



API Standardisation

Contribution to the discussion on API at
UN/CEFACT Forum 26th April 2021



Project for Transport T&T at VDA/Odette

- ❑ Goal: Increase transparency in transport processes of automotive supply chains, especially by connecting also smaller partners
- ❑ Stakeholders: OEMs, suppliers, transport service providers, IT service providers
- ❑ Agreed foundations:
 - Automotive supply chain transport process model
 - UN/CEFACT CCL semantic artefacts
 - UN/CEFACT RDM2API draft recommendations for technology



First feedback

- ❑ The UN/CEFACT RDM2API draft documents provide a good and comprehensive technological basis for API development.
- ❑ It is not yet clear (to us), how exactly the exported RDM data will look like. <https://edi3.org/vocabulary/unece-context.jsonld>



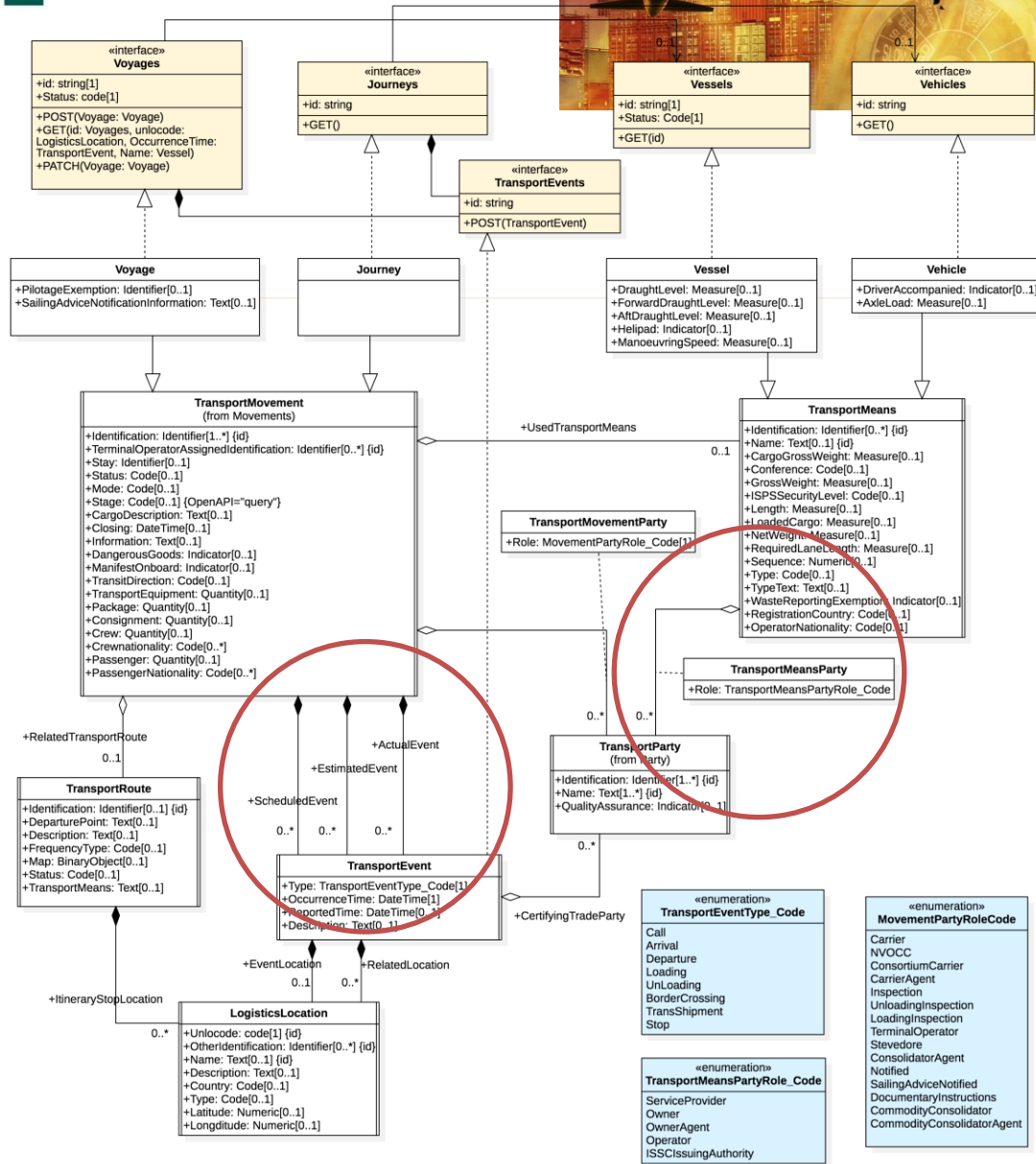
Hypothesis

- ❑ There are standard processes in international trade and transport that should be supported by globally standardised API services.
- ❑ However, other business processes in different industries or different regions run along different routes or patterns. Therefore, they often need different information patterns.
- ❑ Basic semantic units are often the same, but their combination and usage in a specific business process differs often from other processes.
- ❑ Reference Data Models (e.g. SCRDM) try to address this situation by developing “Master Models” containing all possible information blocks and leave it then to the users to define an appropriate profile (subset) for their processes.
- ❑ For API solutions, these huge artefacts are hardly usable. A toolbox of standardised building blocks (semantic units) is needed, which can be combined flexibly according to business process needs.



