

Federal Ministry of Transport, Building and Urban Development

Preparation of a study on dangerous goods
telematics

“Relevant standards as regards telematics applications”

HBC

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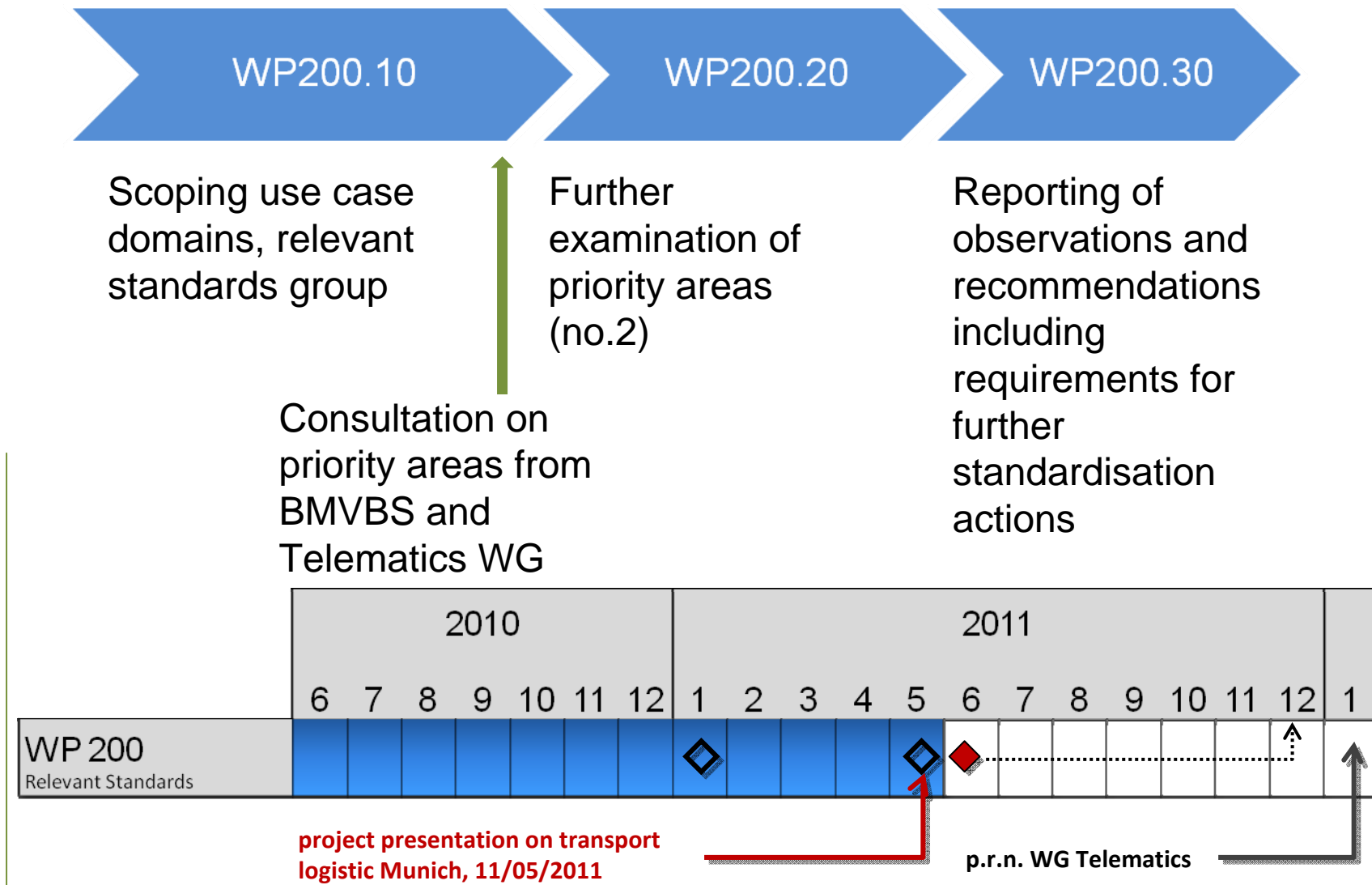
Key Messages

- ❖ 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
- ❖ There are obvious opportunities
 - eCall – for Dangerous Goods
 - Architecture
- ❖ There are some standardisation developments and linked deployments that should be of high interest

Contents

- ❖ Study on dangerous goods telematics WP200 Objectives & Methodology
- ❖ Overview of existing Standardisation
- ❖ Focus on Priority Topics – Emergency Response
 - eCall HGV/DG
 - Framework for applications for regulated vehicles
 - Content and identification ‘within vehicle’
- ❖ Conclusions

WP Approach



AP200 – Expected Results

- ❖ Review of areas of telematics 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

G/S1

Others...

