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
Geneva, 12-16 September 2022
Item 11 of the provisional agenda
Any other business

14 September 2022

Telematics for the carriage of dangerous goods

Transmitted by the experts from France, Germany and Italy

Joint Meeting Session September 2022

Telematic

Mandate proposed by th EC and adopted by Joint Meeting

I. TERMS OF REFERENCE OF THE INFORMAL WORKING GROUP ON THE USE OF TELEMATICS FOR THE CARRIAGE OF DANGEROUS GOODS

The working group shall:

1. Consider what information provided by telematics enhances the safety and security of the transport of dangerous goods and facilitates such transport. In particular, consider who might benefit from the provision of such information and in what way, having regard, inter alia, to: consignors, transport operators, emergency responders, enforcers, regulators;

2. Consider necessary parameters for telematics systemsm, and examine if existing systems meet these parameters and what further developments might be necessary;

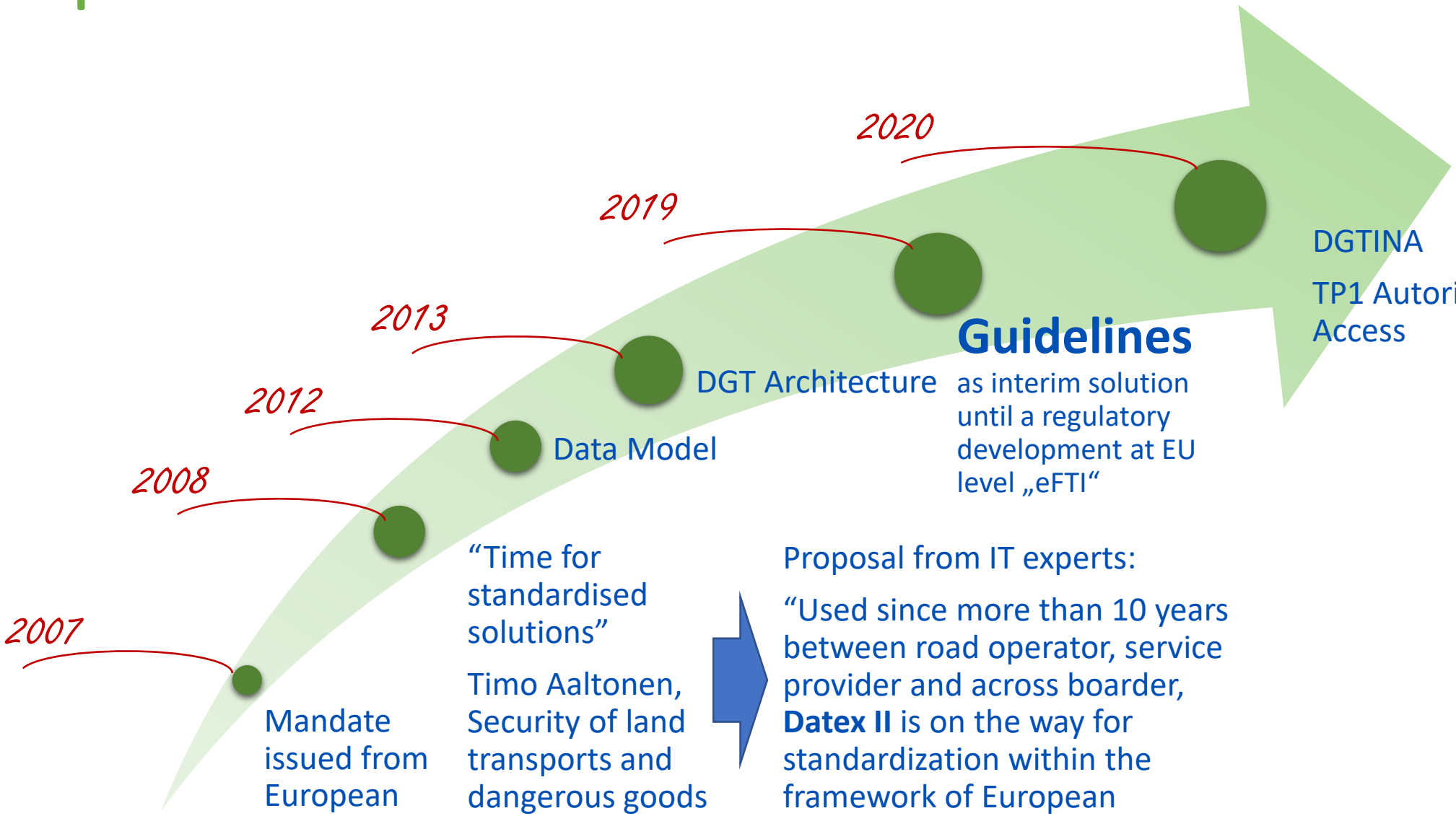
3. Consider the cost/benefit analysis of utilising telematics for the purposes identified above;

