## Economic Commission for Europe

Inland Transport Committee

### Working Party on the Transport of Dangerous Goods

**Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods**
Bern, 22–26 March 2010
Item 6 of the provisional agenda
**Reports of informal working groups**

# Report of the working group on telematics

## Joint document from Germany and the secretariat of OTIF transmitted on behalf of the working group

## Addendum

This addendum includes the presentation referred to in paragraphs 16 and 18 of informal document INF.11, annex 1 (Report of the 5th meeting of the working group on telematics)

EasyWay

# ECE/TRANS WG Telematics

## Arcachon
## 14-16 October 2009

www.easyway-its.eu

## What lies beyond the table?

**The informal WG Telematics has created a *Who does what?* table defining actors vs. data being used in the DGT process**

**The table is structured but consists of *natural language* descriptions, suitable for *human readers***

**The – electronic, *formal representation* of the – data is or may be used by telematics *systems***

**How would the content of the table have to be processed to enable regulations of the use of such systems to improve safety and security of Dangerous Goods Transport?**

- Prescribe the use of such systems during DGT?
- Prescribe mandatory characteristics & behaviour?
- Prescribe capabilities/interfaces that ensure interoperability?
- Prescribe data structures used in interactions between such systems?

**In principle, all statements make sense and can be based on the table as a starting point!**

## Domains of DGT telematics

**It is obvious that different parts of the table address different aspects / phases of DGT**

**These different phases – may – have different requirements regarding telematics systems**

**The following "domains" of DGT had been identified during the discussions in Munich:**

- Electronic consignment note
  - Existing developments, e.g. *eRailFreight* for rail
- Tracing & Tracking
  (with direct link to traffic management & enforcement)
  - For safety
  - For security
- Incident Management
  - Local information needs (on-site emergency services) in soft real-time (<< 1 minute latency)



## Layers of system architecture

**Regulatory frameworks like ADR / ADN / RID apply to the *business processes* of domain stakeholders; e.g.**

- Procure equipment to operate dangerous goods transports
- Handle electronic consignment note along route
- Perform emergency services in case of an incident
- ...

**During these processes, actors rely on (telematics) *services provided by systems***

**Systems interoperate via services and *interfaces***

**Their interoperability is achieved by compliance to *standards* which is verified via *certification* procedures**

**Services and their interfaces are described in terms of**

- Their *functionality* (also called *behaviour*)
- The *data* they provide / consume

## Contextual requirements

**Telematics systems may interfere with existing DGT requirements (e.g. for electrical equipment in general)**

**Requirements from regulations of the respective mode of transport**

**From eGovernment , e.g. for *electronic data interchange* in XML (not necessarily internationally harmonised yet!)**

**DGT requirements should be aligned with overall ITS framework conditions**

- ITS Action Plan of the European Commission and associated proposal for a directive on ITS
- National ITS architectures
- Freight & logistics market conditions
- Existing relevant developments: eRailFreight, RIS
- DG is sensitive data ⇒ IT security & data protection requirements



## What needs to be considered

**Which of the named architectural layers to address?**

**Business process requirements**

- Where and when in DGT process is the use of telematics systems subject to regulation
- Show up win-win situations with stakeholders' business needs

**System capability requirements**

- What minimum functionality is mandatory

**Interface and interoperability requirements**

- Which systems do require interoperability interfaces (e.g. with systems of emergency forces)
- What data do these systems exchange

**The 'canonical' next step for the matrix would be to start *bottom-up with a data model* and accompany this activity with a *top-down study on a suitable architectural framework***

## Relationship table – data model (1)

### Not all columns of the table directly relate to a data model

- *WHEN IST IT NEEDED* is aimed at process modelling
- Meta data can be captured in the model (e.g. in UML in a *"profile"*)

### The semantics of *WHO IS IT FOR* needs to be clarified

- It is certainly a statement of positive requirement
- Is a lacking entry a requirement for non disclosure or just a lack of need?
- Does an "O" mean optional or conditional access?

### Some elements required for a data model are not in the table

- Attribute multiplicity (once or multiple)
- Data types (= value space of attributes)
  - Intent to avoid free text attributes ⇒ prescriptive use of "codes" (= enumeration types) as far as possible
- Logical grouping of (related) attributes into data record
- Positioning requirements (addressed only implicitly!)



## Relationship table – data model (2)

### Transformation of table into a (data) model

- Is labour intensive
- Should be formalised rather than "ad-hoc"
- Needs to be repeated after each table update!
- … thus, would call for a software or at least software supported solution
- Alternatively, the table could be seen as a one-off approach that would be replaced by a model (i.e. After approval of model, the model would be maintained rather than the table)

### Questions:

- Should non-data (e.g. process related) content of the table also be captured in a (non-data) model?
- What would be appropriate methods and *"languages"* to specify such a model (especially with a focus on regulation rather than engineering)?

## Table and EasyWay / DATEX II

**DATEX II would benefit from improved model elements regarding dangerous goods transport (for the purpose of improved traffic management & information services)**

**Embedding a (data)model for DGT into DATEX II has the advantage of building on a European standardisation activity**

**An initial mapping would be rather straight forward**

- Columns WHAT IS IT FOR and INFORMATION map to *definition*; *name* should be deduced
- WHEN IS IT NEEDED and HOW IS IT PROVIDED? May also contribute to *definition*
- Data types are implicit or derived from HOW IS IT PROVIDED?
- A/B/C grouping can be mapped to packages



## Proposal (1)

**"Scoping Study"**

- … is not a pilot system!
- Produces guidelines / recommendations on how to develop specific regulatory requirements for ITS / Telematics
- Should produce
  - A high level modelling of stakeholders and business processes behind the *Who does what* spreadsheet
  - An architectural framework model to structure the domain from the perspective of DGT regulations
  - A conceptual model of (sub-)systems and the services they provide to each other, with the service interfaces forming the prime layer of interoperability
  - An analysis of applicable standards and recommendations on their use for DGT, including a concept for system and component certification
  - A domain model for DGT data derived directly from the *Who does what* spreadsheet
  - Use Cases for the four identified application domains in DGT, e.g. incident management scenarios

# Proposal (2)

## Team skill preferences

- DGT expertise to drive requirements
- IT skills: networks & distributed systems, architecture, security
- Business process modelling
- Standardisation
- All modes of inland transport represented, especially with logistics background
- Multi-national background welcome

## Suggested time frame: 12 to 18 months