PTOLEMUS Consulting Group

What is the future of TPS eCall?

Brussels - 1st October 2018

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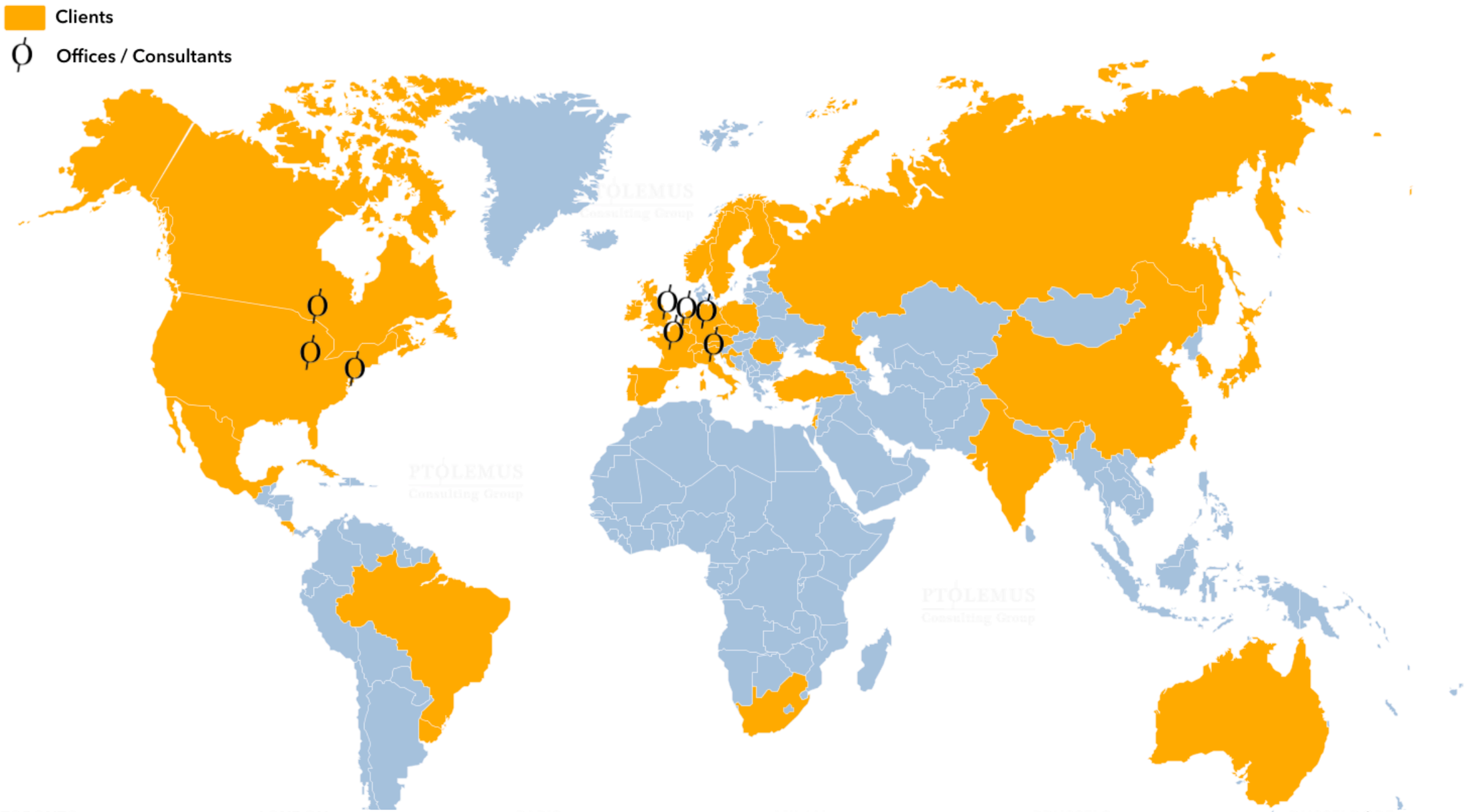

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This brief is based on market research in the last 9 months

- This brief is the result of 9 months of research
- Our methodology included:
  - Over **20 interviews conducted** with key stakeholders including OEMs, PSAPs, local authorities and third party service providers
  - The regulatory and structural frameworks assessed in **18 European countries**
  - A **competitive market analysis** of major OEMs and third party service providers
  - Assistance to leading players in the field of e/bCall

The eCall mandate regulates 2 out of 3 types of services including public eCall and TPS eCall

Classification of eCall solutions

eCall

2 types of services

Emergency solutions (embedded or aftermarket)

1 **Private eCall** Non-compliant solutions

OEMs or aftermarket private eCall not compliant with pan-European mandate or EN standards

Pan-European eCall mandate (from 31st March 2018)