AP200 – Expected Results

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Relevant Standards Activities

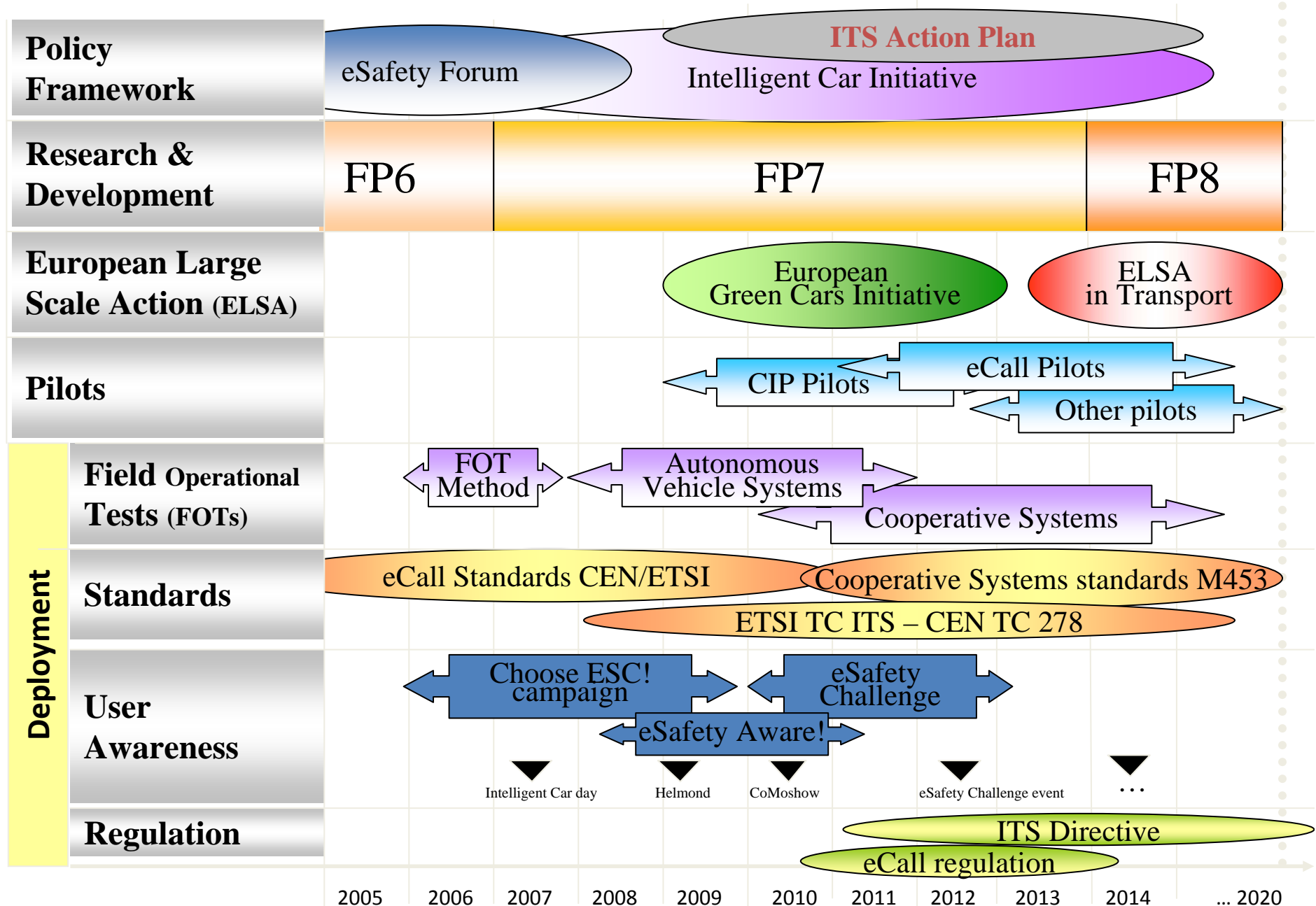
- ❖ Vast array of different standards for individual specified purposes
 - Standards for architecture(s), terms, processes, technologies, applications, testing

- ❖ Comments:
 - No overarching structure or defined relationships
 - No standards development masterplan
 - Individual standardisation communities promote their standards of interest
 - Communities often grow and enhance their scope – causing overlaps and boundary conflicts
 - No single lead organisation
 - Consistency and alignment
 - Broad attempt to ensure that no conflicts occur
 - Very challenging in a complex environment
 - Individually limited resources
 - No budget or remit for coordination
 - e.g. over 30,000 British Standards & 1,500 committees

Relevant Standards Activities

- ❖ In road transport telematics/Intelligent Transport Systems for DG transport there are no mandatory standards, yet
 - However note legislation such as the ITS Directive 2010/40/EU
- ❖ Summarizing:
 - There are many relevant existing and developing Standards
 - There are many relevant Standardisers
 - Don't assume coherence or a masterplan
- ❖ For this Research Project there was a need to focus on specific topics and domains of interest

Strategy ITS Deployment – EU Overview



WP200.10 Scope using 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
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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



