# eCall deployment and interoperability challenges

## Public WS on eCall numbering

Copenhagen, 31 January 2017

Francois Fischer

# Where interoperability is relevant



**Legend:**

| | |
|---|---|
| **PSAP112** | Emergency call centre 112 |
| **MSD** | Minimum set of data |
| ▮ (yellow) | Data connection |
| ▮▮ (blue/red) | Voice connection |
| **1** | eCall trucks |
| **2** | eCall buses |
| **3** | eCall cars & light vehicles |
| **4** | eCall PTW (powered two wheelers) |

**(GNSS) POSITIONING**

**WWW**

**PSAP**

**PSAP112**
**An operator of the 112 emergency number can see the location of the collision on the map as well as the data transmitted by the eCall system and communicates with the passengers.** They ensure immediate dispatch of the emergency units and forward information about the collision to the traffic information and management centre.

**The satellite indicates the precise location of the vehicle .**

**eCall**
**Immediately after the collision, the vehicle unit transmits the following data to PSAP 112:  time and location of the collision, direction and number of passengers.** The occupants m ay then communicate with the 112 operator.

**IVS**

**MSD**

**MSD**

**TRAFFIC MANAGEMENT**

**Unified Traffic Information System**

**VMS**

**INSTRUCTION TO SEND UNITS**

**TRAFFIC INFO**

**Integrated Emergency System**
**The emergency system sends units to the location of the accident.**

**RESCUE  INTERVENTION**

**2**

**4**
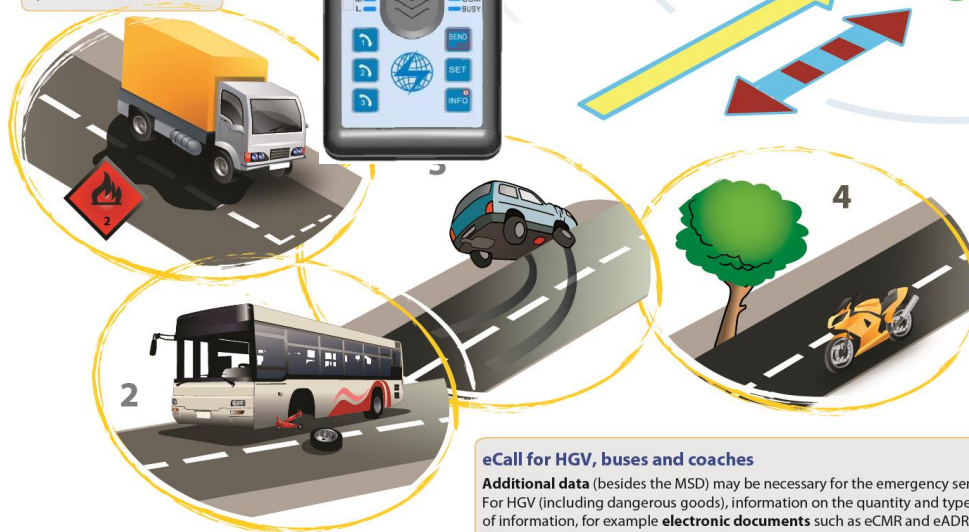
**eCall for HGV, buses and coaches**
**Additional data** (besides the MSD) may be necessary for the emergency services to be effective.
For HGV (including dangerous goods), information on the quantity and type of cargo is the key and external sources of information, for example **electronic documents** such as eCMR and eADR, could be vital.
For buses and coaches, the number of passengers is key and passengers list provided electronically could be very useful for the rescue services.

