

Economic and Social CouncilDistr.: General
10 July 2024

English only

Economic Commission for Europe

Executive Committee

Centre for Trade Facilitation and Electronic Business**Thirtieth session**

Geneva, 11 and 12 July 2024

Item 3 of the provisional agenda

Policy dialogue on the role of climate-smart connectivity and digital trade and transport corridors in support of regional and global integration and sustainable development**UN/CEFACT Package of Standards for data exchange along the supply chain****Submitted by the ECE secretariat***Summary*

The draft UN/CEFACT Standards Package offers a comprehensive suite of deliverables for seamless electronic multimodal data and document exchange, including a common business requirement specification (BRS) customized for the different modes of transport, and supporting deliverables. These are based on common UN/CEFACT naming rules and definitions, terminologies and structured data models, crucial for data exchange standards across multimodal supply chains. These ensure seamless communication, interoperability, and efficiency, enhancing digitalization in trade and transport corridors and global trade operations. The package of standards is meant to address the main problem of fragmentation of digitalization efforts and projects, national, regional and modal legal regimes and various syntaxes.

The digitalization of trade and transport data and document exchange relies on UN/CEFACT robust data standards, critical for initiatives like trade finance (e.g., eBL), Single Window systems, and EU's Electronic Freight Transport Information (eFTI) as well as other regulations. Future efforts, such as ECE recommendations on smart connectivity, will leverage these standards to further advance global trade networks.

In summary, adopting UN/CEFACT data exchange standards enhances global trade efficiency, fosters international cooperation, and strengthens supply chain resilience and sustainability in an interconnected world.

Document ECE/TRADE/C/CEFACT/2024/INF.2 is submitted to the thirtieth session of the UN/CEFACT Plenary for information.

UNECE Package of Standards and Supporting Tools

Experts from UNECE and its subsidiary body UN Centre for Trade Facilitation and Electronic Business (UN/CEFACT) developed, during the Covid-19 pandemic, a package of standards and supporting tools for digitalization of data and document exchange in supply chains and digital corridors, aligned with UN/CEFACT semantic standards and reference data models.



Developing UN/CEFACT standards for data exchange along the supply chain

Digitalization is bringing profound changes to human activities, from the production of goods and services to their consumption. Digitalization also changes the way international trade operates; it transforms supply chains, globally and in the UNECE region.

Specifically, digitalization is changing the way goods and the information about them move across borders. Digitalization creates the potential to integrate the data and document exchange across different modes of transport and sectors of the supply chain and create efficiency gains. Yet efforts to digitalize are currently fragmented, focusing on specific modes or on specific parts of the supply chain. This fragmentation poses significant challenges for interoperability and, ultimately, expected efficiency gains.

To avoid fragmentation, it is important to consider the benefits of UN standards and supporting tools that can help ensure interoperability in the information flows in supply chains, including multimodal transport chains. The UN/CEFACT semantic standards and reference data models produced as international public goods through an established UN procedure, as well as the new UNECE package of standards for multimodal data and document exchange, are examples of such UN standards.[1]

The UN/CEFACT standards offer:

- ◆ Ubiquitous basis for interoperability across industries and modes of transport, while maintaining existing sectoral standards and solutions,
- ◆ Aligned trade and transport data semantics through a common, overarching supply chain reference data model (BUY-SHIP-PAY) which serves as the foundation for interoperability,
- ◆ Standardized data exchange structures based on a common master data exchange structure and independent data exchange syntax - a major move ahead for the digitalization of data exchange, and
- ◆ A common basis for implementing chosen data exchange syntax(es).



Implementing the new UN/CEFACT package of standards will bring a number of benefits.