Multi-Modal

- ❖ Little standardisation of overall processes so far
- ❖ Activities in G/S1, UN CEFAC, OASIS/UBL
- ❖ A number of facilitating technology standards exist
- ❖ Relevant activities in ISO TC204 WG7, ISO TC104 activities
- ❖ CEN Workshop Agreement on Smart Container Tagging (interference monitoring, pre-clearance) [**SMART-CM**]
- ❖ EFM (US) – eFreight (EU)



Monitoring & Enforcement



Monitoring & Enforcement

- Track & Trace
- Enforcement
- Required Authority documents



SCUTUM project: EGNOS services for dangerous goods transports

CEN Workshop Agreement:

- ❖ Commenced: 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

Limited 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
- ❖ Weak alignment with ADR/RID/ADR Regulations in Europe?
- ❖ Revision is required

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?]
 - eFreight, eRailFreight, SafeSeaNet
- ❖ Standardisation of these elements done in different communities, different Standardisation bodies & 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", ISO 26683-2 "IFreight 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

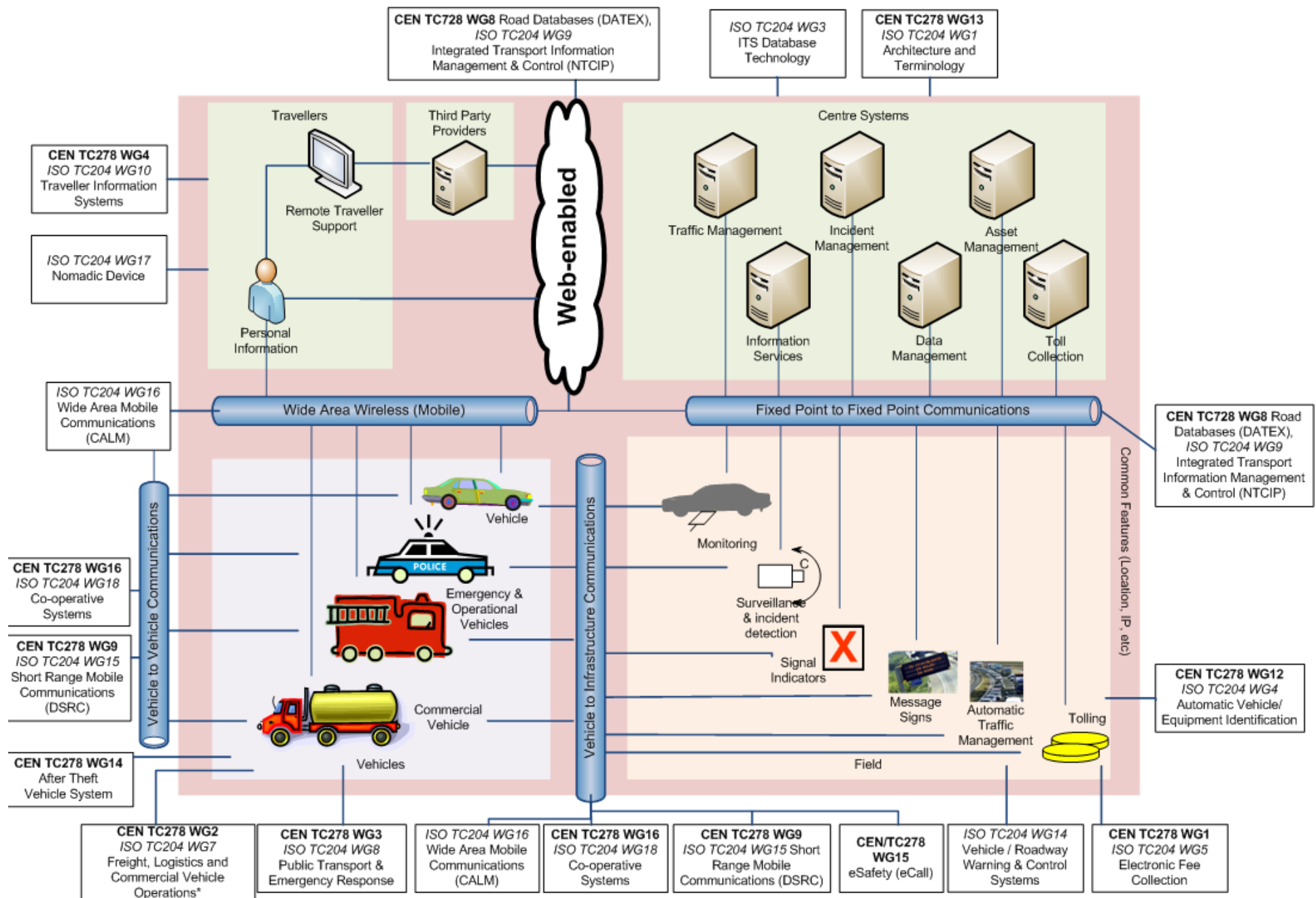
Payload
description

Load Status

Event /Status
description

Communications

Processes



Based on a design concept of AustRoads, 2010

Priority Topics

- ❖ eCall for HGV – Dangerous Goods
- ❖ Architecture
- ❖ On-board Data Agglomeration