**eCall for PTW**
Due to the absence of a collision-indicating trigger, like the airbag trigger in passenger cars nowadays, a **specific triggering method** is necessary for PTW. This triggering system as well as the statistical injury prediction method will lead to a realistic minimum of false positive and an acceptable level of false negative calls to PSAPs.
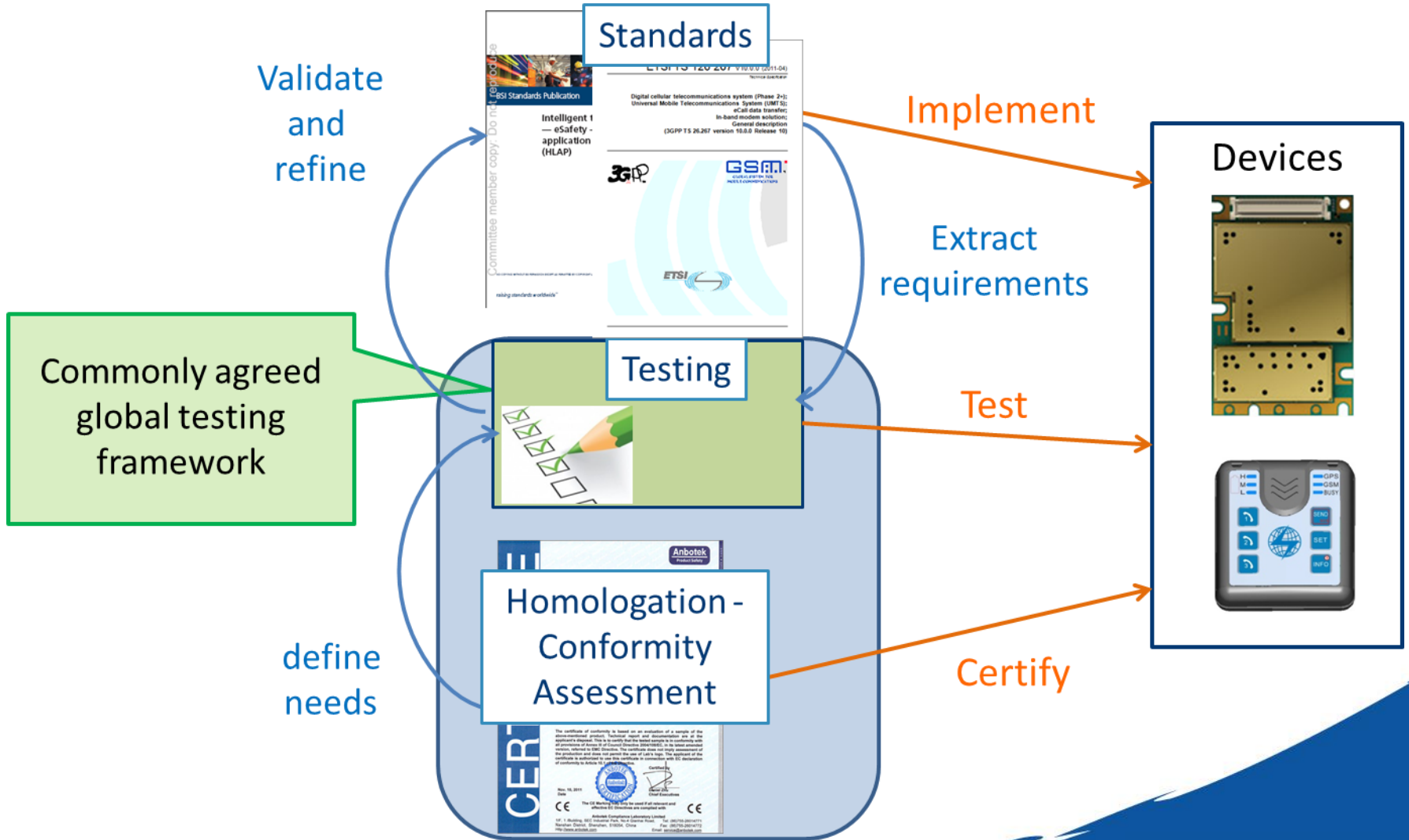
