Work package AP200 - Research of relevant standardization areas

"Regulation of Telematics in Dangerous Goods Transport" Project

Report to Telematics Working Group
Bordeaux 17-19 January 2011

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"Transport Telematics / ITS"

Key Messages

- There are many existing and developing standards underpinning relevant technologies, applications, and potential services of interest
- There is no agreed architecture into which the range of applications fit, yet
- Improvements could be made to raise awareness of the UN Regulations to ensure the consistency of standards
- There are some standardisation developments and linked deployments that should be of high interest
- Telematics WG needs to consider carefully its objectives:
  - Which applications?
  - Mandatory usage or making the Regulations support optional use?
  - Creation of a roadmap of the application of likely technological advances?

Contents

- Review of AP200 Objectives and Methodology
- Recap of overview of existing Standardisation
- Focus on Priority Topics – Emergency Response
  - Framework for applications for regulated vehicles
  - Content and identification ‘within vehicle’
  - eCall HGV/DG
- Recommendations

WP Approach

Scoping use case domains, relevant standards group

Consultation on priority areas from BMVBS and Telematics WG

Further examination of priority areas (no.2)

Reporting of observations and recommendations including requirements for further standardisation actions

Project Month / Workpackage (WBS)	6	7	8	9	10	11	12	13	14	15	16	17
WP200.10	■	■										
WP200.20			■	■	■	■	■	■	■			
WP200.30						■	■	■	■	■	■	■

Progress Report

Preliminary report (Telematics WG, 17 to 19/01/2011)

Final report (Telematics WG, 10 to 13/05/2011)

AP200 – Expected Results

- Review of areas of standards relevant to Dangerous Goods domain space
  - Which Standards Development Organisations have relevant work?
  - Known relevant activities
  - Identification of standards and standards needs for priority areas
- Deliverable : Overview report plus recommendations – future actions

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Standards Bodies

CEN

- **TC278 Intelligent Transport Systems**
- TC296 Tanks for transport of dangerous goods
- TC224 Personal identification, electronic signature and cards and their related systems and operations
- TC225 AIDC Technologies

ISO

- **TC204 Intelligent Transport Systems**
- TC8 Ships and marine technology
- TC22 Road vehicles
- TC104 Freight containers
- TC122 Packaging
- TC154 Processes, data elements and documents in commerce, industry and administration
- TC211 Geographic information/Geomatics

ETSI

- ETSI TC ITS

UN-CEFACT

WCO - World Customs Organization

OASIS

Others…

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Relevant Standards Activities

- Vast array of different standards for individual specified purposes
  - No overarching structure or defined relationship
  - No standards development masterplan
  - Broad attempt to ensure that no conflicts occur, but this is challenging in a very complex (there are over 30,000 British Standards and approximately 1,500 committees)

  - In road transport telematics there are no mandatory standards, yet

WP200.10 Scoping Use Case Domains

Freight / Commercial

- E-documentation
- E-clearances
- Smart container management
- Fleet management

Monitoring & Enforcement

- Track & Trace
- Enforcement
- Required Authority documents

Incident & Emergency Response

- Remote notification
- Incident scene data access
- Incident management
- Additional information sourcing
- Information dissemination

Fitting it together

Freight / Commercial

- E-documentation
- E-clearances
- Smart container management
- Fleet management

Monitoring & Enforcement

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Incident & Emergency Response

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Architecture/Framework

Common terminology/ Common concepts

Classification

Identification

Location

Payload description

Load Status

Event /Status description

Communications

Processes

Freight / Commercial

Freight / Commercial

- E-documentation
- E-clearances
- Smart container management
- Fleet management

Vision:

- Common Electronic Transport Documentation
- Support of Green Lanes
- E-Clearance
- Increased fleet efficiency
- Reduced environment impact

One Common Framework for Information and Communication Systems in Transport and Logistics

FREIGHTWISE RISing INTEGRITY SMART-CM URIDICE smartfreight FREIGHT DISCWISE

SMART-CM smart container chain management

Multi-Modal

- Very little standardisation of overall processes so far
- Activities in GS1, UN CEFACT, OASIS/UBL
- A number of facilitating technology standards exist
- Increasing alignment to ISO TC204 WG7 activities
- CEN Workshop Agreement on Smart Container Tagging (interference monitoring, pre-clearance) [**SMART-CM**]

