

eCall for Commercial Vehicles (HGV), buses and coaches

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Mick Trosh (SA Catapult)
14.12.2017



This project is funded
by the European Union



Agenda

- Act2 overview: objectives, partners, deliverables
- eCall for Commercial vehicles (HGV)
- Events & IVS and PSAP prototypes
- eCall for buses and coaches
- Type-approval and legislation amendments
- Cross-border eCall
- Future work



Activity 2 : OBJECTIVES And PARTNERS



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How eCall works

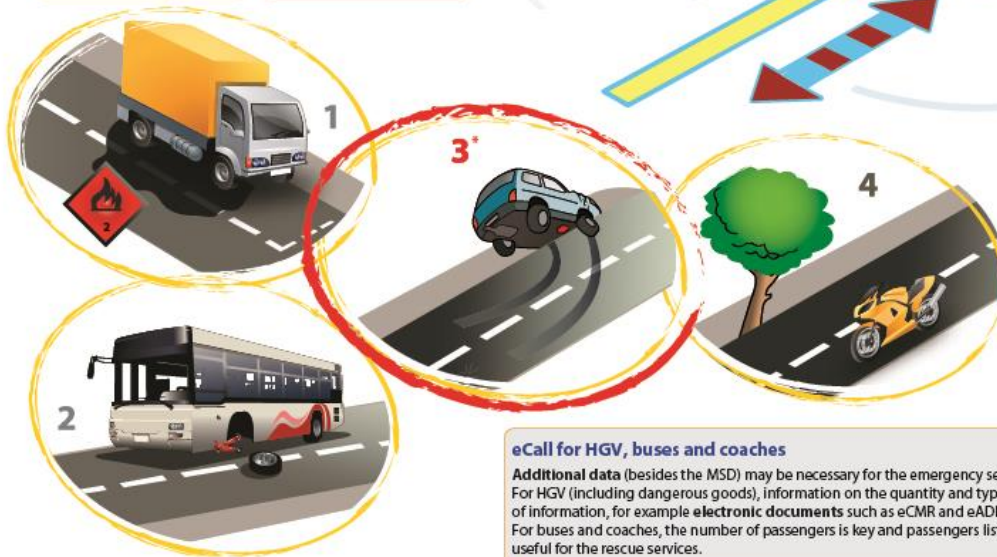
Legend:

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

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 may then communicate with the 112 operator.

* Mandatory deployment of eCall for Member State PSAP by 1 October 2017 applies to cars and light vehicles.



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.

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.

Unified Traffic Information System

VMS

TRAFFIC INFO



Integrated Emergency System

The emergency system sends units to the location of the accident.

Objectives (1)

Analysis of stakeholder needs and specification
of interfaces



Objectives (2)

Prototype development and interfacing to existing information sources



Objectives (3)

Development of costs-benefit analysis for each of the specific vehicle groups



Objectives (4)

Recommendations on type approval legislation
and next steps towards eCall implementation



Activity 2 partners



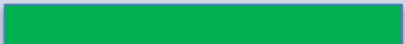




 Autoritatea de Servicii Spatiu Aeronautic				 BETA 80 GROUP			 CATAPULT		
									
									
									
									
									

Sub-activities

- 2.1 Heavy goods vehicles carrying dangerous goods
- 2.2 Heavy goods vehicles carrying all other types of goods
- 2.3 Long distance buses and coaches
- 2.4 eCall cross-border cooperation with neighbouring countries
-



All Activity 2 deliverables

Deliverable	Completeness
D2.1 Draft specification of eCall for HGV (incl. Dangerous Goods)	
D2.2 Prototype IVS and PSAP to demonstrate feasibility of eCall for HGV	
D2.3 Draft specification of eCall for buses/coaches	
D2.4 Final specification of interfaces for eCall for HGV (incl. DG)	
D2.5 Final specification of interfaces for eCall for buses/coaches	
D2.6 Recommendation to adjust type-approval and potential amendments to legislation	
D2.7 Recommendations for implementation of eCall with neighbouring countries	



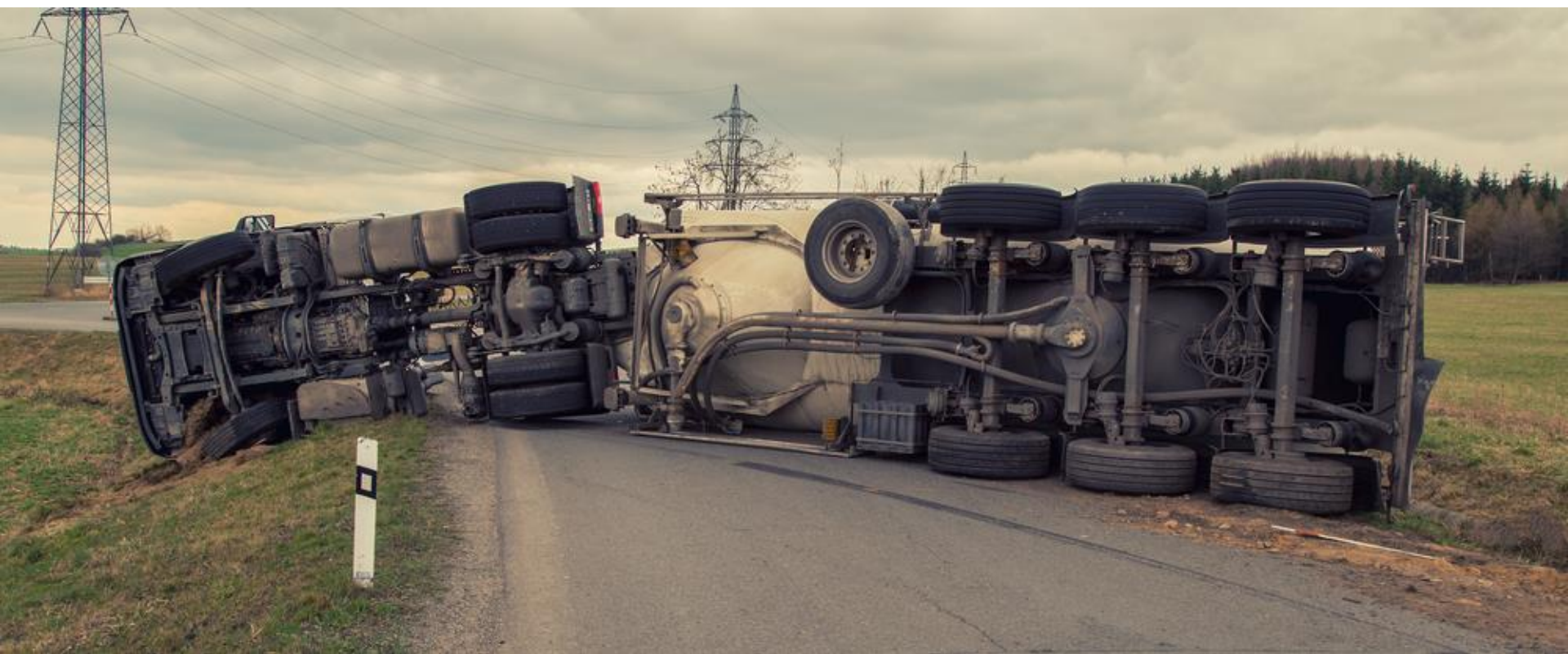
Activity 2:

eCall for Commercial Vehicles (HGV)



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Why eCall for Commercial Vehicles?



