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)
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*
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!)

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)?
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 straightforward

- 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
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**