Monitoring & Enforcement

Monitoring & Enforcement

- Track & Trace
- Enforcement
- Required Authority documents

SCUTUM project: EGNOS services for dangerous goods transports

CEN Workshop Agreement:

- Kick-off meeting: 28 September 2010
- Approval plan: November 2011

- Precursor to formal standards development

RESTORE – Remove vehicle stop:

- Security-led initiative
- Plans to seek European CEN Standardisation

Incident & Emergency Response

Incident & Emergency Response

- Remote notification
- Incident scene data access
- Incident management
- Additional information sourcing
- Information dissemination

Sparse coverage for these applications

But a number of the building blocks exist

Example
ISO 17687 *Data dictionary and message sets for electronic identification and monitoring of hazardous materials/dangerous goods transportation*

- Roads oriented
- Alignment with UN Regulations?

Architecture / Commons Terminology

Architecture/Framework

Common terminology/ Common concepts

- Primary focus of investigation – road transport

- Fragmented vocabulary/architecture across modes
  - Rail – TSI – Telematics Applications for Freight (TAF) Freight – [RID]
  - Inland Waterways – little investigation done, but understood to be well aligned to ADN
  - Road (ITS) - ISO 17687 – [ADR?]

- Standardisation of these elements done in different communities, different CEN and ISO Technical Committees

Facilitating Technology Standards (Examples)

Identification

- ISO 6346 (container identification)
- ISO 10378 (automatic intermodal container identification)
- ISO 10891, 18185, 17365 Tags
- Under development ISO 26683-1 ISO TS ”26683-1 Freight Conveyance Context and architecture”,; SO 26683-2 “Intelligent transport systems — Freight land conveyance content identification and communication — Part 2: Application interface profiles”

Location

- Many standards (GNSS, Location Referencing, Map exchange); Under consideration: safety related attributes (ROSSATTE)

Communications

- CALM (Continuous Access for Land Mobiles) Architecture, covers 5.9G, DSRC, GSM, UMTS, Satellite

Classification
Identification
Location
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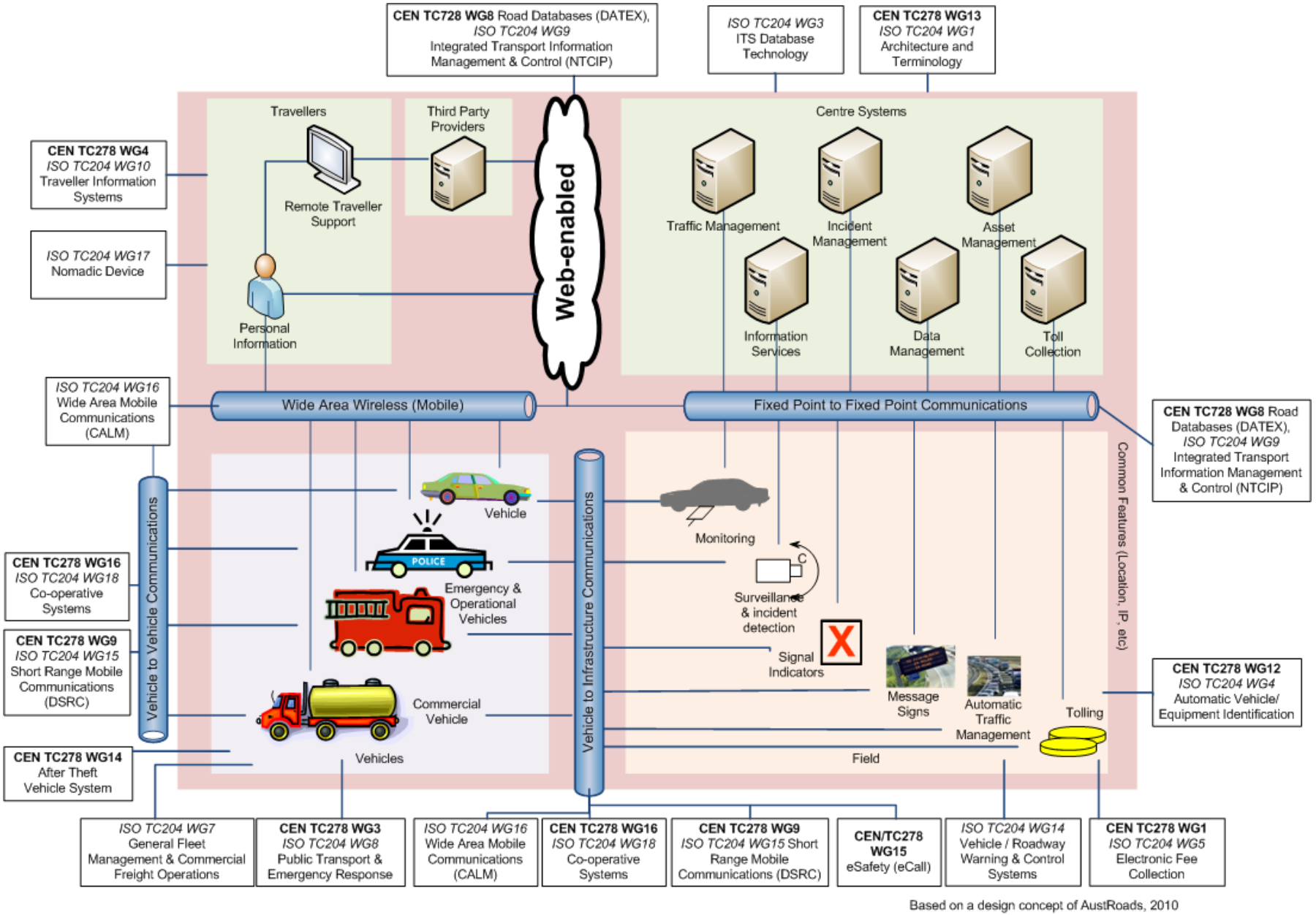
Processes



