Emergency Communications from Third-Party Service Providers

An entity that makes emergency calls seeking help on behalf of others on a regular basis as part of their services is referred to as a Third-Party Service Provider (TPSPs)

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EMERGENCY COMMUNICATIONS FROM THIRD-PARTY SERVICE PROVIDERS

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Authors that contributed to this document:

Author:

Ciaran Moynihan – ECAS, Ireland

Contributors:

Freddie McBride - EENA

Cristina Lumbreras - EENA

EENA

European Emergency Number Association

EENA 112

Avenue de la Toison d'Or 79, Brussels, Belgium

T: +32/2.534.97.89

E-mail: info@eena.org

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1 | INTRODUCTION

When a citizen requires emergency assistance, they can make a telephone call to emergency services on a short code such as the pan-European emergency number, 112. The emergency call is generally routed based on the callers region by the originating network to the appropriate Public Safety Answering Point (PSAP). The emergency services PSAP will answer the call, assess the situation, and dispatch appropriate emergency assistance if it is needed. The call taker in the PSAP will also have access to additional information such as the Calling Line Identity (CLI) of the caller and location information derived from the telecommunications network, or from the device used to make the call, which is used to further inform the decision-making process.

Sometimes, a call to emergency services may be made by one party seeking assistance on behalf of another party. A good example is a security systems service provider. A premises is fitted with a security system and is monitored constantly as part of a commercial offering to both business and residential customers. If an alarm is triggered, the company's monitoring centre will be notified. The situation will be assessed based on the available information. If it is deemed that emergency assistance is needed (for example, there has been a break-in or a smoke alarm is activated) the monitoring company may contact emergency services to seek assistance from the police or fire services.

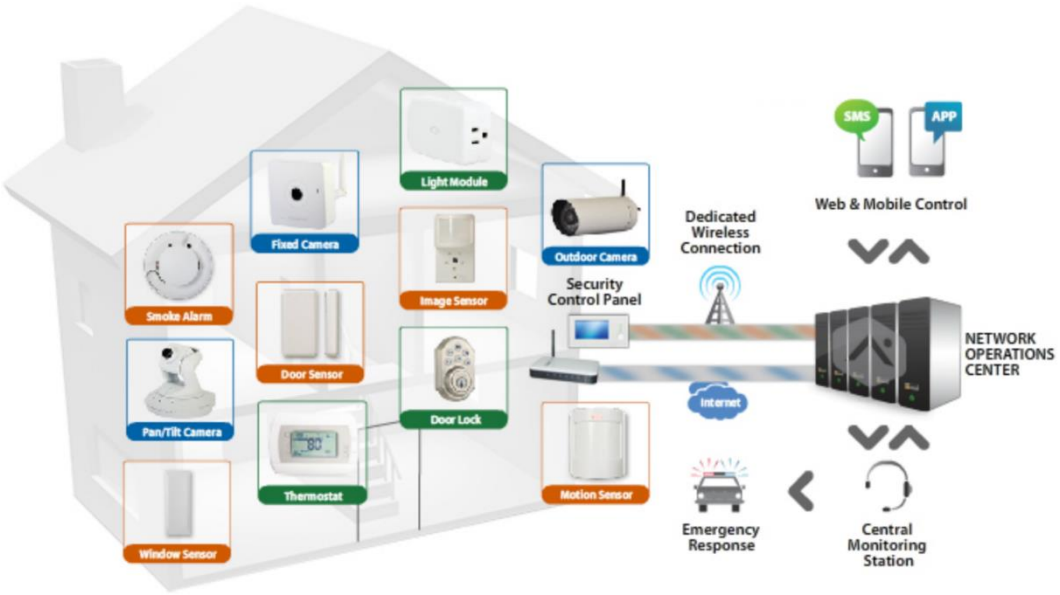

Figure 1: Example of Security System Service Provider contacting emergency services (Source: www.18004alarms.com)

In this report, **entities who make emergency calls seeking help on behalf of others on a regular basis as part of their services to their clients are referred to as Third-Party Service Providers (TPSPs).**

Traditionally, TPSPs emerged as local operations providing services in a single area and may, over the years, have developed direct informal relationships with the relevant local emergency

service control centres e.g. a security systems service provider may have obtained a direct contact number for the local police or fire service. Alternatively, TPSPs may have used the public national, or regional emergency numbers to contact the emergency services when required using the same channel as ordinary citizens. This largely unstructured approach may have been suitable for local or regional TPSPs and may have worked well for the serving PSAPs as the degree of shared knowledge of processes and functions, along with an expectation of good communication between the TPSP and the PSAP, ensured that calls were handled appropriately, and people received the assistance required in a timely manner.