Incident & Emergency Response

Incident & Emergency Response

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

Topic for standardisation:

- ❖ Line of sight communications
- ❖ Remote communications/notification
- ❖ Architecture
- ❖ Terminology/Data formats
- ❖ Back office system requirements

eCall



- ❖ Proposed pan-European **Location Enhanced Emergency Call Service**
- ❖ Enhancement using the existing 112 Emergency call service
- ❖ Under Standardisation by:
 - CEN/TC278 Working Group 15 eSafety (architecture, applications, data) and
 - ETSI (communications, comms. testing)
- ❖ Most of required Standards exist
- ❖ Memorandum of Understanding for Realisation of Interoperable In-Vehicle eCall has been signed by:
 - 20 European Member States
 - Over 100 other organisations
- ❖ ***European Commission seeking pan-European roll out in 2014?***

Standards related to eCall (1)

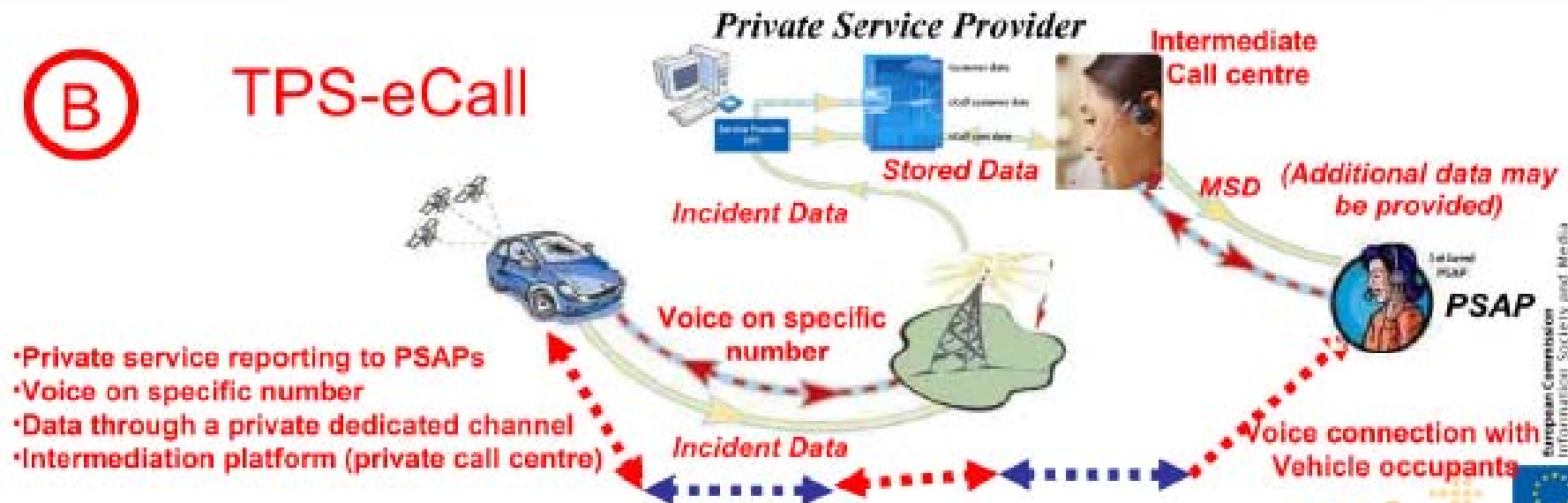
(A)

eCall: Pan-European in-vehicle emergency call



(B)

TPS-eCall



9/12/08 – TPS meeting



A

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

WI 278220

Pan-European eCall Operating Requirements (112-only)

High Level Application Protocols



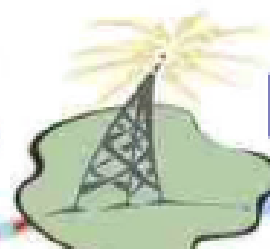
Car in incident

3GPP TS 22.101

-Voice + MSD on 112
Voice (112)