2 **Public eCall** Operated by a public authority

Pan-European eCall-112

Delegated to a TPSP

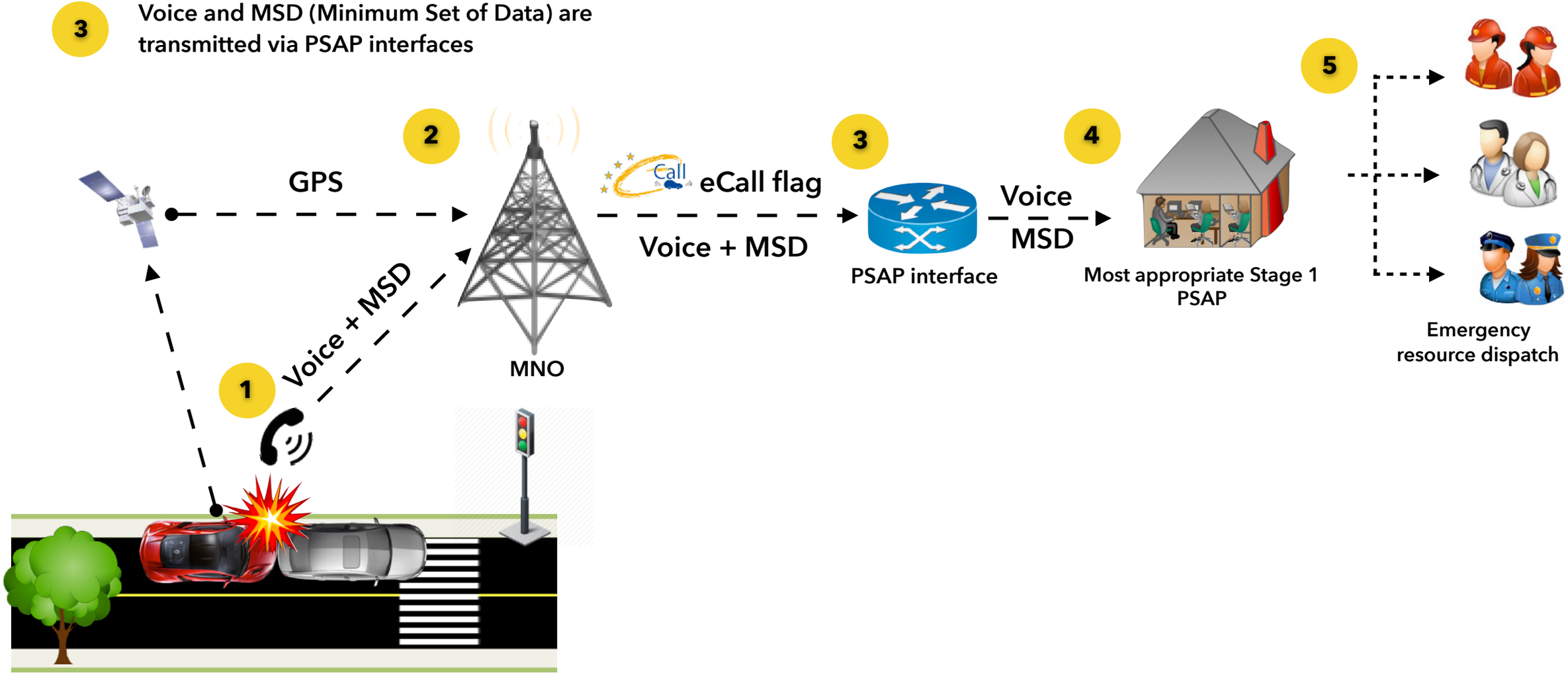
3 **TPS eCall** Operated by compliant TPSPs

Compliant with EN standards and local requirements

Source: PTOLEMUS *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

Public eCall delivery model includes 5 key steps

1. An eCall is automatically triggered when a crash is detected or is triggered manually
2. MNOs (Mobile Network Operator) put eCall flag to the call, detect the location and route to the most appropriate PSAP
3. Voice and MSD (Minimum Set of Data) are transmitted via PSAP interfaces
4. The most appropriate Stage 1 PSAP* or eCall PSAP receives the call, classifies accident type and decodes MSD
5. Information is sent to Stage 2 PSAPs for emergency resource dispatch

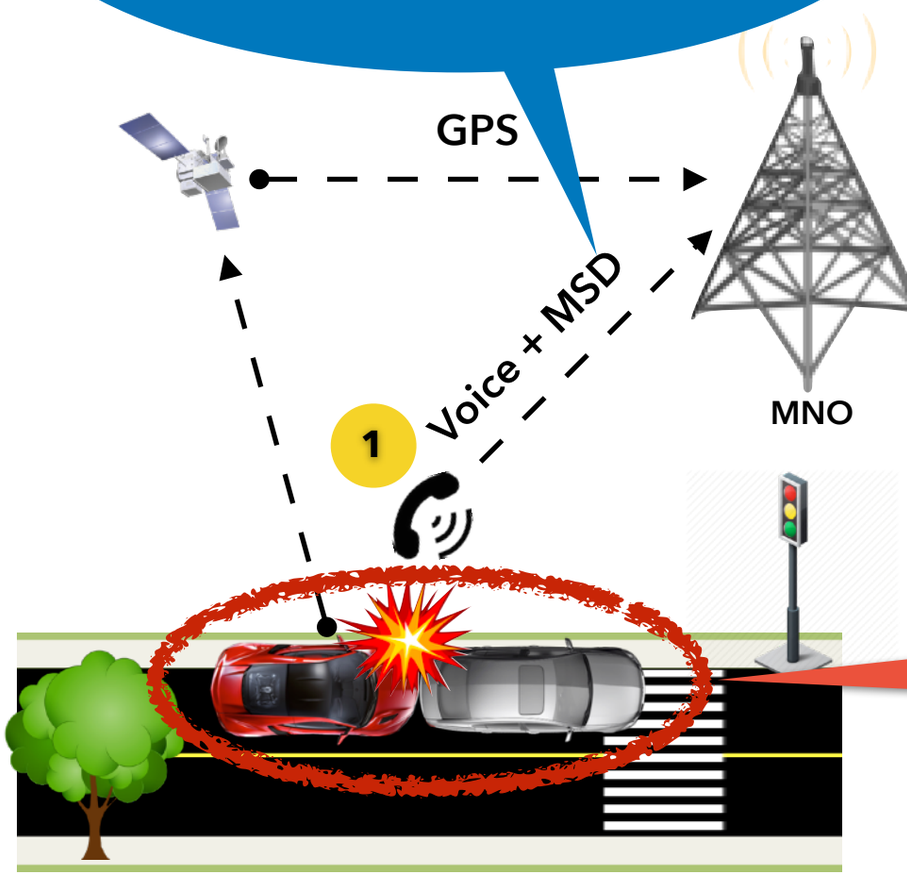


Source: PTOLEMUS, EN Standards. *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

All new type approved vehicles should apply to the pan-European eCall mandate from 31 March 2018

1 **An eCall is automatically triggered when a crash is detected or is triggered manually**

The device must transmit a minimum set of data (MSD) which should include the crash information, type of call, vehicle types,VIN number, vehicle location, and travel direction



Devices for 112-based eCalls and TPSP* eCalls can co-exist but only one can be activated at a time, based on the customer choice

The eCall-112 device can be used to deliver other telematics services, given that it would not affect the function of the eCall