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Harmonised eCall European Deployment







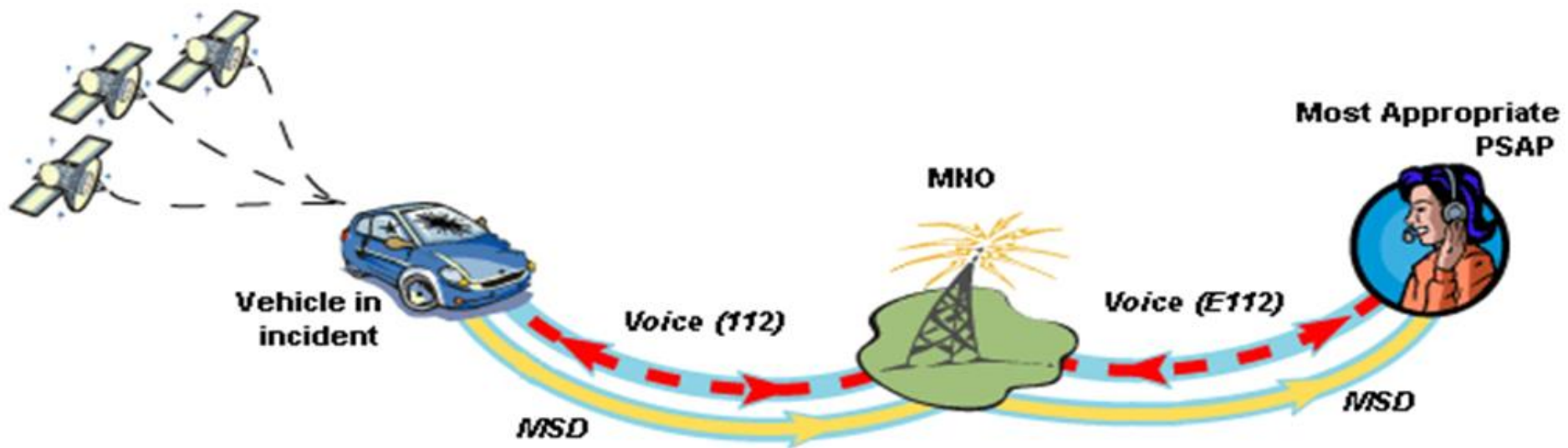


Highly disruptive!





eCall working principle



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Handling eCall from a Commercial Vehicle



- Operator receives an emergency call
- GPS location, vehicle type, license nr.
- **CARGO INFORMATION**



Benefits for emergency services



- Information on the cargo helps operator **make decisions on dispatching actions**
- Special tools, protective gear, deviations ...



Useful cargo information

- Consignor
- Carrier
- Phone numbers
- Type of Cargo, quantity



Dangerous goods (ADR)



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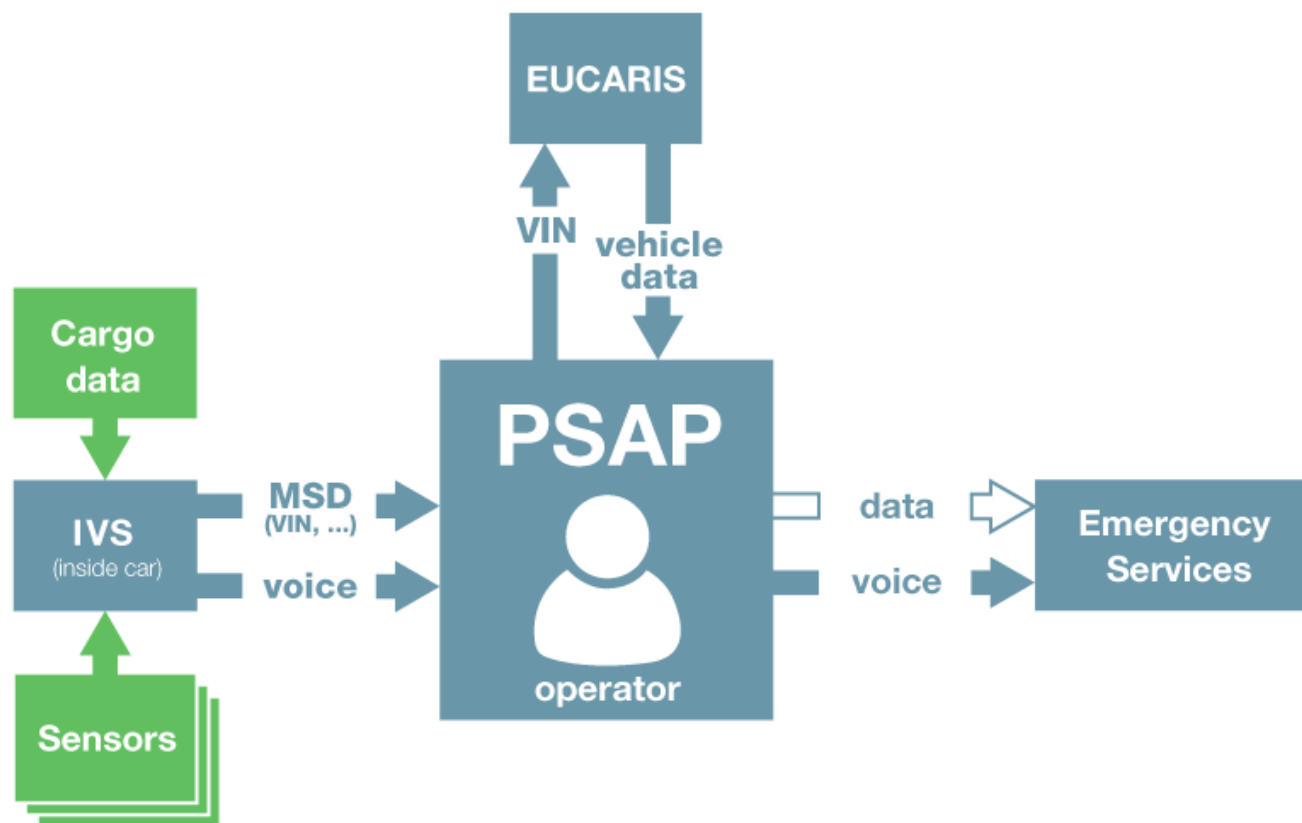