# The relevant eCall interfaces
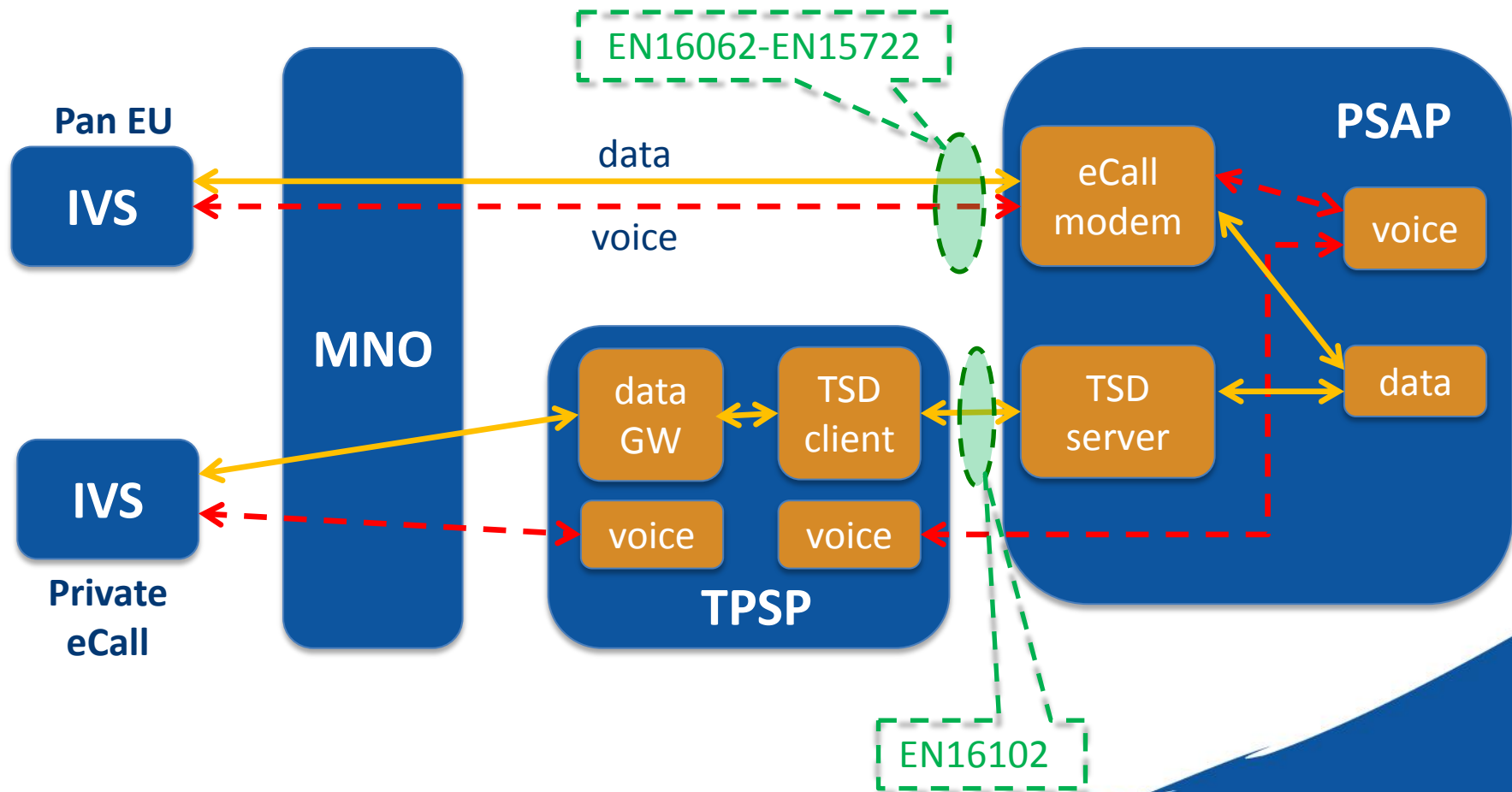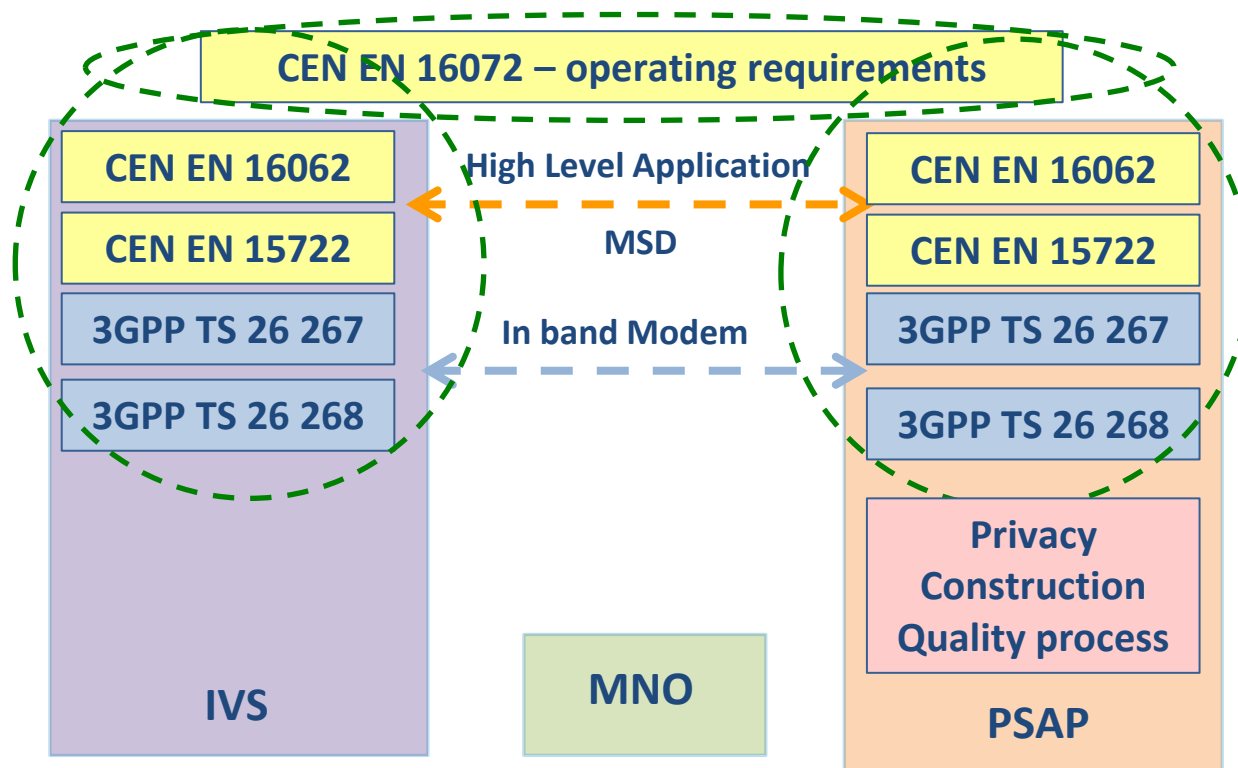
# EN16062 – HLAP message flow
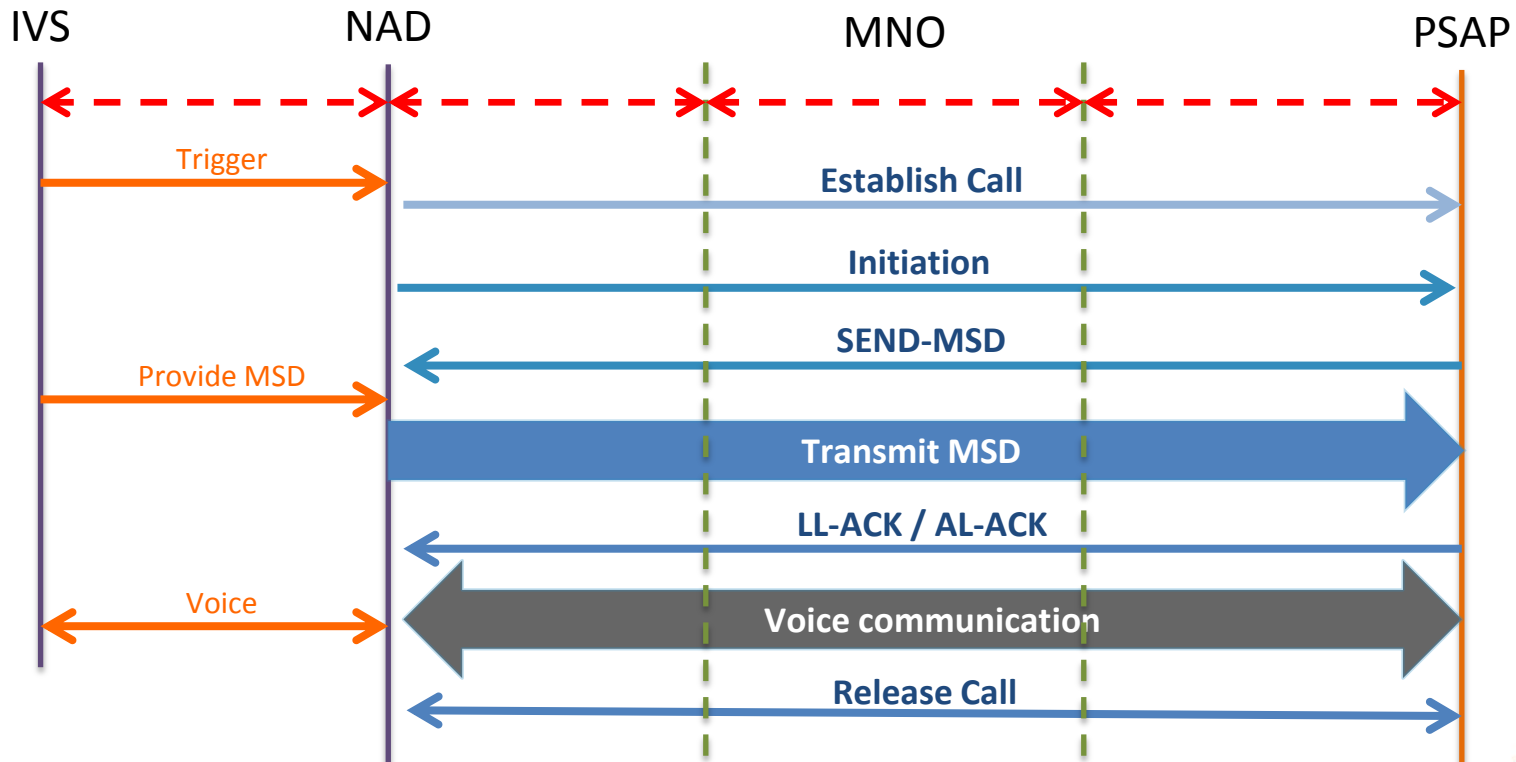
# How to ensure interoperability

