy and Building Technology sector, plays a crucial role in providing comprehensive alarm management solutions and TPS eCall services. The company's origins in building alarm monitoring have established it as a trusted partner in the emergency response industry. With over 80 million alarm notifications received annually from a diverse range of real estate objects, Bosch's expertise and rigorous pre-clearance procedures ensure that only verified emergency communications are routed to PSAPs. Its alarm receiving centres conform with EN 50518-I which is the certification scheme for Monitoring and Alarm Receiving Centres (MARC) in Europe. The standard describes the requirements which MARCs must comply with.

3.1.1 Value chain proposition/service offering and role in the TPSP supply chain

Bosch Service Solutions described its role as a TPSP eCall provider. The legislation and standards for eCall envisage an implementation where the eCall is sent directly to the PSAP (112 eCall) or through a TPS centre such as the one provided by Bosch Service Solutions (TPS eCall). Both implementations co-exist. Technical standard EN16102[2] provides specifics for the operating requirements for TPSP eCall providers.

Bosch Service Solutions has been providing eCall services since 2012, initially with one Original Equipment Manufacturer (OEM) and expanding to nine countries and six languages with approximately 80,000 connected vehicles. The company's TPS service pre-dated the mandatory eCall requirements for new vehicles sold in the EU, and Bosch Service Solutions is now rolling out Next Generation eCall capabilities on 4G networks.

With over 30 million vehicles now connected to its eCall platform, its TPSP services operate in over 60 countries, supported by 18 international contact centres that cater to 23 languages. A robust backend infrastructure, housed in five fully redundant data centres, ensures seamless operation and data integrity.

Bosch Service Solutions' TPSP eCall service delivery chain is designed for efficiency and accuracy. Upon

[2] CSN EN 16102, Intelligent transport systems- eCall- Operating requirements for third party support, May 2012.

triggering of an eCall, a voice connection is established, and Minimum Set of Data (MSD) and Extended Sets of Data (ESD) are transmitted to its platform simultaneously using the same voice connection.

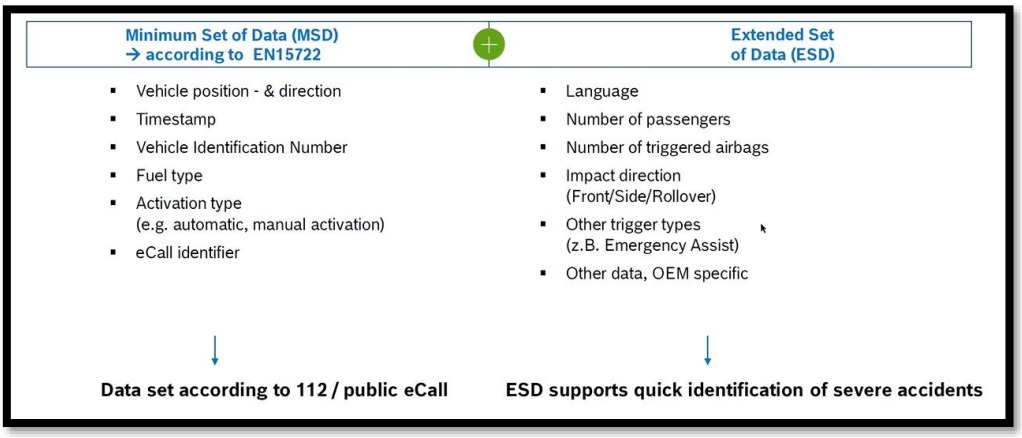

Figure 1: Contents of MSD and ESD for TPS eCall (source: Bosch Service Solutions)

A vehicle equipped with an IVS communicates with the TPSP centre via a SIM card and mobile network connectivity. Multiple transmission mechanisms are employed to transmit data and voice to Bosch's mobility services platform, including SMS, voice channels (2G/3G/4G), and in-band channels (i.e., in-band using DTMF tones).

Data and voice streams are synchronised in the backend platform, and incident data is utilised to route calls to the appropriate agent in the TPS centre using skills-based routing principles (e.g., language).

This real-time data exchange enables agents to immediately assess the situation and, if necessary, transfer the call to the most appropriate PSAP based on the vehicle's location and language. To further enhance connectivity, Bosch Service Solutions supports the digital transfer of MSD to all PSAPs and ESD to PSAPs already transitioned to packet-switched technologies.

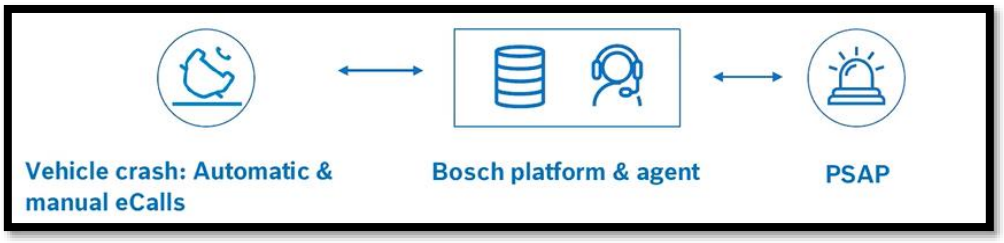

Figure 2: High-level overview of Bosch's process chain for TPS eCall (source: Bosch Service Solutions)

If the eCall is filtered and pre-qualified as an emergency, it will be transferred to the most appropriate PSAP in the language expected by that PSAP. The language indicator is derived from the vehicle's infotainment system configuration settings.

There are two main benefits of the TPSP approach:

- 100% of eCalls sent to PSAPs are genuine emergencies, having already been filtered and pre-qualified.

- Dedicated PSAP communications agents ensure eCalls are always handled in the local language of the most appropriate PSAPs.

These two benefits ensure that no unnecessary resource is expended at the PSAP side in dealing with the call. Detailed reports and statistics are also available to the PSAPs.

3.1.2 Communications and exchange of data between TPSPs and PSAPs – Technical Description

Bosch Service Solutions presented its TPS eCall IT architecture, highlighting the lack of standardised interfaces between TPSPs and PSAPs. Today, the interfaces between TPS centres and PSAPs are organised on a PSAP-by-PSAP basis which is not ideal. GNSS location information is employed to identify the most appropriate PSAP. Bosch Service Solutions has developed its own PSAP registry encompassing geographical and polygon data.

The agents place calls to PSAPs, relaying details verbally while the platform simultaneously transmits data automatically. Data can be transferred via the voice channel to the in-band modem at the PSAP (as per 112 public eCall) or through individual API interfaces for some PSAPs. API interfaces facilitate the transmission of ESD (Emergency Service Data).

Numerous TPS data transfer methods have been proposed, including web services (APIs), web pages, dedicated eCall centres, eCall routers, and NG112. The eCall router approach is currently the standard for 112 public eCall. Each approach has its own technical, operational, financial, and responsibility-related advantages and disadvantages.

Bosch Service Solutions already utilises NG eCall for its own customers, employing SIP to transmit voice and data. However, implementing these solutions poses challenges related to PSAP readiness and willingness to engage. Bosch strongly expressed its support for the NG112 approach and encourages PSAPs not to overlook the need for TPS access when planning and deploying nationwide NG112-enabled solutions.

3.2 Presentation by bevuta IT

bevuta IT is a technology company with a strong presence in Germany. It was founded in 1999 and currently employs over 40 employees. It is a registered telecommunications service provider and has extensive experience in complex software projects. Its primary function is the development and implementation of “Nora”, the official emergency call app system of the German Federal States. The Nora app, and the technology platform underpinning it, has had a significant impact on the country's emergency response infrastructure, with over 300 PSAPs adopting the system. Nora has over 16,000 registered users working in German PSAPs today.

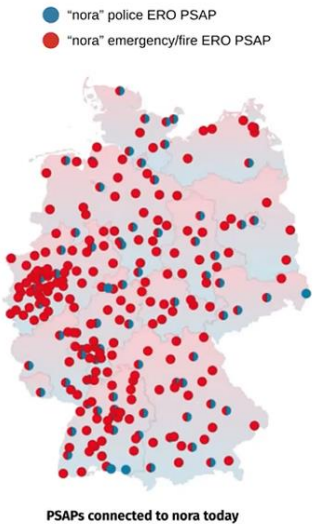

Figure 3: Overview of German PSAPs connected via BEVUTA-IT for NORA App (source: bevuta IT)

Nora is important for PSAPs and citizens in that it provides a facility for a text-based emergency communication which is optimised for persons with hearing or speech impairments. It provides device-based location and automatically sends that location to the most appropriate PSAP. The situational details provided automatically means the PSAP can send help even without the need for additional interaction with the citizen in need. Nora provides an optional client-side silence feature which can be useful in situations where emergency communications need to remain unnoticed.

bevuta IT is currently in the process of obtaining an ISO/IEC 27001[3] Certificate, the world's best-known standard for information security management systems. Conformity with ISO/IEC 27001 means that an organisation has put in place a system to manage risks related to the security of data owned or handled by it and that the system respects all the best practices and principles enshrined in this international standard.