Harmonised eCall European Deployment

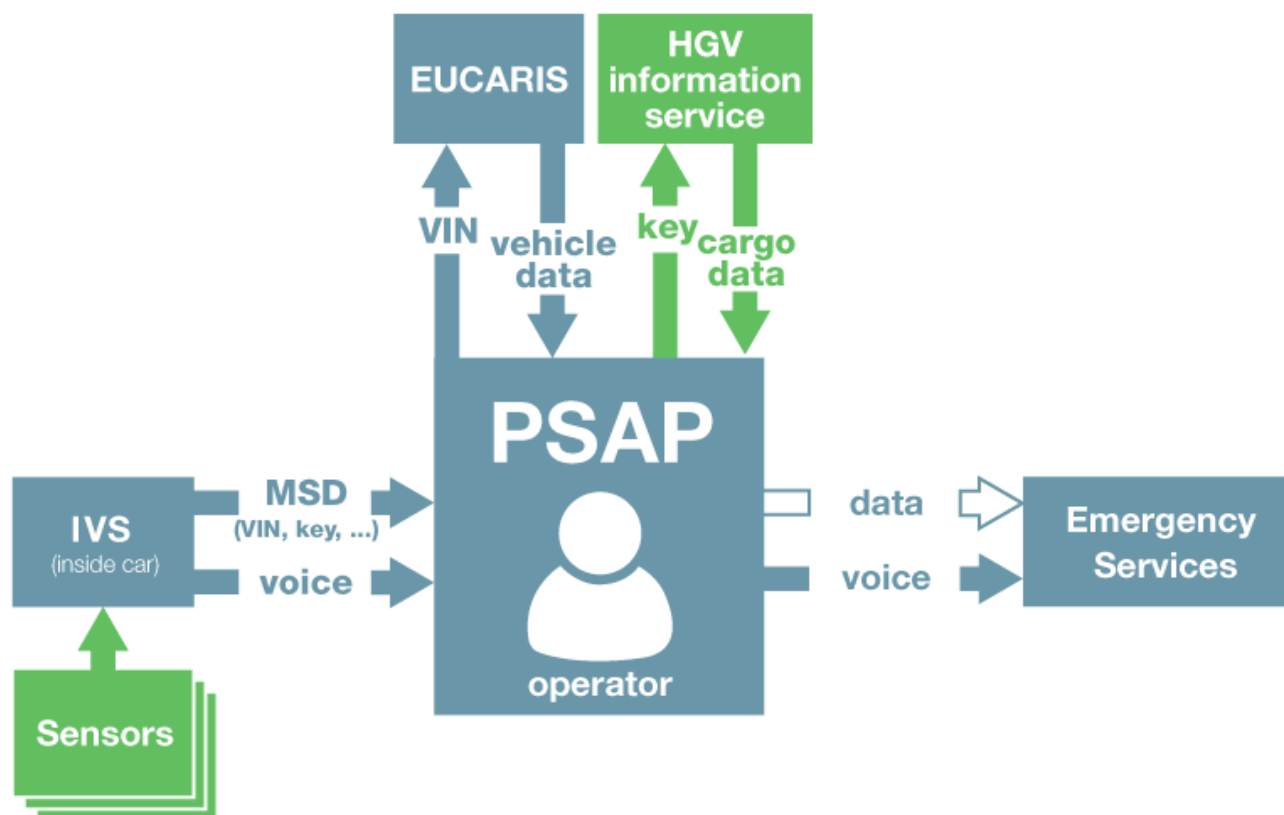
Consignment note: CMR

[illegible]

Cargo information in IVS



Cargo information from external source



Interoperability



Type A



Type B



Type B3



Type BF



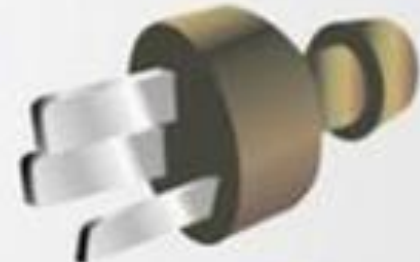
Type C



Type SE



Type O
(without ground
prong)

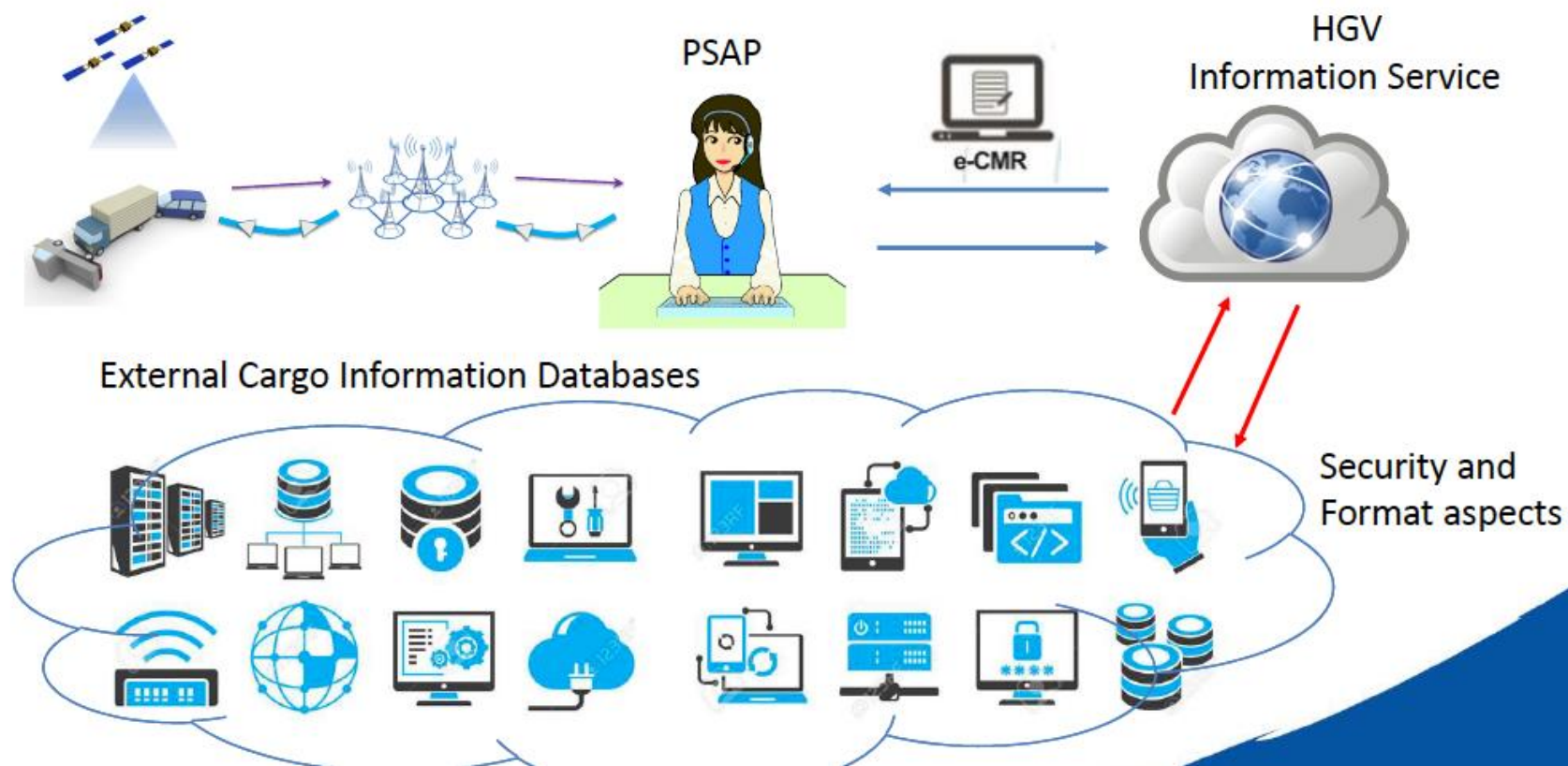


Type O (with
ground
prong)