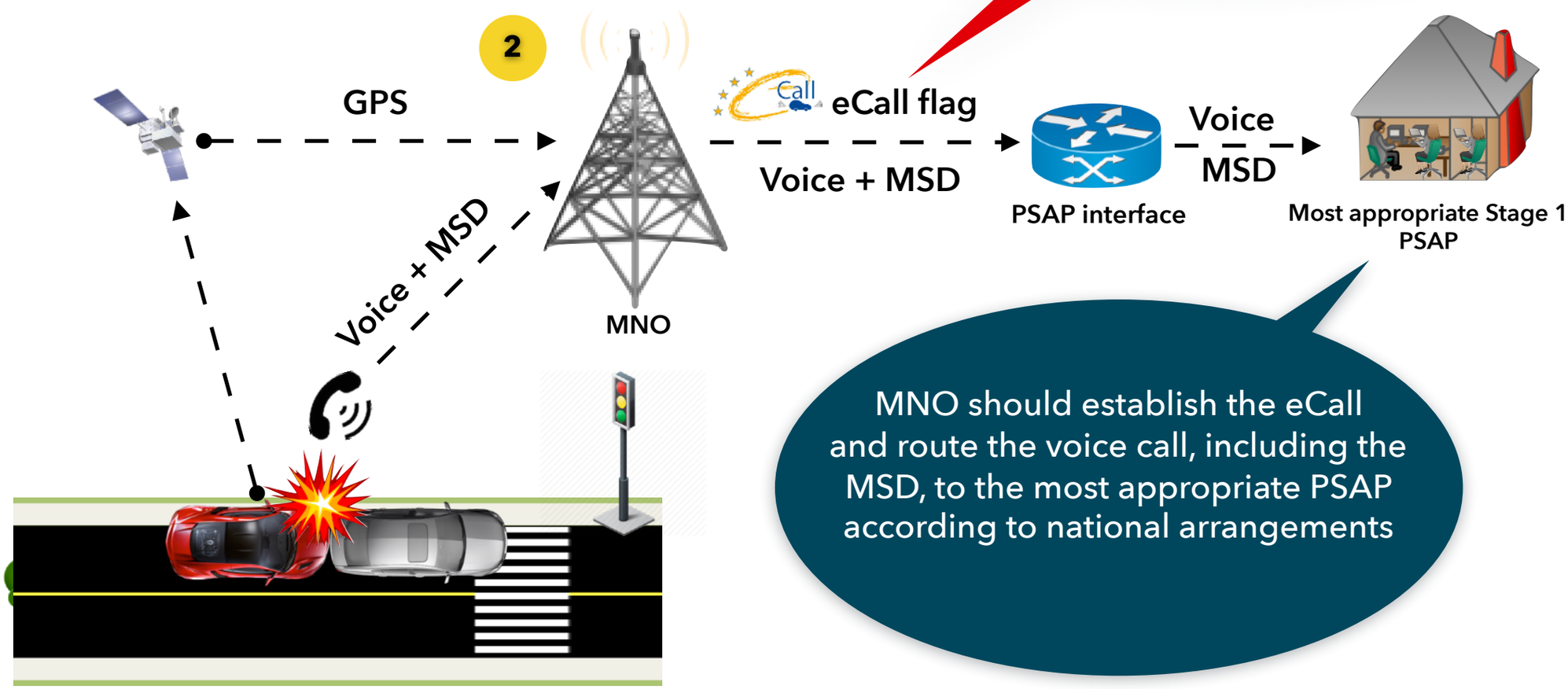
All new type approved vehicles should install a certified in-vehicle device able to transmit 112-based eCalls both automatically and manually from 31 March 2018

Source: PTOLEMUS, EN Standards. *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

The MNOs are responsible to use eCall flags to distinguish and prioritise eCalls from other emergency calls

2 **MNOs (Mobile Network Operator) put eCall flag to the call, detect the location and route to the most appropriate PSAP**

An eCall compliant MNO system should use an eCall flag to differentiate eCalls from other speech only emergency calls and distinguish automatically and manually triggered eCalls



MNO should establish the eCall and route the voice call, including the MSD, to the most appropriate PSAP according to national arrangements

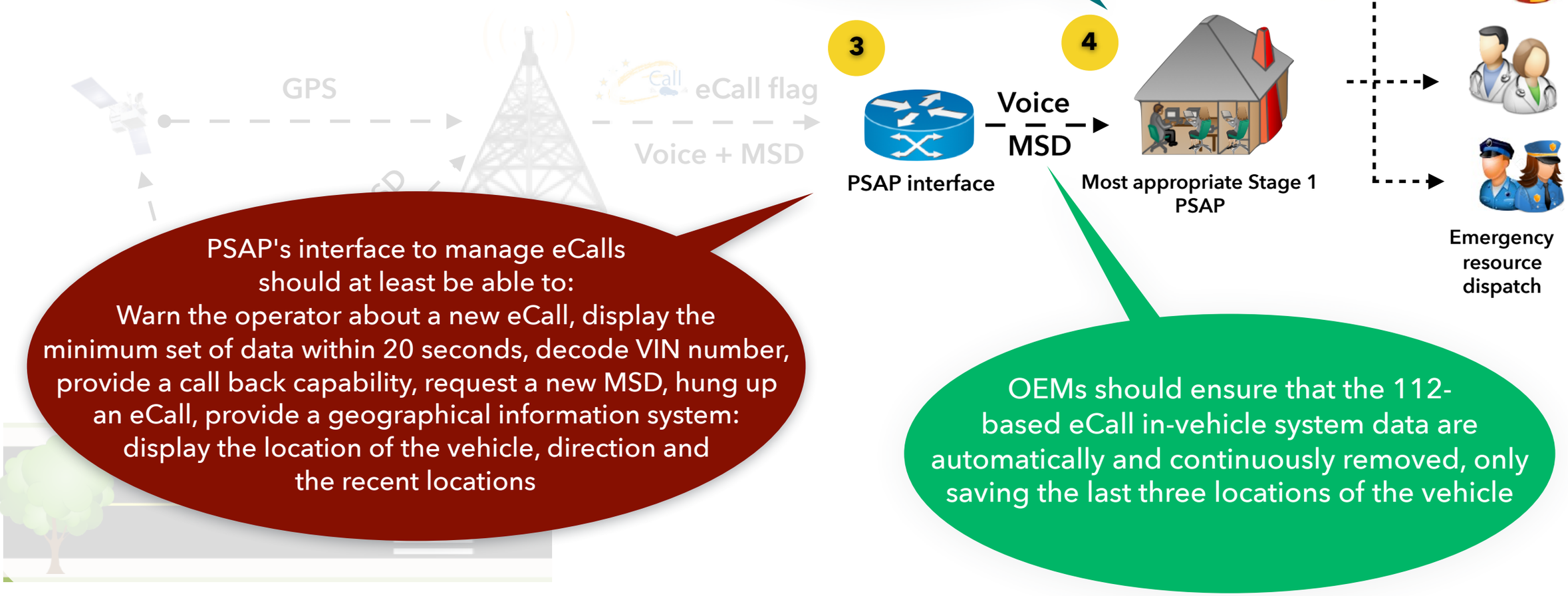
Source: PTOLEMUS, EN Standards. *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

PSAP interface solutions should be able to establish voice connection and receive the Minimum Set of Data

3. Voice and MSD (Minimum Set of Data) are transmitted via PSAP interfaces
4. The most appropriate Stage 1 PSAP* or eCall PSAP receives the call, classifies accident type and decodes MSD
5. Information is sent to Stage 2 PSAPs for emergency resource dispatch

