How to respond to ESG Challenges
For Cross-Border Sustainable Trade
10 May 2023 H-200, Palais des Nations, Geneva, Switzerland
Lunch & Learn Session

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Gerhard HEEMSKERK
Brett HYLAND
Maria Teresa PISANI
Agenda

• Presentation of the Team of Specialists on ESG Traceability

• Cross-Industry Integrated Track & Trace (Dr. Hanane Becha)
  • Using UN/CEFACT T&T standards for achieving ESG goals

• Standards supporting ESG goals (Gerhard Heemskerk)
  • Using UNCEFACT standards process descriptions, data models, code lists, recommendations

• Foundations for future digital product conformity systems
  • Testing inspection certification, digital connectivity, product related concept, conformity assessment, trusted conformity data
UN/CEFACT
Team of Specialists on ESG Traceability of Sustainable Value Chains in the Circular Economy

Secretary of the Team of Specialists
Maria Teresa Pisani
UN/CEFACT
Cross-Industry Integrated Track & Trace

Project Lead and Vice Chair, Transport & Logistics
Dr. Hanane BECHA
T&T scopes towards supporting ESG goals

Visibility of transport assets
Smart Containers project

Visibility of goods/products being multi-modal transported from seller to buyer
Cross Industry Supply Chain T&T UN/CEFACT project

Visibility of the ESG conditions under which products were made, and where they were made (especially raw materials).
  e.g., working conditions, use of chemicals.
Sustainable textile and leather traceability and transparency project
Product Sustainability Data becomes vital (e.g., EU DPP)
Cross Industry Supply Chain Track & Trace Project

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.
Challenges and opportunities

- Numerous stakeholders, large amount of information and multiple modes can be involved in a single journey
- End users and competent authorities have increasing expectations due to new regulations and 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 across all logistic chain actors
- Many scenarios defining relationship of traded items, logistic units, transport and means of transportation (consolidation, de-consolidations, incident, etc.)
Visibility of goods between seller and buyer

Where are my goods in the supply chain?

Multi-Modal Transport Service Providers

Orders

Despatch Note

Items
Global unique identifiers for transport assets

Identifier schemes of other standards organizations can be used within UN/CEFACT standards.
Transport events can provide information on:

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
Bringing worlds together: trade and transport

Consignment TA (transport shipment)
- Consignment Item 1
- Consignment Item 2
- Transport Unit 1
- Transport Unit 2
- Transport Unit 3

Shipment DA
- Package A
- Package B
- Order 1
  - Line 1: Item A
  - Line 2: Item B
  - Line 3: Item C
  - Line 4: Item D

Shipment DB
- Package C
- Order 2
  - Line 1: Item A
  - Line 2: Item B

Shipment DC
- Package D
- Package E
- Order 3
  - Line 1: Item A
  - Line 2: Item B
  - Line 3: Item C
  - Line 4: Item D
- Order 4
  - Line 1: Item A
  - Line 2: Item B
  - Line 3: Item C
  - Line 4: Item D

Transport Movement LIS-RDM
- Transport Means IMO-123
- Transport Equipment BIC 123
Why is integrated T&T difficult?

The disconnect between trade and transport views for the goods being transported using different modes of transport. e.g., Tracing the goods offer evidences of the place of origin of the products supporting ESG goals.

Stakeholders involved in trade and transportation of goods use terms and definitions in different ways. e.g., consignments versus trade deliveries (trade shipments)
Semantic anchors help to solve the disconnects

**Integrated T&T using 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.
Common terms and linking data is key

Linking shipments – means of transport – consignments - transport units – items - products

Visibility
All of the data elements required for supply chain track and trace are already in the UN/CEFACT Library.