3.2.1 Value chain proposition/service offering and role in the TPSP supply chain

bevuta IT has identified a growing number of emerging technologies that can be used to initiate emergency communications. These technologies include wearable devices, personal locator beacons, sensor-initiated communications from helmets/bikes, apps, and smart home devices. However, there is a need for an effective way for these devices to connect and interact with PSAPs and Nora's existing connections to PSAPs could provide a new emergency infrastructure connector service using the TPS model.

The Nora platform offers a resilient architecture and software to connect European citizens in Germany and organisations to 112 services based on the TPS model. It is a solution that could be also used in other countries.

[3] ISO/IEC 27001:2022(EN), Information security, cybersecurity and privacy protection — Information security management systems — Requirements

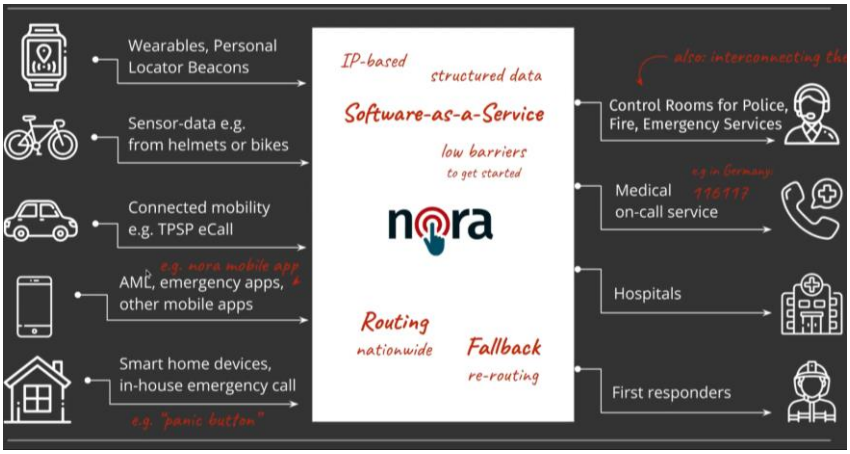

Figure 4: Using bevuta IT as a PSAP connecter service for different types of emergency communications (source: bevuta IT)

Unlike legacy solutions that rely on telecommunications networks, Nora provides IP-based access to all German 112 services. This makes it a fast and easy-to-implement solution, while also giving TPS providers full control over their data in a secure environment offering high availability and redundancy.

3.2.2 Communications and exchange of data between TPSPs and PSAPs – Technical Description

TPS providers face significant challenges in establishing relationships with individual PSAPs. Deployment depends on national regulations and PSAP setups. While technical issues are relatively straightforward, administrative complexities need to be addressed and the entire process can be simplified by collaborating with an infrastructure connector, such as Nora, with pre-existing connections to PSAPs. With his approach, PSAP connectivity is provided to TPSPs "as a service" with no additional hardware/software required.

3.3 Main highlights from moderated discussion- Workshop #1

Following the presentations by Bosch Service Solutions and bevuta IT, a moderated discussion, involving a question-and-answer session, was held. This section provides a report of the main discussion points/highlights. These points are relevant inputs for discussion between concerned parties for TPSP-PSAP integration.

3.3.1 Appropriate routing of TPS emergency communications to PSAPs

Typically, the PSAPs or PSAP Authorities within any jurisdiction determine where emergency communications should be routed. To avoid inconsistencies and incorrect routing, there is a need for better coordination between PSAPs and TPSPs to ensure that TPS eCalls are always routed consistently and correctly. There appears to be a need for standards, not just for the appropriate routing of voice calls but for the appropriate routing of contextual data also.

3.3.2 Contact numbers for PSAPs used by TPSPs

PSAP participants in the project shared information on how TPSPs make contact with them to transfer calls. The following approaches are used in different countries:

- A dedicated E.164 telephone number for each TPSP so that the origin of the call can be uniquely identified and treated appropriately in the call queue. This is important as the interaction between the TPSP Agent and the PSAP Agent is different i.e. from one professional call taker to another operator. The questions are different, the process is different and, when conducted correctly, call duration is reduced. This approach also permits individual TPSP identification for reporting and statistical information.
- A single E.164 number for all TPSPs. This rather generic approach does not allow for immediate identity of the TPSP nor for the handling of calls from TPSPs in a different way which may be a necessity. This approach does not facilitate statistical analysis of calls from different TPSPs easily.
- Using the commonly known emergency short numbers such as 112. This very generic approach also does not allow for the immediate identity of the TPSP nor for handling calls from TPSPs in a different way which may be a necessity. This approach also does not facilitate statistical analysis of calls from different TPSPs easily.

3.3.3 Criteria for transferring eCalls from TPSPs to PSAPs

TPSPs use a variety of criteria to determine whether to transfer a TPS eCall to a PSAP. There is no single standard for these criteria, and TPSPs may have different policies for each country. As the vast majority of eCalls are not real emergencies, there is always an element of decision making involved in this process.

eCall can be initiated automatically or manually and Bosch Service Solutions has a different process for the handling of each:

- With an automatic eCall, there is more information on the severity of the incident from the vehicle data. In such cases, even if there is no voice contact with the vehicle occupants, the data would be sufficient to inform a decision on forwarding the call to the PSAP. Unlike car crash detection capability on smart phones, the eCall sensors are more robust and are less likely to generate false alarms.
- With a manual eCall, there is an agreement with customers that they will try to call back to the car three times if there is no voice contact. If there is no response to the call back it will not be forwarded to the PSAP.

Sometimes the manual eCall button is used to report an incident witnessed. If someone reports an accident in this way, it will be forwarded to the PSAP as there may be a benefit to having location information from a nearby vehicle.

Often, manual eCalls are made by children in cars. In such cases, the Bosch agent will stay on the line until an adult comes on the line. For example, this could be a case of a child alone in a hot car. It might turn out that this could be a serious case and the emergency services should intervene. The benefit remains though that it is the TPSP dealing with this and the emergency communication is filtered and pre-qualified before forwarding to the PSAP.

All information obtained during pre-qualification should be handed over to the PSAP so that the same questions do not need to be asked again during the interview process with the vehicle occupant(s).

3.3.4 The benefit of a language indicator in the contextual data

The spoken language of the occupants of a vehicle is an important piece of information that can be used to transfer the call to the correct PSAP. TPSPs should use this information to ensure that the call is handled in the appropriate language. In some cases, it may be necessary to translate the call between languages before transferring it to the PSAP.

3.3.5 KPIs for TPSPs

TPSPs are typically measured on KPIs including, for example:

- **Response time:** The time it takes for a TPSP to answer a call (e.g. 90% of all incoming calls to a TPSP must be answered within 15 seconds).
- **Pre-qualification time:** The time it takes for a TPSP to determine whether a call is an emergency (e.g. 90 seconds, 180 seconds).
- **Call handling time:** The time it takes for a TPSP to handle a call, including transferring the call to the PSAP if necessary.

These KPIs may be set in consultation with PSAPs and TPS customers. For example, the car manufacturers. TPSPs should strive to meet or exceed these KPIs to ensure that they are providing a high-quality service to their customers.

3.3.6 Regulatory considerations

There are a number of regulations that TPSPs must comply with in order to operate in the eCall environment. These regulations typically cover issues such as privacy, data handling, and security. TPSPs should ensure that they are familiar with and compliant with all applicable regulations at European and national level.

3.3.7 National contact points for TPSPs to integrate with PSAPs

It is difficult for TPSPs to know which PSAP or PSAP Authority to contact in each country when seeking to establish a service. This is particularly true in countries with a decentralised emergency communications handling model. Using a PSAP connector service (such as described by bevuta IT) with already established connections with PSAPs in a single jurisdiction would appear to be a good option to establish a service quickly and seamlessly. However, such services are not available in all countries and an agreement with PSAP authorities may be required to allow a TPSP to gain access.

TPSPs should contact the relevant PSAP or government agency in the country where they want to operate. This is a challenge if there is no single point of contact in each country. A single point of contact would be useful for TPSPs to quickly understand what the process is and to get information on any national certification processes they must go through in order to operate in the eCall environment. Authorities in some European countries have information on their websites on the process TPSPs must follow but it is not widespread. It would be very useful to have a directory of

contact information for each country. Even a centralised list of links containing generic contact information for each country would work.

3.3.8 Priority treatment of calls from TPSPs

The priority of calls from TPSPs varies from country to country. In some cases, they may be given priority over other emergency calls. In other cases, they may be treated as normal emergency calls. TPSPs should be aware of the priority of their calls in each country so that they can ensure that they are being appropriately routed in a timely manner.

