

Buyers and Sellers may finally know where their goods are!

by Hanane Becha, Todd Frazier, Mikael Lind, Jaco Voorspuij

UN/CEFACT have released the Business Requirement Specification document for “INTEGRATED TRACK AND TRACE FOR MULTI-MODAL TRANSPORTATION”.

The multi-modal transport system aims to serve the buyers and sellers in realising their business transaction, but many beneficial cargo owners experience the transport chain as a “black box”. There is hope, however, that this situation may soon be resolved. Digital service providers and transport operators have developed a new business requirement specification (BRS) document on “Integrated Track and Trace for Multi-modal Transportation”. [UN/CEFACT issued the press released](#) recently. This document provides a standards-based approach to creating tracking and tracing solutions for goods transported between a Seller and a Buyer regardless of mode of transport used and types of goods transported. This new BRS, which is strictly speaking not a standard but rather a guideline on how to apply standards, builds upon the following two fundamentals:

- THERE IS NO NEED FOR NEW STANDARDS: Proven global data standards can deliver seamless integrated tracking and tracing in multi-modal transport networks already.
- The proposed approach is applicable for all Sellers and Buyers in all sectors, trades, types of goods and modes of transport.

Problem: Where are my goods?

End-users of transportation services (such as Sellers and Buyers) are raising their expectations of the transport service providers to require better quality, more visibility, additional services and more control of their supply chain.

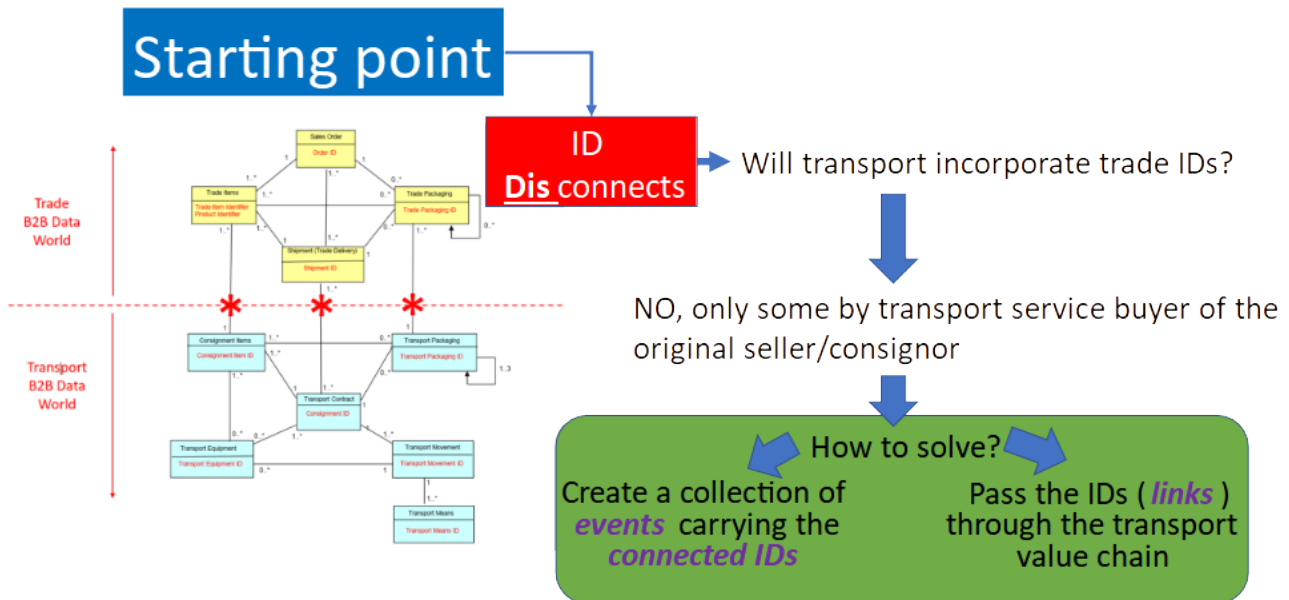
One of the most persistent challenges for stakeholders owning goods or waiting for goods to be delivered is the fact that very few have reliable, timely information that answers their main question of “*Where are my Goods?*”.

Regardless how the goods are packaged (in a box, pallet, container, etc.), there is a need to know where the goods are. Without that knowledge, supply chain managers are effectively blind, lack situational awareness and are unable to really control their supply chains and the value chains depending on those supply chains. Without this knowledge, stakeholders have been forced to establish buffer capacity in the supply chain network to be able to deliver enough service quality to their customer. This in turn drives higher prices. Now we are moving toward a higher degree of transparency in the multi-modal supply chain providing a better decision-basis for sellers and buyers.

Focus on linking identifiers rather than on creating new standards

The main obstacle to fulfilling these end-user expectations is a disconnect between the identifiers used in the Trade domain by the Sellers and Buyers and the identifiers used by stakeholders active in the Transport domain.

Trade and Transport identity disconnects



The BRS responds to the following main question: “How do we enable the Trade Parties to have visibility across all the transport movements, unless the primary identification in the Sales Order Contract is also carried throughout the related transportation (sub-)contracts?”

There is an abundance of identifiers in both trade and transport domains. Generally, each party uses its own identifiers without linking those identifiers with identifications that have been assigned and used in previous steps of the journey of the goods from seller to buyer (stakeholders often ignoring identifiers from others).

The BRS aims to provide an approach and guidance on how stakeholders involved in the movement of goods between Seller and Buyer may capture and communicate the relevant identifiers in a consistent way to achieve seamless tracking and tracing throughout the life cycle of the trade shipment.

