# Enabling smart connectivity through DLT and clear semantic data standards

ITU FG DLT Interoperability Workshop

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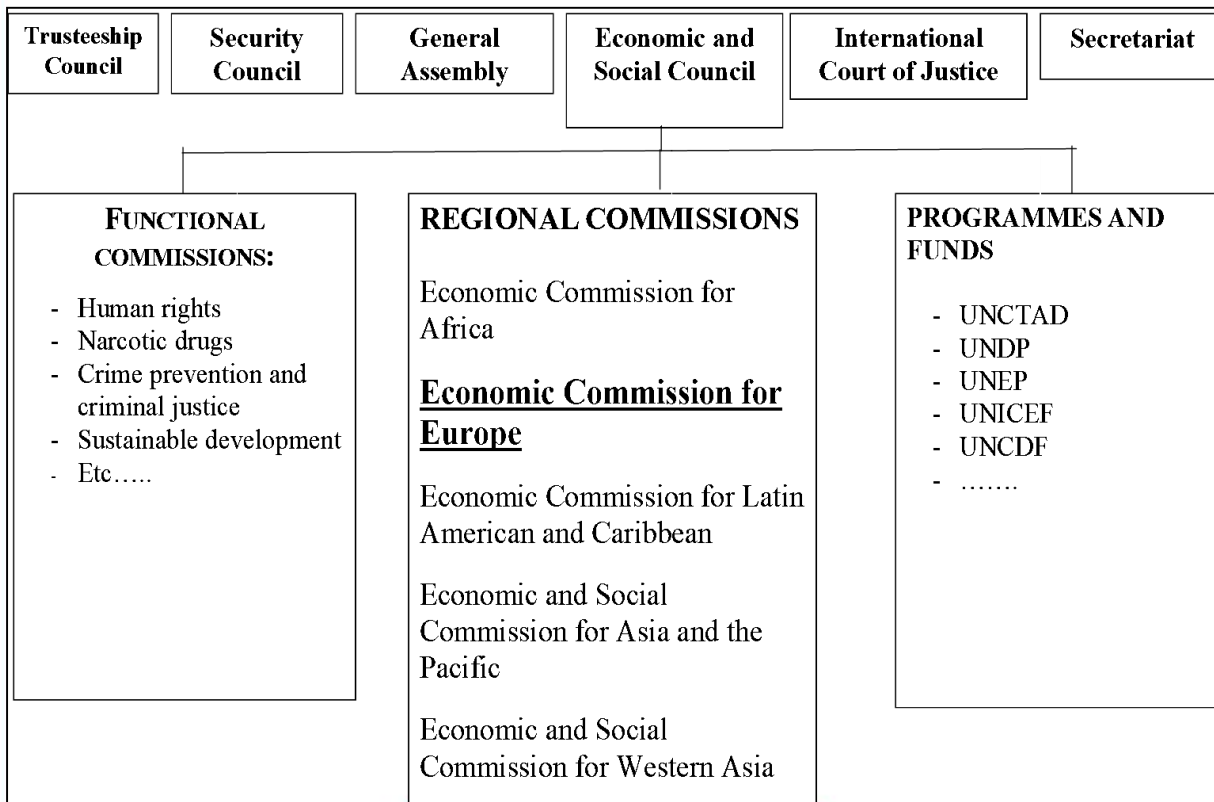lance.thompson@un.org
**UNECE** – UN/CEFACT
Geneva, 2 August 2019

UNECE

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# UN Economic Commission for Europe (UNECE)

| Trusteeship Council | Security Council | General Assembly | Economic and Social Council | International Court of Justice | Secretariat |
|---|---|---|---|---|---|

**UNECE**

| FUNCTIONAL COMMISSIONS: | REGIONAL COMMISSIONS | PROGRAMMES AND FUNDS |
|---|---|---|
| - Human rights<br>- Narcotic drugs<br>- Crime prevention and criminal justice<br>- Sustainable development<br>- Etc….. | Economic Commission for Africa<br><br>**Economic Commission for Europe**<br><br>Economic Commission for Latin American and Caribbean<br><br>Economic and Social Commission for Asia and the Pacific<br><br>Economic and Social Commission for Western Asia | - UNCTAD<br>- UNDP<br>- UNEP<br>- UNICEF<br>- UNCDF<br>- ……. |

Economic Cooperation & Trade Division

Transport Division

Environment Division

Sustainable Energy Division

Housing & Forestry Division

Statistics Division

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# Smart Connectivity

- Uses clear, free, openly available and harmonized standards, recommendations, guidance, regulations, conventions… in order to promote seamless exchanges

- Applies Information and Communication Technologies (ICT) and innovative processes to improve interactions (between people, companies, governments, economies, objects)

- Brings together public service needs with private sector innovation and financing capabilities

# UN/CEFACT – UN Centre for Trade Facilitation and Electronic Business

**Objectives**
- Simple, transparent and effective processes for global business
- Efficient and automated exchange of information

**Trade facilitation is discussed at three levels: all complementary**

**Key tools**
- Global trade facilitation recommendations
- eBusiness standards
- Guidelines

The regional dimension

The international dimension

The national dimension

**Means**
- Public-Private Partnership – over 1000 experts
- Meeting virtually practically every week
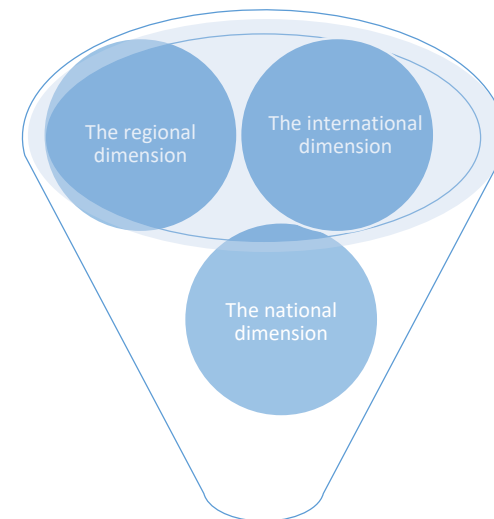
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# UN/CEFACT Work on Blockchain