Integrated T & T Project: conclusion
T & T and Transport related ESG data

- Reefer Monitoring
  - Reduced loss of goods
- CO2 emissions monitoring
- Custom clearance
  - Reduction of inspection delays
- Cargo security
  - Reduction of theft, counterfeiting
- Container terminal congestion monitoring
- Reduction of buffer stock and stock in transit
- Reduction of delivery time and cargo loss
- Process compliance
  - Reduction of fine occurrence
Our 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 MMT-RDM

• 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 of existing international open standards as much as possible!
Thank you

Project Lead and Vice Chair, Transport & Logistics
Dr. Hanane BECHA
UN/CEFACT Standards supporting ESG goals

Gerhard Heemskerk
UN/CEFACT Expert
Standards for enhancing sustainable trade in garments & footwear

Initial Contributions

Policy Recommendation

Business Process Analysis

Workshops, experts feedback

Business Requirement Specification for Textile & Leather

Textile Value Chain

Leather Value Chain

Processes Part 1

Use cases Part 2

Published

Traceability Data

Transparency Data
The content of the Business Requirement Specification

- Functional & data requirements
- Process diagrams
- Scope
- Actors involved
- Data exchanges
- Data definitions
- Data structures
There is a need for supply chain visibility

1. Planting & cultivation of cotton
2. Harvesting cotton
3. Ginning
4. Spinning
5. Dyeing, bleaching, washing
6. Weaving
7. Finishing
8. Enoblement, packaging
9. Placement in stores/on-line
10. Consumption & disposal
11. Post consumption & recycling

Many transformations, facilities, traders, sub-contractors, brands, retailers
The UNCCL the basis of all: contains data components for T&T and ESG.

A library with more than 15000 data elements

- 125 Messages
- 170 Code lists
- 1350 Business artefacts
- 600 Core components

Versions

ABIE - Aggregate Business Information Entities - ACC - Aggregate Core Component qDT – Qualified DataType
Providing a framework of standardized data

UN Core Component Library

Library Level

Contextualized RDM Level 1

Contextualized RDM Level 2

Contextualized Subsets Level 3

Buy-SHIP-Pay RDM

1350

140 Supply Chain RDM

150 Multi Modal Transport RDM

90 Cross-Border Management RDM

170 SDCE/ESG Sustainability RDM

380

Textile & Leather subset

Standardized Messages

Number of aggregate business information entities
ESG related data components in UN/CEFACT Library

- Emissions
- Used Methods
- Corrective actions
- Events
- Inspection Results
- DNA Marker
- Returnable Asset Instructions
- Standard
- Tolerances
- Inspection event
- Inventory level
- Mass balance
- Assertion
- Country of origin
- Inspection
- CITES
- Quality
- Bio Based
- Returnable Asset Instructions
- Environmental impact
- Crop protection
- Toxicological Material
- Observation
- Segregation
- Chemical Treatment
- Compliance Policy
- Finishing Treatments
- Certificates
- Organic
- Production Waste
- Transport Waste
- Mass ratio
- Health Risks
- Consumption
- Dangerous goods
- Waste Disposal process
- Animal Welfare
- Metrics
- Recycling
- Reusable
- Input/Output
- Laboratory Results
- Social aspects
- Labour Conditions
- Certification
Standardized data components supporting traceability & transparency

- Traceability data
- Standardized data
- Transparency data

Data Components
- ESG data
- Code Lists & Identifiers

Data structures
- Sustainability data (how)

Events
- (what, why, when, where, who)
Transactions data and ESG related data linking using unique identifiers

Transactions using identifiers and data components
Traceability (T&T data) and Transparency (ESG data)

<table>
<thead>
<tr>
<th>Traceability key information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party</td>
</tr>
<tr>
<td>Product</td>
</tr>
<tr>
<td>Process</td>
</tr>
</tbody>
</table>

Data Components

1. Planting & cultivation of cotton
2. Harvesting cotton
3. Ginning
4. Spinning
5. Dyeing, finishing, washing
6. Weaving
7. Finishing
8. Embroidery, packaging
9. Placement in stores/online
10. Consumption & disposal
11. Post consumption & recycling

<table>
<thead>
<tr>
<th>Transparency key information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification Standard</td>
</tr>
<tr>
<td>Inspection Report</td>
</tr>
<tr>
<td>Claim Statement</td>
</tr>
</tbody>
</table>

Data Components

Transactions

Certifications / ESG data

28
Sustainability claims and verification

CLAIMS VERIFICATION PROCESS

UNECE PoC based on (manual) confirmation by second or third party.