The most appropriate Stage 1 PSAP should filter the call, decode MSD, classify the accident type and transmit relevant information to Stage 2 PSAPs to dispatch emergency resources

In some cases, Stage 1 PSAPs have the ability to dispatch emergency resources directly



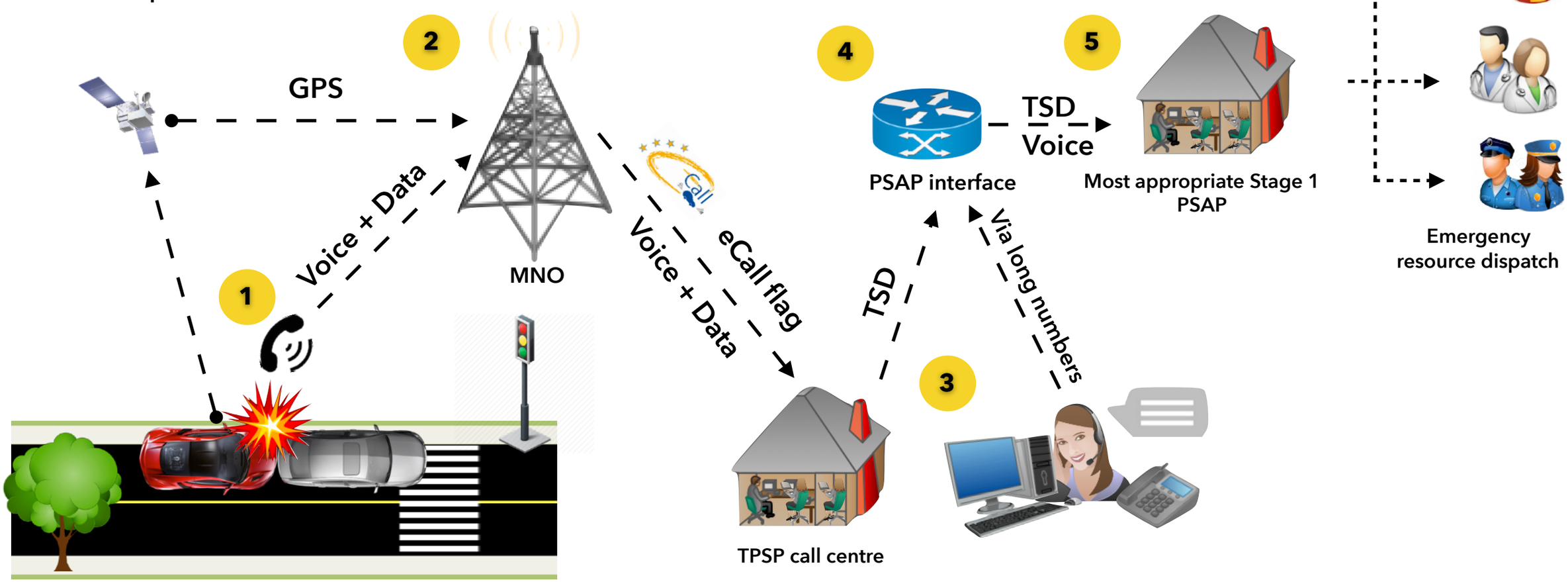
PSAP's interface to manage eCalls should at least be able to:
Warn the operator about a new eCall, display the minimum set of data within 20 seconds, decode VIN number, provide a call back capability, request a new MSD, hung up an eCall, provide a geographical information system: display the location of the vehicle, direction and the recent locations

OEMs should ensure that the 112-based eCall in-vehicle system data are automatically and continuously removed, only saving the last three locations of the vehicle

Source: PTOLEMUS, EN Standards. *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

TPSPs act as intermediaries in the eCall delivery ecosystem

1. An eCall is automatically triggered when a crash is detected or is triggered manually in the case of emergency
2. MNOs (Mobile Network Operator) put eCall flag to the call, detect the location and route to the TPSP call centre
3. TPSP receives eCall & dataset, filters false call, classifies accident type and collects MSD & optional additional data
4. TPSP contacts the most appropriate Stage 1 PSAP via Long Numbers and transmits TSD (TPS Set of Data) via PSAP interface
5. The most appropriate Stage 1 PSAP* or eCall PSAP receives the call, classifies accident type and decodes MSD
6. Information is sent to Stage 2 PSAPs for emergency resource dispatch



Source: PTOLEMUS, EN Standards. *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

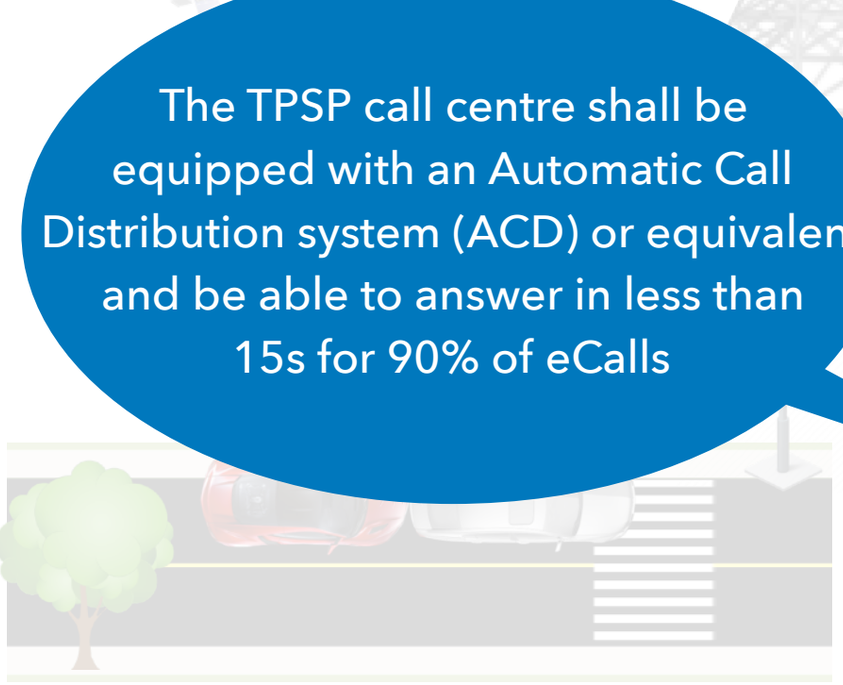
TPSPs' call centres should operate in accordance to EN 16102 standard which specifies TPS-eCall operating requirements

3 **TPSP receives eCall & dataset, filters false calls, classifies accident type and collects MSD & optional additional data**