Hypothesis

- ❑ Explicit documentation of semantics e.g. in EDI guidelines or document centric or hierarchical data structures is a good way of explaining and enabling conformance to specific business process requirements.
- ❑ From an IT implementation perspective, it is not the best way (unless a customised hierarchical database is used).
- ❑ restAPI are intended to provide a quick and easy to implement access to information systems and their data storage.
- ❑ For API solutions, a library of standardised data structures (ABIE) using qualifying attributes (type code, role code, etc.) rather than explicit names seems to be the best way to combine standardised semantics with ease of implementation (one also has to avoid arbitrary decisions). However, the “semantic intelligence” of the RDM must be preserved at all cost.

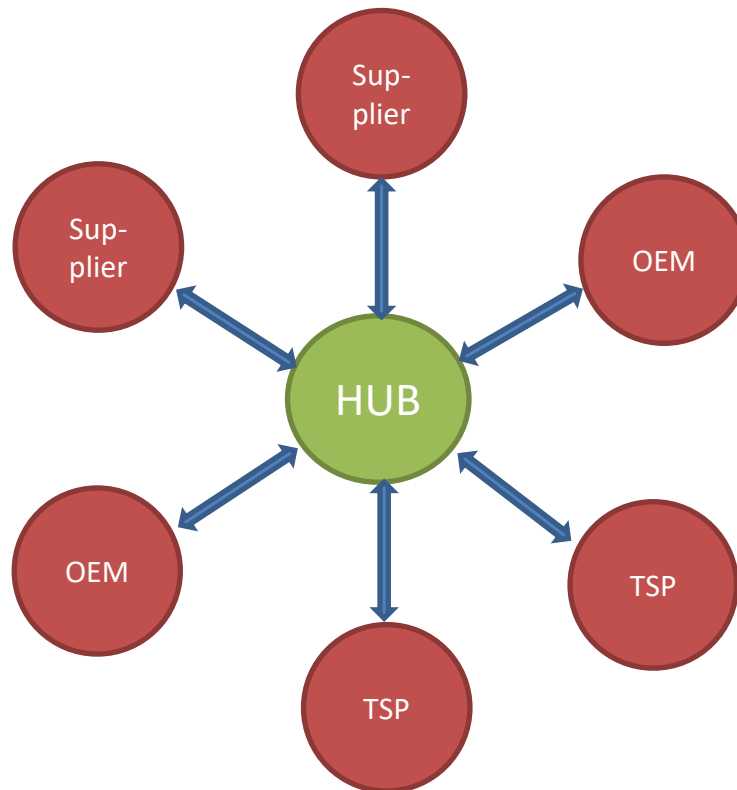


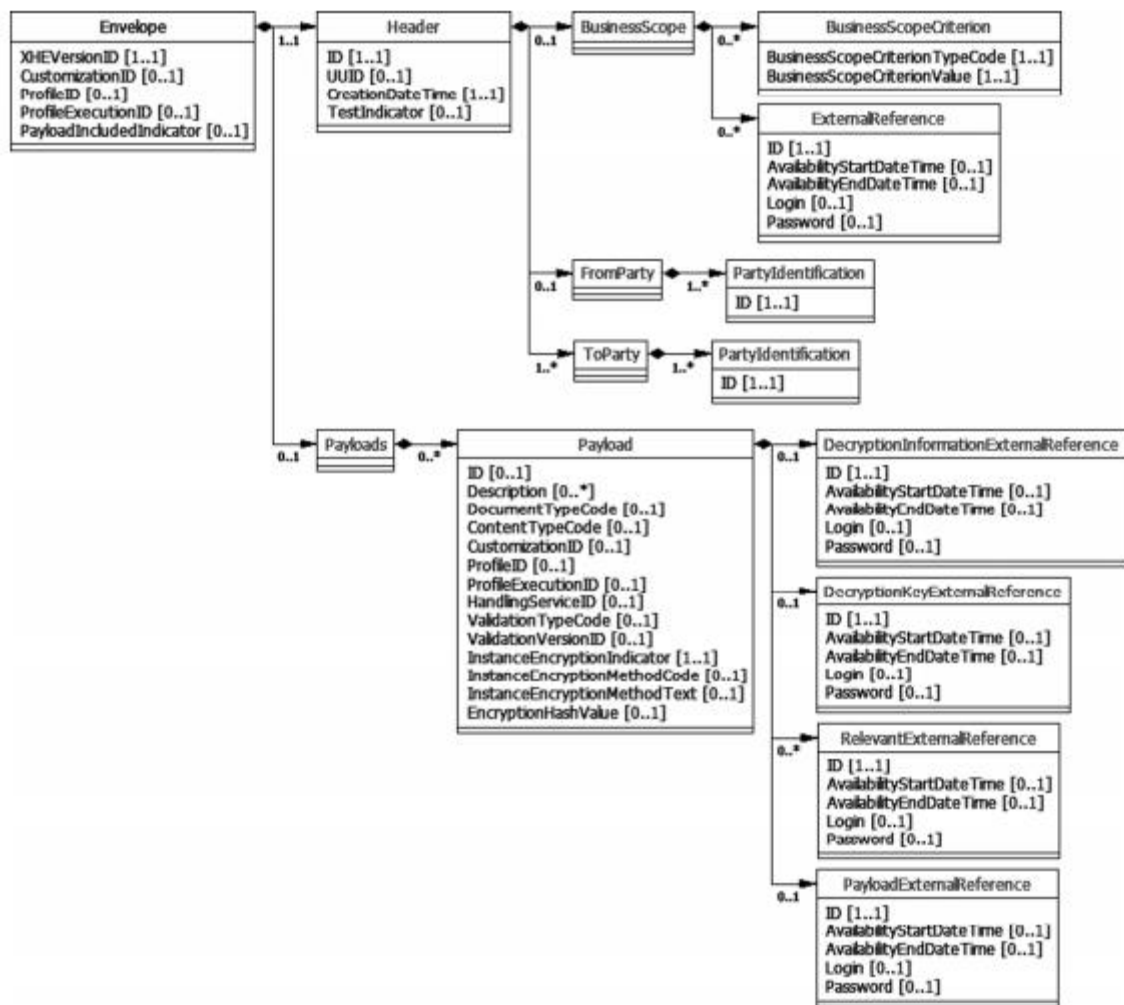
From draft rdm2api UML profile document



Architecture

- ❑ Support for hub-spoke models is needed. Can XHE be used for this?
- ❑ Flexible implementation of linked data necessary (aggregation (link), where possible, but composition (include) available as well).







Standardisation at UN/CEFACT

- ❑ The above mentioned open questions need to be addressed to complete the technical specifications of the “how”.
- ❑ For standard processes in international trade and transport we should jointly develop standard API (similar to the Single Window approach).
- ❑ For business process, regional or industry specific processes we should provide and maintain a universal toolbox enabling solution developers to implement/support various processes using the same data structures / artefacts.
- ❑ Experts from the automotive industry are prepared to collaborate in UN/CEFACT projects aiming for the development of globally standardised API as means of trade facilitation and digitalisation.



GETTING PRACTICAL

ODETTE

Automotive MVP



Path	Operation	Status	Description
/consignments	GET	M	Returns a list of consignment Ids; filter to be applied
