CEN eCall Application level Standards

Progress Report  September 2017

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Harmonised eCall European Deployment
CEN eCall Application level Standards

Very

WE ARE BUSY!
The Previous Status of standards

Pan European eCall

Application
EN 15722:2015 MSD.
EN 16072:2015 PE eCall Op Requirements
EN 16062:2015 PE High Level App Protocols
EN 16454:2015 eCall end to end conformance tests

Communications
ETSI TS 102 936-1
ETSI TS 102 936-2
RELEASE 8 OR LATER OF 3GPP SPECS
APPROVED 2009-2011

Third Party Service eCall

Application
EN 16102:2011 TPS eCall

CEN TS 16405 HGV Optional Additional Data

ACTORS: IVS MNO PSAP

End user: Vehicle Occupants
ProForma agreements PSAPs and TPSPs - completed deliverable in ballot

Interoperability and user choice in 112 eCall aftermarket and third party eCall services - under discussion/development

High Level Application Protocols eCall via LTE/4G (Packet Switched Networks)
  - Completed Deliverables in ballot process

eCall via a general on-board ITS platform (ITS-Station)
  - Completed Deliverable in ballot process

eCall for other classes of road users
  - Completed Deliverables review and approval by WG 23 Sept 2017
  - HGV
  - Coaches and busses
  - Agricultural and forestry vehicles
  - Powered 2 wheel vehicles
  - Tricycles and Quads

Worked together with I_Hero

  - eCall via satellite telecommunications
  - eCall: Tests to enable PSAPs to demonstrate conformance and performance
  - eCall OAD for multiple Optional Additional Datasets
  - eCall optional additional data - Linked mobile phone number data concept
Regulated Situation

eCall Regulations
IVS MNO
PSAP

EN 16454 Conformance Tests
EN 15722 MSD
EN 16072 Operating Requirements
EN 16062 HLAP 2G/3G (CS)
EN 16102 TPSP eCall

MNOs
PSAPs

Class M1
Class N1
Class M2+ O
Class M2 M3
Class T R S
Class L1 L3
Class L2 L4 L5 L6

Harmonised eCall European Deployment
Packet Switched eCall using IMS

- eCall Regulations
- IVS MNO
- PSAP
- EN 16454 Conformance Tests
- EN 15722 MSD
- EN 16072 Operating Requirements
- EN 16062 HLAP 2G/3G (CS)
- WI 0027845 IMS Conformance Tests
- WI 00278460 IMS Performance Tests
- WI 00278463 PSAP Performance Tests
- WI 00278460 IMS Conformance Tests
- EN 16102 TPSP eCall
- MNOs
- PSAPs
- Class M1
- Class N1
- Class M2+ O
- Class M2 M3
- Class T R S
- Class L1 L3
- Class L2 L4
- L5 L6
The Previous Status of standards

Pan European eCall

Application

EN 15722:2015 MSD.
EN 16072:2015 PE eCall Op Requirements
EN 16062:2015 PE High Level App Protocols
EN 16454:2015 eCall end to end conformance tests
CEN TS eCall over IMS & EN eCall over IMS Conformance Tests
CEN TS eCall using Satellite Communications

Communications

ETSI TS 102 936-1
ETSI TS 102 936-2
RELEASE 14 OR LATER OF 3GPP SPECS

Third Party Service eCall

Application

EN 16102:2011 TPS eCall

CEN TS 16405 HGV Optional Additional Data
CEN TS eCall for HGVs and commercial vehicles
CEN TS eCall for coaches and buses
CEN TS eCall for Agricultural & Forestry vehicles
CEN TS eCall for P2WV
CEN TS eCall for Trikes and Quads

ACTORS:
IVS
MNO
End user: Vehicle Occupants
PSAP
• The same MSD, the same length
• The Vehicle category enumeration in EN 15722 needs extending to enable all use cases
• OAD field slightly reduced
• Additional information provided in OAD
• ALL additional data in these TS is “Optional”
• Issues with I HeERO recommendations for L3 P2WV
HGV eCall

- Cargo data or URL/URN link to that data as specified in TS16405, plus

<table>
<thead>
<tr>
<th>Vehicle Registration Number</th>
<th>Vehicle Type</th>
</tr>
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<tbody>
<tr>
<td>Load Facility type</td>
<td>Unladen weight</td>
</tr>
<tr>
<td>Facility for pulling trailer available</td>
<td></td>
</tr>
<tr>
<td>Contact details</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Total weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact Above Threshold</td>
</tr>
<tr>
<td>Rollover</td>
</tr>
<tr>
<td>Temperature Above Threshold</td>
</tr>
<tr>
<td>Pressure Above Threshold</td>
</tr>
<tr>
<td>Leakage Alarm Activated</td>
</tr>
<tr>
<td>Number of trailer(s) connected at the start of the journey</td>
</tr>
<tr>
<td>Number of trailer(s) connected at the point of triggering eCall</td>
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</tbody>
</table>
Coaches & Busses

<table>
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<th>SeatedPlaces</th>
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<tbody>
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<tr>
<td>Drive</td>
<td>collisionType</td>
</tr>
<tr>
<td>L/R</td>
<td>Fire</td>
</tr>
<tr>
<td></td>
<td>trailer</td>
</tr>
<tr>
<td></td>
<td>URI</td>
</tr>
</tbody>
</table>
Agricultural and Forestry Vehicles

- rolloverSignal
- operatorInVehicle
- seatBeltFastened
- implementList
• No additional data, just standard MSD
• Indicator in MSD to identify if audio available
• For eCall audio is of course required
• See eMessage slide below
Tricycles and quads