Based on a design concept of AustRoads, 2010

Priority Topics

Supporting Architecture

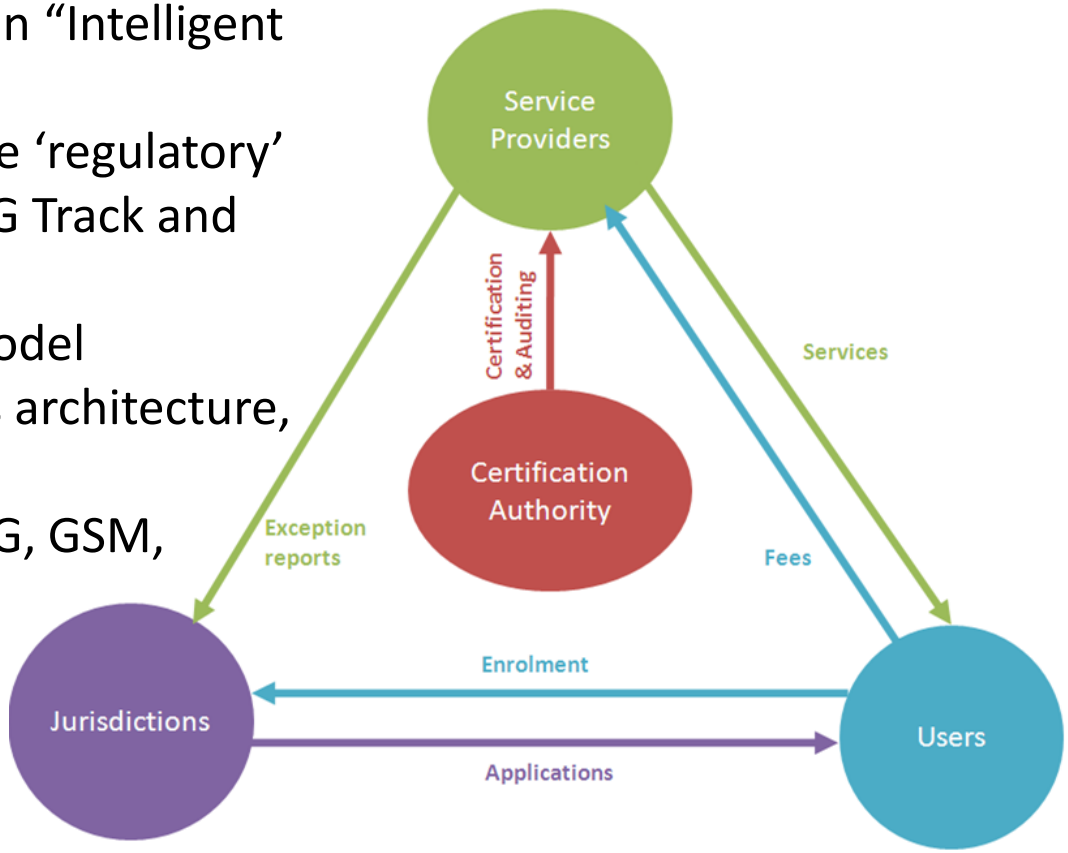
- In Standardisation, for Dangerous Goods Transport, there is currently no common domain model or architecture:
  - A range of applications under consideration
  - Various communications standards available
  - But consistency of data concepts and constructs are vital
  - Separating data concepts from communications means, as much as possible:
    - is a long term investment protection measure
    - Creates a good basis for integrating applications into a common architecture