If requested by a national PSAP organisation in advance, criteria shall be agreed of what constitutes an emergency likely to require emergency services and taken into account by the TPSP in their decision as to notify the PSAP about the emergency or not

The TPS operators should not use more than 90 seconds to filter the call and classify accident type before contacting PSAPs

The TPSP call centre shall be equipped with an Automatic Call Distribution system (ACD) or equivalent and be able to answer in less than 15s for 90% of eCalls



TPS eCall operators are not obliged to be fully dedicated to answer to eCalls only

Source: PTOLEMUS, EN Standards. *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

TPSP should comply to PSAP Service Level Agreement and respect data privacy rules described in European Directives

4 TPSP contacts the most appropriate Stage 1 PSAP via Long Numbers and transmits TSD (TPS Set of Data) via PSAP interface

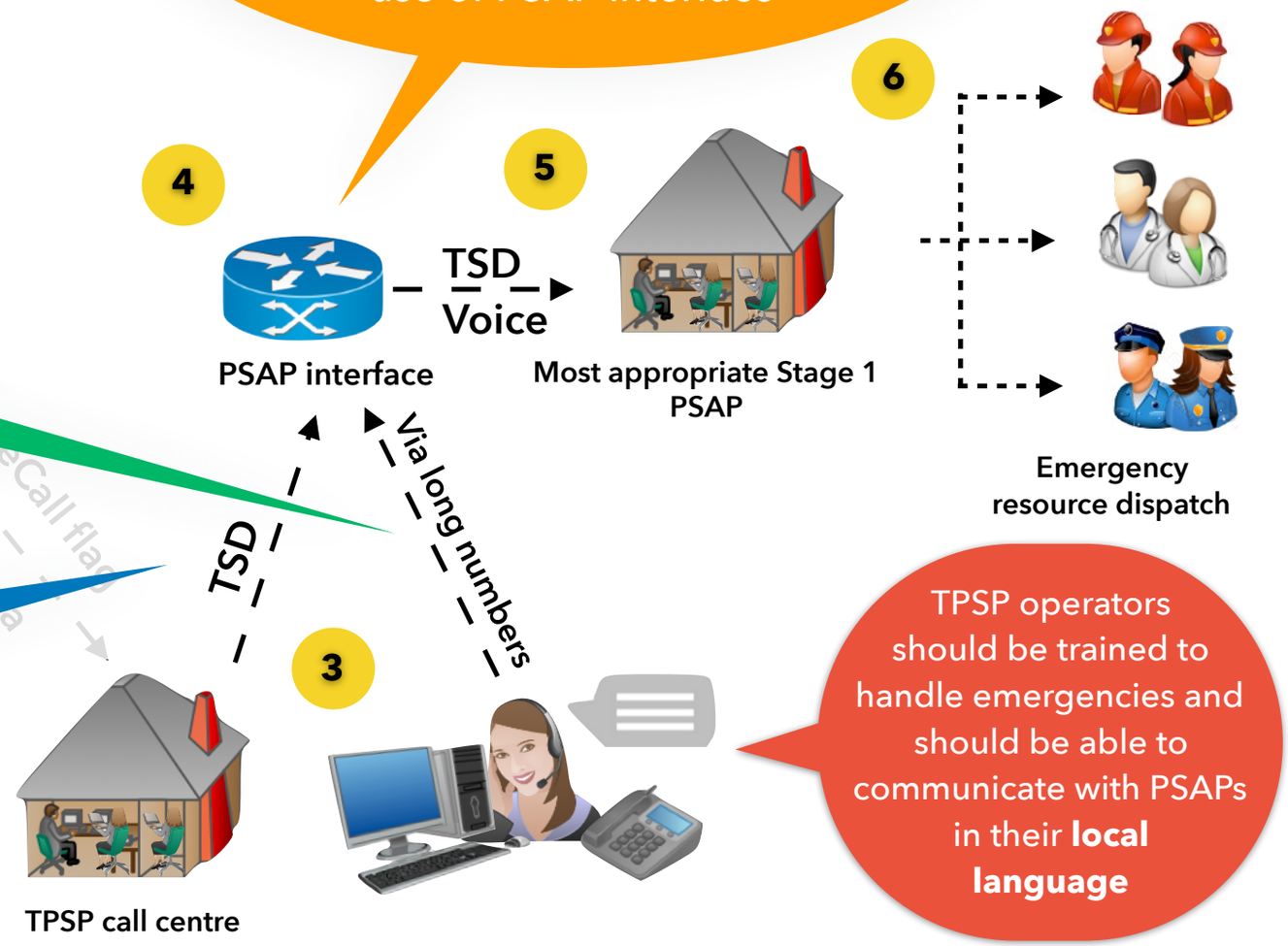
5 The most appropriate Stage 1 PSAP* or eCall PSAP receives the call, classifies accident type and decodes MSD

6 Information is sent to Stage 2 PSAPs for emergency resource dispatch

TPSPs must conform to the PSAP requirements and adhere to the Service Level Agreement (if such standard exists in the country) to define the emergency notification method and use of PSAP interface

TPSPs should contact PSAPs by E164 long numbers which are unique emergency telephone numbers of PSAPs. TPSP's call centres can be located in foreign countries as the long numbers can be dialled internationally

TPSP can provide additional data to PSAPs in addition to MSD and should respect privacy and data protection rules - to fully delete personal data as soon as they are no longer necessary for handling the emergency situation



TPSP operators should be trained to handle emergencies and should be able to communicate with PSAPs in their **local language**