- Use standards for defining communication procedures of the eCall High Level Application (HLAP)

- Test the IVS and PSAP:
    - The compliance of the devices with the standards
    - The interoperability between IVS and PSAPs

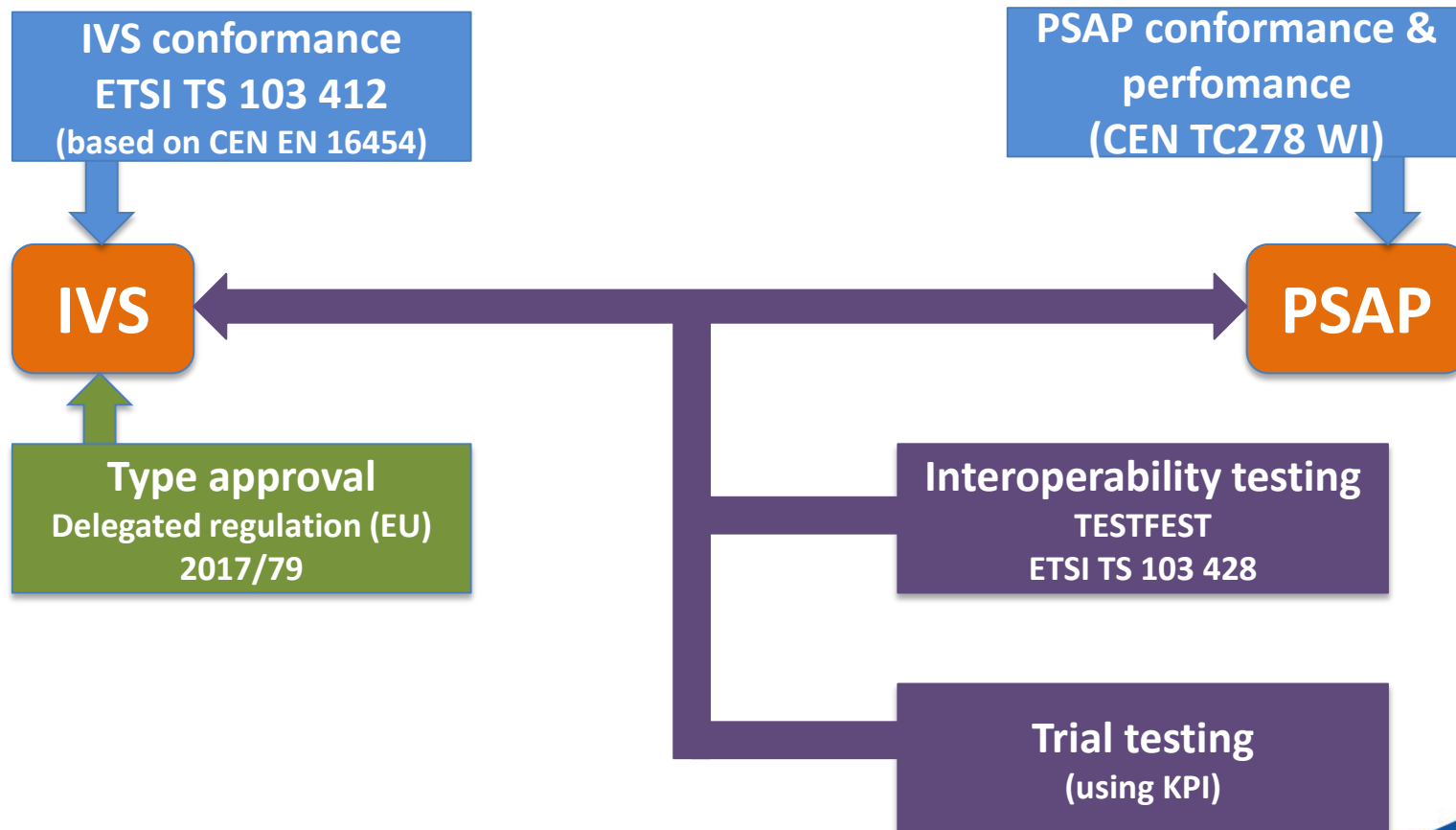- Provide a common framework for testing

# The relevant eCall standards



CEN EN 16072 – operating requirements

| IVS | | PSAP |
|---|---|---|
| CEN EN 16062 | High Level Application | CEN EN 16062 |
| CEN EN 15722 | MSD | CEN EN 15722 |
| 3GPP TS 26 267 | In band Modem | 3GPP TS 26 267 |
| 3GPP TS 26 268 | | 3GPP TS 26 268 |