Among others, it can help to:

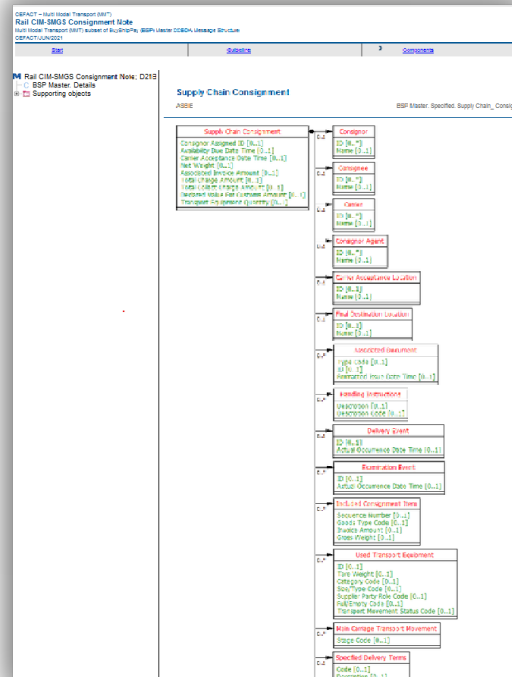
- ◆ Support information sharing, e.g., in data pipelines with the timely capture of quality data from original (business) data sources for secure authorized use of concrete sets of data, ensuring visibility of data exchange in the supply chain,
- ◆ Reduce the administrative burden through an efficient reuse of data shared across the international supply chain, and
- ◆ Increase possibility for collaboration among a broad spectrum of public and private stakeholders (overcoming a certain silo mentality – an issue that became a stumbling block for several advanced private data pipeline initiatives).

The current fragmentation of digitalization efforts in supply and transport chains makes very important the need to take a holistic approach to digitalizing data flows. Consequently, UN/CEFACT holds a place of recognition among major stakeholders as a provider of global semantic standards for electronic data exchange, produced and validated in an open United Nations development process.

UN/CEFACT is seen as the feasible provider of a global foundation for cross-sectoral harmonization and standardization (for example, for the European Union with its eFTI Regulation, Ukraine, the United Kingdom, and Uzbekistan, among others).

The new package of standards offers a complementary tool, developed in close partnership with key actors as part of the broader UN/CEFACT structure and based on a collaborative approach:

- UN/CEFACT standards do not substitute existing transport contract international regulatory standards such as the standard for an electronic airwaybill produced by the International Air Transport Association (IATA). Instead, UN/CEFACT standards offer a basis for functional interoperability of cargo data across different modes of transport and sectors using a common semantic foundation.
- The development of the new package of standards has benefitted from the expertise of many UN/CEFACT Forum experts and collaborations with key modal standards organizations. For example, the International Civil Aviation Organization (ICAO) and the IATA have contributed to developing electronic information exchange technical specifications for three transport documents which are key to the safety, security, and efficiency of air cargo.[2]
- The package is not a self-standing product but part of a broad effort by UN/CEFACT on a spectrum of semantic standards for the digitalization of information exchange along the supply chain (table 1).

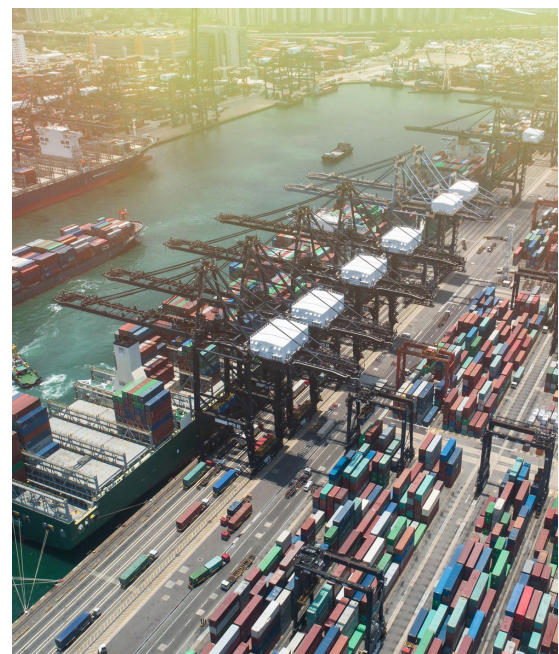


The new package of standards is made up of several components

It includes technical specifications, business requirement specifications (which in essence are “the standards”) and supporting tools for key documents accompanying goods transported across one or more of the five key modes of transport (table 1):