TPSPs have continued to evolve over time. There is a noticeable trend of a move to larger, outsourced TPSPs who may serve multiple jurisdictions. This trend introduces the potential for a lack of understanding between the TPSPs and PSAPs with regards to ways of working, awareness of local call handling procedures and, indeed, required information on the caller which has the potential to affect the outcome of an emergency call.

The purpose of this report is to examine current arrangements in Europe between PSAPs and TPSPs and to compare the different approaches in place. The effectiveness of these approaches are assessed. Where gaps or deficiencies in current approaches are identified, recommendations are made to harmonise and formalise approaches particularly in relation to larger TPSPs serving more than one jurisdiction. It is also hoped that the report will serve to inform new TPSPs as to how they can more easily work with PSAPs across Europe and overcome the significant challenge of establishing relationships with multiple PSAPs in different jurisdictions.

2 | DIFFERENT TYPES OF TPSPs

In the previous chapter, the example of a security systems service provider is described to introduce the concept of a TPSP. This chapter looks at some of the other types of TPSPs that exist in Europe.

2.1 Third-Party Services eCall (TPS eCall)

eCall is an emergency call that can be generated either manually by vehicle passengers or automatically via activation of in-vehicle sensors when a serious road accident occurs. eCall is a mandatory requirement in all new-type vehicles sold in the European Union (EU) since April 2018.

The legislative framework for eCall in the European Union permits two different implementations for eCall. These are described in the figure below as pan-European eCall and Third-Party Services (TPS) eCall.

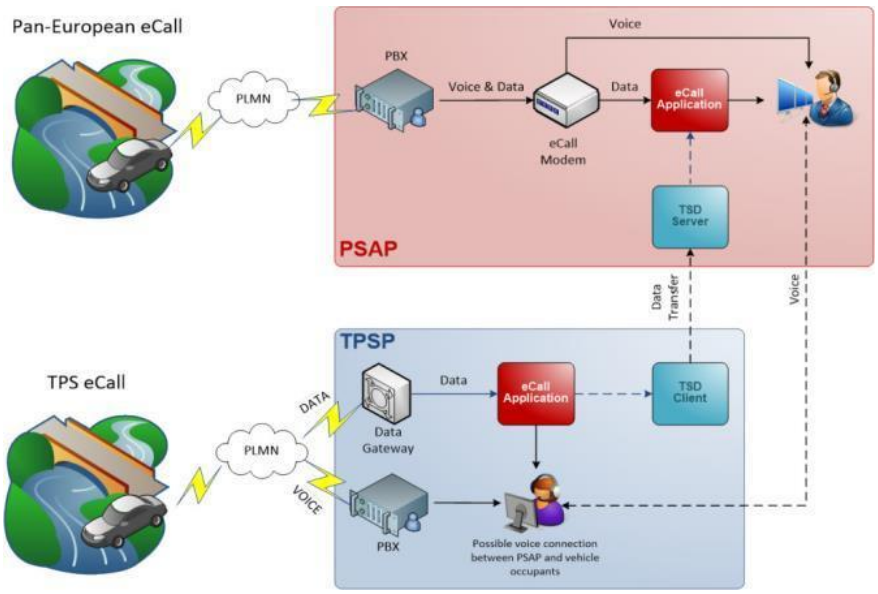

Figure 2: Example of TPS eCall (Source: HeERO)

When activated, the in-vehicle eCall system establishes a voice call to 112 and is directly connected to the relevant PSAP in the pan-European eCall implementation or to a TPSP in the TPS eCall implementation. In the case of Pan-European eCall, contextualised information referred to as the Minimum Set of Data (MSD), which includes location information, is sent over the same voice connection to the PSAP, and in the case of TPS eCall, similar contextualised data is sent either over the voice connection or a parallel data connection from the vehicle to the TPS eCall providers systems.