• There are many types.
• They include farm quads, a major source of accident injury
• Importantly, they include many light potential automated vehicles and light EVs
• This TS does not create new data, but points to which of the other TS are appropriate
• This is a subject for debate
• The European Parliament have demanded that something is done to assist P2WVs by 2019
• The I_HeERO P2WV project’s recommendations include that for a number of reasons it is not practicable in many cases to equip P2WVs with audio
• WG15/PT1507 deem that eCall requires both voice and MSD (eCall is an enhanced voice call on the 112 emergency voice call line)
• However, we do understand the I_HeERO point of view so have assisted I_HeERO to develop an “eMessage” draft TS – which is essentially an eCall without voice.
• **The question is how acceptable is this to PSAPs and EROs and Regulators ????**
• **Do these calls go via 112 or to a long number designated by PSAP?**
• **Do regulations need to change?**
• IMS eCall is simpler, more reliable, and much faster than CS eCall
• IMS eCall is a way of future proofing eCall - it is a sublayer that will work on any IP network. As all future networks are likely to support IP, then IMS will work on LTE/4G and will work on 5G once it is in place, then 6G etc etc
• Delegated regulation amend to allow may be needed
• (some countries are already allowing licencees to refarm 2G bands to 4G)
• IMS eCall is possible thanks to 3GPP Release 14. IMS eCall support in Release 14 is dependent on IETF RFC 8147
• In IMS eCall the MSD is sent in the SIP message header, but, unnecessarily refers to “the 140 byte MSD as defined in EN 15722”, when it should simply refer to “the MSD as defined in EN 15722”.
• This unnecessarily restricts the length of any referenced URN/URL in optional additional data. This matters because URLs can be long
• We need to take steps to revise this
- There are nearly 300 million vehicles in Europe’s vehicle park
- It is forecast to increase to 400m vehicles by 2025
- As 112-eCall is only for “New Model” vehicles it will be 2024 before even 10% of vehicles are equipped by manufacturers
- Manufacturers have their own business cases for minimising penetration of 112 eCall
- Aftermarket eCall devices will be offered on the market for a one off cost of about €60
- Or may be offered free by insurance companies and car clubs etc as a membership benefit- or as a TPS subscription service
But currently, while eCall for new models vehicles are “type approval” tested, there are no standards or regulations for aftermarket devices.

There is therefore a risk that inadequate aftermarket devices could generate unacceptable numbers of false calls.

Overloading of false calls could even lead to flooding and ‘Denial of Service’.

This will be a particular problem in countries with low vehicle replacement rates (older vehicle park).

Standards (and subsequently regulations built around the Standards) are therefore needed to provide minimum performance and conformance requirements for aftermarket devices.

Fortunately, our colleagues in EC are aware of the situation and considering initiatives to quickly overcome this problem.
‘Traditional’ eCall is sent via 2G/3G circuit switched network.
A voice channel is connected and data sent in the voice channel.
There is a security risk involved, but as it would involve ‘tapping’ into the particular individual eCall session, (and these are difficult to know ahead of the accident) the risk is low (but perhaps needs some study)
But, as stated above, we are moving into LTE/4G (potentially 5G) in ‘Packet switched’ environments
In these environments we are moving voice in data packets, i.e. this is an internet type of data transfer and will move as packets of data around networks
It therefore carries the same risk as being ‘hacked’ as any other data travelling through the cloud
But, at present, there are no measures to secure these data packets in our eCall Standards or Regulations
This will be a particular threat for aftermarket devices that will frequently use smartphone ‘apps’
Some 112/emergency call national systems have already been the target of hackers
This is also a saboteur/terrorist target risk as it could bring down emergency service networks
We therefore need to address these issues with the same priority as for other open network security measures for strategically sensitive systems
We are hoping that urgent EC aftermarket initiative will assist with the general minimum performance and conformance requirements for eCall security
Keeping PSAPs up to date with eCall Data Concepts

The eCall Regulations are now completed.

- HELP IS AT HAND

- CSI is providing a FREE website making up to date data concept definitions readily available online to PSAPs.

- Now available at www.esafetydata.com
• eCall for M1 and N1 is a regulated process
• We now have the tools to widen eCall to other classes and use packet switched networks and even satellite communications
• QUESTION: Do we have to wait for the EC to regulate to enforce these extra capabilities? Does the Commission really want to do this?-For sure if lives are being unnecessarily lost it will be their responsibility to do something.....but
• Wouldn’t is be better if the Industry organised itself through voluntary means.?
• It would be quicker, less onerous, more flexible, and save lives more quickly
• It would provide a coordinated means to interface with The Commission
• It would be far more cost efficient for The Commission
• Industries such as Automatic Identification, IoT etc largely regulate themselves, organise projects, interface to The Commission and work together with the Commission
A self regulation trade association for manufacturers, equipment suppliers, TPS service providers, OEMs could:

- Provide industry norms and contribute to required standards
- Provide a forum to meet and deal with technical and political issues as they arise
- Provide an organised interface to the European Commission and Parliament
- Provide an organised interface to EENA, PSAPs and Member States National Requirements
- Organise and test minimum triggering and response and provide a forum for cooperative tests in a collaborative environment; and set minimum requirements
- Provide a “Seal of Approval” for products that meet operational requirements
- Provide a forum to promote the industry and present it to the world.
- YES. It will cost money, it will not be cheap – but it will be less expensive than the present arrangements

If you are interested in helping to form or joining such an organisation, contact Bob Williams at bw_csi@fastmail.fm or Andrew Rooke at andy@shadowfocus.com
The Suite of standards

Questions

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