- Data subsets of the UN/CEFACT Multimodal Transport Reference Data Model (MMT RDM), data structures, XSD and other schemas,
- Data exchange standards and supporting tools for the five main modes of transport: maritime, inland water, air, road and rail cargo movements (e.g., consignment notes, bills of lading, and additional documents supporting transport of goods by rail, road, sea, air, and inland water).

Importantly, these different tools are aligned with each other by each being a subset of the overarching MMT RDM, which itself is a subset of the widely recognised UN/CEFACT global supply chain semantic reference data model (BSP RDM).



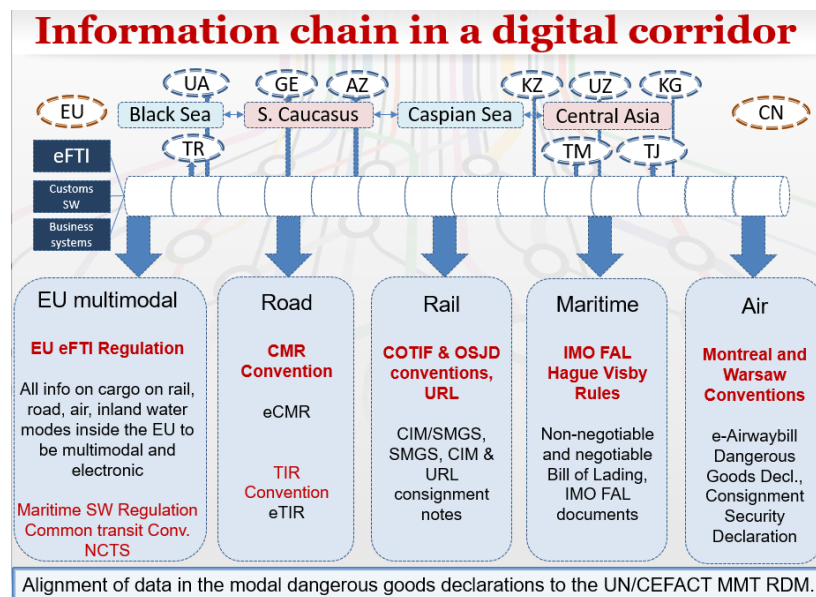
The new package of standards works with modern and emerging technologies.

The new generation of RDM-based standards are exchange syntax independent and are suitable for implementation using modern and emerging technologies, such as XML, JSON, Restful API and blockchain.[3]

The UNECE package of standards has been successfully tested in several pilot projects. Examples include:

- A practical assessment of the feasibility of implementing the data pipeline concept to improve the efficiency of the grain corridor between Ukraine and Türkiye using UN/CEFACT standards,
- A digital corridor between Ukraine and Azerbaijan for two pilot products (bitumen and meat),
- A multimodal transport case study on the export of wood products from Belarus to Central Europe via Ukraine, the Black Sea and the Danube,
- The digitalization of IMO/FAL documents for the ports of Ukraine,
- A data mapping between business documents accompanying goods and the regulatory IT systems.

The use of UNECE's UN/CEFACT semantic standards as a common foundation can enable the smooth exchange of data between different data sets which are of relevance for European Union initiatives.



This is particularly pertinent as the EU's Regulation 2020/1056 on Electronic Freight Transport Information (eFTI) envisages that transport information exchanges within EU member States should be electronic and multimodal. In addition, the UN/CEFACT semantic standards and Single Window Recommendations contribute to the successful implementation of the EU Regulation 2022/2399 establishing the European Union Single Window Environment for Customs.