Future possibly based on: Verifiable Credentials & Decentralized Identifiers (automate verification enabling greater interoperability)

Levels for trustworthy ESG data

Assurance types developed within the UNECE Blockchain pilots

01 SELF DECLARED
02 SELF ASSESSED
03 SECOND PARTY VERIFIED
04 THIRD PARTY CERTIFIED
Need for retrieving trustworthy ESG data being assured about the evidences
ITC “Standards Map”: harmonized ESG sustainability criteria

ITC “Sustainability Map”: businesses and their sustainability
Claims on finished PRODUCTS substantiated by traceability and ESG data

Input/Output Materials

SLIM SHIRT
Season SS21

CLASSIC TAPERED JEANS
Season SS21

Traceability of Origin

Organic Content

Recycled Content

Chemical Compliance

Input/Output Materials

CLAIMS
UNECE Blockchain Pilot: Combining T&T events and ESG data using a web-application

1. Memorandum of Understanding + Rules book for data management
2. Welcome on Board
3. TT matrix data collection template
5. UNECE TT BC platform
   http://www.unecettbcplatform.ch/
Enhancing sustainability by providing data supporting product circularity

Circular product data represents the digital identity of product and material data in such a way that it supports circular business models, including resale, rental, collecting, sorting, and recycling.

What’s happening and who is involved?

UN/CEFACT Product Circularity Data project

<table>
<thead>
<tr>
<th>ODP Stage (open Development Process)</th>
<th>Working Period</th>
<th>Maximum Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements gathering</td>
<td>01.2023 to 05.2023</td>
<td>4 months</td>
</tr>
<tr>
<td>Draft development</td>
<td>05.2023 to 09.2023</td>
<td>4 months</td>
</tr>
<tr>
<td>Public Draft Review</td>
<td>09.2023 to 11.2023</td>
<td>2 months</td>
</tr>
<tr>
<td>Publication</td>
<td>11.2023 to 02.2024</td>
<td>3 months</td>
</tr>
<tr>
<td>Project exit</td>
<td>02.2024 to 05.2024</td>
<td>3 months</td>
</tr>
</tbody>
</table>
Shaping product data to become more circular

Product
- Model, batch, item level

Component

Used Chemicals/Substances

Sustainability Characteristics
- Durability Characteristics
- Recyclability Characteristics
- Repairability Characteristics
- Refurbishability Characteristics
- Reusability Characteristics
- Recycled Content Characteristics
- Renewable Content Characteristics

Circularity Characteristics

Manufacturer

Details
UN/CEFACT will align its “Circular Product Data Structure” with the European Digital Product Passport

- The identification of the “families of attributes” may be included in the horizontal legislation. It is important to keep in mind that each attribute should be available on a “need-to-know” basis.

- A preliminary list, which has not yet been the subject of political discussion within the Commission, includes the following:
  - Name of the model
  - Producer
  - Size, color, picture of the model
  - Location of the manufacturing plant
  - Origin of raw materials
  - Environmental impact indicators (PEF profile if calculated)
  - Circularity indicators
  - Social indicators/due diligence compliance
  - Chemical content
  - Recycled content
  - Use instructions
  - Recycling instructions
  - Dismantlability instructions
  - Other labels & green claims

European Union's Proposal for a Regulation on Ecodesign for Sustainable Products
CIRPASS project shapes the European Digital Product Passport and uses international open standards
T&T and ESG data are easy comparable when using standardized code lists and identifiers

Most of the available code lists and identifiers are optional to use, but the use of it brings a lot of benefits!
Benefits of UN/CEFACT standards

1. **REFERENCE DATA MODELS**
2. **DEIGNED FOR CROSS INDUSTRY USE**
3. **GLOBAL SCOPE**
4. **FOR SME & LARGE ENTERPRISES**
5. **BASED ON MERITS OF OTHER STANDARDS**
6. **SUPPORTS TRACEABILITY**
7. **SUPPORTS TRANSPARENCY**
8. **STANDARDIZED DATA STRUCTURES**
9. **STANDARDIZED CODE LISTS**
10. **TECHNOLOGY INDEPENDENT**

**Requirements**
- BRS

**Semantics**
- SDCE/ESG RDM

**Syntax**
- XML
- JSON

**Technology**
- BLOCK CHAIN

**BRS**: Business Requirement Specification  
**SDCE**: Sustainable Development and Circular Economy Reference Data Model  
**XML, JSON**: format of the data exchange structures
Thank you