4. Consider what procedures/responsibilities might be necessary to monitor the information captured by telematics and how access to data should be controlled; and

5. Consider interfaces and synergy with other systems.

- https://unece.org/DAM/trans/doc/2007/wp15ac1/ECE-TRANS-WP15-AC1-108a3e.pdf

Important milestones



Joint Meeting (Telematic WG), where we are now

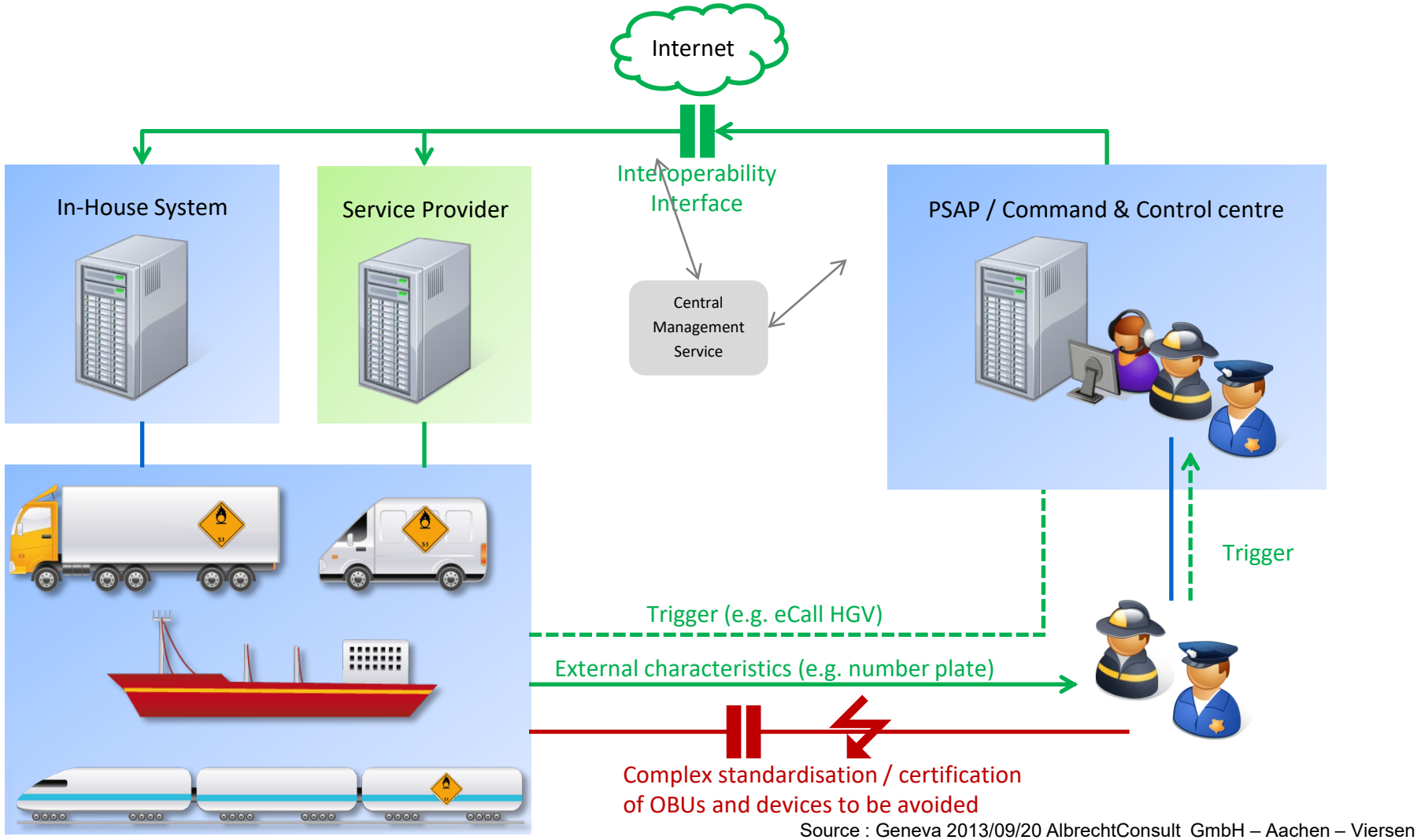
Fundamental basis of the work

- Mandate followed:
  - Enhancing the safety and security of the transport of dangerous goods
  - Considering who might benefit from the provision of such information
- European standard (Datex II) used to inherite the extension mechanism
- An architecture approved by the Joint Meeting designed
- European and national projects used to consolidate the work
- Take into account some arising evolution (eCall, Digital tachograph, derailment detection, …)