Supporting Architecture

- ISO TC204 (WG7 in conjunction with others) has developed preliminary Work Item ISO 15638 "Framework for collaborative telematics applications for regulated commercial freight vehicles".

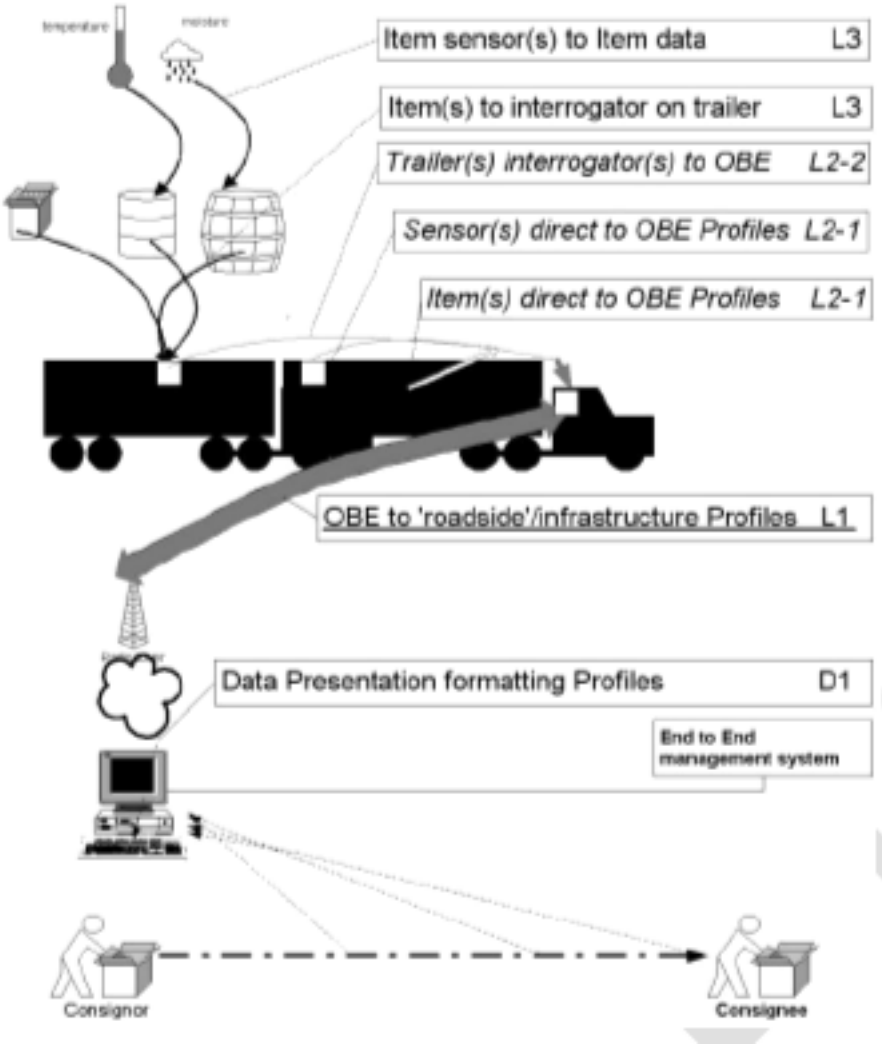
- Based on deployed Australian “Intelligent Access Programme“(IAP)
- Designed to support multiple ‘regulatory’ applications (HGV eCall & DG Track and Trace in scope)
- Multiple Service Provider model
- Uses CALM communications architecture, which supports a range of communications media: 5.9G, GSM, Satellite