Car manufacturers have been offering services to vehicle owners known as "infotainment" or "concierge" services for many years and these services predate the mandatory eCall service. A button in the vehicle can be pressed to talk with an agent in a call centre who can provide directions, service advice, breakdown assistance, and other services as well as emergency assistance. Many providers of these optional services added the mandatory eCall service to their offering as the regulations accommodate this approach.

Therefore, the TPS eCall service that operates privately is permitted provided that:

- It complies with the TPS eCall standard EN 16102[1]
- Only one system (i.e. the private eCall service or the mandatory 112-based eCall service) can be active at any given time.
- The vehicle owner may at any time choose to use the 112-based eCall instead of the TPS service.

The eCall TPSP model typically serves multiple jurisdictions. This means that a TPSP located in one country could receive eCalls from vehicles in multiple countries and, where emergency assistance is needed, transfer those calls to PSAPs in multiple countries. The multi-country nature of the eCall TPSP operation raises some challenges such as language support, establishing working relationships with multiple PSAPs in multiple countries and the conveyance of the MSD from the vehicle, to the TPSP and on to the PSAP. EENA recognised the need for formal bilateral

[1] CEN EN 16102, Intelligent transport systems - eCall - Operating requirements for third party support, June 2012.

agreements between eCall TPSPs and PSAPs and published a template[2] to assist TPSPs and PSAPs to create such agreements.

2.2 Building and Security monitoring services

Both commercial and domestic buildings typically avail of monitoring services of one type or another including basic monitored intruder alarms, CCTV systems, and also fire detection systems. This is especially true for commercial premises which may be part of a large group of buildings owned by an organisation and availing of a centralised buildings management and monitoring service.

The buildings monitoring systems send sensor data and CCTV feeds back to a centralised system operated by the monitoring services provider. These monitoring services may be based in the same country as the group of buildings being monitored or indeed may be based in another country.

In the event that an alarm is triggered (e.g. fire alarm or door sensor) or other situation is detected (e.g. on CCTV) which requires the assistance of the emergency services then the monitoring service will need to contact the relevant emergency services in the country and region where the building is located. When the monitoring service is located in a different country or region to the affected building, establishing a connection to the most appropriate PSAP can present a difficulty.

When a direct call to 112 will not result in access to the most appropriate PSAP an alternative approach is needed. In the past, monitoring services have utilised a number of approaches to work around this issue including local agreements directly with the appropriate emergency services or indeed utilising the telephone system deployed in the building in question or elsewhere in that region to achieve "local PSTN breakout" to place the 112 calls locally. This can in many cases lead to confusion on the part of the emergency services being contacted as the caller is in a different region or country and may not effectively communicate this fact to the emergency services. It is also worth noting that depending on the issue affecting the building, the local PSTN breakout capability may be unavailable (e.g. fire affecting power or local connectivity).

Large building monitoring services may seek to engage with PSAPs in the jurisdictions where the buildings that they monitor are located so as to ensure that they can alert the emergency services responsible for those areas in the event of an incident at one of their monitored premises.

It is also worth noting that this type of TPSP arrangement may be of vital importance to a monitoring service responsible for critical infrastructure such as oil refineries/depots and chemical plants which carry the risk of high impact events.

2.3 Health monitoring services

Health monitoring and alerting services including TeleCare and TeleHealth which utilise a variety of sensors (motion sensors, personal alarms etc.) and other integrated devices are widely used by older adults and vulnerable people to allow them to live independently.

By the very nature of the services provided, there is often a need to alert the ambulance service or other emergency services should one of their customers require assistance. Telecare/health

[2] EENA, *eCall TPSP and Emergency Services Authorities Agreement Template*, May 2015.

services are typically provided using a contact centre type operation where the telecare/health staff are alerted to changes in a customer's condition either through a personal alarm activation or sensor data.

There are a wide variety of telecare/health services operating across the European market and some provide services to customers located in other countries. Where this is the case, the telecare/health company may engage with a local PSAP under a TPSP type arrangement to access the appropriate emergency services.

