Pilot project on building a data pipeline for exports of grain via the corridor Ukraine-Turkey

EM PORTS/March 2023 Expert Meeting on Development of Ports and Port Operations

DANUBE COMMISSION 21 March 2023





Brief

Overview

UN Black Sea Grain Initiative

UN/CEFACT data pipeline concept

Main business process

Degree of the standard acceptance evaluation

Transformation of the datasets on the corridor

Concept of distributed data conversion

Conclusion and recommendations





DUETs initiative

Focuses on the emergency, enhancing and speeding up the information exchange on the movement of goods (including grain and other agricultural goods) between Ukraine and EU member States, in order to speed up the movement of goods;

Involves experts and trusted parties to integrate already working solutions;

Even if focusing on ready solutions for the emergency, it will move forward sustainable solutions using global UN (UN/CEFACT) standards and EU requirements to ensure the long-term viability of the services provided and that ultimately no funding would be required;

Proposed by the team of international experts and supported by the UNECE and IPCSA.



Borders of Ukraine, available for cargo flows



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UN Black Sea Grain initiative

Search



Black Sea Grain Initiative Joint Coordination Centre



- Agreement was signed on 27 July in Istanbul, Türkiye.
- The Joint Coordination Center was established to monitor implementation
- First vessel was departure on 1 August from Odesa port



Source: UN, UKRinLBN





UN Black Sea Grain initiative

Total Outbound Shipments by Month



Total Outbound Shipments by Commodities

Total Outbound Shipments by Regions



Source: https://www.un.org/en/black-sea-grain-initiative/vessel-movements





The concept of UN/CEFACT data pipelines



- Getting data from the right source at the right place at the right time;
- Data is captured once and reused throughout the supply chain;
- Data is transferred to the pipeline directly at its place of origin;
- Data can be either requested by the receiver from the pipeline or sent to it by the pipeline.

UN/CEFACT Data Pipeline Project, David Roff, T&L Domain, Source: https://unece.org/fileadmin/DAM/cefact/cf_forums/2019_Geneva/T_L_DataPipeline2019.pdf





Approach definition

Progressive approach



Traditional approach

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Implementation roadmap



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The functionality of distributed converters can be described as follows:

- 1. (optional) Transforming the internal identifiers into distributed identifiers in accordance with the identification scheme adopted in the peer-to-peer network,
- 2. Maintaining the canonical "interface" a data model,
- 3. Transforming the data structure between the canonical structure of reference models and the internal representation of a particular IT solution,
- 4. Harmonization of non-standardized code lists,
- 5. Transforming the data format between an internal representation and one that is supported by a peer-to-peer network,
- 6. Transforming the API calls,
- 7. Transforming security layer requirements.

Main business process diagram







Degree of the standard acceptance evaluation



- <u>Compliant</u> when the implementation of a given solution is defined solely with the terms and within the scope of a given standard
- Conformant when the implementation of a given solution uses all of a given standard and then builds upon that with extensions.
- Consistent when the implementation of a given solution uses only parts of a given standard and builds extensions upon that.

Source: UN/CEFACT Rec.36 Recommendation on Single Window Interoperability https://tfig.unece.org/contents/recommendation-36.htm

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Degree of the standard acceptance evaluation



Transformation of the data sets on the corridor



Transformation of the data sets on the corridor

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Client identification issue – example from the railway consignment note

- Client identified the Port of Odessa Authority (national code list)
- The real consignee in the port terminal Porto-San – is identified in text or in internal railway code list

The actual consignee of the goods (overseas) is not mentioned





Transformation of the data sets on the corridor

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Goods identification issue – example from the railway consignment note

- Goods are identified in internal railway code list (ETSNG)
- Translation to national UKTVED or international HS code lists is not unambiguous
 - 7129011Dried sweetcorn, hybrid, for sowing 10051011 Maize except seed corn, ELLOW 10051013 Three cross hybrid maize seed for sowing 10051015 Simple hybrid maize seed for sowing
 - 10051019 Maize except seed corn, OTHER
 - 10051090 Maize seed for sowing (excl. hybrid)
 - 10059000 Maize (excl. seed for sowing)





Transformation of the data sets on the corridor The issue of the fragmented supply chain



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The concept of distributed data conversion



The concept of distributed data conversion



Distributed Data Conversion Concept, authors: Dmytro Iakymenkov, Galina Roizina

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Concept development – building blocks

- Datasets and Data spaces versus Documents
- Model driven APIs
- Decentralized Identifiers and Verifiable Credentials (DID, VC)
- The role of the State as an Trust anchor for cross-border and multimodal business transactions







Conclusion and recommendations

- Despite the fact that the assessment was focused on the BSGI corridor, its deliverables can also be used to facilitate other transport corridors, in particular the Danube
- The use of international standards and data models to harmonize the digital interaction of supply chain participants is an effective tool
 for facilitating trade procedures and reducing losses in the execution of such a chain.
- The UN/CEFACT Data Model is the only functionally complete model that describes all trade and transport business processes for both business and administrative operations.
- Such a diversification of participants' readiness in terms of the maturity of business processes, IT solutions, legalization of electronic document management and requirements for it is the valuable obstacle to the speedy adaptation of international standards, as well as a fragmentation of the supply chain.
- To solve the issues it is recommended to expand the scope of the transport corridor digitalization project to the supply chain to involve into the process the origin seller and end buyer.
- The Corridor Freight Information System seems to be the most feasible solution that can harmonize requirements and expectation of all parties in the supply chain. Such solution could be built on the basis of the existing IT solutions along the corridor with high level of the standard application.
- The one-level distributed architecture, as proposed by the e-FTI Regulation, is the most optimal model for transborder interaction to equalize demands of the business and Government stakeholders from different jurisdictions and modes of transport.
- The role of the Governments and intergovernmental agencies is in harmonizing the requirements. The UNECE could play the valuable role for this on the corridor.





Other DUETs activities

Use case 1: Helsinki – Valencia (FEDeRATED LL1+LL17)



Helsinki, Finland	Luxembourg	Valencia, Spair
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Use case 2: Ukraine - EU



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