Mandatory needs regarding safety

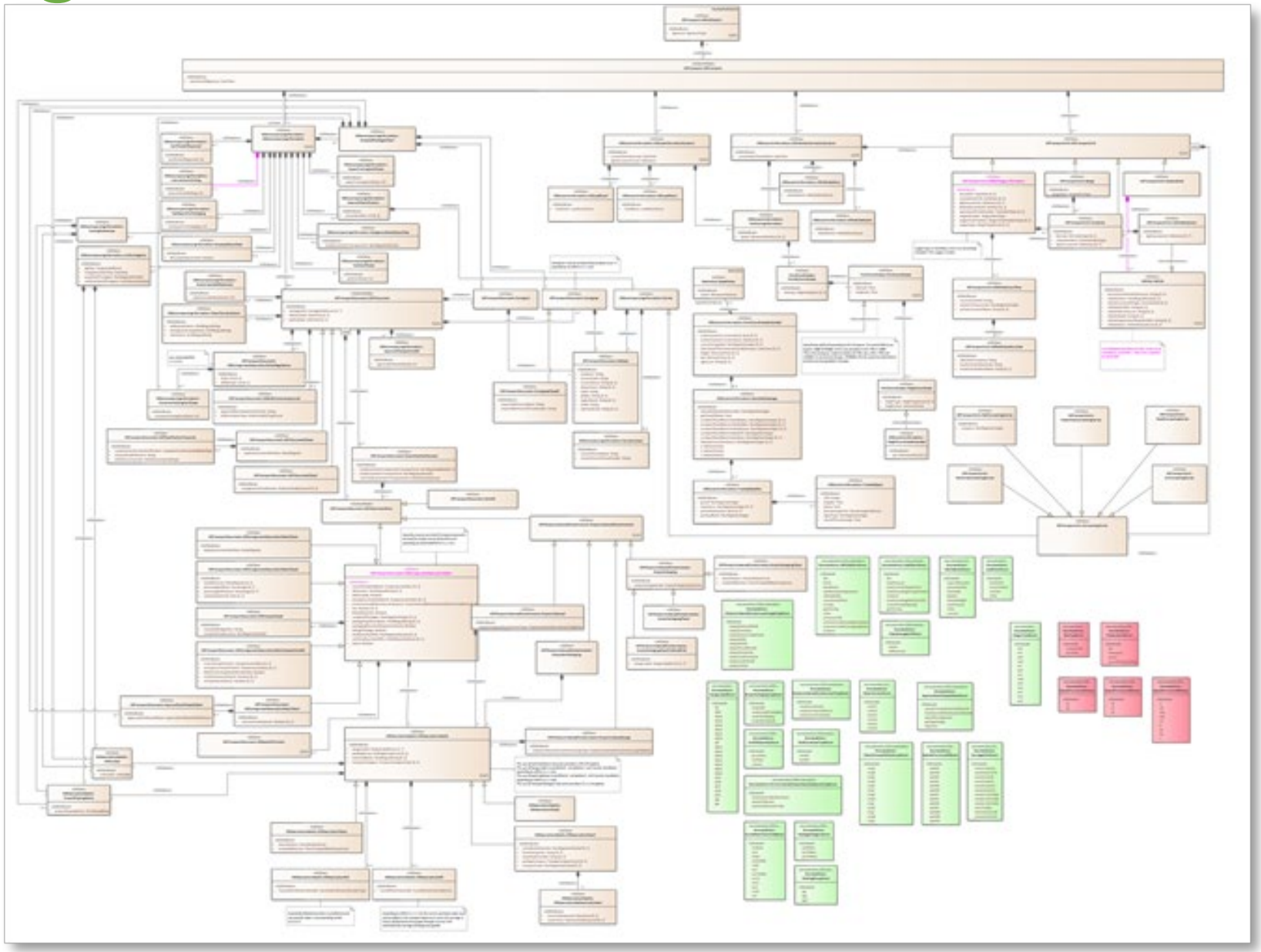
- Identification of visible transport unit characteristics as metadata (like number plate, Wagon ID, Barge ENI number, BIC …)
- Enable the use of eCall to decrease the response time for emergency responders in case of automatic alerts (eCall is using VIN of road vehicle)
- Enable the use of Digital Tachograph as source of the VIN to access via the metadata registry to the information
- **Remote access** to the document
    1. Road/rail control situation: The controlling authority is in physical proximity to the vehicle to be checked and starts querying the freight information on-site via visible characteristics as ‘metadata’. The driver does not have to intervene, and the transport operation does not have to be stopped for this. When checks are made in marshalling yards, there are often no train drivers present.
    2. Emergency situation: Emergency services in the command centre are informed of an accident involving freight transport. Observers present at the scene (parties involved in the accident, police etc.) send visible characteristics – as ‘metadata’.