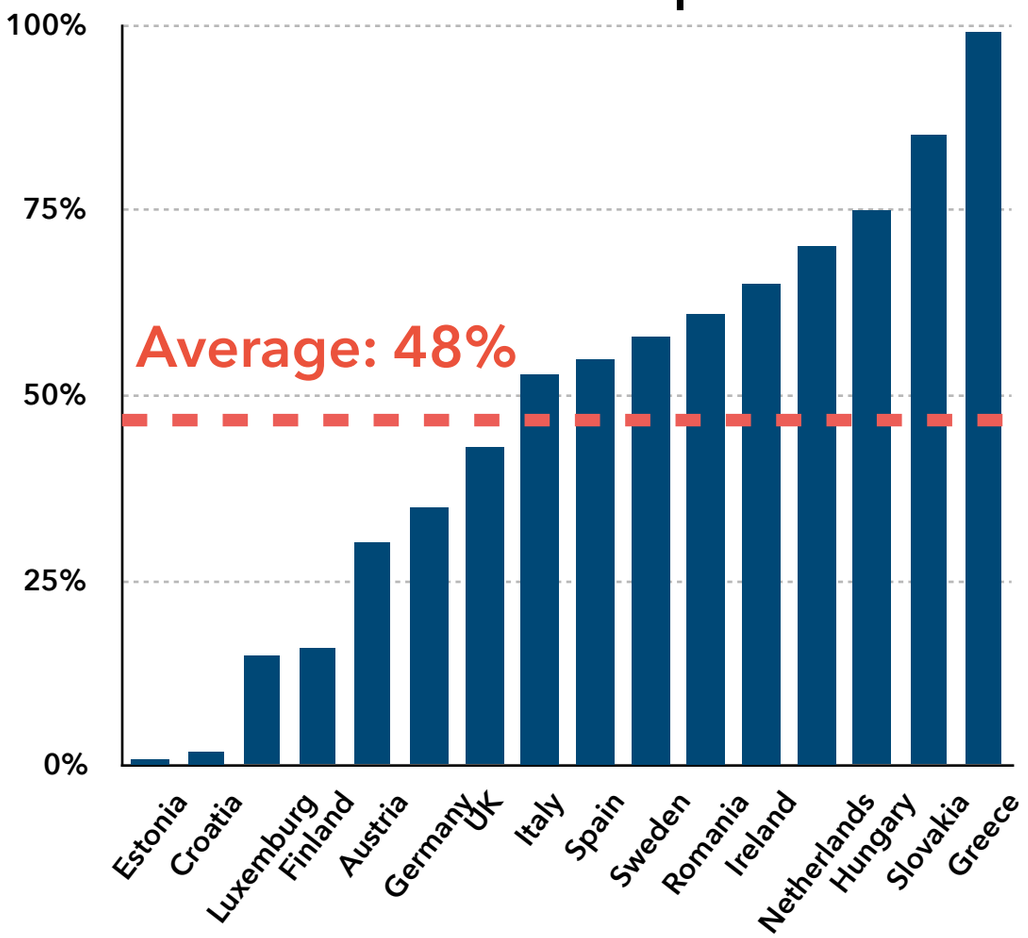
Source: PTOLEMUS, EN Standards. *PSAP stands for Public Safety Answering Point, TPSP stands for Third Party Service Provider

50% of emergency calls are false calls and many do not require emergency services

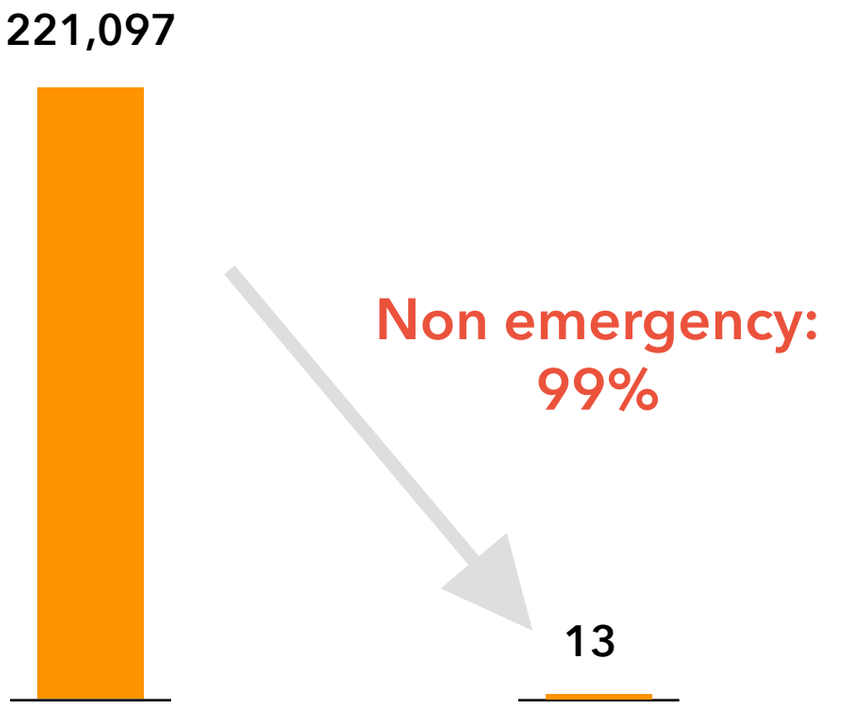
Call filtering

TPSPs bring the most value in filtering calls for PSAPs, as a large number of eCalls are false calls

Percentage of false emergency calls in Europe*



Percentage of non-emergency alerts of Italian aftermarket solutions



Source: COCOM (Communication Committee from E.C.), ENNA, Telematics Service Providers Association
Note: * This includes all types of emergency calls including fixed line, mobile phone, vehicle etc.

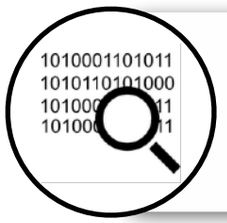
There are clear areas where TPS eCall can bring value to PSAPs

Call filtering

TPSPs bring the most value in filtering calls for PSAPs, as a large number of eCalls are false calls

Flexibility & scalability

As the number of vehicles with mandated eCall function grows, increasing workload will be required for PSAPs, TPSP call centres can scale up quickly

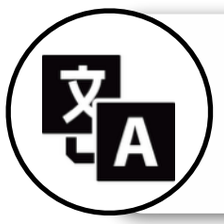


Additional data to MSD

Additional data such as airbag deployment, level of force and drivers' personal telephone number can assist emergency service dispatch

Aftermarket eCall

There will be a growing demand for aftermarket eCall, requiring TPSPs to be involved. Direct connection TPSP-PSAP will significantly improve the emergency services quality