/consignments/{ident}	POST	M	Creates a new object and provides the available data. The ID is assigned by Ship-from and must be globally unique (e.g. using a data identifier 2K + Odette ID or DUNS + number). Only consignments that have been created reliably and have assigned to a permanent shipment ID shall be posted.
	PATCH	M	Changes or adds parts of an existing consignment (e.g. referenced events)
	GET	M	Returns all information on the identified consignment.
/consignment-items	GET	M	Returns a list of consignment item Ids; filter to be applied
/consignment-items/{ident}	PUT	M	Provides/replaces the complete information for the consignment item. It is assumed that the consignment has been posted before and had contained at least the unique IDs of the consignment items. For each of these IDs the system has generated an empty record or a record with the provided data.
	PATCH	M	Changes or adds parts of an existing consignment item.
	GET	M	Returns the details if the identified consignment item.
/transport-events	POST	M	Creates an empty event object and returns the id.
	GET	M	Returns a list of event IDs; filter to be applied.
/transport-events/{ident}	PUT	M	Provides/replaces the complete information for the event. The identifier had to be created before with a POST operation.
	GET	M	Returns the details of the identified event.
/transport-capacity-reservations	POST	O	Creates an empty object and returns the ID.
	GET	O	Returns a list of Capacity reservation IDs; filter to be applied.
/transport-capacity-reservations/{ident}	PUT	O	Provides/replaces the complete information for the reservation. The identifier had to be created before with a POST operation.
	GET	O	Returns a list of reservation IDs; filter to be applied.
/transport-equipments	GET	O	Returns a list of equipment IDs; filter to be applied.
/transport-equipments/{ident}	GET	O	Returns the details of the identified equipment.
/transport-means	GET	O	Returns a list of means of transport IDs; filter to be applied.
/transport-means/{ident}	GET	O	Returns the details of the identified means of transport.
/transport-movements	GET	O	Returns a list of transport movement IDs; filter to be applied.
/transport-movements/{ident}	GET	O	Returns the details of the identified transport movement.

