How universal track and trace capabilities will overcome current logistics inefficiencies

UN/CEFACT Supply Chain Cross-Industry Track & Trace Project Update

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The mission of this project: Where is the product at any time?

- Enable tracking and tracing of products (or assets) and information sharing in *standard* electronic format.
- Track and trace any *traded and identified items* including transport equipment or assets (e.g., box, pallet, container, etc. … Even empty!).
- Logistic services: transport the traded goods between the *seller* and the *buyer*.
Multiple deliveries? Where are my goods?

Smart containers? In which containers are my goods?

AIS service? In which vessel are my goods?

RFID tracking? In which containers are my goods?

Tracking the truck based on the driver cell phone? On which truck are my goods?

Where are my goods?
Track & Trace Project
Current Status and Deliverables

• Information gathering phase: Green Paper compiling concepts, scenarios, and use cases for all primary modes of transport - completed (82 pages)

Formal DELIVERABLES of the project:

• Published:
  • White Paper: “Integrated Track and Trace for Multi-Modal Transportation” presented to the 27th UN/CEFACT Plenary in April 2021

• In progress:
  • Business Requirements Specification (BRS) detailing the Business Processes of Cross Industry Track and Trace
  • Message structures (as class diagrams) for the business transactions and XML Schemas
Challenges and opportunities

- Numerous stakeholders can be involved in a single journey
- End users have increasing expectations due to technology progress
- Emergence of many digital data streams offering more visibility (smart containers, RFID, etc.)
- It is not possible to impose the usage of the same unique identifier to all logistic chain actors
- Many scenarios defining relationship of traded items, logistic units, transport and means of transportation
Global Trade – Semantic anchors

**Shipment (Trade Delivery)**

- A shipment is an identifiable collection of one or more Trade Items (available to be) transported together from the Seller (Original Consignor/Shipper) to the Buyer (Final/Ultimate Consignee):
  - A Shipment can only be destined for one Buyer
  - A Shipment can be made up of some or all Trade Items from one or more Sales Orders
  - A Shipment can have only one Customs UCR
  - A shipment may form part or all of a Consignment or may be transported in different Consignments.

**Consignment**

- A consignment is a separately identifiable collection of Consignment Items (available to be) transported from one Consignor to one Consignee via one or more modes of transport as specified in one single transport service contractual document:
  - A Consignment can only have one Transport Service Buyer
  - A Consignment can only have one Transport Service Provider
  - A Consignment can only have one Consignor
  - A Consignment can only have one Consignee
  - The Transport Service Buyer can be either the Consignor or the Consignee
  - A Consignment is made up of one or more Consignment Items
  - A Consignment can be made up of some or all Trade Items (aggregated into Consignment Items) from one or more Shipments
Trade and Transport identity gaps

Starting point

Will transport incorporate trade IDs?

NO, only some by transport service buyer of the original seller/consignor

How to solve?

Create a collection of events carrying the different IDs

Pass the IDs (links) through the transport value chain
ID GAPS in multimodal transport cases

<table>
<thead>
<tr>
<th>Transport Modes</th>
<th>Road</th>
<th>Rail</th>
<th>Maritime</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport Order S1</td>
<td>Transport Order T1</td>
<td>Transport Order U1</td>
<td>Transport Order W1</td>
<td></td>
</tr>
<tr>
<td>Consignment: W1</td>
<td>Consignment: X1</td>
<td>Consignment: Y1</td>
<td>Consignment: Z1</td>
<td></td>
</tr>
<tr>
<td>- Item A</td>
<td>- Item B</td>
<td>- Item C</td>
<td>- Item D</td>
<td></td>
</tr>
<tr>
<td>Truck</td>
<td>Wagon</td>
<td>Vessel</td>
<td>Plane</td>
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<tr>
<td>Container</td>
<td>Container</td>
<td>Container</td>
<td>ULD</td>
<td></td>
</tr>
<tr>
<td>Trs. Package: 1,2,3</td>
<td>Trs. Package: 3,4,5</td>
<td>Trs. Package: 6,7,8</td>
<td>Trs. Package: 9,10,11</td>
<td></td>
</tr>
<tr>
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<td>FRPAR (Paris)</td>
<td>DEHAM (Hamburg)</td>
<td>DEBCN (Burgkirchen)</td>
<td></td>
</tr>
</tbody>
</table>

Delivery/Shipmeht ID: SO-1
Delivery/Shipmeht ID: SO-2
Events are the basis of Track and Trace
Key Waypoints in a Data Pipeline

Waypoint 1
- **Parties**
  - Buyer
  - Seller
  - Loading Party
  - Ship To
- **Goods**
  - No Packages
  - Country of Origin
  - HS Code
  - Value of Goods
  - Description of Goods
  - Container Details
  - Container and Seal No

Waypoint 2
- **Parties**
- **Carrier**
- **Planned Delivery**
- **Goods**
  - Country of Export
  - Country of Destination
- **References**
  - Master Bill Number

Waypoint 3
- **Routing**
  - Port Call(s)
  - Port of Entry to EU / UK
  - Estimated Arrival Date
  - Arrival Location

Waypoint 4
- **Parties**
- **Actual Delivery Date**
- **Goods**
  - No Packages
  - Declared Amounts (if different)

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Events to capture the different IDs

1. Packing
2. Consolidation
3. Combining consignments
4. Loading consignment onto transport means
5. Unloading consignments from transport means
6. De-Consolidating Consignments
7. Shipment splitting event
Global standards for efficient T&T

Trade Shipment IDs <> Transport Shipment IDs

Transport Movem.  Transport Means  Transport Equip.

Consignment

Consignment Item  Consignment Item

HS codes

Trs. Package/Unit 1  Trs. Package/Unit 2  Trs. Package/Unit 3

Trade Delivery


Order 1  Order 2  Order 3  Order 4

Trade Item  Trade Item  Trade Item  Trade Item  Trade Item

product  product  product  product  product

e.g. GTIN

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Collaboration with Associations & Standards Development Organisations
Key messages

• Decentralized identifiers – accepting different IDs, as long the identifier is associated with a recognized standards body. This is referenced today in the UN/CEFACT MMTRDM

• UN/CEFACT MMT RDM already contains all required data elements

• Combining existing data elements in concert with using new digital technologies make it now possible to close the trade-transport gap and move closer toward operational and systems interoperability.

• Reuse existing standards unique identifiers (e.g. UNLOCODE, GS1, IATA, BIC, SMDG, IMO ) and event structure (e.g., EPCIS) to link these identifiers
Thank you

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