| | | Privacy Construction Quality process |
| IVS | MNO | PSAP |

Harmonised eCall European Deployment

# Types of testing

**IVS conformance**
**ETSI TS 103 412**
**(based on CEN EN 16454)**

**PSAP conformance &**
**perfomance**
**(CEN TC278 WI)**

**IVS**

**PSAP**

**Type approval**
**Delegated regulation (EU)**
**2017/79**

**Interoperability testing**
**TESTFEST**
**ETSI TS 103 428**

**Trial testing**
**(using KPI)**
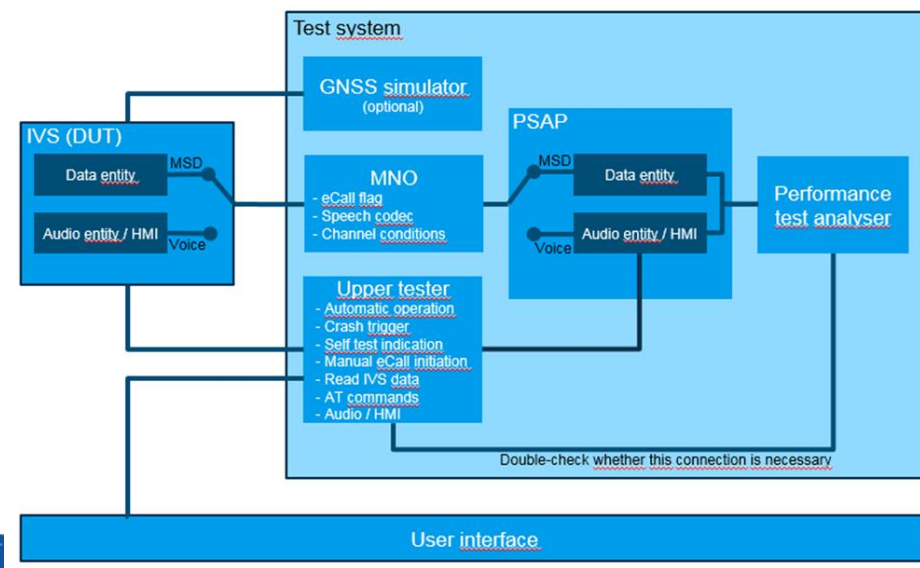
# IVS conformance testing

- Technical specification for IVS conformance testing is provided in the ETSI TS 103 412

