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

Dr Jon Harrod Booth
Harrod Booth Consulting
Chairman, British Standards EPL/278
“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

WP200.10

Scoping use case domains, relevant standards group

Further examination of priority areas (no.2)

Consultation on priority areas from BMVBS and Telematics WG

WP200.20

Reporting of observations and recommendations including requirements for further standardisation actions

WP200.30

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
AP200 – Expected Results

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- Deliverable: Overview report plus recommendations – future actions
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...
AP200 – Expected Results

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  - Identification of standards and standards needs for priority areas

- Deliverable: Overview report plus recommendations – future actions
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**
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**Architecture/Framework**

**Common terminology/ Common concepts**

- Classification
- Identification
- Location
- Payload description
- Load Status
- Event / Status description
- Communications
- Processes
**Freight / Commercial**

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

**Multi-Modal**
- Very little standardisation of overall processes so far
- Activities in GS1, UN CEFAC, 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]

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

- 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?
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

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
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
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
Remote notification
Incident scene data access
Incident management
Additional information sourcing
Information dissemination
Standards related to eCall (1)

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
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

Wireless Interface 278220 (WI 278220)
Pan-European eCall Operating Requirements (112-only)

High Level Application Protocols

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

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

Quality of Service Requirements for eCall and Emergency Support Services

ETSI-MSG & 3GPP. Chair: F. Courau
CEN TC 278 WG 15. Chair Bob Williams

Courtesy of EC DG INFSO
eCall – CEN Standards

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

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>Status</th>
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<tbody>
<tr>
<td>CEN/TS 15722:2009</td>
<td>Road transport and traffic telematics - ESafety - ECall minimum set of data (MSD)</td>
<td>TS</td>
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</table>

- Current Active Work Items

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

<table>
<thead>
<tr>
<th>No.</th>
<th>INFORMATION</th>
<th>WHO IS IT FOR?</th>
<th>AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Entry in the transport document or documents attached to the transport document</td>
<td>Public authorities</td>
<td>In case of incident/accident</td>
</tr>
<tr>
<td>2.</td>
<td>UN number; Proper Shipping Name; Technical name (if req); Class (for Class 7); Code (for Class 1); Packing Group; Number &amp; type of packages; Total quantity of DG Empty uncleaned packagings; Multi-compartment tank; Elevated temperature; Temp control/stabilized; Net Quantity (Class 1)</td>
<td>Emergency responders</td>
<td></td>
</tr>
</tbody>
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What would “who does what” table imply?

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”?

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<td>prEN 15969</td>
<td>Tanks for transport of dangerous goods - Digital interface for the data transfer between tank vehicle and with stationary facilities</td>
</tr>
<tr>
<td>EN 15208:2007</td>
<td>Tanks for transport of dangerous goods - Sealed parcel delivery systems - Working principles and interface specifications</td>
</tr>
</tbody>
</table>

- 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