- Proposed 7 Part Standard
- Work Item under Ballot



On-vehicle data agglomeration

- Vast array of communications technology standards available (RFID, item tags, container tags, GSM, CALM…)
- ISO/TS 26683 *Freight land conveyance content identification and communication* provides a range of technology standard profiles to enable aggregation of freight item(s) identification data to be collated at “Vehicle” On-Board Equipment (OBE) and for data transfer to infrastructure
- Profiles include:
  - ISO 15682 DSRC
  - ISO 21215 CALM 5GHz DSRC
  - GSM/UMTS/LTE/IMS/PDC/PH
  - ISO 18000-6 RFID



Incident & Emergency Response

Incident & Emergency Response

- Remote notification
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Standards related to eCall (1)

Data

Voice

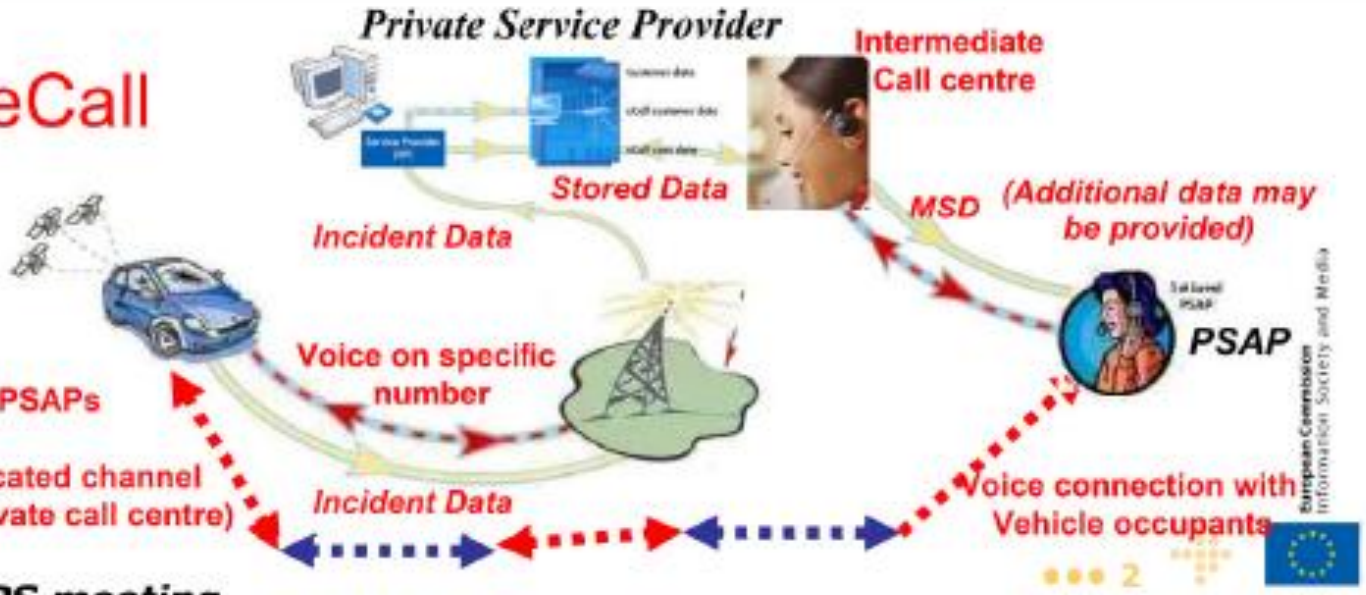
A

eCall: Pan-European in-vehicle emergency call

-Public service 112-based only
-As defined in the MoU
-Voice + MSD to relevant PSAP
- 112-based, with or without intermediation platform under Public delegation