Connectivity Everywhere

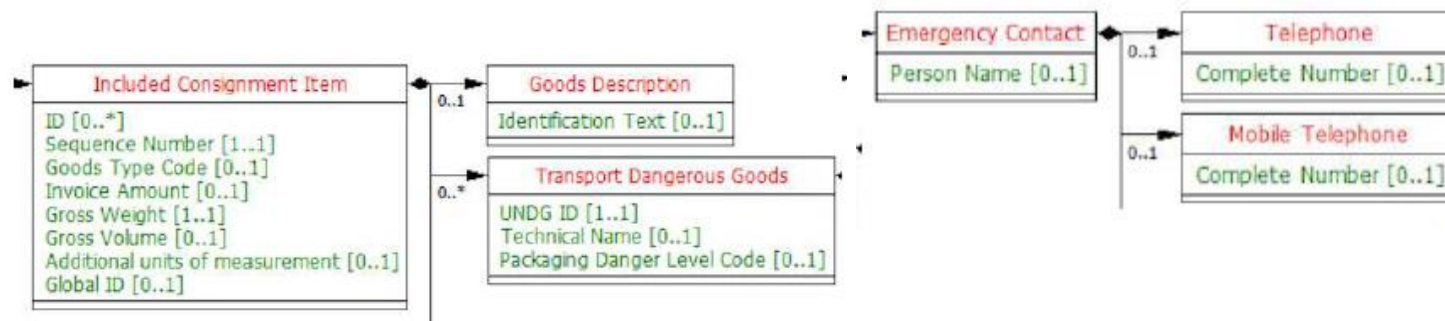


Cargo Databases in different countries



Data format

- Single data format: e-CMR
- UN/CEFACT data model for standardised electronic consignment note and appropriate message schemas (under public consultation)



e-CMR support from European Commission

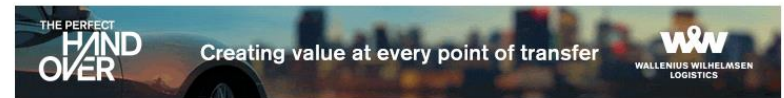
Bulg said she would like to see all EU member states adopt the protocol by the time her term ends in 2019.

She also reiterated the importance of more EU member states adopting the e-CMR (electronic consignment note) protocol, which allows for electronic filing of legal transport documents and billing. Late last year, France and Estonia joined just nine other members of the EU, along with Switzerland, in adopting the protocol.

Automotive LOGISTICS



Home News & Intelligence Magazines Events



Home > News > European transport commissioner wants digital cooperation

Read this in:

European transport commissioner wants digital cooperation

22 March 2017 | Christopher Ludwig



Violeta Bulc, the European commissioner for transport, has urged the finished vehicle logistics sector to work with the European Commission and EU member states to push for legislative reforms and policies to support better use of developing technologies.

Speaking at an event marking the 20th anniversary of the Association of European Vehicle Logistics (ECV) in Brussels this week, Bulc stressed that digitalisation would be vital to the success and survival of transport and logistics companies, even if many of their processes today were still manual.

Source: <http://automotivelogistics.media/news/european-transport-commissioner-calls-digital-cooperation>

Access to cargo information

- Decentralised
- Centralised (e.g. EUCARIS)



Cargo information Proxy



- TS16405 Schema A and Schema B
- e-CMR for cargo information
- Architectures: centralised or PKI-based
- Automatic triggering not trivial

- TS16405 Schema A and Schema B
- e-CMR for cargo information
- Architectures: centralised or PKI-based
- Automatic triggering not trivial



HERO 112 SOS
Harmonised eCall European Deployment

Questions?



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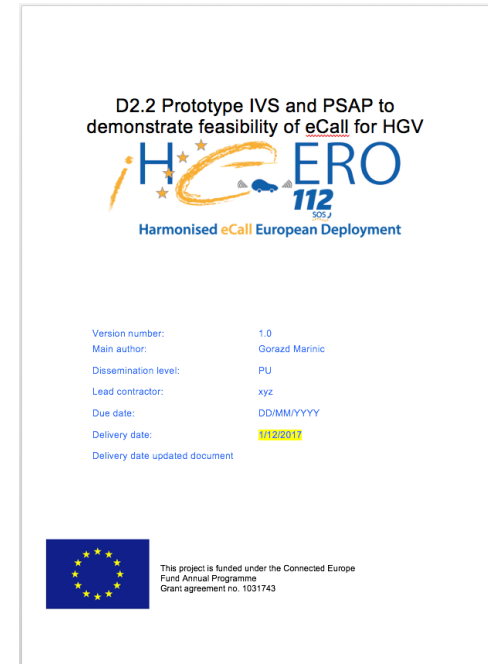
Activity 2: EVENTS & IVS and PSAP Prototypes



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D2.2 Prototype IVS and PSAP to demonstrate feasibility of eCall for HGV

- Report on development
- IVS: 4
- PSAP: 8
- Implemented eCall for HGV (Schema A and Schema B)
- Test cases



ITS Strasbourg

- 19 - 22 June 2017



Demo tour: Torino, Italy

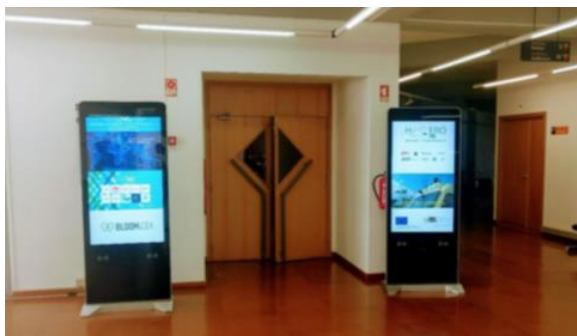
- SmartMobilityWorld 10-11 October 2017



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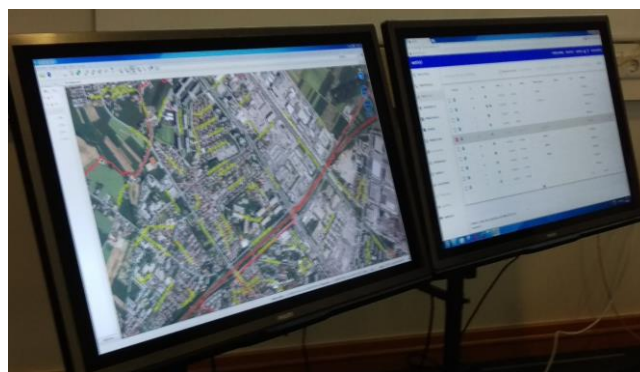
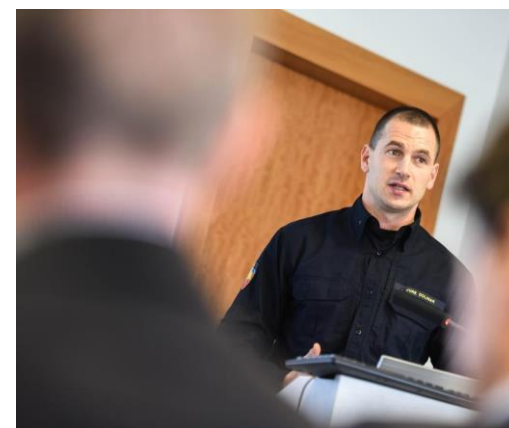
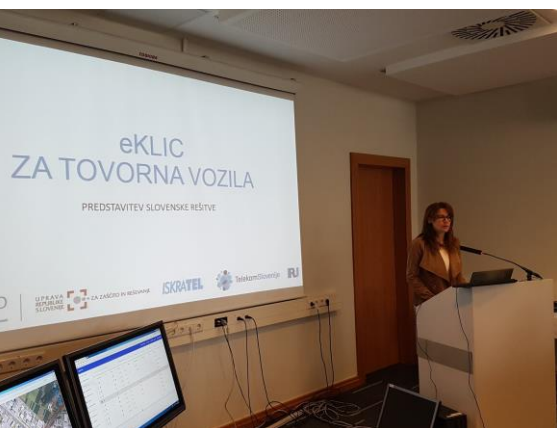
Demo tour: Lisbon, Portugal