3.3.9 NG112 as an enabler for TPS eCall

Voice communication is still the primary means of communication in the TPS eCall environment. However, technological and regulatory advancements will mean changes to the infrastructure set up in PSAPs in the coming years to receive voice, video, messaging and eCall over IMS.

To fully benefit from these advancements:

- TPS eCall should be defined as a use case in the NG112 environment.
- TPSPs should be prepared to adapt to any changes in the technology as NG112 is introduced across Europe in order to ease integration and acceptance of additional contextual data.

3.4 Conclusions from Workshop #1

3.4.1 TPSP/PSAP Agreements

- Any PSAP-TPSP agreement should specify that all laws/requirements in the PSAP jurisdiction related to call recording, privacy, data protection and data retention are complied with.
- Agreement templates governing TPSP-PSAP relationships are in place such as those provided by EENA and in the EU eCall standardisation set. In reality, these templates are not always used. What is most important to establishing a relationship is an openness to collaboration by PSAPs/PSAP Authorities in a given country.

3.4.2 Technical & Operational considerations

- There are several known methods to transfer data from a TPSP to a PSAP. It is currently a country-by-country approach. All of these approaches have benefits and drawbacks whether, technical, operational, financial or for issues related to responsibility.
- A language indicator is very useful for a TPSP so that the initial communication can be transferred to a call taker with the appropriate language skills. However, if the call is subsequently sent to a PSAP, the TPSP call taker must be capable of communicating with the PSAP in the PSAP's preferred local language.
- From a technical perspective there is no avoiding a PSAP-by-PSAP approach to implementing a technical capability to convey emergency communications from TPSPs unless there is a centralised PSAP infrastructure, a PSAP connector platform (such as set out in BEVUTA-IT's

value proposition) or NG112 infrastructure that already provides connectivity and routing functionality to all PSAPs in a particular jurisdiction.

- It should be standard practice that all information obtained during pre-qualification is handed over by the TPSP to the PSAP whether electronically or verbally. This is important so as to avoid a situation where the same questions are asked again by the PSAP call taker during the interview process with the vehicle occupant(s).
- Several participants raised the challenge of communication location coordinates verbally as there is a high risk of human error. Every effort should be made to ensure that location information is conveyed automatically.
- It would be very useful to have a central directory of contact information for authorities/departments in each country that could be contacted by TPSPs seeking to gain access to PSAPs. Even a centralised list of links for each country, which are already publicly available, would work.

3.4.3 Technical Standards

- The European standards for TPS eCall specify minimum call answering times and times for pre-qualification of emergency incidents. In reality, the requirements are a lot stricter.
- For eCall, one of the benefits of having a data transmission channel based on an API is that the ESD can be sent in addition the MSD. The additional data sets allow for better situational awareness and faster pre-qualification of emergency incidents.
- There is a need to standardise the interface for bi-directional transfer of data between TPSPs and PSAPs that would cater for all TPSP-PSAP scenarios.

3.4.4 TPSP Certification

- As the transition to packet-switched technologies accelerates in Europe, it will be necessary to ensure that all platforms connecting TPSPs and PSAPs are secure, redundant and resilient. In this regard, certification schemes for IT security (e.g. ISO/IEC 27001), redundancy and resilience could become criteria to be met as part of a national TPSP certification process.
- Specific certification processes exist for alarm monitoring TPSPs. e.g. EN 50518-I. It would be useful to compile a set of certification processes for TPSPs to comply with, depending on the sector in which they operate, as it could facilitate a harmonised approach to certification requirements across Europe in the future.
- From an administrative perspective, and irrespective of the PSAP call handling model, there is a need for an approach to designate or certify a TPSP at national or European level that qualifies them to engage with all PSAPs within a jurisdiction for technical implementations.

4. Workstream #2 report: Access to emergency services for end-users with disabilities via TPSPs

Workshop #2 took place on 5 October 2023 from 13:30 to 15:30 CEST and covered access to emergency services for end-users with disabilities via TPSPs. In this scenario a relay service is a TPSP.

The designated presenter in this workshop was nWise. To facilitate a better understanding of the role of relay service delivery, nWise was joined in the presentation by representatives of SOS Alarm (Sweden), Bildtelefoni (Sweden), Netherlands Police (Netherlands) and Berengroep (Netherlands) to provide additional context/scope on relay services (both text and video) available in Sweden and the Netherlands. nWise is the technology provider for these services in both countries.

4.1 Presentation by nWise

nWise has been dedicated to enhancing accessibility in electronic communications since its inception in 2002. The company has been at the forefront of enabling emergency communications for individuals who are deaf, deafblind, or hard of hearing, leveraging relay services since 2002 and incorporating real-time text (RTT) technology since 2014. nWise's primary customer base comprises electronic communications network/service providers and governments worldwide.

4.1.1 Value chain proposition/service offering, technical considerations and role in the TPSP supply chain

The nWise MMX platform provides a basis for enabling equal and accessible emergency communications for individuals who rely on varying communication modalities, including text, RTT, sign language, and braille.

Figure 5: The nWise MMX Platform (source: nWise)

The architecture includes integration of teletype services (TTY) but these services are gradually being phased out as technology evolves and a stronger emphasis is placed on the need for alternative solutions.

The increased importance of geolocation in emergency communications is recognised by nWise and the capability of providing location information to the PSAP is considered to be an integral requirement for any emergency communications solution.

The nWise architecture supports assistive technology integration for deafblind citizens who rely on braille to communicate. The feasibility of connecting smartphones and computers to braille devices is acknowledged but there remains a lack of readily available and usable relay services that are accessible for individuals who are deafblind for this purpose.

Relay services facilitate two-way communication between individuals using different communication modes (text, sign language, speech) through ICT, with human operators translating between modes. These services are crucial for deaf people to access emergency services.

Figure 6: Supporting Text and Video Relay Services (source: nWise)

The ETSI harmonised standard, EN 301 549[4] defines a relay service and advises that it is best practice to meet the applicable relay service harmonised requirements set out in ETSI ES 202 975[5].

ITU-T Working Group 16 has also carried out standardisation work in this area. In particular, Recommendation ITU-T F.930[6] provides a functional description of four common types of relay services in use today: text relay, video relay, captioned telephone service relay and speech-to-speech relay. Additionally, it lays out specific functional requirements of relay services pertaining to equipment, call set-up, call experience, emergency communications and message retrieval. nWise also referred to ITU-T Working Group 16's work on describing total conversation in ITU-T Recommendation F.703[7].

nWise's experience in the market is that national procurement procedures do not always follow the technical requirements of the standards and technical specifications set out above. This can create problems for roaming end-users where services in one country are not always available in another. It should be noted that continuity of access to emergency services, including equivalent access for end-users with disabilities, is now a requirement in the EU.

If the different national implementations are not following defined standards and specifications, it will be difficult to ensure compatibility, interoperability and continuity of the services between Member States.

[4] ETSI EN 301 549 V3.2.1, Accessibility requirements for ICT products and services, March 2021.
[5] ETSI ES 202 975 V1.2.1, Human Factors (HF); Harmonized relay services, October 2002.
[6] ITU-T Recommendation F.930, Multimedia telecommunication relay services, March 2018.
[7] ITU-T Recommendation F.703, Multimedia conversational services, November 2000.

Relay Services in Sweden

In Sweden, deaf individuals can access 112 via relay services (video relay, text relay, and speech to speech Relay). The Swedish Video Relay Service (VRS), procured by the Swedish Post and Telecom Authority (PTS) and operated by Evantia, is called Bildtelefoni (Video Telephony). The technology is provided by nWise and it provides a comprehensive suite of communication services to speech-impaired, deaf, and deafblind end-users since 1997.

This nationwide VRS service caters to both primary users (i.e. those who primarily communicate in sign language) and secondary users (i.e. hearing individuals interacting with deaf people using sign language). In 2022, the VRS facilitated approximately 320,000 relay calls. 518 of these were directed to emergency services. Additionally, non-emergency calls to healthcare and police were facilitated through the VRS. Nearly 40% of these calls were made through a freely available service app.