B

TPS-eCall



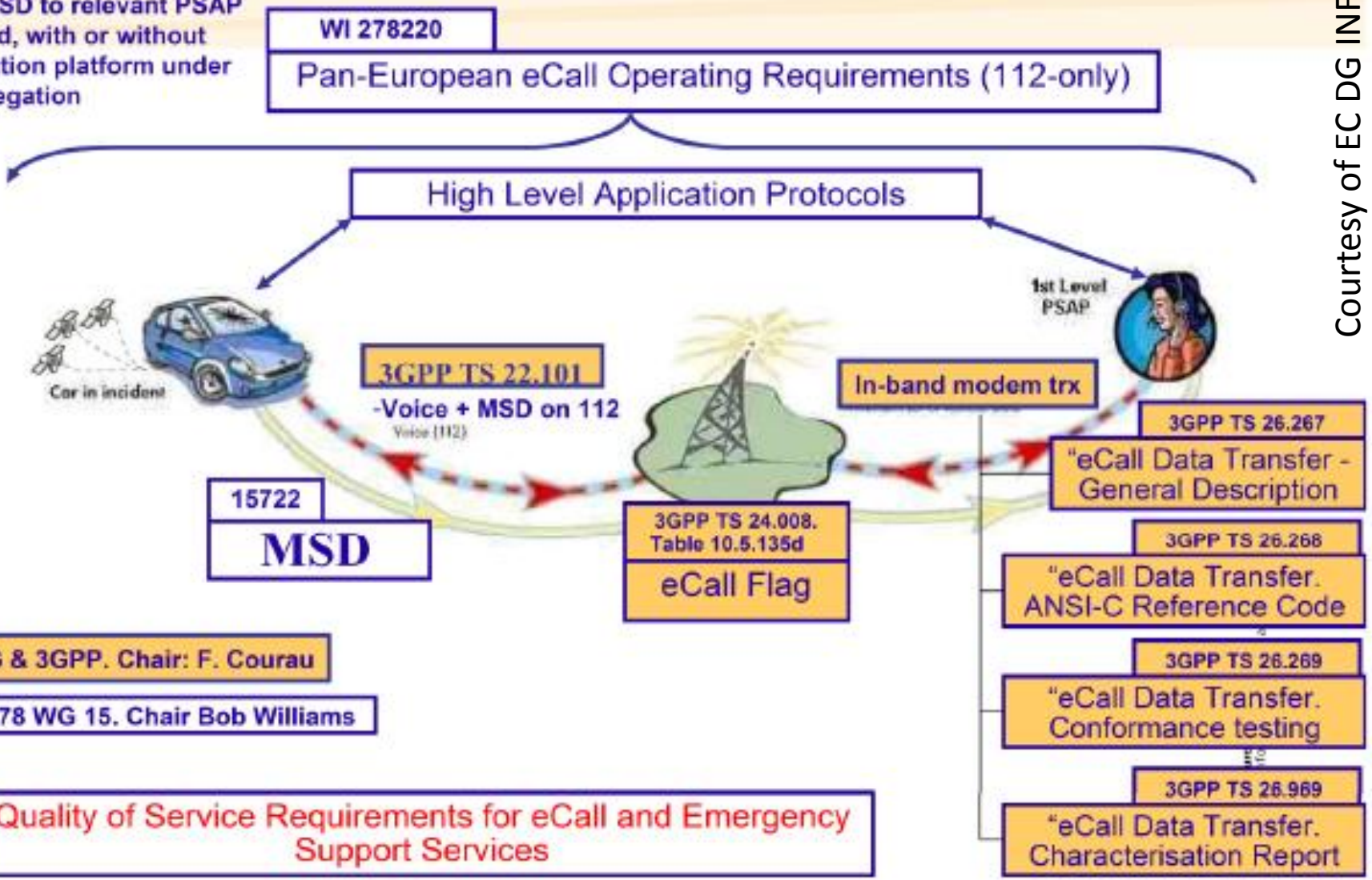
•Private service reporting to PSAPs
•Voice on specific number
•Data through a private dedicated channel
•Intermediation platform (private call centre)

9/12/08 – TPS meeting

Courtesy of EC DG INFSO

Standards related to eCall (2)
Pan-European eCall

-Public service 112-based only
-As defined in the MoU
-Voice + MSD to relevant PSAP
- 112-based, with or without intermediation platform under Public delegation



Courtesy of EC DG INFSO

eCall – CEN Standards

- Led by CEN TC278 Working Group 15 – eSafety
  - Adopted standards

CEN/TS 15722:2009	Road transport and traffic telematics - ESafety - ECall minimum set of data (MSD)	TS
EN ISO 24978:2009	Intelligent transport systems - ITS Safety and emergency messages using any available wireless media - Data registry procedures (ISO 24978:2009)	Full

  - Current Active Work Items

prEN 16072	Intelligent transport systems - ESafety - Pan European eCall-Operating requirements	31/03/2012
prEN 15722	Road transport and traffic telematics - ESafety - ECall minimum set of data	25/09/2011
prEN 16062	Intelligent transport systems - ESafety - ECall high level application requirements (HLAP)	25/09/2011
prEN 16102	Intelligent transport systems - ECall - Operating requirements for third party support	31/03/2012

eCall – HGV (Dangerous Goods)