UN/CEFACT Expert
Gerhard Heemskerk
UN/CEFACT
Foundations for future digital product conformity systems

UN/CEFACT Project Lead
Brett Hyland
Digital Product Conformity Certificate Exchange
For many products that we consume and interact with, TIC provides the basis for assuring:

- Safety
- Quality
- Environmental impact
- Social impact

The sector is fundamental to global trade:

- Global accreditation arrangements ensure cross-border recognition
- Operating under a well-established framework of ISO standards
International Laboratory Accreditation Cooperation

International Cooperation
Peer evaluations of Accreditation Bodies against ISO/IEC 17011 facilitating global Mutual Recognition Arrangements

Accreditation
Competency Assessment of Conformity Assessment Bodies (CABs)

Accredited CABs
Conformity assessment activities

Management system certifiers
Product certification bodies
Personnel certification bodies
Verification bodies

National (or regional) Accreditation Bodies

Laboratories
Inspection bodies
Reference Materials
PT Scheme providers
Lack of digital connectivity in existing systems

- Physical Process
- Accreditation Coverage
- Producer/Manufacturer/Supplier
- Product/Shipments
- Product/System Certificate
- Inspection Report
- Certificate of Sampling
- Sampling Agency
- Test Certificate
- Certification Body
- Inspection Body
- Product Samples
- Laboratory
Can this product-related concept be generalised?

1. [Image of a document]
2. [Image of a phone with a QR code]
3. [Image of a flowchart]
4. [Image of a person holding a phone]
5. [Image of a phone with a checkmark]

Conformity Assessment Body
Certificate Identifier URL

Web Menu or Resolver

View certificate (if permitted)
Linked product ID
External authority (if applicable)
CAB*  
*Or repository on CAB’s behalf

Supplier of finished goods

Supply chain actor

Authorization

Supply chain actor

Rest of supply chain

Access link

UNECE
An approach to selective redaction of data
Conformity assessment  
- a digital building block for future supply chains

Direct electronic access to authoritative original sources could provide:

✓ trust anchors for ESG data coming onto supply chains from 3rd party sources

✓ Reliably linking 3rd party ESG data to physical supply by leveraging global data standards

✓ an enabling mechanism for traceability in areas such as ESG regulations

✓ support for data aggregation, via feasible models, across different economies/supply networks
Conformity assessment - supporting Digital Product Passports?

Trusted conformity data potentially fulfilling the following roles:

- URLs to which manufactures can point for substantiating specific product claims for ESG
- Oracles accessible by any ESG-related blockchain
- Secure sources of verifiable credentials attesting to product conformity, exchangeable by any party
- Reliable data sources for independent apps or rating systems generating sustainability profiles
Thank you

UN/CEFACT Project Lead
Brett Hyland
Conclusion on how to respond to ESG challenges

1. Implement T&T standards for collecting ESG data backwards and forward traceability of supply chain events
2. Substantiate ESG evidence (trade transactions, certificates, inspection reports, Lab reports etc.)
3. Substantiate ESG performance with clear metrics (actual values, thresholds) to be able to report progress
4. Be able to check the origin of goods avoiding buying goods from regions that do not respect ESG goals
5. Include product quality and ECO design aspects applied which contributes to ESG goals (extending life)
6. Exchange product circularity data contributing to your and others ESG goals (reducing waste & reusing products)
7. Use fast verification methods of goods (inspection, verification of identity etc.) means less energy from resources
8. Try to achieve the highest level of assurance (by third parties)
9. Use a trustworthy system or framework by which tampering of data of is eliminated (signatures, blockchain, etc)
10. Identify key ESG risks and ESG strategies specified within UNECE recommendation 46 for Garments & Footwear.
11. Ask your Tier-1-n suppliers for ESG data to minimize or eliminate any responsibility
12. Learn from UNECE sustainability projects understand stakeholders ESG expectations and concerns
13. Adopt responsible sourcing practices for raw materials and other inputs, ensuring that they are sourced sustainably and ethically
14. Use credible reporting frameworks to ensure consistency and comparability
End of Lunch & Learn session