Month	Emergency 112	Non-Emergency Health 1177	Info Hotline A & E 113 13	Non-Emergency Police 114 14
2022-01	42	529	9	112
2022-02	46	309	5	96
2022-03	51	322	4	160
2022-04	29	319	2	143
2022-05	25	261	0	159
2022-06	47	242	0	169
2022-07	31	239	0	132
2022-08	31	325	0	136
2022-09	53	288	1	142
2022-10	64	315	0	148
2022-11	44	290	0	127
2022-12	55	348	0	145
Totalt	**518**	**3787**	**21**	**1669**

Table 2: Video relay calls to emergency services in 2022 (source: nWise)

The following tables provide a breakdown of the total number of relayed calls (text relay and video relay) to emergency services in Sweden:

Inbound to 112	Total 2022 (2021)
Via Text Relay	286 (307)
Via Video Relay	518 (485)
Via Speech-to-Speech Relay	3 (-)
SMS112 (registered users)*	881 (796)
TOTALT	**1 688 (1 588)**

*** SMS to 112 is direct and does not use a relay services**

Table 3: Calls to emergency services via relay services in 2022 (source: SOS Alarm)

As illustrated above, PTS also offers SMS-to-112, a direct text messaging service to emergency services. This service currently has a pre-registration requirement, but this will be removed in 2024 in accordance with EU regulations. To further enhance communication options, Sweden has a range of communication aids prescribed by healthcare authorities, ensuring a diverse array of communication devices for deaf and deafblind individuals.

nWise clarified that the low number of speech-to-speech relay calls to emergency services is because most speech-impaired end-users would call 112 directly in an emergency situation.

There is a requirement in Sweden for relay service providers to have an agreement with SOS Alarm, the company operating the PSAPs. This is to ensure that all calls are handled in a safe and methodical way for primary users and call takers. When an end-user is calling emergency services, they end up in a priority queue at the relay service which is then relayed to the PSAP.

Relay Services in The Netherlands

Berengroep, a leading provider of communication solutions for deaf and hard of hearing individuals in the Netherlands, manages the KPN Teletolk service, offering both text and video relay services. The service handles an average of 16,000 video calls and 18,000 text calls annually. A dedicated app is provided for the service, including a direct text connection option for emergency calls to 112. This feature establishes a synchronised voice and text channel, enabling the caller to speak with the agent while the agent communicates using text. Of the approximately 600 emergency calls made annually, approximately 98% are initiated directly through the app, and the remaining calls utilise video relay services for users requiring sign language interpretation.

The service also provides remote interpretation services for added convenience. Pre-registration is mandatory for the service, requiring an address to be provided for location identification. This information, in conjunction with device location data obtained with user consent when accessing the service via the app, ensures efficient caller localisation. Device location functionality has been available since 2019 for RTT and since 2023 for Total Conversation. One of the technical requirements is priority for video calls. When a video call is received, the first available agent will promptly answer.

Figure 7 below described the call flow for both text and video relay services:

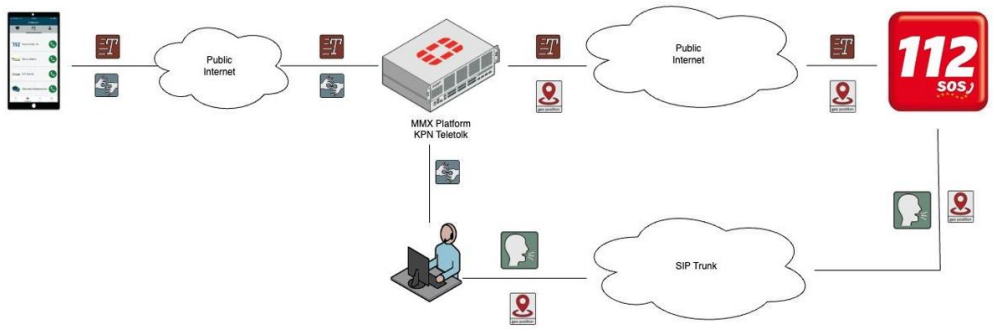

Figure 7: Call flow for text and video relay services in The Netherlands (source: nWise)

The nWise MMX platform receives incoming communications from the Teletolk app users via the public Internet. Upon recognising a RTT call, the MMX seamlessly routes it directly to the appropriate PSAP while incorporating the user's geolocation information. For video calls, the MMX platform dispatches the communication to an available relay centre agent.

The relay centre currently does not extend support to deafblind users. This is attributed to the app's development and distribution not being under the purview of the relay services. However, discussions are ongoing regarding the potential provision of such services in the future. The deafblind app enables users to adjust the text stream's speed, accommodating the needs of deafblind individuals who interpret the text using braille.

Video relay services are available from 08:00 AM to 11:00 PM daily. Beyond these hours, only text-based services are available. The Netherlands Police described the service's operations from the PSAP standpoint. The PSAP call taker communicates verbally with the relay service agent, while the relay service agent engages in sign language with the end-user seeking emergency assistance.

4.1.2 Bilateral agreements and other administrative matters

There are no minimum sets of data (MSD) defined for relay services. Geolocation is specified as a requirement in the Netherlands and technical specifications for SIP implementation are required to ensure the services between Relay Centres and PSAPs are interoperable.

nWise noted the treatment of relay services in European legislation and that they are mentioned (in the EECC[8] and European Accessibility Act[9]) but they are not regulated as such.

nWise, in its discussion with authorities in Sweden and the Netherlands, recognise a number of gaps:

- Providing support to callers who are not in their home countries: This is not just a technical interoperability issue but also related to the provision of sign language support. There are many different variants of sign language around the world.
- The use of a standard for sending geolocation from a desktop computer: This is likely to be more increasingly used as we transition to a packet-switched environment and as working from home is more common since the COVID-19 pandemic.
- Harmonising KPIs for call answering: It is necessary for relay service centre call answering KPIs to be aligned with PSAP call handling KPIs.
- A framework for best practice for the provision of relay services: A framework for best practice is becoming necessary as the number of calls to these services increases (for example, in 2013 there was around one call per month to the TTY service in The Netherlands. It is now around 60 calls per month via the Teletolk App).

4.2 Main highlights from moderated discussion- Workshop #2

Following the presentations by nWise and others, a question-and-answer session addressed various aspects of access to emergency services for end-users with disabilities via TPSPs.

4.2.1 Provision of Caller Location Information

For Over the Top (OTT) RTT apps in the Netherlands, caller location information is collected from end-user devices with consent and provided to PSAPs. Consent is provided when the app is installed.

[8] Recital 285 of the EECC states that *"emergency communications are a means of communication that includes not only voice communications services, but also SMS, messaging, video or other types of communications, for example real time text, total conversation and relay services"*. Article 85 of the EECC states that *"Member States shall ensure, in light of national conditions, that support is provided, as appropriate, to consumers with disabilities, and that other specific measures are taken, where appropriate, with a view to ensuring that related terminal equipment, and specific equipment and specific services that enhance equivalent access, including where necessary total conversation services and relay services, are available and affordable"*.

[9] Recital 28 of the European Accessibility Act states *"For electronic communications services including emergency communications to be accessible, providers should, in addition to voice, provide real time text, and total conversation services where video is provided by them, ensuring the synchronisation of all those communication means. Member States should, in addition to the requirements of this Directive, in accordance with Directive (EU) 2018/1972, be able to determine a relay service provider that could be used by persons with disabilities".*

Where pre-registration is a requirement, civic address location is available from pre-registration details and is passed to the PSAP. A civic address may also be available based on the end-user's telephone number.

4.2.2 Pre-registration requirements for relay services

Typically, name and e-mail address are required for pre-registration requirements. Delegated Regulation (EU) 2023/444[10] sets out criteria for meeting the requirement of equivalence and solutions specifically designed for access to emergency services, through emergency communications, for end-users with disabilities must meet these criteria. Therefore, countries offering solutions that require pre-registration are likely to remove such requirements in the coming years.

4.2.3 Pre-qualification of emergency situations

Relay services do not perform a pre-qualification function. A request for emergency assistance will always be sent to the PSAP. It is the PSAP's responsibility to assess the emergency situation.

4.2.4 KPIs for relay services

KPIs are in place to ensure timely call handling, with targets for connecting interpreters and for handling calls in the PSAP. In the Netherlands, the PSAP answers (audio only) and the first available agent from the relay service is added to the call. The interpreter should be connected within 20 seconds for text for 85% of calls and within 60 seconds for 85% for video calls. That target has consistently been achieved, apart from one month, in the last 10 years. The PSAP has a KPI to answer 90% of all calls within 10 seconds and the PSAP consistently achieves this target for 96% of calls.

Availability requirements for relay services vary by country. In Sweden, the requirement is 99.8% availability.

ISO 9001[11] or similar certification for privacy and data security measures is required for relay services in the Netherlands. ISO 9001 helps organisations of all sizes and sectors to improve their performance, meet customer expectations and demonstrate their commitment to quality.

4.2.5 Technology evolution

Relay services are expected to become more secure and robust, with native services becoming more widely available. IMS implementation may lead to higher availability and priority for Total Conversation calls. In the future, native RTT and video calls will be conveyed natively over electronic communications networks i.e. conveyance will not require a mobile data connection as is the case for mobile apps.

[10] 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'.
[11] ISO 9001, Quality management systems requirements, September 2015.

As technology evolves and RTT and Total Conversation become natively available in the network, it would be possible to start with a voice call and then switch to a text or video call if needed. This would allow the interpreter to be pulled into the call rather than being sent out to a relay service.