Architecture principles



Source : Geneva 2013/09/20 AlbrechtConsult GmbH – Aachen – Viersen

Data model as digital twin of the DG regulation



ARCHITECTURE basic points with regard to dangerous goods

- No regulations for authorities or emergency responders : Their internal behaviour and how they make use of the system is entirely up to them
- Existing public key infrastructure would be used
- Internet backbone
- Two level « trusted party » interface:

1. **Access provider** named also **TP1**
   - Provided by an official organisation (Authority or certified body)
   - Provides services for Access control
   - Management of trusted certification bodies
   - Management of black lists Management of roles and rights
   - Registration of certificates
   - Stores service end-points, metadata (vehicle IDs…) and related attributes for each DG transport
2. **Content provider** named also **TP2**
   - May be provided by an company in house system or a service provider
   - Stores transport related DG information (transport documents, certificates, dynamic data) and metadata (e.g. vehicle ID) for the time of transport

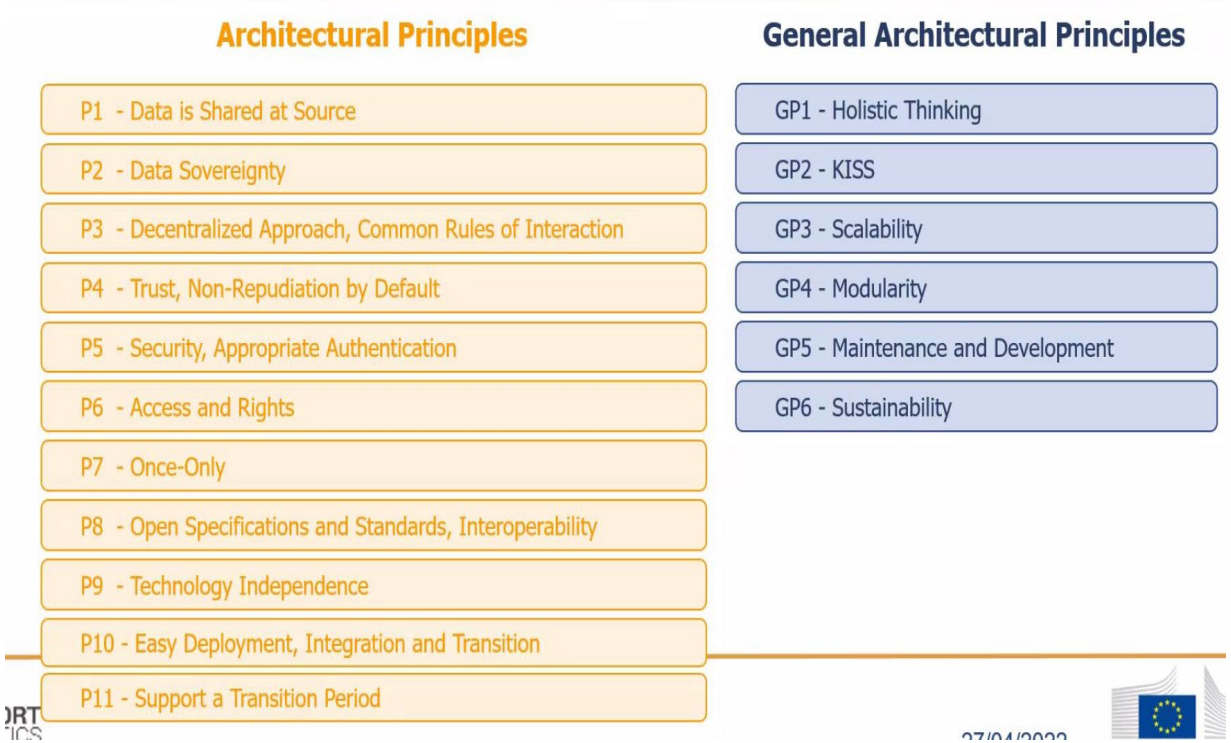
September 2019 : Guidelines, data model and exchange mechanism