2.4 Counselling services

Services which offer emotional support and advice to citizens may sometimes call emergency services on behalf of a client who may be in a vulnerable situation. For example, child protection services, suicide prevention and self-harm prevention services. These are usually very sensitive cases and very clear communications between the counselling service and the PSAP are needed to ensure an appropriate emergency response.

2.5 Emergency call aggregation services

There are certain categories of emergency call where it may be difficult to determine the most appropriate PSAP to send the call to.

For example, an emergency call from a satellite phone or from a Voice over Internet Protocol (VoIP) service where location information is not available at call setup. These types of services can also support an SMS requesting emergency assistance in an area where SMS to 112 is not available. The TPSP receiving the initial call or text will determine who the caller is, the nature of the emergency, what type of help is required and the location of the emergency. The location will be determined either automatically from the calling device or calling network or manually by asking the caller where help is needed. Once all information is received and assessed, the TPSP will contact the appropriate PSAP to relay this information.

Other types of TPSPs aggregate emergency calls from different types of services where it can be challenging to route to the most appropriate PSAP. These include:

- Emergency calls from private/corporate networks
- Calls from M2M/IoT or Telematics devices

2.6 Relay Services

Some TPSPs are specifically focused on providing access to emergency services from persons with disabilities. These are known as Emergency Call Relay Centres and typically have call takers trained to a PSAP standard and adopt a critical communications culture.

3 | CURRENT ARRANGEMENTS IN EUROPE FOR TPSPs – THE VIEW FROM PSAPs

It would seem reasonable to expect that personnel working in a TPSP setting would have the required training and experience to communicate on a regular basis with PSAPs. This would include having the competence to have the necessary information available and to communicate that information in a clear and concise manner to PSAP call takers. This differs significantly from a typical emergency call where a member of the public may be contacting the emergency services for the first time in their lives.

In March 2021, EENA's Tech & Ops Committee circulated a questionnaire to European PSAPs investigating the experience of PSAPS in dealing with calls from TPSPs. The objective of the questionnaire was to gain an understanding of the current landscape and approach to working with TPSPs across Europe. The questionnaire was followed up with interviews in some cases to clarify and elaborate on certain responses. The main observations are presented in the following sub-sections.

3.1 TPSP approaches to contacting PSAPs

All respondents to the questionnaire stated that PSAPs in their respective countries receive emergency communications from TPSPs. In most cases, TPSPs contact PSAPs using a long form E.164 telephone number. This can be a dedicated number that each individual TPSP can contact the PSAP on or one common number for all TPSPs to use. One respondent did report that it receives calls from TPSPs using publicly available emergency short codes such as 112. The figure below illustrates the different contact methods.