The widespread implementation of NG112 and forest guide functionality will facilitate interoperability and continuity of relay services across country borders. This would require standardisation, cooperation and harmonisation.

As an interim step, a solution similar to the PSAP Directory[12] was suggested where a similar directory of relay services/translation services could be available for PSAPs should a need arise for cross-border assistance.

4.2.6 Abusive calls

Accidental and inadvertent calls are common, but there have been no significant issues with malicious or abusive calls. IP blocking can be used as a preventative measure should such incidents occur.

4.2.7 Availability of relay services around Europe

It should be noted that many European countries do not offer relay services of any kind. Some of those representing European PSAPs provided some information on the availability of services for end-users with disabilities in their respective countries:

- In Austria, there is an App called Dec 112 for people who are hard of hearing.
- Finland has an SMS-to-112 direct to PSAP system.
- Norway and Denmark have text relay services.
- France has a national relay centre that is accessed via an app and provides 24x7 video relay services.
- Romania has no relay services, but SMS to 113 directly to the PSAP is available.

4.3 Conclusions from Workshop #2

4.3.1 General Remarks

- Relay services enable users of different modes of communication (e.g. text, sign language, speech) to interact remotely through ICT with two-way communication by providing conversion between the modes of communication, normally by a human operator. It should be noted that many European countries do not offer relay services of any kind.
- EU law requires compatibility, interoperability and continuity of emergency communications in the EU. Relay services are mentioned in the recitals of the European Electronic Communications Code and the European Accessibility Act but they are not regulated as such. Relay services should play an integral part in the provision of emergency communications and having a level of harmonisation of relay services available will make it easier to achieve compatibility, interoperability and continuity.

[12] EENA Document, PSAP Directory – Supporting inter-PSAP communications across borders, June 2019.

4.3.2 TPSP/PSAP Agreements

- Bilateral agreements between Relay Service Providers and PSAPs is not a common practice in Europe.
- Relay services are often funded by governments and they are used to facilitate access to a wide range of services, not just emergency services, for end-users with disabilities. Therefore, agreements for the provision of relay services tend to be with government authorities.
- In Sweden and the Netherlands, the Swedish Post and Telecom Authority (PTS) and the Authority for Consumers and Markets (ACM), have an oversight role in the provision of relay services.

4.3.3 Technical & Operational Requirements and Standards

- National relay services should be implemented/adapted in order to comply with available standards such as ETSI EN 301 549 v3.2.1, ETSI ES 202 975 and ITU-T Recommendation ITU-T F.930. Relay services should also be required to meet quality standards for service availability and delivery. In the Netherlands, for example, there is a requirement to conform with ISO 9001 requirements for privacy and data security measures.
- nWise, in its discussion with authorities in Sweden and the Netherlands, recognises a number of gaps:
    - Providing support to callers who are not in their home countries. This is not just a technical interoperability issue but also related to the provision of sign language support. There are many different variants of sign language around the world.
    - The use of a standard for sending a geolocation from a computer. This is likely to be more increasingly used as we transition to a packet-switched environment.
    - Harmonising KPIs for call answering so that relay service centre call answering KPIs align with PSAP call handling KPIs.
- There would appear to be a need to define a minimum set of data to be sent to PSAPs with an emergency communication received via a relay service. Geolocation is a requirement in the Netherlands but no additional data is mandated and there appears to be no standardised or harmonised approach in Europe.
- With the transition to packet-switched technologies, PSAPs will become more interconnected and support for video will be commonplace. This can enable relay services operations to be provided differently and, possibly, make relay services available across borders. Forest Guide[13] capability in PSAP ESInets[14] can facilitate this. Peering between the relay services and PSAPs in different countries would need to be in place and the Forest Guide would provide a look up directory per country.

[13] The main purpose of the Forest Guide in Europe is to interconnect the ESInets of the individual countries. It can be seen as a map-based dictionary where you can look up the responsible ESInet for a certain location. Instead of providing the technical information about an ESInet directly, the Forest Guide provides a pointer, where additional information about the responsible ESInet can be found. This pointer can then be used to retrieve the technical endpoints for different services within the ESInet.

[14] The Emergency Service IP Network (ESInet) hosts multiple core components specified by the NG112 architecture. For more information on Forest Guides and ESInet interconnection, please see the EENA document entitled "Forest Guide – ESInet Interconnection".

5 Workshop #3 report: Automated non-voice emergency communications via TPSPs

5.1 Presentation by Intrado

5.1.1 Value chain proposition/service offering, technical considerations and role in the TPSP supply chain

Intrado is a US-based company that specialises in public safety solutions worldwide. It provides a suite of emergency communications services, encompassing caller location, call routing and management of emergency service networks and call handling systems at Public Safety Answering Points (PSAPs). Intrado employs over 1400 professionals dedicated to public safety and serves over 230 carriers. Intrado connects with over 6,000 PSAPs in North America and is expanding its reach to PSAPs across Europe and Asia. It was the pioneer of text-to-9-1-1 deployment in North America and is now providing non-voice Requests For Emergency Assistance (RFAs) in the US, Europe, and other parts of the world.

Intrado has been actively involved in handling RFAs for a considerable period. It has experience in managing telematics services, such as eCall-like services with SOS buttons and automatic crash notifications. These services are integrated through Intrado's API, regardless of whether they are voice or non-voice. Intrado can handle multiple incoming protocols and multiple data sources, enabling it to effectively validate the authenticity of RFAs. Subsequently, these requests are routed through Intrado's Emergency Call Relay Centre (ECRC), which serves as its TPS centre. The ECRC is staffed by experienced call takers, including former PSAP call takers and dispatchers who have undergone rigorous training. These call takers triage RFAs based on the available information and filter out non-emergency requests. The ECRC receives data related to location, nature of emergency and assistance needed for each request. If PSAP dispatch is necessary, the ECRC relays the call to the most appropriate PSAP, accompanied by the ECRC-gathered data.

Intrado also handles RFAs from alarm monitoring companies. It provides a service to receive alarm notifications electronically to the ECRC instead of directly sending them to PSAPs using voice. In instances where not all PSAPs are equipped to receive text messages, the ECRC receives the text message and relays it over a voice connection to the most appropriate PSAP.

Intrado is also at the forefront of school and enterprise safety. It offers devices, such as panic buttons, to facilitate prompt emergency response. In these scenarios, Intrado collaborates with PSAPs to directly integrate these notifications into the PSAP system. Additionally, cameras and artificial intelligence (AI) can be utilised in these situations. For instance, AI can detect firearms in a situation and promptly inform the PSAP. The accompanying diagram illustrates different types of RFAs, received data, and channels used to contact PSAPs:

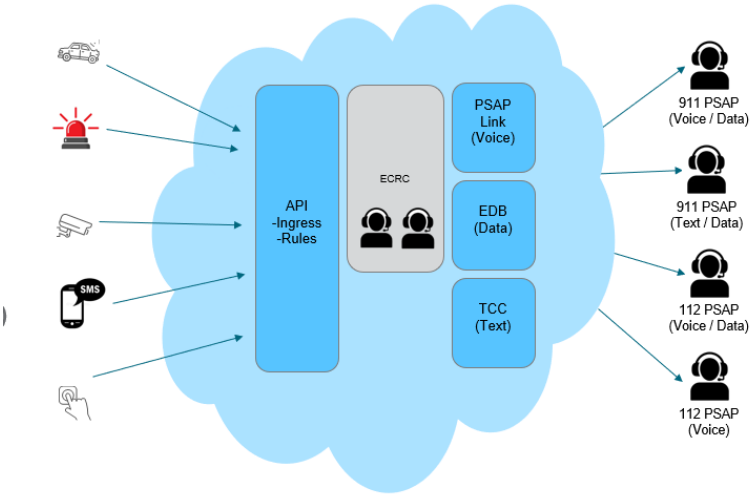

Figure 8: Channels used to contact PSAPs and provide contextual data using the Intrado Platform (source: Intrado)

All information is delivered using voice and data as appropriate. Data is provided in the order that a PSAP call taker would request it and it is provided straight to the PSAP call taker's screen. One of the big benefits is the filtering function which ensures that only real emergencies are dispatched.

5.1.2 Bilateral agreements and other administrative matters

Intrado said that the agreements for TPSP integration with PSAPs has always been challenging in the same way that it is a challenge for PSAPs to deal with different companies with different interface requirements.

5.2 Presentation by SS8

5.2.1 Value chain proposition/service offering, technical considerations and role in the TPSP supply chain

SS8 is a leading provider of lawful interception and location intelligence solutions to electronic communications service providers, law enforcement agencies, public safety organisations, government intelligence agencies, and emergency services. The company is committed to providing its clients with the most advanced and innovative solutions available to help them protect their citizens and the company has a proven track record of delivering high-quality results.