  - Based on the CEN EN 16454 → refine test cases, translating the degree of freedom in well-defined possible sequences of test

# PSAP conformity assessment

- Document drafted by I-HeERO and will be published by CEN TC278 (wg15)

- Scope: define conformance and performance tests to assess PSAP compliance with the eCall Regulations and Standards

- Requirement in the EU delegated regulation No 305/2013

  – Article 4 - Conformity assessment - Member States shall designate the authorities that are competent for assessing the conformity of the operations of the eCall PSAPs

This project is funded by the European Union

Harmonised eCall European Deployment

# IVS Type Approval

- Provided in delegated regulation 2017/79

- Not enough for assessing full compliance
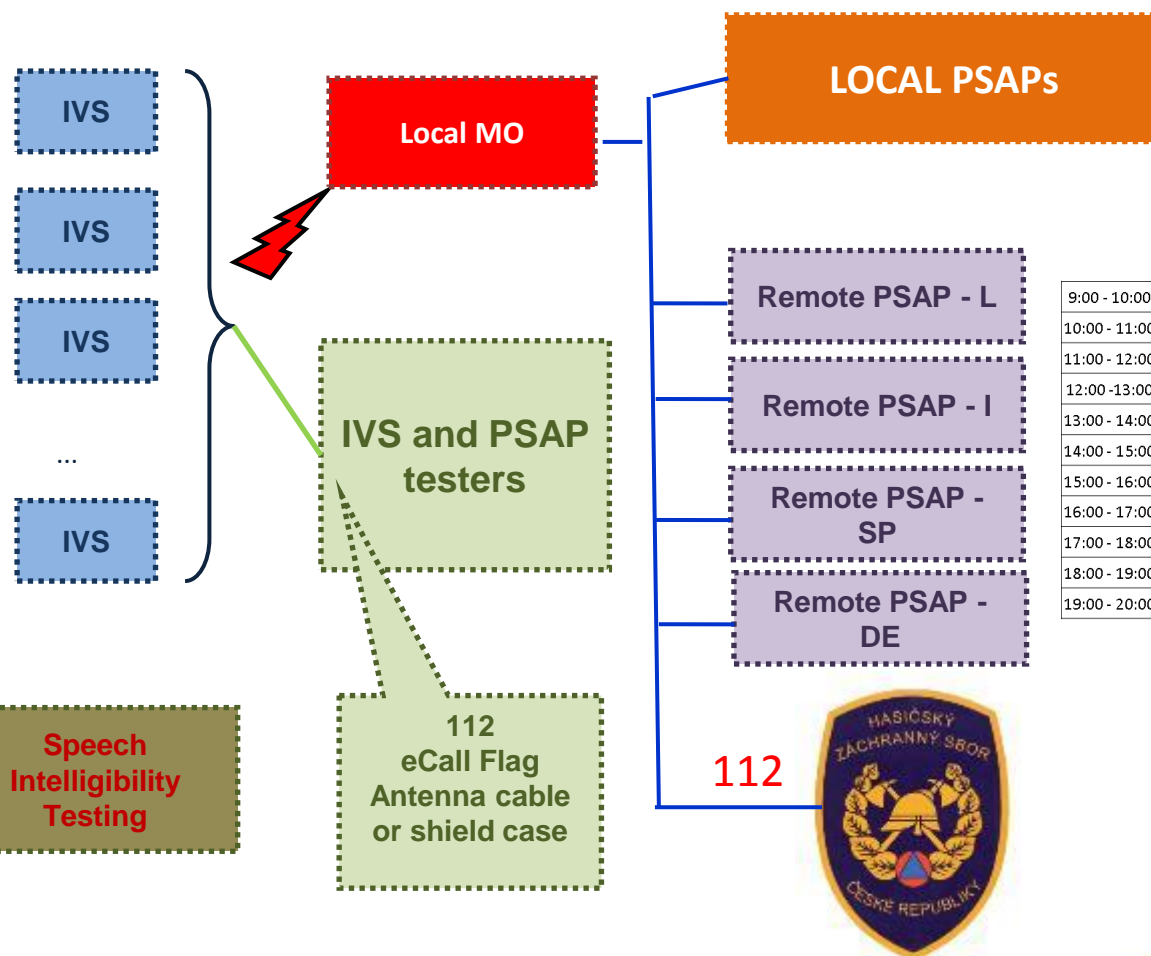
# Interoperability testing - TESTFEST