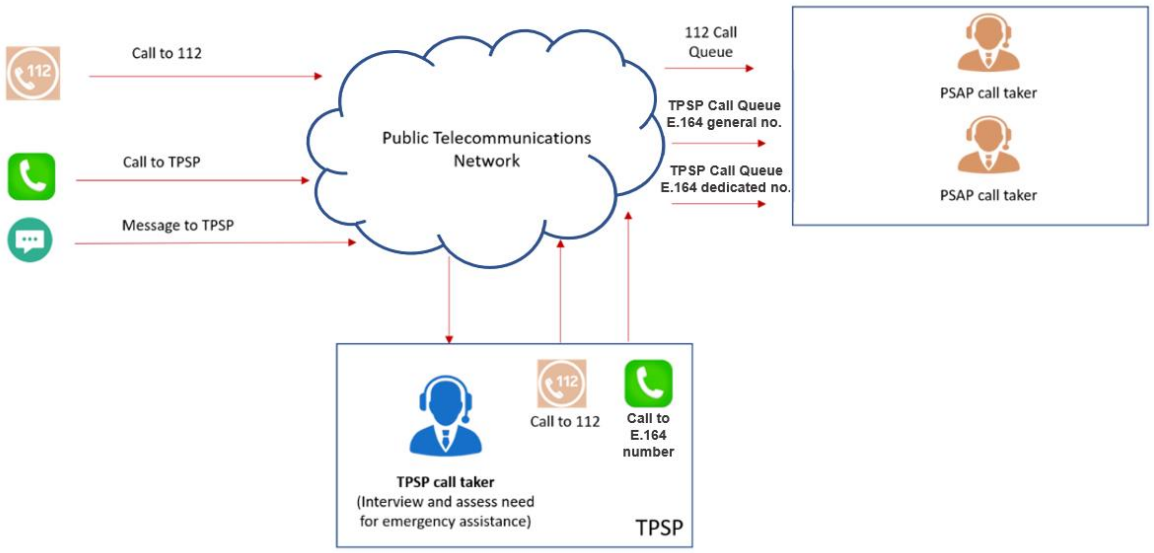

Figure 3: Methods for TPSPs to contact PSAPs

3.2 Models for agreements between PSAPs and TPSPs

The process for establishing an agreement between the PSAP and the TPSP varies between countries. The models that exist include:

- TPSPs must complete a formal registration process with a relevant national authority e.g. Ministry, Police etc.
- TPSPs must sign a written agreement before getting access to an E.164 number.
- No formal written agreement *per se* but procedures are in place for access to PSAP, for data transfer and other possible forms of communications. Procedures then need to be tested with each PSAP nationwide.
- There are no specific requirements for TPSPs. They can access the PSAP using 112 like any other citizen.
- Respondents informed that there were no fees incurred by TPSPs for sending calls to PSAPs other than telephony charges associated with calling long form E.164 telephone numbers.
- One respondent noted that there were cases of calls coming from TPSPs on specific TPSP numbers without a formal agreement being in place but this was clarified as a legacy issue when less formal procedures were in place and at least one TPSP continues to use the number.

3.3 Measures for addressing non-compliance with agreements and processes

Respondents informed that agreements between PSAPs and TPSPs may include a requirement to provide contact details for responsible managers or escalation points within the TPSP. This provides a focal point for PSAPs to follow up with on possible issues of non-compliance and to work together on resolving issues effectively. Where issues cannot be resolved or where repeated cases of non-compliance occur, there are specific conditions to address such non-compliance which may include the potential to block access to the PSAP and terminate the agreement.

Some respondents reported that monitoring of calls for quality of service is achieved by reviewing call recordings while others monitor on a case-by-case basis as the number of such calls is not very high. One respondent also noted that when PSAP call takers experience difficulties with a TPSP then the incident should be reported to a supervisor. Reported difficulties included use of non-agreed language, conveying inaccurate emergency location coordinates as well as "a few minor difficulties".

3.4 Volume and types of TPSP calls

Respondents reported between 10 and 1500 calls per annum from TPSPs which represents a tiny fraction of total calls received. No statistics were available in some cases. The types of calls received were from:

- eCall TPSPs
- Counselling and mental health services (e.g. crisis text or phone lines)
- Security services (e.g. alarms/CCTV monitoring, Guard services etc.)

Fire monitoring services - domestic (often combined with home security) or commercial premises including large high-risk installations such as fuel depots)

3.5 Concerns raised by PSAPs

The following concerns were raised by PSAP respondents in their submissions to the questionnaire.

3.5.1 Language

When TPSPs have a multi-country footprint. It is important that their agents can speak the language of the country to which they are transferring an emergency call. Most European countries have some support for foreign languages. However, language support itself, is not something that a TPSP should rely on a PSAP to provide. TPS eCall is a case in point here. One respondent reported an instance where an eCall IVS contacted a TPS service. The TPS call taker, not having the necessary language skills, transferred the call to a PSAP without being able to validate if emergency assistance was actually needed.

3.5.2 Lack of accurate location

When a PSAP receives an emergency call, the call taker is automatically presented with location information. This could relate to a physical address, location of a cell tower serving the caller or GNSS coordinates. This information is crucial for emergency services to ensure a timely intervention at the place of the accident.

When a third-party is involved this type of information is gathered by the TPSP call-taker. It should then be forwarded to the PSAP. The transfer of location information may be relayed automatically if there is a data connection between the TPSP and the PSAP. If no data connection exists, information is relayed verbally between the TPSP and PSAP call takers. It is uncommon for data connections to exist between TPSPs and PSAPs which means that caller location information is provided verbally in most cases. This introduces the possibility of human error and the provision of incorrect location information. This can lead to a delay in the arrival of emergency assistance to the caller. The authors are aware of another approach where the TPSP can provide a secure URI to the PSAP call taker which enables them to retrieve the location information using a web browser.