15722

MSD



3GPP TS 24.008,
Table 10.5.135d

eCall Flag

In-band modem trx

1st Level
PSAP



3GPP TS 26.267

"eCall Data Transfer -
General Description

3GPP TS 26.268

"eCall Data Transfer,
ANSI-C Reference Code

3GPP TS 26.269

"eCall Data Transfer,
Conformance testing

3GPP TS 26.989

"eCall Data Transfer,
Characterisation Report

ETSI-MSG & 3GPP. Chair: F. Courau

CEN TC 278 WG 15. Chair Bob Williams

Quality of Service Requirements for eCall and Emergency
Support Services

Courtesy of EC DG INFSO

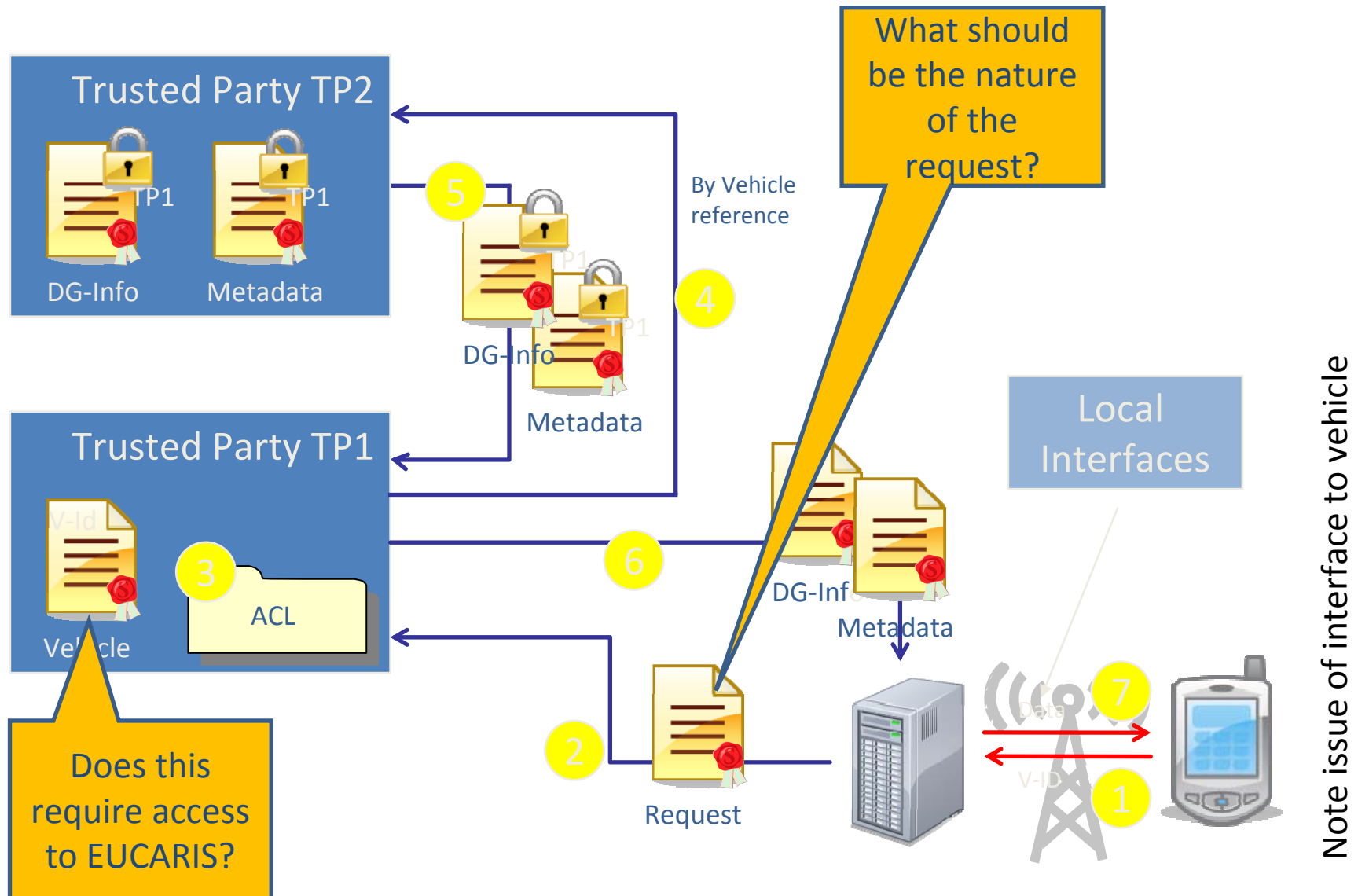
eCall – HGV (Dangerous Goods)