Get engaged!

- Use UNECE's new package of standards! Economic operators, business companies involved in trade, transport and payment operations, regulatory agencies and other stakeholders in the international supply chain will use these standards.
- Update and expand UNECE's new package of standards! The standards for inter-sectoral and multimodal exchange of data along the supply chain are a living instrument that is used, reviewed, updated, and expanded through the UN/CEFACT intergovernmental process and with various partners with whom we work.

[3] These new UN/CEFACT deliverables contribute to the next generation of United Nations semantic standards for trade and transport data exchange in the Internet era. This builds on earlier deliverables, notably UN/EDIFACT, developed 30 years ago to support electronic document exchange, which supports millions of messages exchanged globally each day.



Table 1: UNECE Package of Standard for digitalization of information flows along supply chains

<p>1. Standards developed for the digitalization of information flows in various parts of the supply chain before 2020:</p>	<p>3. Standardized data exchanges to support cross-modal cargo transfers – package of standards for digitalization of multimodal data exchange</p>
<ul style="list-style-type: none"> • eCMR • Cross Industry Invoice • Cross Industry Delivery • Cross Industry Catalogue • Cross Industry Quotation • Cross Industry Remittance Advice • Cross Industry Scheduling • Cross Industry Ordering Process • Material Safety Data Sheet Details (MSDS) • Contract Financial Execution Management • Market Research Information • Verified Gross Mass (VERMAS) documents • International Forwarding and Transfer documents • Smart container information • Numerous agricultural certificates, accounting, and other documents 	<ul style="list-style-type: none"> • Inland water transport contract document (IWT “Bill of Lading”; CMNI consignment note; etc.) • Maritime waybill • CIM/SMGS and SMGS consignment notes • CIM/SMGS Wagon List (+Commercial Act, etc.) • eCERT (sanitary-phytosanitary certificates and basis for other certificates): aligned to the Buy-Ship-Pay Reference Data Model
<p>2. Standards for logistics data and document exchange published in October 2020 at www.unttc.org and https://unece.org/trade/uncefact/mainstandards</p>	<p>4. Air cargo and dangerous goods documents:</p>
<ul style="list-style-type: none"> • Provisional booking • Firm booking • Booking confirmation • Shipping instructions • Waybill • Status report • Status request • Packing list • RASFF (Rapid Alert for Security of Food and Feeds) 	<ul style="list-style-type: none"> • Airwaybill • Dangerous goods declaration • Consignment security declaration <p>Electronic version of the FIATA multimodal Bill of Lading launched in 2022; work ongoing on three other FIATA documents</p>

Contacts:

Ms. Sue Probert

Chairperson, United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), suesiprobert@live.com

Mr. Mario Apostolov

Regional Adviser, Economic Cooperation and Trade Division, UNECE secretariat

mario.apostolov@un.org, tel. +41 22 9171134; mob.: +41 792790936

Ms. Kamola Khusnutdinova

UN/CEFACT Secretary, Trade Facilitation Section, Economic Cooperation and Trade Division, UNECE secretariat

kamola.khusnutdinova@un.org, tel. +41 22 917 2403



Partnerships

We collaborate on these standards with other bodies of the United Nations such as the United Nations Commission on International Trade Law (UNCITRAL); United Nations Conference on Trade and Development (UNCTAD); International Trade Centre (ITC); United Nations Industrial Development Organization (UNIDO); International Telecommunication Union (ITU); Universal Postal Union (UPU); International Maritime Organization (IMO); International Civil Aviation Organization (ICAO) and United Nations Environment Programme (UNEP), as well as the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the other UN regional commissions.

There is a long-standing cooperation with other international organizations, such as the European Commission, the Eurasian Economic Commission (EEC), the Organization for Cooperation of Railways (OSJD), the World Customs Organization, the Eurasian Economic Commission, the Permanent Secretariat of the Transport Corridor Europe-Caucasus-Asia (TRACECA), the Organization for Democracy and Economic Development, and other organizations in the UNECE region.