- 10 October 2017



Demo tour: Ljubljana, Slovenia

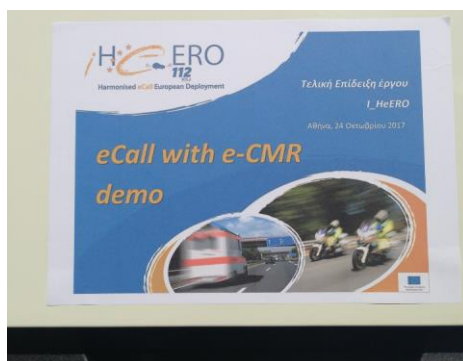
- 16 October 2017



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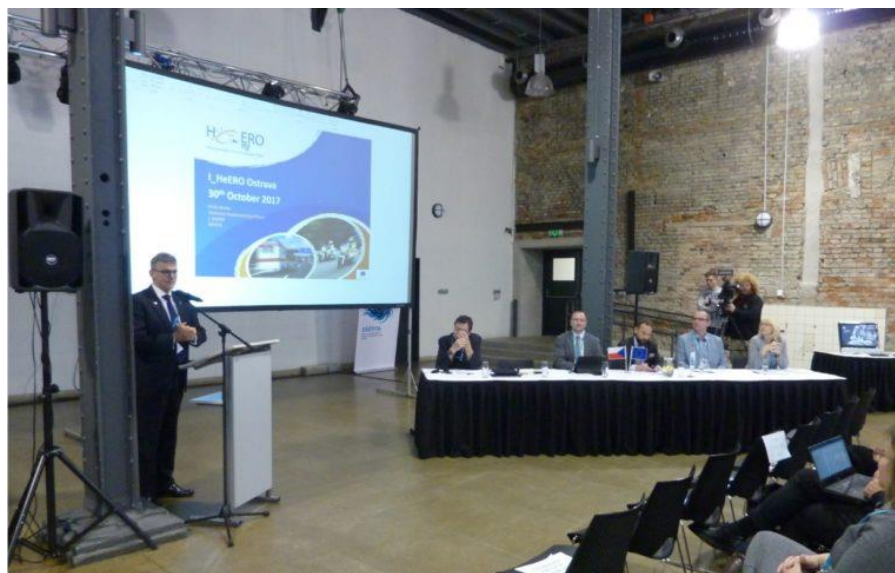
Demo tour: Athens, Greece

- 24 October 2017



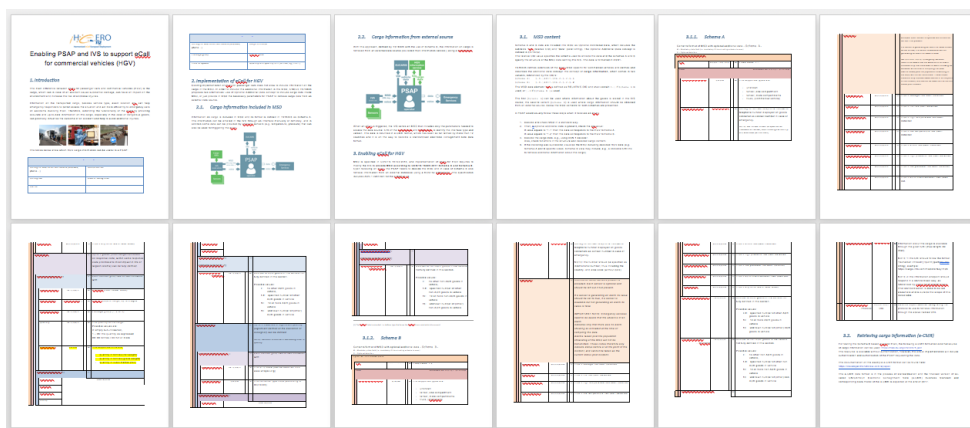
Demo tour: Ostrava, Czech republic

- 30-31 October 2017



eCall Testfest

- 9-13 October in Kranj, Slovenia
- > 80 registered participants
- Implementation of eCall for HGV
- Instructions for IVS and PSAP developers



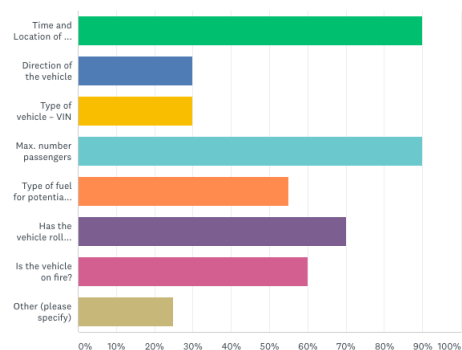
BUSWORLD

- Survey on eCall for buses and coaches



What type of information would be useful to the emergency services in relation to the vehicle and accident to best understand

Answered: 20 Skipped: 0



busworld.
EUROPE KORTRIJK
20-25 OCT 2017



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HERO
112
SOS
Harmonised eCall European Deployment

Implementation and testing of eCall for HGV using CTAG IVS prototype

Jose Manuel Martínez
David Carro

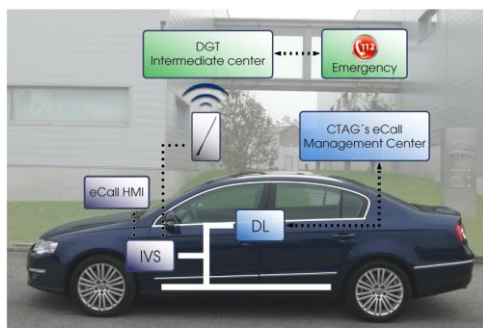


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Equipment

- Compliant with last eCall standard versions (ETSI, CEN, ISO)
- ETSI standards compliant tested in plug tests #2013 & #2014
- Independent power supply
- CAN BUS connection for automated triggering of eCalls.
- HMI: User interface (audio, mic and launch button) integrated in vehicle
- CTAG Data logger: connected to IVS and CAN BUS store all necessary measurements to KPI calculation
- Remote positioning of vehicles in real time
- Remote triggering of automated eCall by emulation of airbag CAN signal



Testing

- Schema A: the cargo information is included directly in the additional data field of the MSD messages
- Schema B: the cargo information is provided by an external source, commonly a web address of the transport company that is included in the MSD
- Testing plan included in *D2.2 Prototype IVS and PSAP to demonstrate feasibility of eCall for HGV*

Objectives:

- Check the performance of both implementations evaluating success rate of MSD transmissions targeting different scenarios
- Comparative study of success rates between both implementations A and B

Scenario	Weather conditions	Satellite visibility	GSM coverage/quality	Driving conditions
SC-001	Good	Good	Good	Normal
SC-002	Normal	Good	Weak	Normal
SC-003	Normal	Normal	High traffic load	Normal
SC-004	Bad	Bad	Normal	Normal
SC-005	Normal	Bad	Bad	Presence of tunnels
SC-006	Normal	Normal	Normal	High speed conditions