The emergency location division (originally Creativity Software which was acquired by SS8 in 2022) provides location solutions to emergency services, governments and law enforcement agencies worldwide. These solutions are known for their accuracy and reliability and have been validated through rigorous audits, including one conducted by Columbia's Ministry of Information Technologies and Communications.

The company's expertise extends to standards development for lawful interception, working closely with organisations such as ETSI and 3GPP. With a presence in over 35 countries and more than 150 employees, SS8 is a global leader in the field of lawful interception and location intelligence.

TPSP – Emergency location challenges

There are two main challenges when it comes to emergency location:

- Firstly, location generation needs to be consistent and standardised, rather than bespoke, so that it is easy for any PSAP to consume and use it.
- Secondly, it is vital that the location information can be routed to the appropriate PSAP service.

Today, there are mainly three parts/origins of location information:

- Fixed line (CLI/ALI for address lookup)
- Mobile network location
- Device-derived location.

For third party solutions and applications initiating emergency communications, the challenge is getting associated location data delivered to the right PSAP in real-time.

In Europe, there is a well-established procedure of making use of a stage 1 location service (e.g. a location endpoint such as for AML) where location data is centralised and then accessed and retrieved by the appropriate PSAP. For emergency communications via TPSPs this service could be used as illustrated in the figure below:

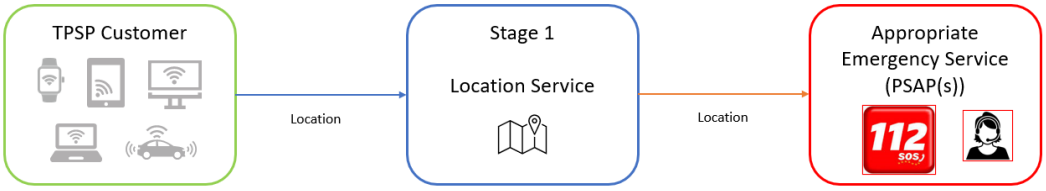

Figure 9: Delivering caller location to the right PSAP in real-time (source: SS8)

Such a use does raise a number of questions in this regard:

- Can the Stage 1 Location Service be opened to allow TPSPs to deliver location data?
- If yes, are the existing transmission mechanisms (SMS, HTTPS, SIP) reliable enough?
- Could a standard interface and schema such as described in the Open Mobile Alliance's Mobile Location Protocol (MLP[15]) be used? This is a well-established interface for PSAPs and PSAP computer-aided desktop applications today. MLP offers a useable format for the PSAPs that allows for enriching location data to include latitude/longitude, civic address, floor information and location conditions (e.g. water terrain etc).

[15] Open Mobile Alliance, Mobile Location Protocol 3.2, July 2011.

```
<?xml version="1.0"?>
<!DOCTYPE svc_result SYSTEM "MLP_SVC_RESULT_320.DTD" [
<!ENTITY % extension SYSTEM "   _MLP_extension.dtd">
]>
<svc_result ver="3.2.0">
  <eme_lia ver="3.2.0">
    <eme_pos>
      <callid type="VoIP">447770123123</callid>
      <pd>
        <time utc_off="+0100">20230502115712</time>
        <shape>
          <Point>
            <coord>
              <X>51.280900</X>
              <Y>0.791851</Y>
            </coord>
          </Point>
        </shape>
      </pd>
    </eme_pos>
    <bwi_caller_location>
      <Address_line1>Concorde Rd, Farnborough GU14 0LS, United Kingdom</Address_line1>
      <Address_line2>2nd Floor</Address_line2>
      <postcode>GU14 OLS</postcode>
    </bwi_caller_location>
  </eme_lia>
</svc_result>
```

Figure 10: Geodetic location example (source: SS8)

For routing location information to the most appropriate PSAP, a typical solution could be to use geofences. This involves defining a specific area and if the user is in this area, the location information could be delivered to the PSAP covering that area. This could be implemented within the Stage 1 service or separate to it. The migration to next generation emergency communications (i.e. NG112) will help in this regard in the future.

5.2.2 Bilateral agreements and other administrative matters

SS8 considers that the biggest challenge is for all forms of TPSPs to come up with a consistent way to drive the integration with PSAPs so that it's as automatic and as simple as possible. A European standard would help that would be aligned with countries leading the way in the move to next generation emergency communications. There is an increasing number of organisations looking to integrate with the emergency services whether for voice or data. Keeping it simple and striving for consistency across countries is key.

5.3 Presentation by RescueTrack

5.3.1 Value chain proposition/service offering, technical considerations and role in the TPSP supply chain

RescueTrack is a leading provider of integrated solutions for emergency services (police, fire and ambulance) in the DACH region (Austria, Germany, and Switzerland). The core functions of its solutions are used by over 2,000 customers in eight European countries and are delivered using cloud, on-premises, or hybrid services. RescueTrack has around 19,000 units (ambulance, fire, and police) connected to its services and over 9,000 users on mobile applications which is a rapidly growing area particularly for fire services in some cantons in Switzerland.

RescueTrack's vendor neutral platform connects different PSAPs and emergency response organisations. The platform receives over 40 million location positions per day, 31,000 mission alerts, and it is connected to 220 CAD systems for transmission of location information, status information

and mission data to different organisations. 30 dispatch centres have replaced legacy GIS systems with RescueTrack's GIS Integration solution.

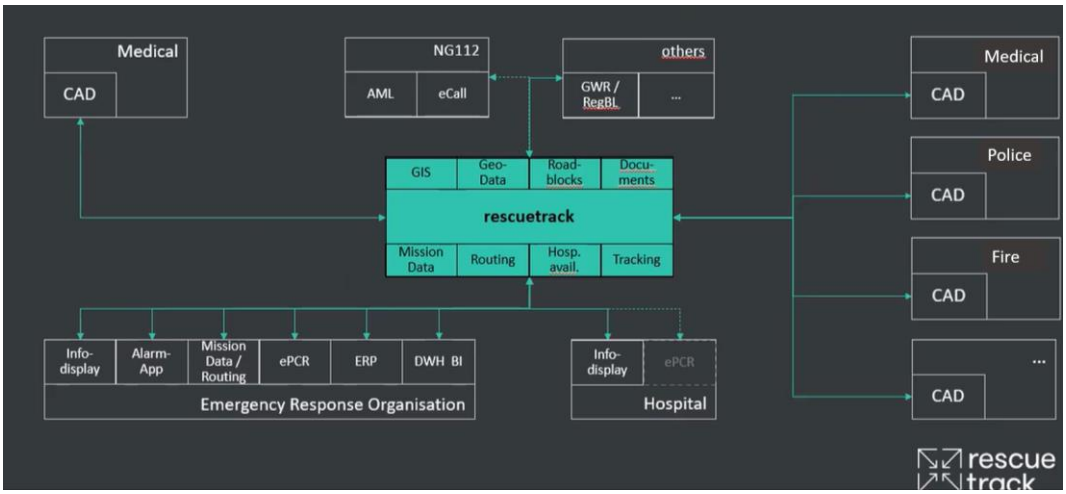

Figure 11: RescueTrack vendor-neutral platform (source: RescueTrack)

RescueTrack's services began with helicopter air rescue 17 years ago and has now expanded to cover ground services provided by public service organisations. This year, RescueTrack started providing roadside assistance services.

Business processes are quite similar in the different organisations and are easily integrated with RescueTrack services. Services are provided through RescueTrack's own data centres which conform with ISO9001/ISO27001.

A map is used where the different jurisdictional areas are geofenced. Maintenance of the data for geofencing is carried out by RescueTrack and it is kept up to date regularly. Sometimes PSAPs have overlapping districts for different emergency services and these can be presented to the users. It is also used for delivering location to the right PSAP depending on the service and corresponding jurisdiction. RescueTrack can assist third parties by providing them with a PSAP connection service into the PSAPs in the DACH region.