[Extensive research](#) pursued by experts at UN/CEFACT showed that for all identifiers relevant for multi-modal transport, well-established global data standard (GDS) identification schemes exist¹. Stakeholders may continue to use the identifiers they are familiar with as long as those identifiers are globally unique. Alternatively, they may also adopt the GDS identifiers. The UN/CEFACT aim is to link the identifiers, not necessarily to replace existing identifiers. The research also showed that proven global data standards exist for the exchange of event information (which responds to the question “Where are my Goods?”) among large groups of very different stakeholders that may be dispersed all over the globe. Therefore, the BRS concludes there is **no need to develop new standards** to achieve seamless tracking and tracing of goods travelling from seller to buyer.

The approach described in the BRS can accommodate track and trace for any single mode of transport or between multiple modes of transport. This however, does not preclude future innovations or technologies that may facilitate an enhanced methodology.

¹ Organisations like IMO, ISO, GS1, BIC and others provide globally unique identifiers for Vessels, Products, Organisations, Locations, intermodal containers and much more.

The need for common language and focus on supply chain events

The BRS focuses on establishing a common language among the stakeholders to be able to discuss how to achieve effective tracking and tracing together. The stakeholders currently use many different terms for the same objects and sometimes the same term but with a different meaning. Without a common understanding about the most basic terms, it is next to impossible to create coherent and consistent track and trace solutions across participants.

The basis for all tracking and tracing is the Event that captures where something happened, when it happened, what object/entity it related to and also the business context (why it happened). The most relevant identifiers will be captured with the Event and connected with each other. Multiple Events may be captured for goods, transport units, transport equipment, transport means, documents and any other "entity" that may be identified uniquely (using global data standards).

Linking supply chain events in chains

The series of the Events provides a full history of the whereabouts of a uniquely identified object and thus also provides the answer to the "Where are my Goods?" question, as well as to the question "Where is my asset?". To be able to find all relevant Events in the full history/collection of Events, these Events must be linked or linkable. This is achieved by ensuring that (where needed) any identifiers created for a subsequent step in the goods journey are linked to the identifiers used in the current (or previous) step within the Event posted to the full history.

Using the links in each Event, you can traverse the Chain of Events to learn about the full history related to the object of interest. The Chain of Events is part of the overall Shipment Data Pipeline related to the Sales Order Contract (Trade transaction) between Seller and Buyer.

Because the Chain of Events relies on each stakeholder creating a new Event on the Chain using the common global data standard identifiers and/or linking any newly created identifiers to the ones used previously, the BRS proposes an 8-step approach. Stakeholders involved in supply chains and transport and logistics networks may use this to jointly map out the critical Events and the critical data-elements (identifiers) to be captured in an individual Event:

1. Collect visibility goals and requirements
2. Document business process flows
3. Break each process flow into series of discrete steps
4. Decide which business steps require visibility events
5. Model completion of each step as a visibility event
6. Decide which data to include in the visibility event
7. Determine vocabularies to populate each data field
8. Document visibility events in a visibility matrix

The proposed approach is generic and may be used for all types of goods sold/bought between Sellers and Buyers in all sectors or trades and travelling on any and all modes of transport. Using the above approach will ensure that stakeholders in the Trade and Transport domains who are involved in the activities related to the Sales Order Contract and the associated execution of that contract will be able to link the relevant

identifiers at each step in the process. To be able to follow the proposed approach, it is imperative that they have agreed on the common language required for the discussions.

Recommendations

The BRS recommends the following to develop effective and efficient track and trace solutions that are independent of sector, type of goods, mode of transport, and individual organisations.

1. Use global data standard identifiers that are widely adopted by business. This will achieve the technical requirement that identifiers **must** be unique when used in Multi-Modal Track and Trace environments.
2. Adopt a common language for discussing the requirements and objectives for the Track and Trace solutions. The BRS provides a starting point. In case further details are needed, the UN/CEFACT semantics and Core Components Library may provide a “neutral” basis for the common language.
3. Use the proposed approach to “map out” the (minimum) requirements for the Track and Trace solution. In general, it is wise to start simply.

Final words – the value of the BRS in a larger setting

A standard on track and trace is crucial to achieve enhanced precision in delivery times. Knowing where the goods are, and thereby opening up the “black box” of transport, is of great value and the necessary step towards enhanced transparency and synchronization along multi-modal supply chains. This is important for sellers and buyers as well as for logistics service providers for them to deliver services with high quality. This also provides mitigation for emerging bottlenecks in the supply chain and a foundation for enhanced predictability of transport for seamless and sustainable multi-modal supply chains. For tracking and tracing where the journey between seller and buyer includes multiple modes of transport, various standards of the identifiers may be needed. In those cases, emerging technologies can be used, such as decentralized identifiers and verifiable credentials, to validate identification of the source data.

The BRS may be downloaded from <https://unece.org/sites/default/files/2022-09/BRS-IntegratedTrack-andTraceforMulti-ModalTransportationv0.1-Final.pdf>.

Note. UN/CEFACT experts participate as independent volunteer experts in their own right, without representing any special interests of their countries or institutions. The opinions expressed herein are the authors'; they are not necessarily those of their employers or organisations in which they are active.

Acknowledgement

The standards of UN/CEFACT are global, openly available, adopted by organisations voluntarily and developed collaboratively by volunteer experts forming a public-private partnership in support of trade facilitation and electronic business.

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