Further, we cooperate with business associations, such as the International Federation of Freight Forwarding Associations (FIATA), International Road Transport Union (IRU), International Rail Transport Committee (CIT), the International Air Transport Association (IATA), and other organizations, which have received new impetus with this work.

About UN/CEFACT

The UN Centre for Trade Facilitation and Electronic Business (UN/CEFACT) was established in 1996 on the basis of the UNECE Working Party 4 on International Trade Procedures “as a subsidiary, inter-governmental body of the UNECE, mandated to develop a programme of work of global relevance to achieve improved worldwide coordination and cooperation” in the development of “trade facilitation recommendations and electronic business standards, covering both commercial and government business processes that can foster growth in international trade and related services”.^[4]

For decades, the focus of UN/CEFACT’s work in electronic business has been on semantic standards for electronic data interchange along the whole international supply chains. Key UN/CEFACT products include:

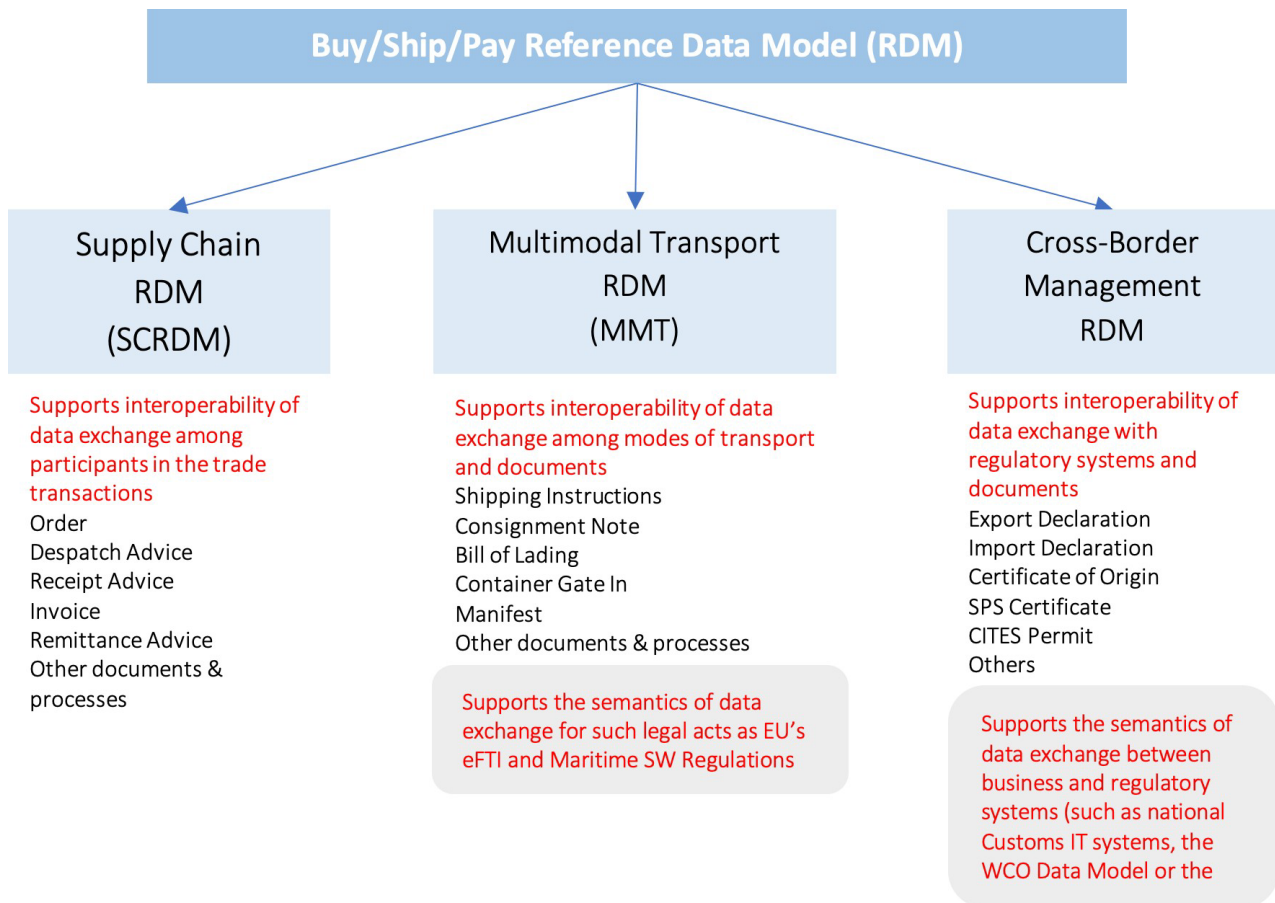
- the UN/CEFACT Buy-Ship-Pay supply chain model, which covers all segments of the supply chain.
- UN/EDIFACT: the only global standard for electronic data interchange developed before the Internet, supporting, for example, the digital exchange of Customs declarations, invoices, payment documents, certificates, and transport documents (e.g., the IFTMIN message for rail transport, widely used in the transition economies).
- the UN/LOCODE standard (the United Nations Location Codes for Trade and Transport Locations),
- the Single Window Recommendations (35-37),
- UN/CEFACT Core Component Library (UN/CCL), which covers a very wide range of international trade sectors of activity,
- the family of UN/CEFACT reference data models (RDMs), which are the basis for the new generation of standards for digitalization of data and document exchange along the supply chain,
- business requirement specifications and supporting tools (artefacts), notably: data subsets of the UN/CEFACT Multimodal Transport Reference Data Model (MMT RDM), XSD schemas, data structures, etc.