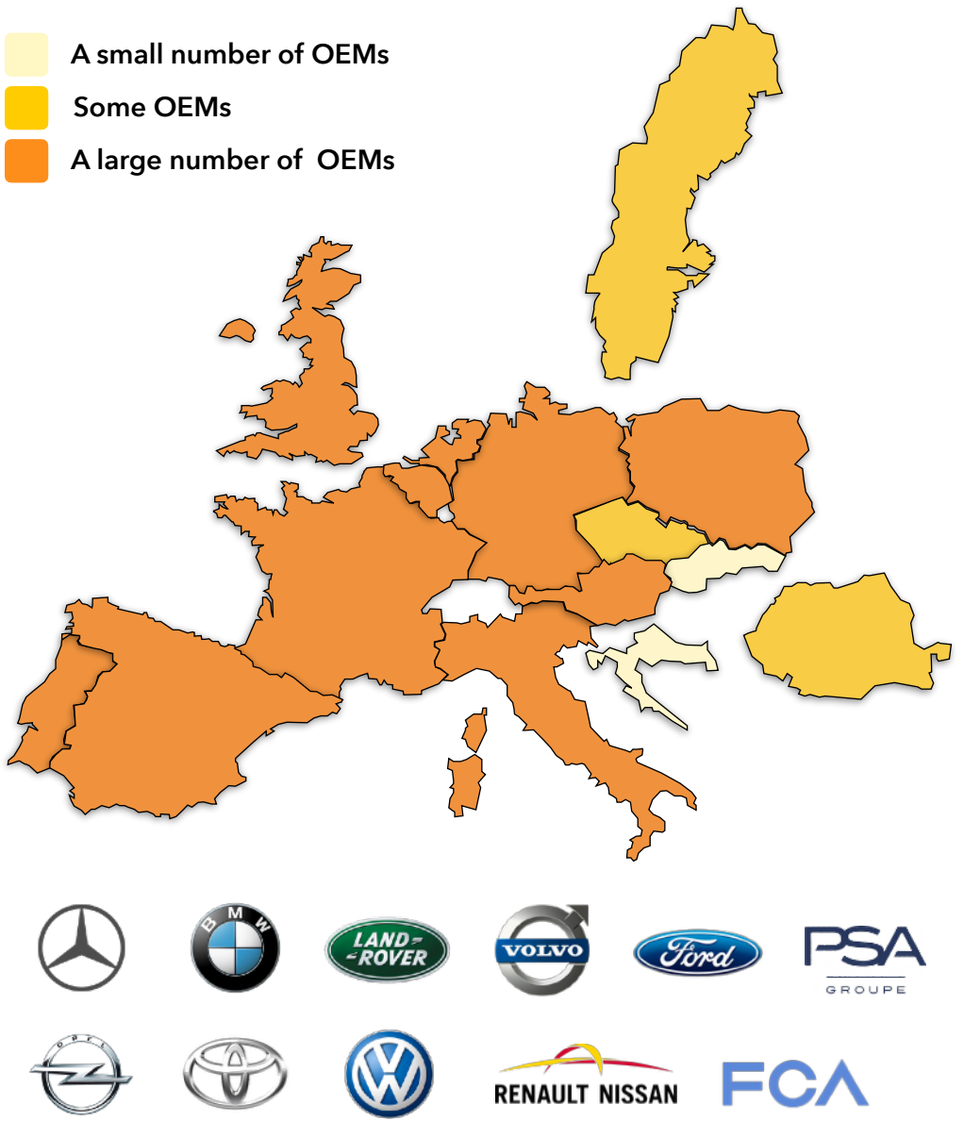
Language

TPSPs can provide service in the driver's preferred language, which add significant value in cross border trips and in emergency cases

Source: PTOLEMUS

OEMs started to provide eCall long before the mandate

OEM private eCall service availability *before the mandate*



A **large number of OEMs** provided private eCall services in **West European countries** before the mandate was implemented

OEMs that provided **eCall mostly bundled** the service with **bCall** and other connected services

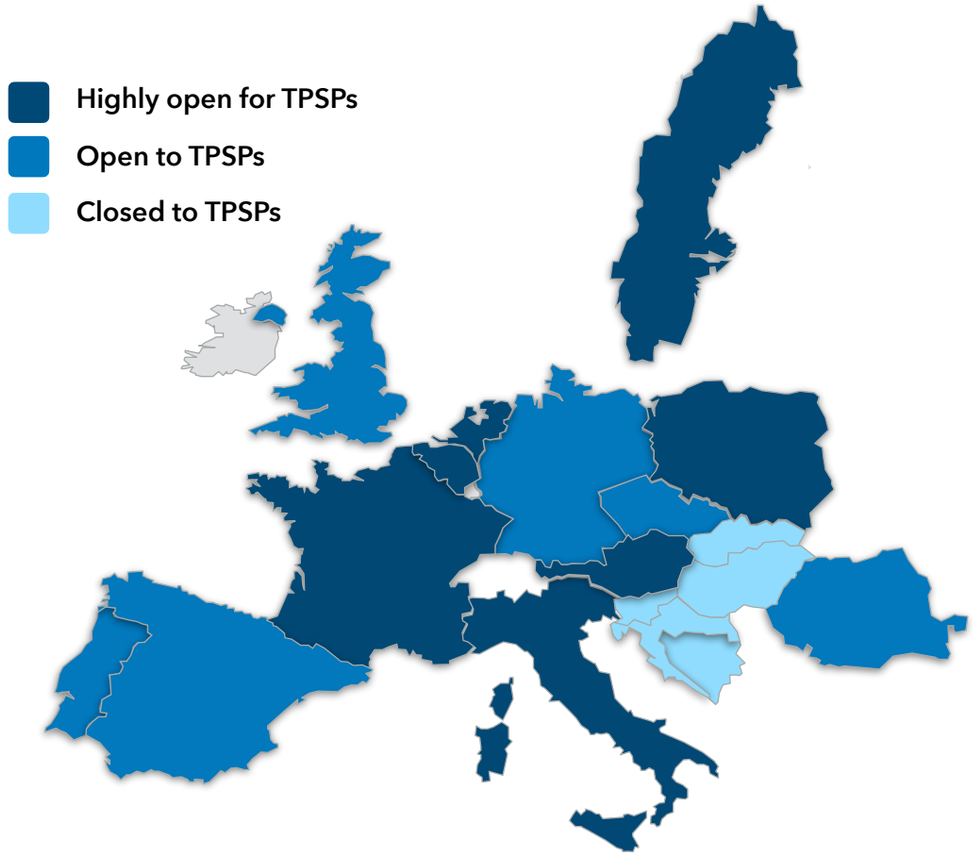
Strong OEM-TPSP relationships are in place for **eCall and bCall** and increasingly moving to **more connected services**

Private eCall services provided by TPSPs **are not regulated by the eCall mandate** regulations and will **continue to exist** in the future

Western Europe is more open to TPSPs than Eastern Europe

Some leading OEMs choose not to provide any private eCall in markets with restrictions for TPSPs

This is a LOSS for everyone!!



The closed and reluctant

- Bosnia and Herzegovina
- Croatia
- Hungary
- Slovakia

The open yet complicated

- Czech Republic
- Germany
- Portugal
- Spain
- United Kingdom

The open and accessible

- Austria
- Belgium
- France
- Italy
- Netherlands
- Poland
- Romania
- Slovenia
- Sweden

Assessment criteria:

1. Do PSAPs in the country **collaborate with TPSPs**?
2. Is the **PSAP structure** complex?
3. Are **requirements for TPS-eCall** in place? Are **processes to set up TPS-eCall** defined?