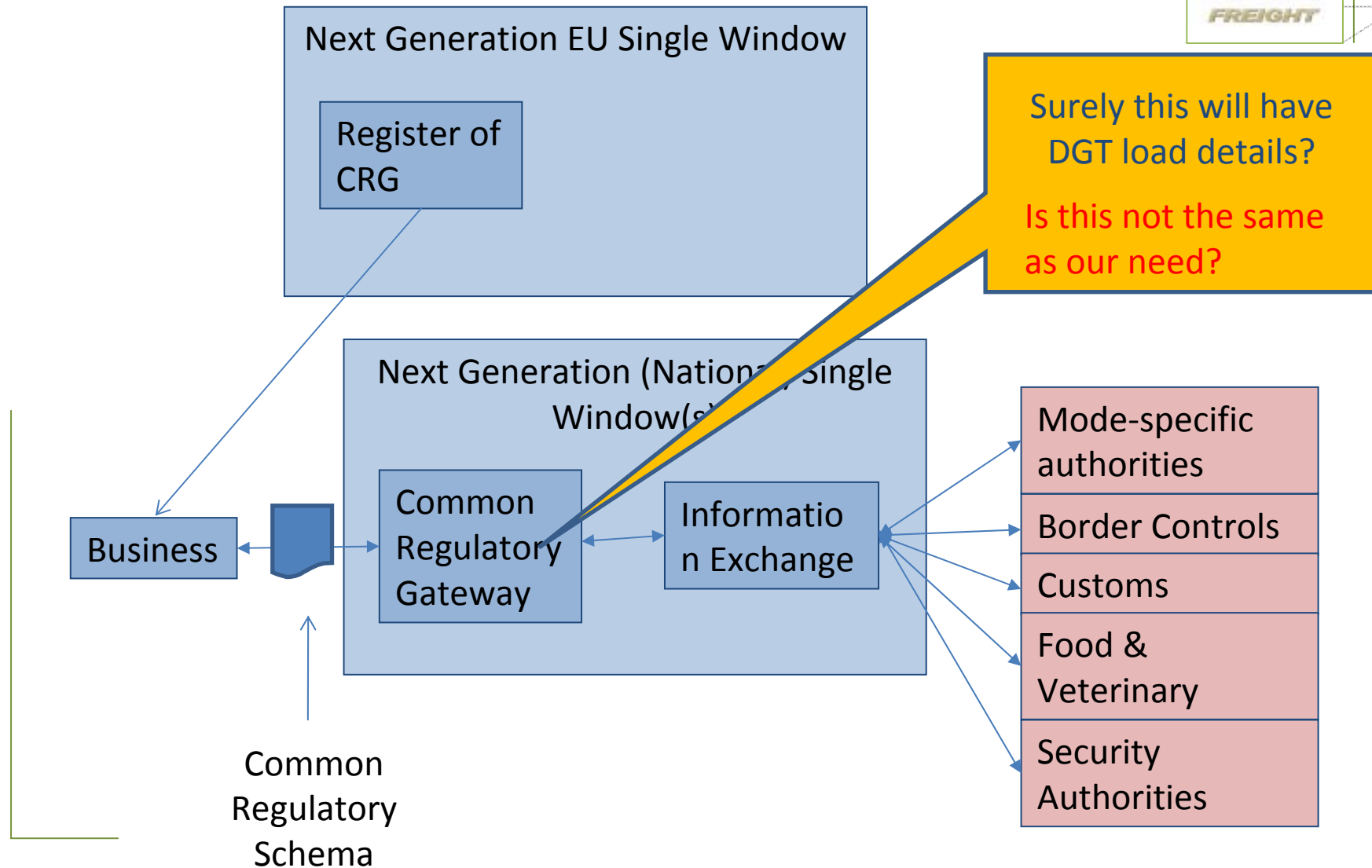
- ❖ The Research project has already promoted a dialogue between the Telematics Working Group and both the lead Standardiser (CEN/TC278 WG15) & the pan-European HeERO eCall project
- ❖ Preliminary Work Item (CEN / 278284)
 - ***Intelligent transport systems - eSafety - eCall additional optional data set for heavy goods vehicles eCall***
- ❖ Discussion on the requirements for use of eCall to support DG incident notification – on-going

Getting Access to Data

Communication between Control Centre and TP 1



eFreight – Next Generation EU Single Window

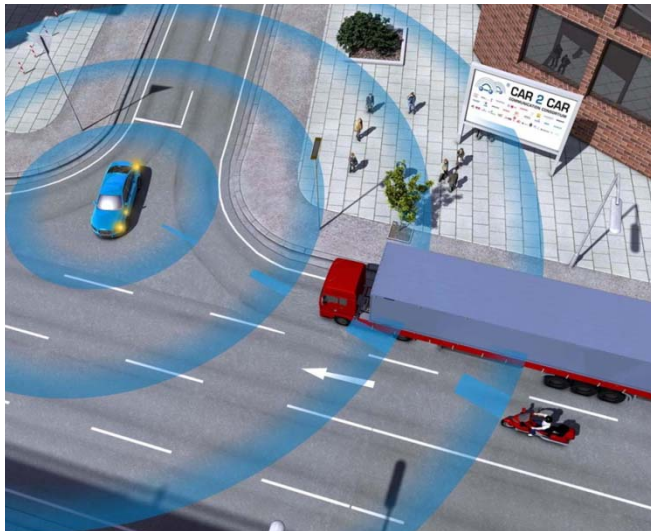


Philosophies (Technical → Business)

DSRC

Car2Car, ETSI, US, Japan...