The new UNDA and UN/CEFACT deliverables contribute to the next generation of United Nations semantic standards for trade and transport data exchange in the Internet era. Notably, this new generation of standards is based on the family of UN/CEFACT reference data models (RDMs) illustrated in the figure below. These semantic standards and RDMs build on earlier deliverables, notably UN/EDIFACT – the only global standards for electronic data interchange (EDI) developed 30 years ago to support electronic document exchange. UN/EDIFACT still supports millions of messages exchanged globally each day. The new generation of RDM-based standards are exchange syntax independent and are suitable for implementing using modern and emerging technologies, such as XML, JSON, Restful API and blockchain.

[4] See document ECE/TRADE/C/CEFACT/2017/15 “Consolidated United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) mandate and terms of reference” from 19 January 2017.

Figure 1:

Standards and the family of reference data models providing interoperability in the supply chain



In the area of electronic business, UN/CEFACT focused on the development of semantic standards, RDMs and directories as the foundation for data exchange among stakeholders in the supply chain. In the era of Internet, these are seen as the next generation standards, beyond the currently widely used UN/EDIFACT messages for data and information exchange. This is the essence of the UN/CEFACT work on standards in various domains: agricultural certificates, trade and logistics documents, transport documents, and regulatory documents, with the objective to ensure a common denominator for the exchange of data.



UNECE's Economic Cooperation and Trade Division (ECTD) promotes trade, innovation and investment for sustainable development in the region

The United Nations Economic Commission for Europe (UNECE) is one of the United Nation's five Regional Economic Commissions. UNECE has 56 member States in Europe, North America, and Asia. UNECE promotes pan-European economic integration in line with the UN's Sustainable Development Goals (SDGs) and Agenda 2030. One of UNECE's six divisions, the ECTD assists UNECE member States to better integrate into the world economy and to harness trade (including trade facilitation), innovation and infrastructure financing and investment for the sustainable development of the UNECE region.