5.3.2 Bilateral agreements and other administrative matters

RescueTrack considers that there are several steps to achieving a seamless technical integration with PSAPs. Before implementing a flexible interface with machine learning, clear standards are needed. This is illustrated in the figure below:

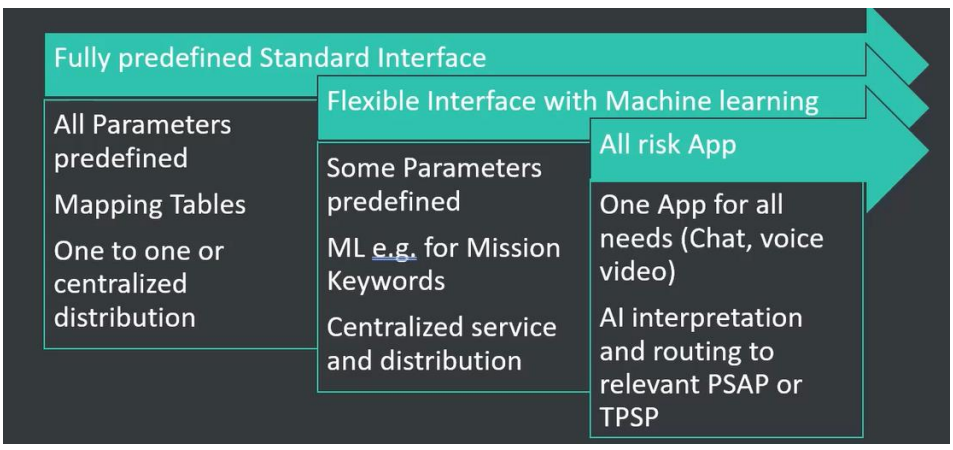

Figure 12: Steps to achieving seamless technical integration with PSAPs (Source: RescueTrack)

5.4 Presentation by Lidar Saving Lives

5.4.1 Value chain proposition/service offering, technical considerations and role in the TPSP supply chain

Lidar Saving Lives (LSL) is a public safety coalition. It is a collaboration of public safety professionals, autonomous vehicle stakeholders and automotive OEMs dedicated to improving vehicular safety for the betterment of society. It aims to equip emergency services with indispensable tools to improve, amongst other things, response time, resource utilisation, situational awareness and preparedness.

Goal of Lidar Saving Lives

LSL aims to deliver sensor data (not just Lidar data) to the appropriate consumer/application in as few steps as possible in order to avoid delays/errors/failures in passing data to those who need it and to avoid overloading systems/users with data they will not utilise.

The appropriate consumer/application is the endpoint that will act on that data so that unit/resource recommendations, extrication planning and medical treatment planning are as efficient and as effective as possible.

One standard that has been successful in the US for sensors/alarms is ANSI 2.101[16] for utilisation of sensor data to improve public safety response. This is achieved by decreasing the response time and workload while increasing accuracy and data content quality.

PSAPs are challenged in adapting to new and emerging technologies including for example, satellite communications, rendered imagery, offboard processing/packaging of data and additional data sources. All of this data creates a risk of overwhelming PSAP call takers and there is a need to ensure that the right data is made available to the right person/application at the right time.

There are different paths to delivering data which can have an impact on the timeliness of it. In an emergency situation, the important point is that the data path is flexible enough to empower first responders with knowledge and the context around that knowledge. These are illustrated in the figure below:

[16] APCO/TMA ANS 2.101, Alarm Monitoring Company to Emergency Communications Center (ECC) Computer-Aided Dispatch (CAD) Automated Secure Alarm Protocol (ASAP), March 2021.

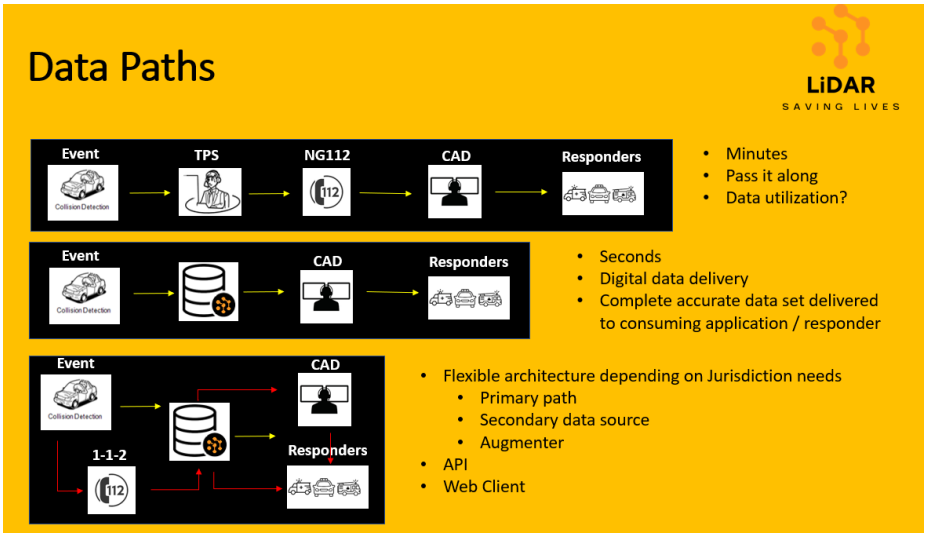

Figure 13: Data paths - Device to PSAP (source: LidarSavingLives)

5.4.2 Value chain proposition/service offering and role in the TPSP supply chain

LSL have experience with typical commercial agreements and memoranda of understanding and certification processes and these vary by jurisdiction. The process on agreeing these can be time intensive so a move towards more streamlined/standardised approaches would help. A clearing house solution providing information on what the differences are would be an admirable goal to have.

5.5 Highlights from moderated Discussion- Workshop #3

Following the presentations by Intrado, SS8, RescueTrack and LidarSavingLives. a question-and-answer session addressed various aspects of non-voice access to emergency services via TPSPs.

5.5.1 Challenges of delivering emergency communications to PSAPs

There is no common standard for delivering emergency communications to PSAPs, which makes it difficult for different TPSPs and PSAPs to interoperate. This can lead to delays in emergency response.

The formats in which emergency communications data is sent can vary, which can also make it difficult for PSAPs to interpret and process the data.

There are concerns about the security of emergency communications data, both in transit and at the PSAP. This is because emergency communications data can contain sensitive personal information

5.5.2 Need for a common standard for delivering alarm data to PSAPs

A common standard would facilitate:

- TPSPs to integrate with different PSAPs, which would improve the efficiency and effectiveness of emergency response.
- PSAPs to interpret and process emergency communications data, which would also improve the speed and accuracy of emergency response.
- An improvement in the security of emergency communications data.

5.5.3 Routing of emergency communications to PSAPs

Current routing methods: There are a number of different ways to route emergency communications to PSAPs. These methods include using fixed geographic routing, using dynamic routing based on the location of the caller, and using a combination of fixed and dynamic routing.

Challenges of current routing methods: The current routing methods can be challenging in certain situations, such as when the caller is in a remote location or when the caller is using a mobile device.

Need for a more efficient and reliable routing method: There is a need for a more efficient and reliable routing method for emergency communications, which would ensure that emergency calls are always routed to the correct PSAP. NG112 can provide a basis for this and it is important that the different TPSP use cases are considered in implementation plans.

Using centralised location services: Centralised location services can be used to inject location data from third parties into PSAPs. This can help to improve the accuracy of routing for emergency communications.

Using IP-based PSAP connectors services: IP-based PSAP connector services (as set out in RescueTrack's value proposition), can be used to ensure that emergency communications are routed properly to IP-based PSAPs through already existing connections that comply with national routing rules. This is important as more PSAPs are migrating to IP-based technology.

5.5.4 Emergency Incident Data Object (EIDO) standard

The EIDO standard is a new standard for transmitting emergency incident data. This standard can be used to transmit a variety of data, including location data, medical data, and other relevant information.

5.6 Conclusions from Workshop #3

5.6.1 General Remarks

- As concluded in previous workshops, one of the big benefits provided by TPSPs is the filtering function which ensures that only real emergencies are dispatched. For alarm monitoring, the relevant information can be sent to directly to the PSAPs CAD system thereby ensuring no wasted resource at the PSAP side.
- The biggest challenge is for all forms of TPSPs to come up with a consistent way to drive the integration with PSAPs so that it is as automatic and as simple as possible.

5.6.2 TPSP/PSAP Agreements

- Making agreements for TPSP integration with PSAPs has always been challenging in the same way that it is challenging for PSAPs to deal with different companies with different interface requirements.
- Commercial agreements, memoranda of understanding and certification processes typically vary by jurisdiction. The process on agreeing these can be time intensive so a move towards more streamlined/standardised approaches would help. A clearing house solution providing information on what the differences are would be an admirable goal to have.

- Trust is key. It is important for PSAPs that TPSPs are able to remove any doubts about the need for emergency assistance to avoid any resource being wasted in the PSAP or within the emergency services themselves. This will make it easier and more comfortable for PSAPs to engage with TPSPs.
- With rights come responsibilities. If a TPSP is afforded the right to send traffic and data into a PSAP then it has a corresponding responsibility to do this in accordance with pre-defined protocols.
- It is challenging for a TPSP to find the right contacts and understand the framework in each country for TPSPs. This information or criteria should be available in the form of guidelines for technical and operational integration. Even in countries with a decentralised PSAP infrastructure, these guidelines should be centrally available. EENA could play a facilitating role to a certain extent (but this is limited) to facilitate a central portal containing these guidelines (or links to them) but the assistance of national level authorities would be needed to prepare (and maintain) the guidelines.
- PSAPs may be reluctant to act on requests that are received only using data which highlights the need for ensuring trust. One option is to start with voice and as the relationship develops the move to a data-only interface can be developed if it is deemed appropriate and beneficial.
- A clear definition is needed on what public service interventions are offered within the service TPSPs offer to their own customers. These types of interventions need to be very clearly defined along with clear protocols on the criteria needed for accessing them. For example, alarm companies should clearly define the circumstances when police or fire would be called so that customers are very clear about their expectations from the service.
- Similarly, the agreement between TPSPs and PSAPs should also be very clear as to when a public service intervention could be called upon so that TPSPs are very clear about their expectations from the service.
- Where rules break down and PSAPs receive false alarms and dispatch resources there should be repercussions for the ATSP defined in the agreement. For example, in the Netherlands, if an ATSP repeatedly breaks these protocols they may be disconnected from providing automatic alarms for a defined period.