- https://unece.org/DAM/trans/doc/2019/dgwp15ac1/ECE-TRANS-WP15-AC1-156e.pdf
- https://unece.org/DAM/trans/doc/2019/dgwp15ac1/ECE-TRANS-WP15-AC1-2019-44e.pdf
- Data model and exchange mechanism: **github.com/dgtina**
  - Data modelling uses the Datex II principles especially to inherit the extension mechanism which help for interoperability even some dedicated needs have been implemented between some stakeholders
  - Interoperability with TAF-TSI has be done within the European project CORE
  - Deployments are on going and costs figures issued from GeoTransMD are confirmed until now

Convergence with eFTI

Architecture principles eFTI / eDGTI

EFTI proposals

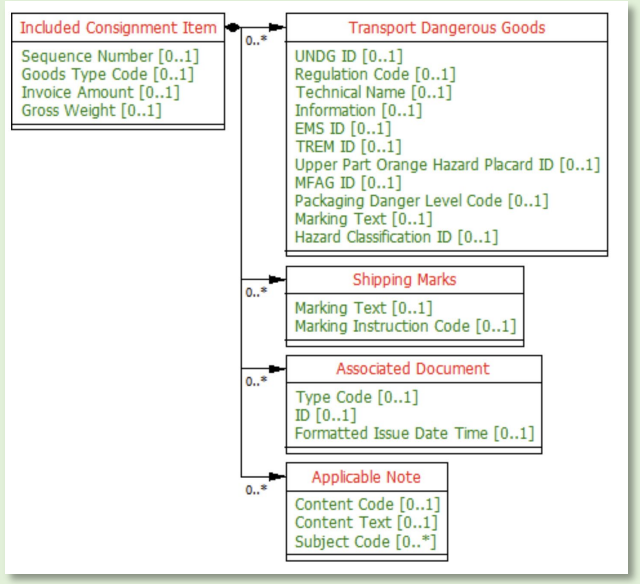


UNECE Architecture for DG Transport

- P1 - TP2 is “source” of the data
- P2 & P6 - TP2 respond with the data seen as needed for competent authorities (CA) which are requesting through the TP1
- P3 - TP1/TP2 are decentralised with common rules
- P4 - Trust, non-repudiation by design with trusted partners and the logs
- P5 & P6 - Double authentication among TP1-TP1, TP1-TP2, TP1-CA
- P7 - Data are filled once only at TP2 level
- P8 - Open specifications & standards
- P11 - Support transition period