Testing

- Ongoing eCalls tested with two I_HeERO PSAPS Beta80 and Vitkovice
- Results and conclusions to be included as annex of *D2.2 Prototype IVS and PSAP to demonstrate feasibility of eCall for HGV*

ID	Description	Comments/Procedure	Units
KPI_001	Number of automatically initiated eCall	-	-
KPI_002	Number of manually initiated eCall	-	-
KPI_003	Success rate of completed eCalls (using long number)	An eCall is considered as completed when the vehicle occupants and the PSAP operator are able to establish communication and the MSD content was correctly decoded and presented in the PSAP's interface.	%
KPI_004	Success rate of received MSDs	The MSD is received even if it is correctly decoded or not	%
KPI_005	Success rate of correct decoded MSDs	The MSD was received and is correctly decoded by the PSAP	%
KPI_006	Time until MSD is presented in PSAPs interface	Starts when the call is triggered and stops when the MSD data is presented in PSAP's interface. This KPI must be measured and provided by the PSAP operator	s
KPI_007	Time needed to transmit the MSD message	Starts when IVS starts to send the MSD message and stops when IVS receives an AL-ACK signal. This KPI must be measured and provided by the PSAP operators	s
KPI_008	Success rate of established voice transmissions	The voice channel must be enabled during the call event if the MSD was transmitted/decoded successfully or not	%
KPI_009	Success rate of call-backs launched by PSAP	The PSAP is able to call back the IVS when the connection is lost	%
KPI_010	Rate of MSD retransmissions needed	This KPI determines whether or not the PSAP operator needs the IVS to retransmit the MSD message due to failures during transmission or decoding process	%
KPI_011a	Success rate of access to cargo information using an external source (only for Schema B)	PSAP operator must be able to access to the cargo information through an external source specified by the IVS in the MSD message	%
KPI_011b	Success rate of access to cargo information using an external source when more than 1 cargo is carried by the vehicle (only for Schema B)	If there is more than one cargo loaded in the vehicle, the PSAP operator must be able to access to all cargo information through the external source specified by the IVS in the MSD	%
KPI_012a	Success rate of cargo information decoding (only for Schema A)	The cargo information must be correctly specified in the additional fields of the MSD message.	%
KPI_012b	Success rate of cargo information decoding when more than 1 cargo is carried by the vehicle (only for Schema A)	If there is more than one cargo loaded in the vehicle, the additional data fields of the MSD must contain the information related to all the cargo	%

Questions?



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Activity 2.5 Long Distance Buses and Coaches

Mick Trosh
(Satellite Applications Catapult)



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Activity description

Sub-activity 2.3 Long distance buses and coaches.

A study on eCall for long distance buses and coaches will make a strong contribution to increasing road safety. Knowing if a long distance bus or a coach is carrying 5 or 45 passengers at the time of a collision can have vast impact on the emergency team readiness to handle rescue missions efficiently.

Task 1	Passenger count <ul style="list-style-type: none">- from reliable external sources through dynamic passenger data (where passenger lists/db exist)- Estimation at any point of the journey
Task 2	eCall Activation mechanism - for bus & coach

Deliverables

Deliverable 2.3	Draft specification of eCall for buses/coaches
Deliverable 2.5	Final specification of interfaces for eCall for buses/coaches



Discussion Agenda

- Context setting
- Method
- Finding's
- Conclusions



Commercial Vehicle Vs Bus and Coach



Vs



Differences



+



Buses and Coach Differences

Bus

- More local routes
- Specific timetable and routes
- Passengers on demand at bus stops
- Tickets on bus or before entry
- No Seat Belt requirement
- Standing allowed
- Unsecured passenger luggage
- Potential limited connectivity



Bus Timetable
2011 - 2012

Buses to the City will run at the following times:

Monday to Friday

Depart	Arrive
09:30	10:00
11:30	12:00
12:30	13:00
13:30	14:00
16:30	17:00
18:30	19:00
20:30	21:00
22:30	23:00

Sunday

Depart	Arrive
10:00	10:30
12:00	12:30
14:00	14:30
16:00	16:30
18:00	18:30
20:00	20:30



Coaches

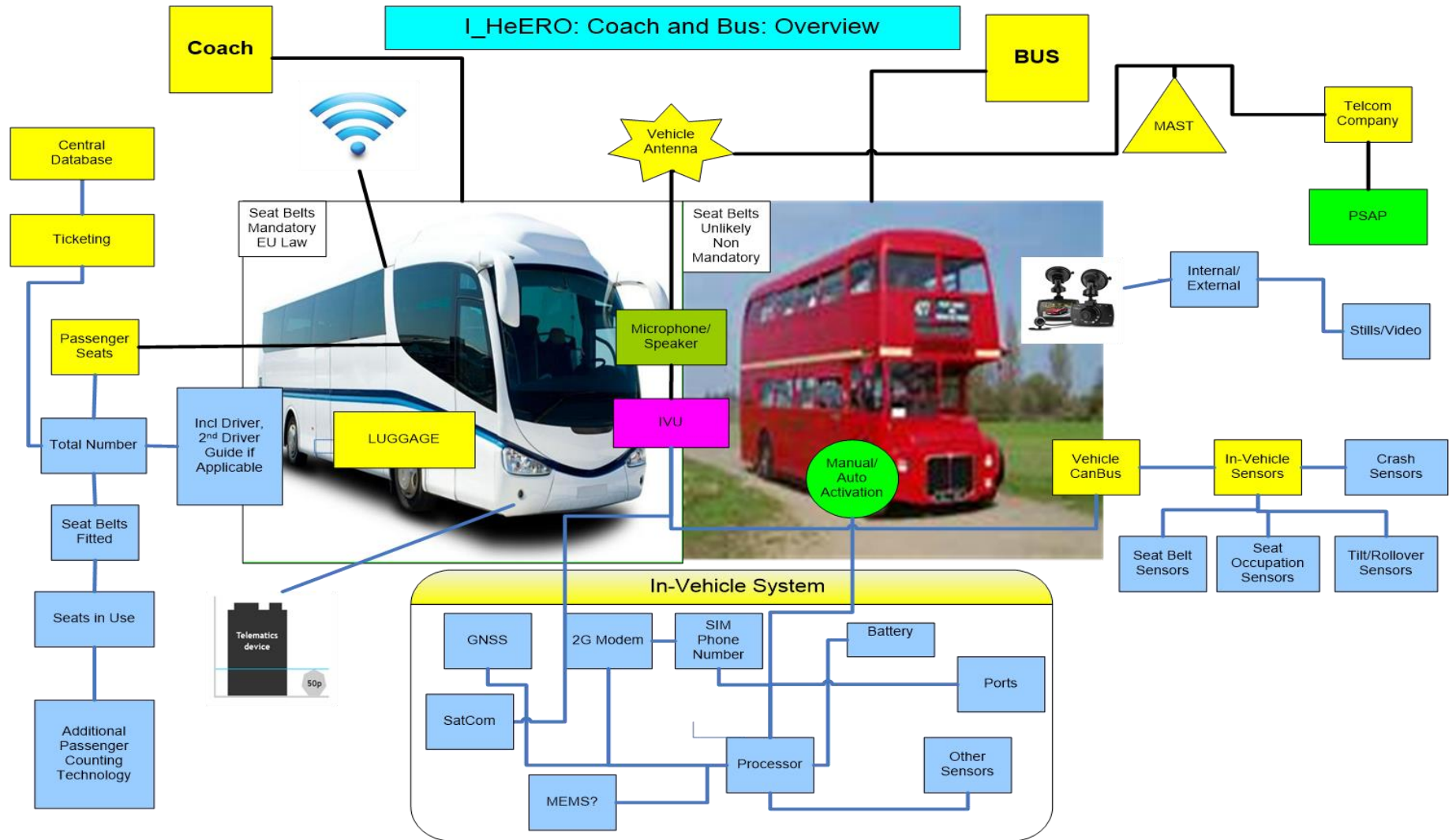
- Tend to travel longer distances
- Cross borders
- Mandatory fitment of seat belts
- No standing passengers
- Secured luggage
- Pre paid tickets
- Passenger data
- Limited Connectivity