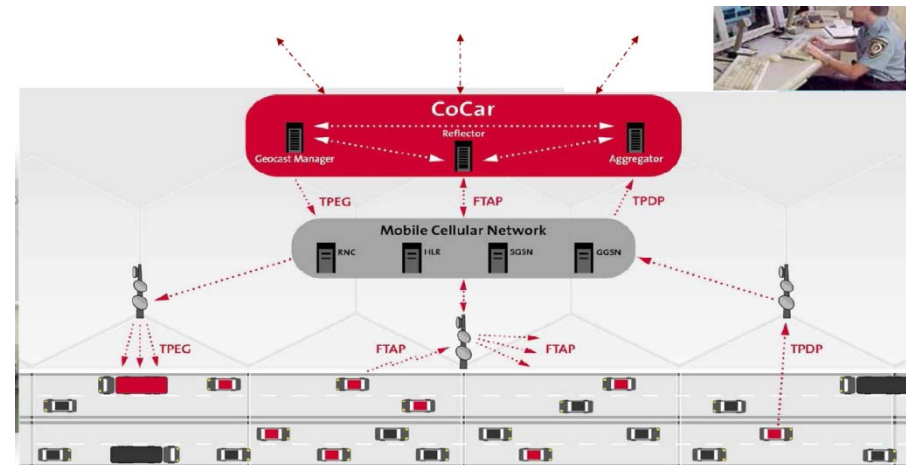
Reserach: CVIS, Pre-DRIVE, SafeSpot, Sartre, Inter-Safe 2, Intellidrive, ASV4...



LTE

Ericsson...

Reserach: COCAR (Instant Mobility)



Towards a true cooperative ITS | Public | © Ericsson AB 2011 | 2011-01-18 | Page 1



eFreight – eCall/ITS



- ❖ The eFreight community expressed a strong position that they see ITS and the Freight framework as separate
 - ❖ This makes some sense as eFreight has a trade and commerce focus
 - ❖ But the interfaces between the two architectures need to be well defined
 - ❖ And there will be a clear interaction between them



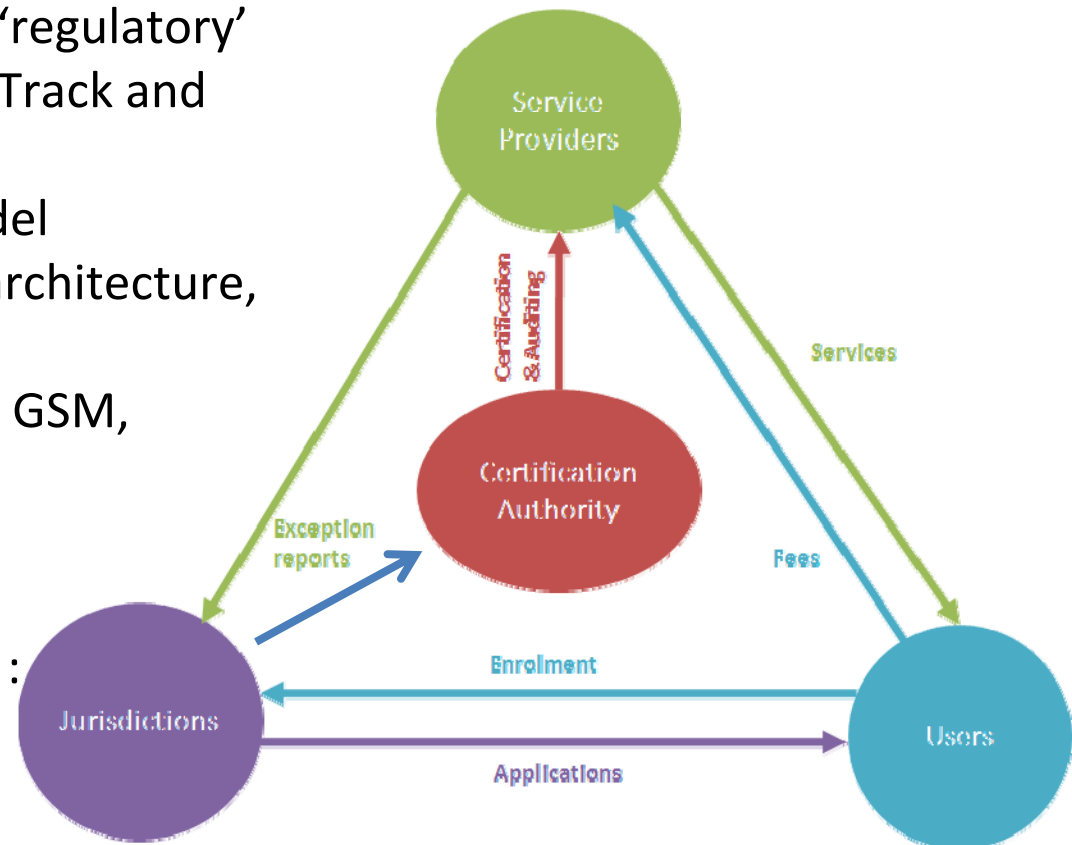
Architecture

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 vital:
 - Is a long term investment protection measure
 - Creates a good basis for integrating applications into a common architecture
 - Supports abstraction to specific communications channels as necessary