One respondent also stated that PSAPs in general would prefer to have a civic address (i.e. number, street and post code for a residential or commercial premises) for the call but where GNSS coordinates are also available they should be provided to the PSAP so that the civic address can be verified.

3.5.3 General time delays

A TPSP introduces an intermediary into the chain between citizen and PSAP and this inevitably leads to a time delay. This is a particular issue for eCall. Even the smoothest of handovers from a TPSP to a PSAP results in a delay and when you add any of the issues already discussed such as language, inaccurate location etc. then the problem is compounded. One respondent stated that the PSAP has no control over the availability of the TPSP service, the competence of TPSP operators, robustness or the resilience of the connection between the PSAP and the TPSP and the person in need of emergency assistance.

3.6 Analysis of observations from PSAPs

The volume of calls to emergency services from TPSPs was reported to be quite low. This is because TPSPs perform an important function of assessing and filtering calls that do not require emergency assistance thereby ensuring that public emergency services resources are utilised in the most efficient manner.

There would appear to be a need for an appropriate mechanism to resolve conflicts between TPSPs and PSAPs regarding call handling, unwarranted dispatching and accountability for failures in providing emergency assistance. From the PSAP, perspective this is necessary as it increases the complexity of staff training as well as being resource intensive.

Agreements should include contact details of the TPSP at both an institutional level and operational level for issue resolution and follow up.

It is important that every entity in the chain of the emergency call must recognise the critical nature of such communications and have the appropriate infrastructure, culture, and training in place. Therefore, TPSPs must adopt a similar approach to PSAPs when it comes to the security and reliability of ICT infrastructure and the training of staff.

4 | CURRENT ARRANGEMENTS IN EUROPE FOR TPSPs – THE VIEW FROM TPSPs

4.1 Agreements between PSAPs and TPSPs

Since the nature of many communications services are now global, TPSPs need access to PSAPs in multiple jurisdictions. The most appropriate way to facilitate this is through bilateral agreements with those countries in which they have customers.

One of the more notable groups of international TPSPs is vehicle assistance services where a TPSP could provide services to vehicle owners in several countries from one single location. In such cases, informal local arrangements for contacting PSAPs are unlikely to be sufficient. All respondents to the survey stated that they received calls from eCall TPSPs which is logical given that eCall is mandatory throughout Europe.

4.2 Identifying and Establishing relationships with appropriate PSAPs

TPSPs noted that the process of identifying the appropriate PSAP (or PSAPs) and then establishing and maintaining relationships with these PSAPS for each region where they provide services as being a significant challenge in setting up and operating their TPSP services.

If they are to provide their services to customers in multiple jurisdictions, then they need to be able to contact the correct emergency services in each of these jurisdictions. The varying models of PSAP organisation across Europe further complicate this effort. It was however noted that the annual EENA PSAP survey is a valuable resource in understanding the various PSAP models in use across Europe.

4.3 Dealing with multiple languages

TPSPs identified that dealing with multiple languages between the person in need of assistance, the TPSP operation, and the target PSAP service can present a challenge. However, the use of available data (e.g. language settings for a vehicle, or service subscription details) along with multiple call handling agents operating to carefully developed call handling procedures where one agent can communicate with the person in need of assistance in their language and another can communicate with the target PSAP in their native language can help to address this challenge.

It should be noted that while this approach will inevitably introduce a risk associated with translation error such a risk would be present in the situation where the caller was communicating directly with the PSAP and the use of trained linguists in the TPSP service can minimise such a risk.

4.4 Lack of Data interface or standards-based interfaces

TPSPs may have rich location and contextual information available to them on the person in need of emergency assistance. However, no standards-based data interface has been implemented by PSAPs or TPSPs in order to automatically transmit this information to PSAPs and

in most cases this information must be passed verbally leading to delays and potential for miscommunication.

While some PSAPs do expose a data interface over which a TPSP may transmit location information, these interfaces are typically not standardised and must be implemented by the TPSP on a case-by-case basis for each PSAP.