DATA

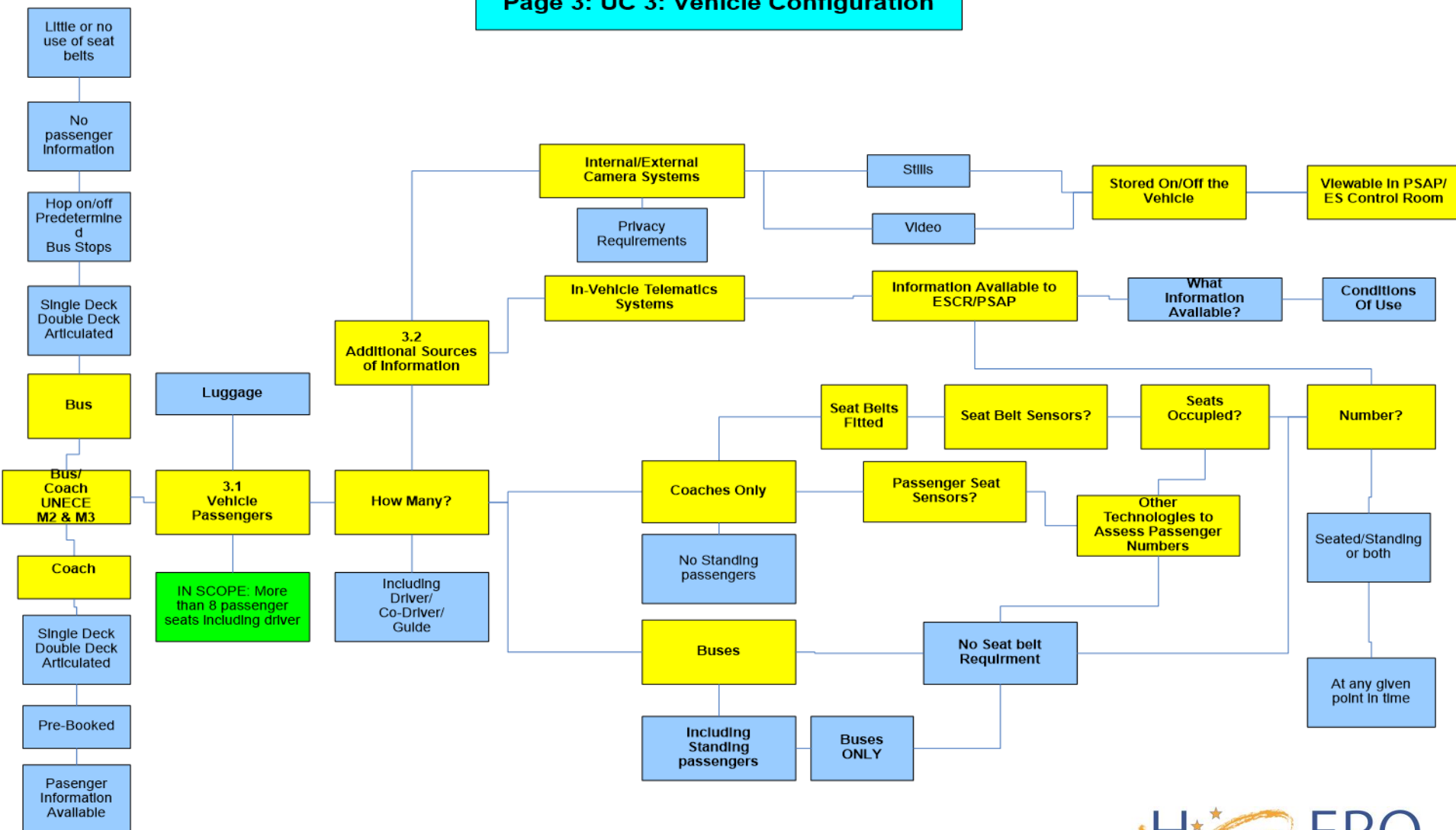


eCall Bus & Coach Overview



Use Cases

Page 3: UC 3: Vehicle Configuration



Requirements

UC Ref	Requirement: Short Definition	Explanation	PERFORMANCE METRIC	Demonstrator Must Have (M)/Should have (S)/Could Have (C) Won't Have (W)	Full System Must Have (M)/Should have (S)/Could Have (C) Won't Have (W)	Test Plan Ref
MUST HAVE						
UC 1	STRATEGIC ISSUES					
UC 1.1	Legal					
11001	The user requires that the final specification relates to specific relevant types of vehicles.	These UR's are specific only to EU Categories M2 & M3 vehicles. Defined as vehicles with more than 8 passenger seats including the driver		M	M	
11002	The user requires that this specification relates to buses.	Defined as vehicles with more than 8 passenger seats including the driver. These vehicles in most cases travel on shorter routes and: <ul style="list-style-type: none"> Operate to a timetable On specific routes Semi random, unplanned stops at passengers request to alight or embark at marked bus stops Little or no use of seat belts Generally, no passenger data available, Except, where ticketing is prepaid for example on a card (Oyster Card-London), 		M	M	



Critical User Requirements Identified



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Connectivity Everywhere



eCall for Buses and Coaches

- Number of Passengers



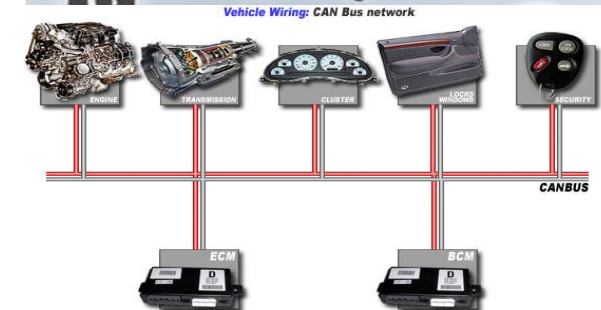
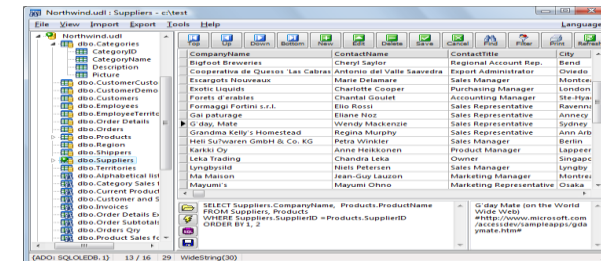
Passenger Numbers-Potential Solutions

Coaches

- Passenger Databases

Buses and Coaches

- Passenger Counting Technology
 - IR
 - CCTV
- Data from Canbus-Air Suspension



Rollover

- Has the vehicle rolled over?
- AND
- How many times?