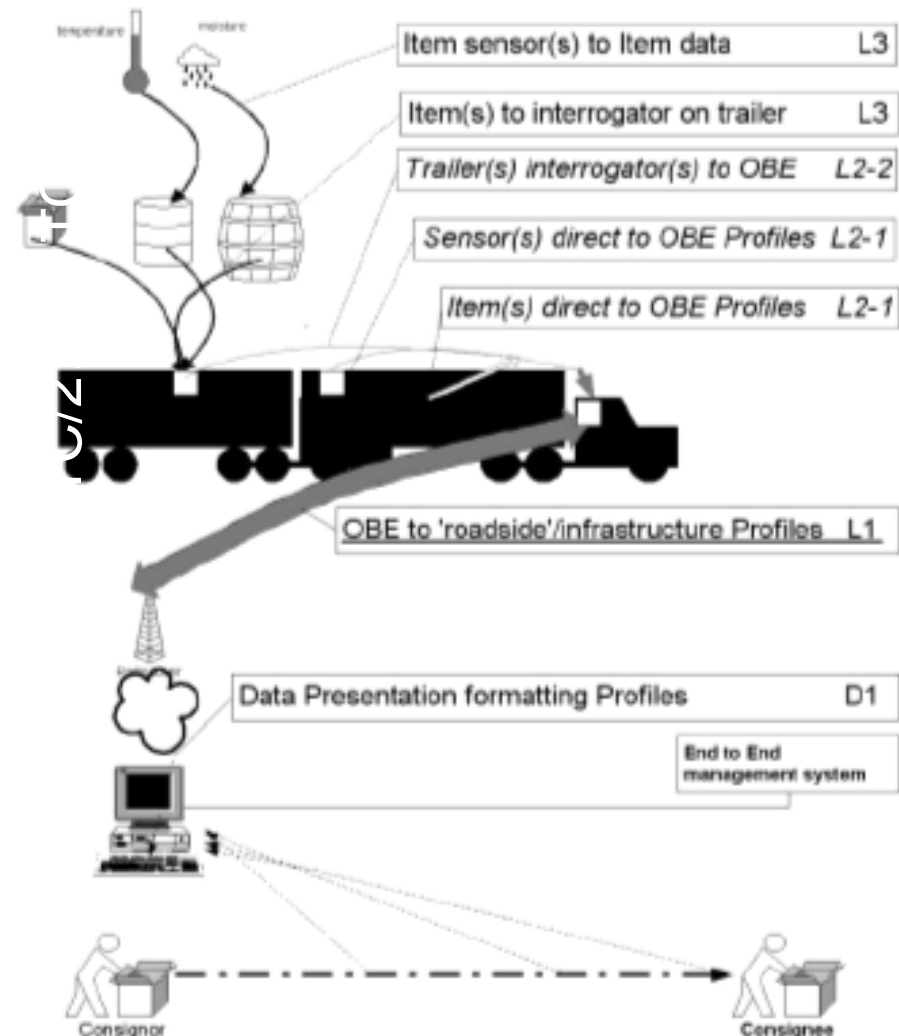
Supporting Architecture

- ❖ 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
- ❖ New Work Item supported by : AT, CZ, FR, DE, HU, NO, UK + 6 others incl. JP, US



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/PHS
 - ❖ ISO 18000-6 RFID



Linkages to Standardisation Organisations

- ❖ For ITS I would see CEN/TC278 European ITS Working Group 2 *Freight, Logistics and Commercial Vehicle Operations* as the natural point of contact
- ❖ CEN TC278 WG15 – *eSafety* – leads the eCall standardisation
- ❖ CEN TC278 WG8 – *Road Databases* – standardises the DATEX II model (WP500 link)
- ❖ ISO TC 204 WG7 is the ‘owner’ of:
 - ❖ ISO 17687 *Data dictionary and message sets for electronic identification and monitoring of hazardous materials/dangerous goods transportation*
 - ❖ WI ISO 15638 *Framework for collaborative telematics applications for regulated commercial freight vehicles*
 - ❖ ISO/TS 26683 *Freight land conveyance content identification and communication*
 - ❖ CEN TC278 WG2 is establishing a symbiotic relationship with WG7
- ❖ eFreight has strong relations with G/S1, OASIS/UBL
- ❖ What about the linkages to eRailFreight, TAP-TSI, (IATA eFreight), SSN, inland waterway incident notification etc?

Linkages to Standardisation Organisations

- ❖ There needs to be a plan for engagement
 - ❖ What form of engagement does the TWG/BMVBS seek? To what end?
 - ❖ Promotion/review of the WP500 Data Model across several domains
 - ❖ Promotion of the Data Model as the definitive data modelling reference
 - ❖ Promotion of a single reusable data usage across multiple domains
 - ❖ Dialogue with Standards groups about where their developments/deployments could be of interest to the TWG/DGT Regulations

Conclusions

- ❖ Many relevant existing and developing standards exist
- ❖ Regulation of Telematics in Dangerous Goods Transport needs to consider which domains & application areas are priorities & its approach to engagement with Standards bodies
- ❖ 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 HeERO/CEN TC278 WG15 to ensure appropriate data set adopted, and business operational model appropriate
 - Consider review and input into existing standards (e.g. ISO 17687) to ensure alignment.
- ❖ Consider support for establishment of open framework to support DG applications in future

HBC

Thank You for Your Attention

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