While there is some definition of standards for the automatic transmission of such information (e.g. using the data format defined in EN 16102 which is specific to vehicular eCall information) the low volumes of TPSP calls and the lack of a standardised and widely adoptable interface has meant that most PSAPs have not invested in the implementation of such interfaces.

It was noted that the future adoption of both NG eCall and the move towards NG112-based PSAP infrastructure should mean that automatic data transmission from TPSP to PSAP can be achieved more easily.

5 | CONCLUSIONS AND RECOMMENDATIONS

TPSPs are a valuable, necessary, and indeed inevitable part of providing emergency assistance to persons or organisations. TPSPs provide a vital function in getting assistance to a group of customers, organisations or individuals in specific circumstances where conventional means of accessing the emergency services may not work or would be an inappropriate choice.

The objective of a TPSP involved in the emergency call handling chain may include:

- Extending emergency calling capabilities to multiple communications channels and technologies not served by, or catered for, under the current regulations and arrangements (e.g., OTT and Number Independent IPC technologies).
- Enabling access to local emergency services as part of an centralised monitoring service operating internationally on behalf of persons or organisations.
- Providing an international routing function (to the appropriate PSAP) for emergency calls where current conventional network-based routing cannot be used to identify the appropriate PSAP. This is particularly applicable to emergency communications originating from OTT and nomadic IP-based communications services as well as from satellite communications services.
- Adding value to the emergency call handling chain by collecting relevant information, triaging, or filtering calls, and providing additional information/advice to the person in need of assistance.
- Shortening the emergency call handling chain by ensuring the appropriate emergency services are contacted by the most direct route available (e.g., overseas buildings monitoring, or remote worker monitoring services).

TPSPs have the potential to add significant value to a request for emergency assistance through the provision of location and other contextual information however until such time as there is widespread adoption or availability of standards-based interfaces over which this information can be automatically transmitted, this significant benefit will not be fully realised. In this context, the provision of a secure URI to PSAPs to allow them to retrieve location information for a particular emergency incident could be a viable solution particularly for PSAPs that using legacy call handling and call dispatch equipment.

With the exception of eCall TPSP operations, no guidelines, standards, or indeed regulations exist at European level governing the interaction between TPSPs and National Emergency services. While policies do exist at a national level in many countries, this can lead to an inconsistent experience and indeed availability of TPSP access to the emergency services.

The adoption of standards, policies and indeed regulation could eventually allow for TPSPs to participate more fully and integrate directly into the emergency access and emergency service provision fabric across Europe. However, in the meantime they need to be catered for specifically and individually by PSAPs in each country where they need to provide service to their users.

PSAPS may take different approaches to dealing with TPSPs which will be driven by their own policies and procedures. These approaches will fall somewhere on a spectrum of:

- Not dealing with TPSPs at all;
- treating all TPSPs in the same manner regardless of the service they provide;
- treating different types of TPSPs differently depending on the type of service they provide; and
- developing a bespoke process for each individual TPSP.

To reduce complexity and effort associated with dealing with TPSPs as well as driving consistency in the overall caller experience it is recommended that PSAPs consider a position around the middle of this spectrum and develop their own processes which can be applied consistently to any new presenting TPSP who wishes to offer services in their region. This will also improve access for TPSPs and overall accessibility of emergency assistance regardless of the caller situation or the assistance needed.

Countries and individual PSAPs are encouraged to develop policies, working standards, and agreements to ease the integration with and onboarding of TPSPs. Such agreements should include escalation points and mechanisms for dealing with substandard caller and PSAP experience.

Countries and PSAPS should consider how to deal with call quality issues arising with PSAPs as a TPSP call is for a person that needs help in their jurisdiction. However, poor quality or standards on the part of the TPSP may have an impact on how well the local emergency services can provide assistance.

The use of dedicated numbers to identify individual TPSPs can be useful for statistical and reporting purposes and allow PSAPs to quickly identify issues with calls received from an individual TPSP and address these issues. While this can equally be achieved using the calling number, or other mechanism (PSAP call taker identification and selection) use of a dedicated number may be more consistent and reliable approach. Having a unique inbound calling number for each TPSP also allows for skills-based routing to be implemented in the PSAP.

PSAPs should publish a point of contact and approach to onboarding TPSPs.