Setting up TPS eCall is still complex and time consuming

Interactions and issues between TPSPs and PSAPs

1. Large amount of time wasted on finding the right contact points for TPS eCall
2. Relationships with multiple PSAPs are often required, processes might vary between different PSAPs
3. Standard requirements for TPSPs are not in place or not publicly available in most countries
4. Different PSAPs may use different solutions and have different technical requirements
5. Data exchange with TPSPs is still not enabled in most countries
6. Local call centre is seen as a commitment to provide TPS eCall in some countries

Source: PTOLEMUS. For more details on implementation methodology, Contact Tong Wang twang@ptolemus.com

OEMs want a single partner to provide connected services

OEM requirements for TPSPs

A Connected vehicle services

- eCall
- bCall
- Other connected services

B Telematics solutions

a eCall geographic coverage in Europe
OEMs are looking to cooperate with a single TPSP with an European level service

a Direct link with PSAPs
TPSPs need to have direct links with PSAPs and mange relationships directly with them

a Call centres
TPSP call centres need to be compliant to EN standards

a Other connected vehicle services
OEMs are looking for TPSPs that are capable of providing multiple connected vehicle services

b Telematics platforms
In addition to service provision ability, TPSPs that have telematics platforms are preferred by OEMs

Source: PTOLEMUS

We see 3 potential areas to facilitate TPS eCall deployment

STANDARDISATION

Standardise TPS eCall technical & service requirements

Standardise TPSP-PSAP interaction processes

HARMONISATION

Develop common technical solutions for TPS eCall

Develop certification recognised by most PSAPs in Europe

COMMON LOG

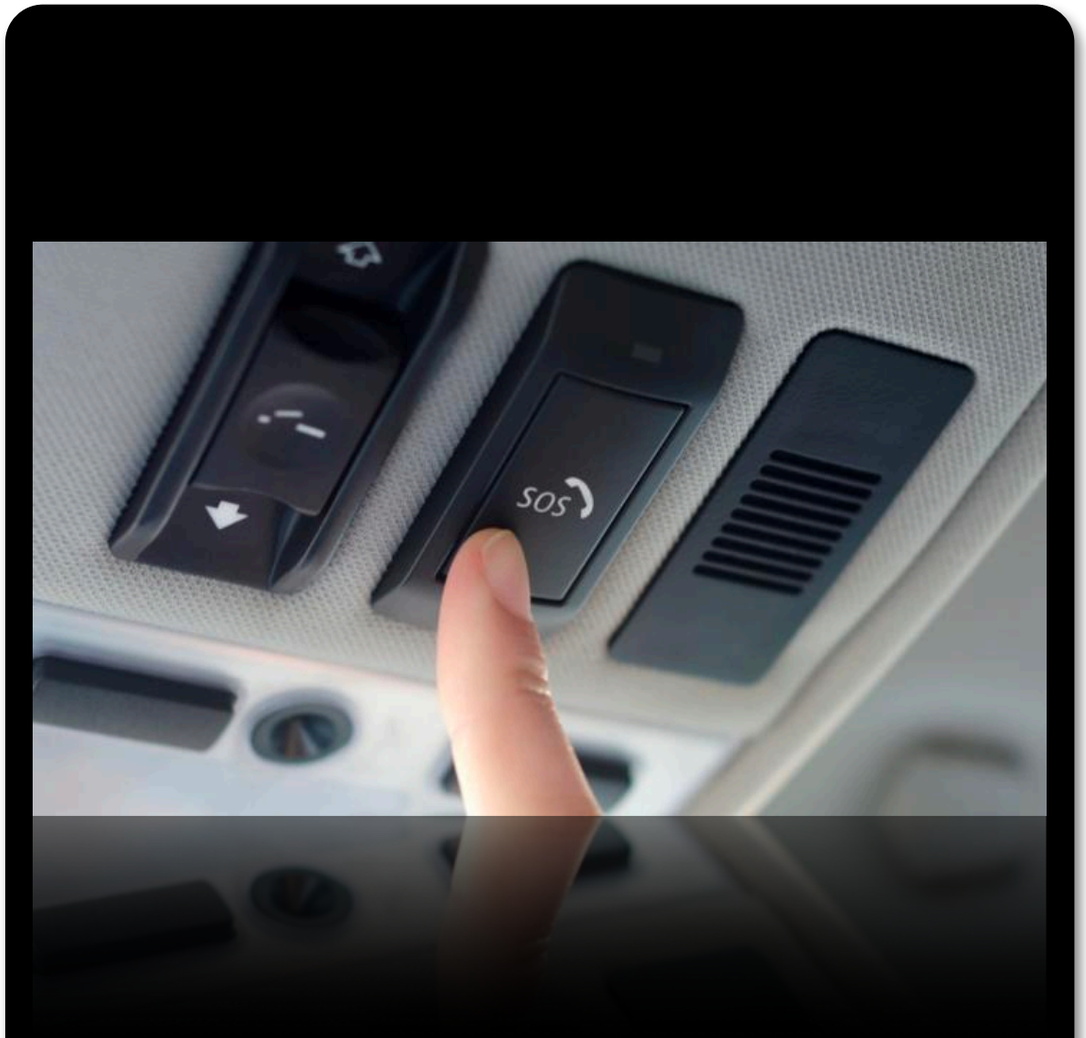
TPS eCall first point of common database

PSAP long numbers common database

Common log of standards & processes for TPS eCall establishment

Source: PTOLEMUS

So what is the future of TPS eCall in Europe?



Contact Tong Wang for more information
twang@ptolemus.com

- As the **deployment of public eCall** will be **slow in the beginning** and only **limits to M1 & N1 new type approved models,** the volume of eCall will be low
- Therefore, the **investment in the infrastructure and human resources** from all parties to realise eCall **will be underused**
- **TPS eCall and public eCall will be complementary to each other**
- **TPSPs** will be able to **serve a wider vehicle segment** than the new type approved segment
- **Call filtering** done by TPSPs is one of the key benefits for PSAPs
- TPSPs' **flexible scale** will help to reduce PSAPs' **workload** in the future when more vehicles are equipped with mandated eCall
- Current TPS eCall deployment status implies that **more support is required from public authorities and PSAPs**
- This will allow **TPS eCall to become an effective intermediate link** in the emergency service process and **optimise the use of existing emergency service resources** at PSAP side

PTOLEMUS Consulting Group

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