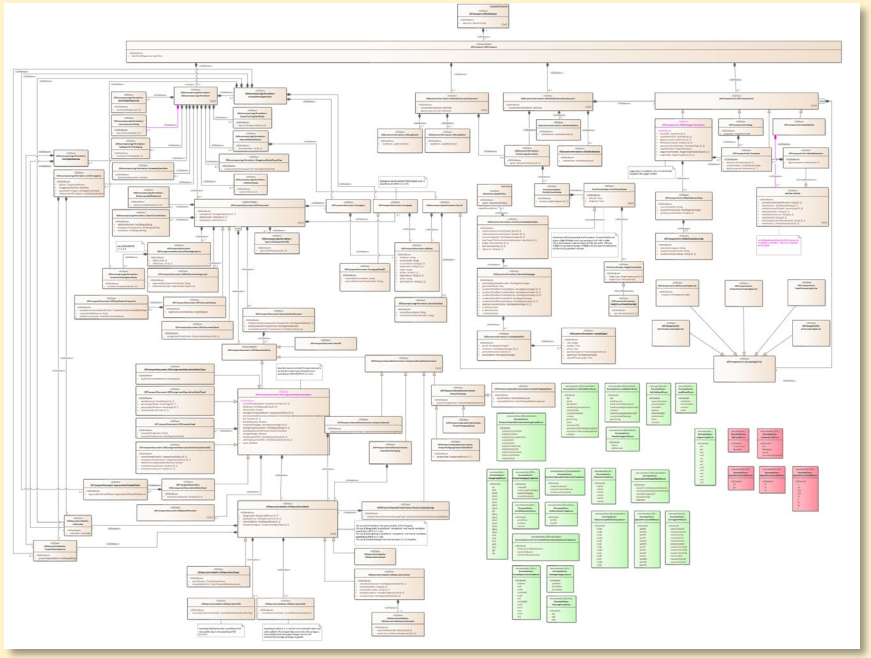
Change of Modeling Paradigm

Trade-based UN/CEFACT Model

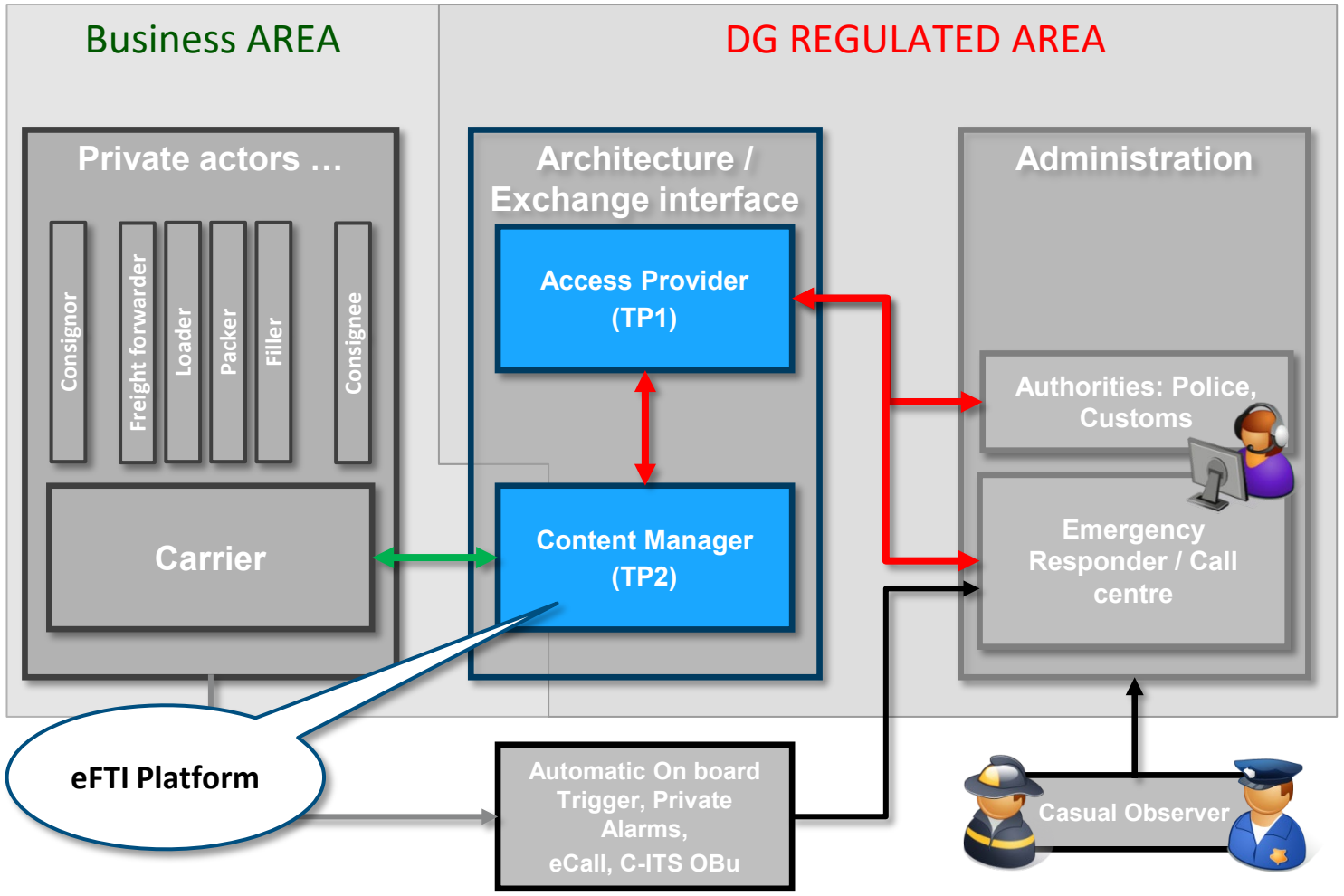


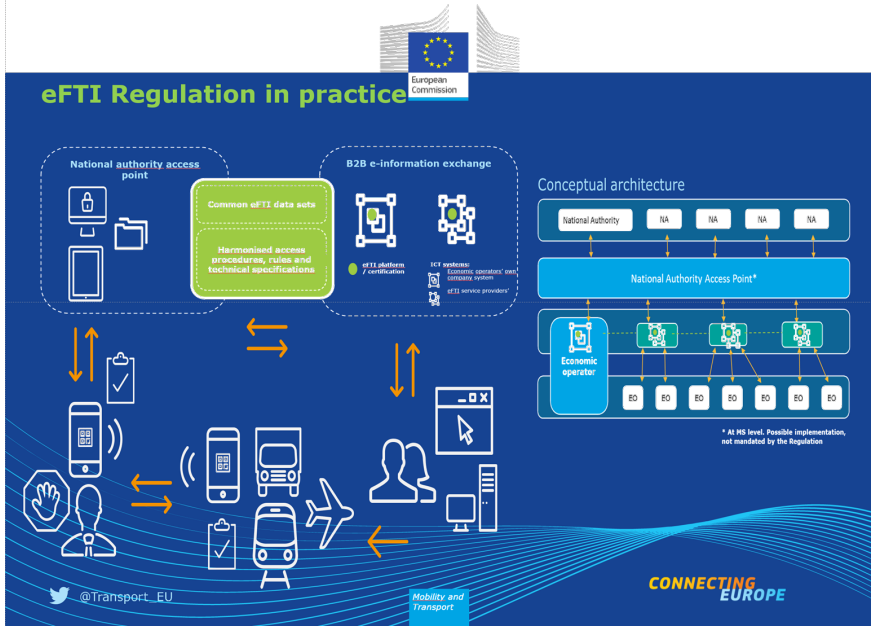
eFTI approach to describe eFTI data requirements

Regulatory UNECE Model as digital twin of RID/ADR/ADN



High-level architectures
Future eDGTI Architecture





- ***Access Provider (TP1)***
  could be seen as a
  National Authority access point

- ***Content Manager (TP2)***
  could be seen as a
  B2A e-information exchange/eFTI platform

Last development within DTLF

- Progress has been made:
  - eFTI Data set will integrate:
    - all the mandatory attributes, classes and enumerations
    - also the conditional ones depending the type of transport
    - included the empty uncleaned packages
  - Metadata will be seen as important data to be taken into account (that is the “transport unit” part of the eDGTI data model)
  - Mechanism to integrate further evolution according to the changes in the regulation will be looked at

DTLF analised architectures

Overview of Scenarios

- Scenario 1 - NAP With Pull from CA
- Scenario 2 - NAP with Push Metadata
- Scenario 3 - No Access Point
- Scenario 4 - NAP and Update Dispatch Mechanism
- Scenario 5 - Share encrypt eFTI Dataset
- Scenario 6 - Extended NAP with Push Metadata
- Scenario 7 - Extensible NAP with NAP service options for MS

Main system components discussed to ensure required EFTI functionality

- Identification & Authentication mechanism
- Authorization mechanism
- Data set unique identification
- National Access Point (NAP) (similar to a TP1) gives access to the eFTI platforms (similar to a TP2) where the data are located
- Access Point (AP) is for competent authority to access the NAP
- Search mechanism
- Metadata registry
- Update dispatch mechanism
- Encryption

Learned from eFTI architecture Options

- Most Architecture Options include eFTI NAP (similar to TP1)
- Important:
  - A Metadata Registry (MR) only has benefits if all eFTI NAPs use an MR with identically specified metadata, so that data can be queried internationally. Otherwise, in checks of a goods vehicle from a country that does not include transport metadata in its NAP, the eFTI data cannot be queried via the vehicle identification number (e.g. sourced from the digital tachograph) or the licence number.
  - Inspectors would be reliant on assistance from the driver, just as they are today. In this case, digitalization would only add costs, not value. If this vehicle is involved in an accident and the driver is non-responsive, no risk appraisal can be performed for the emergency services by ascertaining what freight is being carried.