- Open testing event where IVS vendors and PSAP meet to carryout interoperability test during several sessions within one week

- 5 events carried out so far:
  - 2012 - at Mira, Nuneaton, UK
  - 2013 - at CETECOM, Essen, DE
  - 2014 – at CTAG, Vigo, SP
  - 2015 – at Vitkovice, Ostrava, CZ
  - 2016- at Catapult (Satellite), Harwell, UK

# eCall TESTFEST – the testbed



| | 28/11/2016 | 29/11/2016 | 30/11/2016 | | 02/12/2016 | 03/12/2016 |
|---|---|---|---|---|---|---|
| | Monday | Tuesday | Wednesday | | Thursday | Friday |
| 9:00 - 10:00 | | Test session | Test session | | Test session | Test session |
| 10:00 - 11:00 | | | | | | |
| 11:00 - 12:00 | | Test session | Test session | Open workshop | Test session | Test session |
| 12:00 -13:00 | | | | | | |
| 13:00 - 14:00 | | Lunch | Lunch | | Lunch | Lunch |
| 14:00 - 15:00 | Welcome & setup | Test session | Test session | | Test session | Debriefing |
| 15:00 - 16:00 | | | | | | |
| 16:00 - 17:00 | | Test session | Test session | | Test session | |
| 17:00 - 18:00 | Debriefing | | | | | |
| 18:00 - 19:00 | | Debriefing | Debriefing | | Debriefing | |
| 19:00 - 20:00 | | Social event | | | | |

# Test specification from ETSI – TS 103 428

| Interoperability Test Description | |
|---|---|
| Identifier: | TD_MAN_01 |
| Objective: | To verify the eCall initiation with the PSAP sending a SEND-MSG message without waiting for the INITIATION message. |
| Configuration: | eCall_CFG_01 |
| References: | Clause 7.4.2 of CEN EN 16062:2015 |
| Applicability: | PSAP_PULL |
| | |
| Pre-test conditions: | Default see clause 6.3 |
| | |

| Test Sequence: | Step | Type | Description |
|---|---|---|---|
| | 1 | stimulus | IVS initiates an eCall |
| | 2 | verify | PSAP answers call and immediately transmits SEND-MSD (START) message without waiting for the valid Initiation Signal |
| | 3 | verify | If IVS had started to send an INITIATION message then IVS stopped sending the INITIATION message on receipt of the SEND-MSD message from the PSAP |
| | 4 | verify | PSAP verifies first MSD is received |
| | 5 | verify | Verify the MSD is correctly decoded |
| | 6 | check | MSD content at PSAP is identical to content transmitted by IVS |
| | 7 | verify | PSAP sends acknowledgement |
| | 8 | verify | Verify that the IVS has stopped transmitting the MSD |

iH ERO 112 SOS

Harmonised eCall European Deployment

# Conclusion

- Interoperability of connected application results from standards and an agreed testing framework

- Combining different kind of testing for a complete scope of testing
  - Conformance testing for the compliancy of devices (in test labs)
  - Interoperability testing for the full chain:
    - As an open event
    - In test labs with golden units or simulators

# Thank you for your attention!

## François Fischer, ERTICO – ITS Europe
### Sr Manager Innovation and Development

#I_HeERO    #eCall    www.iheero.eu

Duration        1 January 2015 – 31 December 2017
Funding         € 30.631.959 M
EU Funding      Total cost    € 15.315.979,5 M

Harmonised eCall European Deployment