- Preliminary Work Item (CEN / 278284)
  - ***Intelligent transport systems - eSafety - eCall additional optional data set for heavy goods vehicles eCall***
  - To scope potential standard
  - Being promoted by Rijkswaterstaat, NL
  - Linked to the HeERO project – Kick-off meeting this week

  - Would like to engage with Telematics WG to ensure data content is sufficient

eCall – HGV (Dangerous Goods)

- Current proposal (extract)

12g,j,...	haz_mat_code	int[0..9999]	O	6x	for 6 goods (the most dangerous if a truck has more than 6 goods): ▪ UN number ▪ Quantity (in rounded kg) ▪ Package group[2]
	quantity	int[0..9999]	O		
	packgr	byte	O		

What would "who does what" table imply?

No.	INFORMATION	WHO IS IT FOR?															WHA
		Driver / Crew	Shipper/Consignor/ Sender[1]	Freight forwarder	Consignee	Loader	Carrier	Tank-wagon operator	Packer	Filler	Tank-container operator	Infrastructure manager[2]	Public authorities	Competent authority	Emergency responders	Enforcement bodies	Security bodies	
A.	Entry in the transport document or documents attached to the transport document																
1	UN number 5.4.1.1.1 (a) [+ 5.2.1 ÷ 5.3.2] R: see also item 47	X	X	X	X	X	X	X	X	X	X	X		X	X	X	Ident

No.	INFORMATION	WHO IS IT FOR?	AVAILABILITY
		Public authorities / Emergency responders	In case of incident/accident
A.	Entry in the transport document or documents attached to the transport document		

Mandatory?

UN number; Proper Shipping Name; Technical name (if req); Class (for Class 7); Code (for Class 1); Packing Group; Number & type of packages; Total quantity of DG Empty uncleaned packagings; Multi-compartment tank; Elevated temperature; Temp control/stabilized; Net Quantity (Class 1)

eCall – HGV (Dangerous Goods) - Challenges

- 'normal' private vehicle eCall uses static vehicle data, plus location, etc
- HGV/DG eCall needs to support the loading of load data into on-board unit – how is this to be achieved?
- Requirement appears to link HGV/DG eCall to the standards of Technical Committee CEN/TC 296 "Tanks for transport of dangerous goods"?

prEN 15969	Tanks for transport of dangerous goods - Digital interface for the data transfer between tank vehicle and with stationary facilities
EN 14116:2007+A1:2008	Tanks for transport of dangerous goods - Digital interface for the product recognition device
EN 15208:2007	Tanks for transport of dangerous goods - Sealed parcel delivery systems - Working principles and interface specifications

- HeERO project will trial HGV/DG eCall

eCall – HGV (Dangerous Goods) - Challenges

- Has downstream process from PSAP to Emergency Responders been developed to handle appropriate transfer of this data?
  - EC supported Task Force defining PSAP-RO data exchange requirements
    - Task Force led by Marko Jandrisits (ASFiNAG)
    - Task Force has provide draft recommendations recently – being sought from TF Chair and EC
    - Understood to not cover DG

Observations

- There are many existing and developing standards underpinning relevant technologies, applications, and potential services of interest
  - Electronic notification and identification technologies exist but deployment yet to become widespread
  - Freight Single Framework and ‘regulated commercial freight vehicles’ architectures under development
  - eCall HGV/DG looks like an obvious quick-win
  - SCUTUM/SMART-CM interesting developments

- Complex picture, with many parallel streams of development

Recommendations

- Telematics WG should reflect on application areas and priority of interest (roadmap) noting the presence of existing standards but also potential standards areas under development
- Establish a common data centric terminology for promotion into a number of these initiatives (i.e. provide views on appropriate data to support different DG applications for reuse by other initiatives):
  - Raise awareness in Freight Single Framework and Regulated Vehicle initiatives
  - Engage with eCall HGV PWI activity in CEN TC278 WG15 to ensure appropriate data set adopted, and business operational model appropriate.
  - Seek reviews of CEN DATEX, ISO 17687 to ensure alignment.
- Consider support for establishment of open framework to support DG applications in future

Thank You for Your Attention