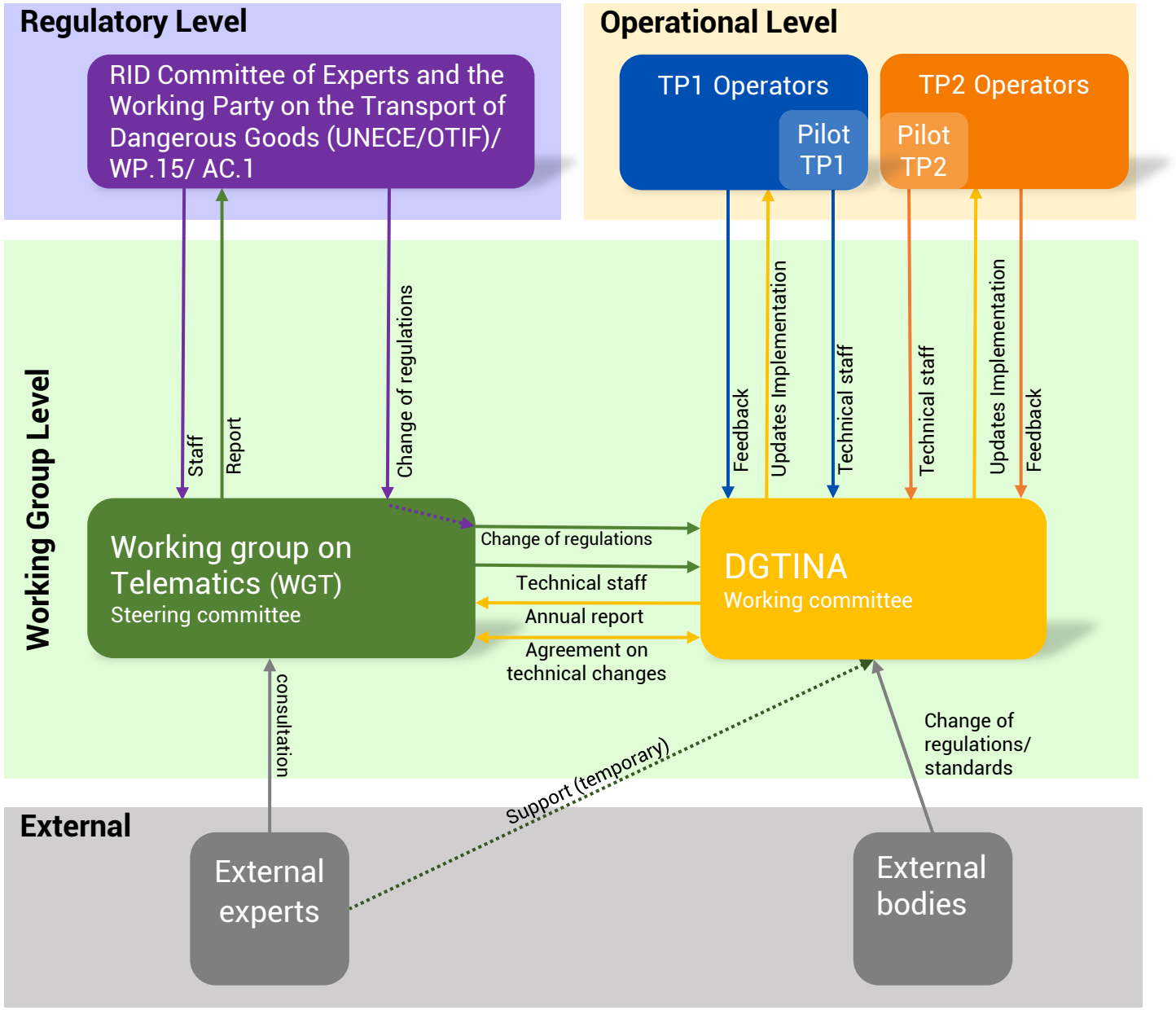
Data model

Open aspects

- Finalisation of the model of eFTI in order to include:
  - Special provisions
  - Calculation in accordance of 1.1.3.6
  - Empty uncleaned packaging
  - …
- Capability to evolve every 2 years and to take into account the national provisions

Suggested Maintenance mechanism

- A look to the procedure within TAF-TSI could be also usefull



Conclusion and perspectives

Conclusions

a. We recommend the full use of the guidelines for the use of 5.4.0.2 in RID/ADR/ADN developed by the joint meeting
-> good input for the eFTI architecture and for governance (rule set)

b. We recommend a data model in compliance with the data model developed by the Joint Meeting and linked to the mentioned guidelines. If the new development under eFTI require a new format the new data model should nevertheless contain all the data contained and their dependencies covered in the data model developed by the Joint Meeting in order to ensure compliance with the RID ADR ADN regulations.
-> solved on 09th September. Approach agreed.

c. TDG information shall be accessible remotely through national access point (similar to the TP1 interfaces described in the guidelines) in order to improve the delay to access the information for authorities; in particular it has to be noted that the guidelines as provided by the Joint meeting and applied inter-alia in France and Germany already allow this functionality.
-> several MS see the necessity (DE, FR wrote it in their statement related to the eFTI architecure options paper)

d. To consider the establishment of an updating system of the data model in close relation to the joint meeting to take into account the biannual evolution of the regulations

Thank you for your attention

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