5.6.3 Standards

- Alarm Transmission Service Providers (ATSPs), TPS-eCall Service Providers and ECRC (relay services) have their own standards for delivering data to PSAPs. A single European standard would be beneficial to help streamline integration.
- This standard should be aligned with countries leading the way in the move to next generation emergency communications. There is an increasing number of organisations looking to integrate with the emergency services whether for voice or data. Keeping it simple and striving for consistency across countries is key.
- Whether emergency communications/contextual data/alarm notifications etc., the traffic is sent directly to PSAPs or via a TPSPs. A common standardised interface into the PSAP should be able to facilitate both.
- Rather than speaking about a one-size-fits-all approach for all TPSP communications, there is at least scope for standardised approaches for the main scenarios defined.
- One standard that has been successful in the US for sensors/alarms is ANSI 2.101.3-2021 ASAP (known as “ASAP to PSAP”) for utilisation of sensor data to improve public safety response. This is achieved by decreasing the response time and workload in the PSAP while increasing accuracy and data content quality. Using this standard, the alarm is delivered directly into the CAD system

of the PSAP. Intrado and Lidar Saving Lives use this to decrease the response time and workload while increasing accuracy and data content quality.

- Not all PSAPs implement the ASAP to PSAP standard and, while effective once it is implemented, it is challenging and expensive to implement.
- Some companies consider next generation emergency communications networks (e.g. ESInets in NG112 and NG911 architectures) as a great future mechanism for delivery of emergency communications/data with different types of requests and the Emergency Incident Data Object (EIDO) standard as a way to transmit the additional data.
- Other standards referenced in the workshop were:
    - ISO/IEC 27001 is the world's best-known standard for information security management systems (ISMS).
    - ISO/IEC 9001 sets out the criteria for a quality management system and is the only standard in the family that can be certified to (although this is not a requirement). It can be used by any organisation, large or small, regardless of its field of activity. There are over one million companies and organisations in over 170 countries certified to ISO 9001.

5.6.4 Transmission of Location & Routing to the most appropriate PSAP

- In Europe, location endpoints exist in all countries where AML is deployed. It would be worth exploring if TPSPs could deliver location and other contextual data into these endpoints where it can be accessed by PSAPs. It is challenging using SMS (using SMPP protocol) but much simpler using IP-based solutions like HTTPS. A key consideration here is ensuring that proper security, authentication and certification of TPSPs is in place and a requirement for meeting these criteria would need to be set out in agreements between TPSPs and the authorities responsible for operation and maintenance of these endpoints.
- In countries where the organisation of emergency communications handling is decentralised, access to a database containing geofences for the jurisdictional areas of each PSAP would make it possible for TPSPs to route emergency communications to the most appropriate PSAP. Such databases do not exist at the moment except for those established by private companies. These are resource intensive to manage and maintain. Would it be feasible for national public authorities to establish and maintain such databases where access could be provided, under certain terms, for organisations such as TPSPs? SS8 and Intrado see a potential benefit here.
- In the absence of databases to facilitate routing to the most appropriate PSAP, PSAP connector services offered by private companies are a possibility. For example, bevuta IT can provide such a service in Germany and RescueTrack can provide such a service in Germany, Austria and Switzerland through their respective platforms.
- In Austria (the DEC112 project) a third-party solution or application could connect to an ESInet and the ESInet would take care of the appropriate routing.

5.6.5 Use of Artificial Intelligence in TPSP operations

- There is scope for the use of AI in TPS applications to help triage calls more quickly and efficiently and provide greater situational awareness to PSAPs when filtered emergency communications and contextual data are transmitted. Intrado provided an example in the US for school safety programs. Video imaging can be analysed using AI and conclusions can be drawn. For example,

where a camera recognises the presence of a gun in an emergency situation, it can provide to the PSAP along with an assessment of the situation provided by the AI.

6 Recommendations

6.1 TPSP Certification

- A European TPSP certification process should be established that includes IT security, redundancy, and resilience requirements. This would be beneficial for the sector. Meeting the criteria for such a process could be included in TPSP/PSAP agreements. Different TPSP scenarios would need to be provided for. For example, compliance with EN 50518 for alarm monitoring TPSPs could be a requirement.
- Implement a mechanism to designate or certify TPSPs at national or European level that would enable them to engage with all PSAPs within a jurisdiction to implement services

6.2 TPSP-PSAP Agreements

- Encourage the adoption of existing TPSP-PSAP agreement templates, such as those provided by EENA and the EU eCall standardisation set, to ensure consistency and clarity. EENA will update its current agreement template based on the findings of this project.
- Clarify the rights, obligations and responsibilities of TPSPs and PSAPs in agreements. This includes defining what constitutes a false alarm and the consequences for TPSPs that violate the agreement.
- Clearly define and implement minimum call answering times and pre-qualification timelines for emergency incidents. This will ensure that TPSP call handling KPIs align with PSAP call handling KPIs. These should be included in TPSP-PSAP agreements.
- Clearly stipulate in TPSP-PSAP agreements that all applicable laws, regulations, and standards related to call recording, privacy, data protection, and data retention are strictly adhered to in the PSAP's jurisdiction.
- Create a clearinghouse solution to provide information on the differences between agreements in different jurisdictions. This would help TPSPs to avoid errors or misinterpretation of the provisions of agreements in different countries.
- For equivalence of access to emergency services through relay services, minimum requirements for service availability should be specified. This is to maintain a high level of consistency for domestic and roaming end-users relying on these services.
- Develop a central directory containing contact information of PSAPs/PSAP authorities so that TPSPs know who to contact in each country in order to establish agreements.

6.3 Standards

- Develop a single European standard for integration of TPSPs and PSAPs. This should specify the interfaces and protocols needed for conveyance of emergency communications and contextual data. The standard should take account of, and be consistent with, the standards and plans used by European countries in the move to next generation emergency communications. It should also be aligned with the Emergency Incident Data Object (EIDO) standard for transmitting additional data with emergency communications.
- The use of APIs to enable bi-directional data transfer between TPSPs and PSAPs, incorporating both MSD and ESD for enhanced situational awareness and faster pre-qualification should be investigated with a view to standardising minimum data sets for different scenarios. All such data sets should include a language indicator to ensure accurate routing of calls to call takers with the appropriate language skills.

- For relay services, the adoption of existing standards like ETSI EN 301 549 v3.2.1, ETSI ES 202 975, and ITU-T Recommendation ITU-T F.930 should be encouraged to ensure interoperability and consistency of service provision across countries.
- Define a minimum sets of data elements for relay services to be included when emergency communications are relayed to PSAPs, including geolocation and additional relevant information.
- Define a standard for sending geolocation data from computers to enhance emergency response accuracy, particularly in packet-switched environments.
- Develop a standardised approach for TPSPs to provide support to callers outside their home countries, including language/sign language translation across different dialects.

6.4 Technical & Operational Requirements

- Address the challenge of conveying location coordinates verbally by prioritising automatic data transfer mechanisms.
- Ensure that TPSP call takers have adequate language proficiency to communicate with PSAPs in the PSAP's preferred local language.
- Employ Forest Guide capability within PSAP ESInets to facilitate peer-to-peer connections between TPSPs and PSAPs in different countries.
- PSAPs should maintain eCall in-band modems even during the transition to next-generation technologies to accommodate legacy traffic for as long as is necessary.
- Explore the use of third-party PSAP connector services to facilitate routing to the most appropriate PSAP. These services could be provided by private companies (e.g. BEVUTA-IT in Germany and RescueTrack in the DACH region) or by national public authorities.

6.5 Use of Artificial Intelligence in TPSP-PSAP operations

- Investigate the use of AI in TPS applications to help triage calls more quickly and efficiently. This could involve using AI to analyse video imaging, audio recordings, and other data from emergency communications.
- Develop guidelines for the use of AI in TPSP operations. These guidelines should ensure that AI is used in a responsible and ethical manner.
- Educate PSAP staff on the use of AI in TPSP operations. This will help PSAPs to understand the capabilities and limitations of AI.