Potential Sources of Information

- Telematics Devices
- Rollover Devices
- CanBus



Manual Activation

- eCall Button Placement for Driver
- Additional eCall buttons for passenger use



Specification- Proposals

- Schema A: Where specific Information is loaded onto IVS
 - Manually
 - Automatically from Vehicle Sensors
- Schema B: Where URL is provided as part of the MSD, which links to an external data source for additional information.



Further Work - Recommended

- Triggering Issues
- Access to Bus and Coach Operator Databases
- Connectivity Everywhere
 - eCall over Sat Comms?



Any questions?

Thank you for your attention!



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Activity 2.6: Recommendation to Adjust Type Approval and Potential amendments to Legislation

Mick Trosh
(Satellite Applications Catapult)



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Discussion Agenda

- Legislation reviewed
- Findings
- Conclusions



Activity description

- Recommendations to Adjust Type Approval and Potential amendments to Legislation



Legislation Reviewed

- Regulation (EU) 2015/758; which relates to the type approval requirements for the deployment of an eCall in-vehicle system in light passenger cars
- Commission Delegated Regulation (EU) 2017/79; which details the technical requirements and test procedures for the EC Type Approval of motor vehicles with respect to their 112-based eCall in-vehicle systems including the separate technical units and components



Legislation Reviewed Cont'd

- European Community Whole Vehicle Type Approval (ECWVTA): Directive 2007/46/EC
- ATEX Regulations (affecting vehicles working in explosive atmospheres)
- ADR Regulations (Relating to the carriage of dangerous goods)
- Data Protection Legislation



Vast Majority of Legislation

- Very little difference to that of light passenger vehicles,
- However, may need slight amendment to reflect uniqueness of commercial vehicles, buses and coaches
- Will require further work re: Triggering



Main Issue: ATEX Regulations

- Relating to vehicles working in potentially explosive atmospheres e.g. Petrol Tankers
- Requirement to de-power all electrical equipment when loading UNLESS
- Specific Requirements met
- eCall requirement to remain powered for 1 hour, post main battery disconnection



Overall Conclusion

- Whilst the vast majority of the legislation outlined will only require minor amendment and updating, the main issue is related to those vehicles subject to the ATEX Regulations (Hugely Complex), for example petrol tankers.
- These regulations have specific technical requirements that must be complied with when operating in explosive atmospheres and any eCall IVS will need to be compliant.
- It is therefore recommended that expert guidance is sought, prior to the writing of the eCall technical specification for these types of vehicles
- Further work required to ensure that any connection to an external data is compliant with Data Protection Legislation



Any questions?

Thank you for your attention!



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Activity 2:

Cross-border eCall



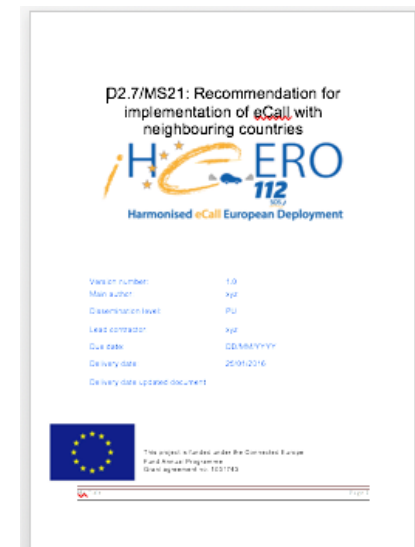
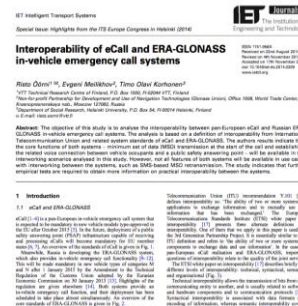
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D2.7 Recommendation for implementation of eCall with neighbouring countries

- Identified use cases
- (Pan-European) eCall and ERA-GLONASS
- Interoperability testing needed
- HGV cargo information: challenge!



eCall country	Neighbouring non-eCall country	Border length (km)	Total border length (km)
Norway	Russia	195,7	195,7
Finland	Russia	1340	1340
Estonia	Russia	294	294
Latvia	Russia	214	214
	Belarus	172,9	
Lithuania	Belarus	679	679
Poland	Belarus	368,9	368,9
	Ukraine	508	529
Slovakia	Ukraine	97	97
Hungary	Ukraine	136,7	136,7
Romania	Ukraine	613,8	
	Moldova	461,3	
Bulgaria	Turkey	269	269
Greece	Turkey	206	206
Total			4145



Activity 2: Future work



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eCall Triggering

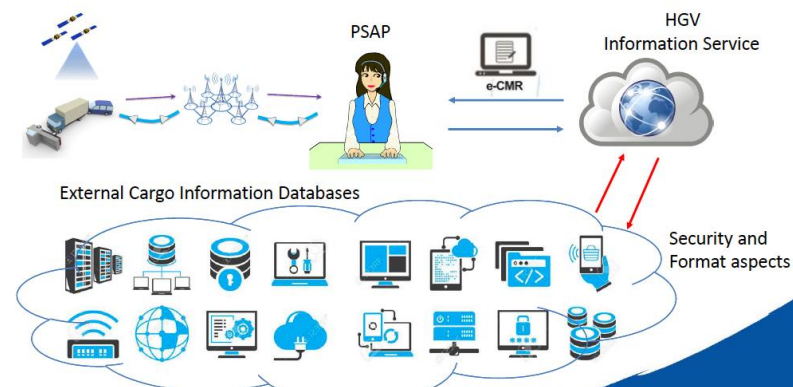
- Automatic triggering criteria (airbag, cargo sensors ...)
- Button placement
- Passengers (misuse)



Access to Cargo information

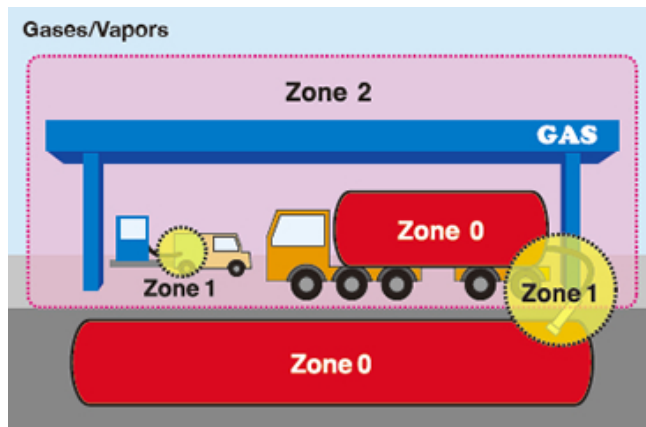
- Architecture?
- Security and Privacy issues
- e-CMR adoption

The image shows a sample e-CMR form, which is a structured document used for electronic consignment notes. It contains various fields for cargo details, sender, receiver, and transport information. The form is divided into several sections, including a header with the e-CMR logo, a main body with multiple rows for cargo details, and a footer with additional information. The form is presented in a red-lined, tabular format.



ADR / ATEX

- Need additional expert work
- Costly implementation



Buses and coaches

- Passenger count!
- On-board sensors / systems
- External databases: difficult to implement!
- Satellite connectivity



Questions?



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Thank you for your attention!



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