- White Paper on Trade Facilitation Processes
  - Presenting the functionalities blockchain offers that can't be achieved by other means
- White Paper on Standards
  - Considering relationships with current standards
  - Studying what new standards are necessary

**Work in progress:**

- Sectoral Use Cases
  - Presenting 31 case studies in 10 Industry sectors
- Cross-border Inter-ledger exchange
  - For Preferential Certificates of Origin using Blockchain
  - Looking at key issues to consider while creating, administering and using such platforms

# Blockchain considerations

- The chosen method of authentication should be "as reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all the circumstances, including any relevant agreement."



- Blockchain is a very high level of reliability and not all data transactions require the highest level of reliability

UN/CEFACT Recommendation 14 (2014), paragraph 37.
Article 7.1, UNCITRAL "Model Law on Electronic Commerce with Guide to Enactment 1996 with additional article 5 bis as adopted in 1998" United Nations, New York, 1999, p.5-6.

# Blockchain challenges

- Not all blockchains are equal. They can vary in:
    - Vulnerability, robustness, cost, speed and ability to scale up, degree of privacy
- Cannot reasonably expect all data exchanges to use the same blockchain solution.  Creating - interoperability issues:
    Semantics, syntax, programs, consensus protocols
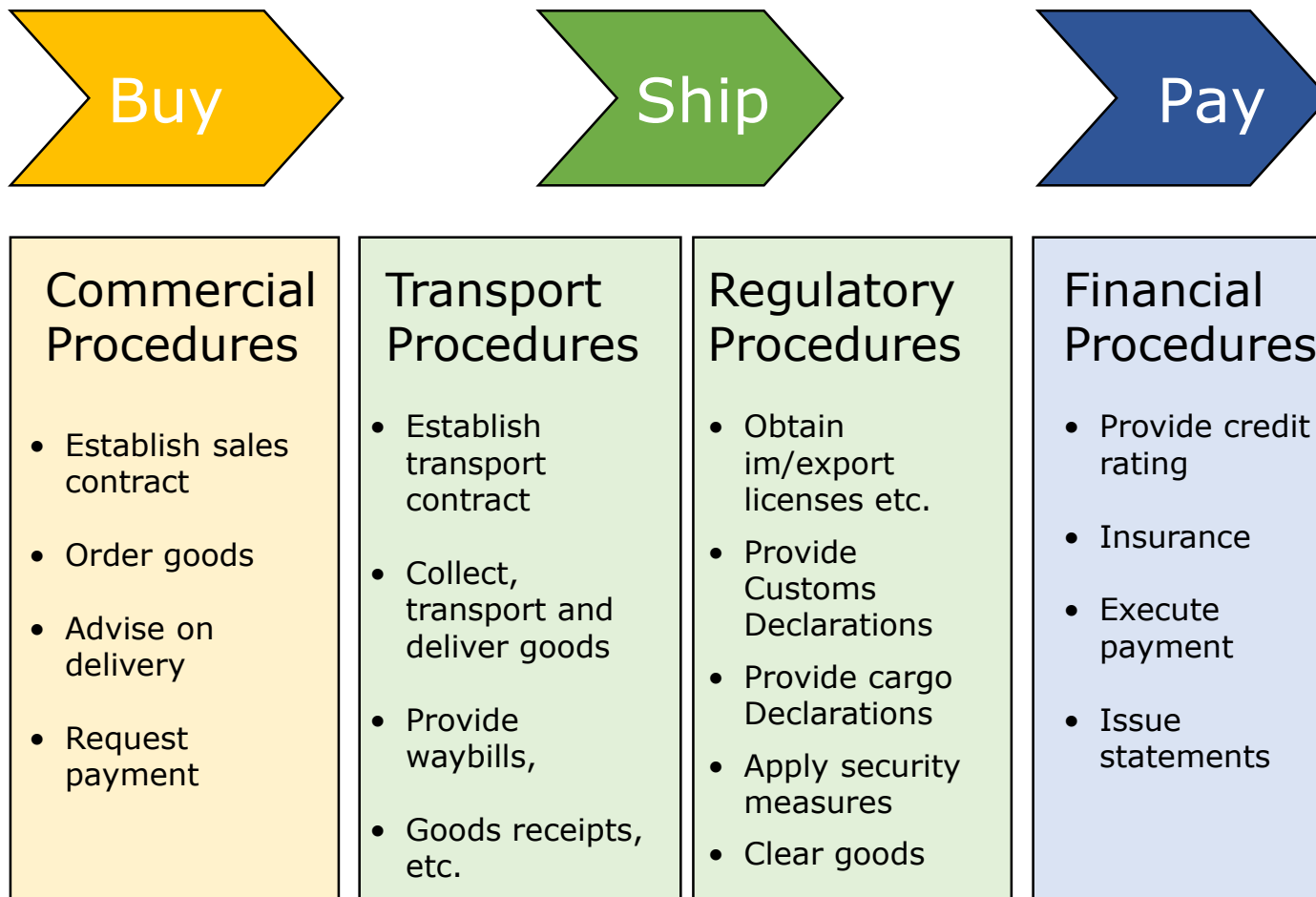- Implied cost of using blockchain may in fact create new barriers to trade
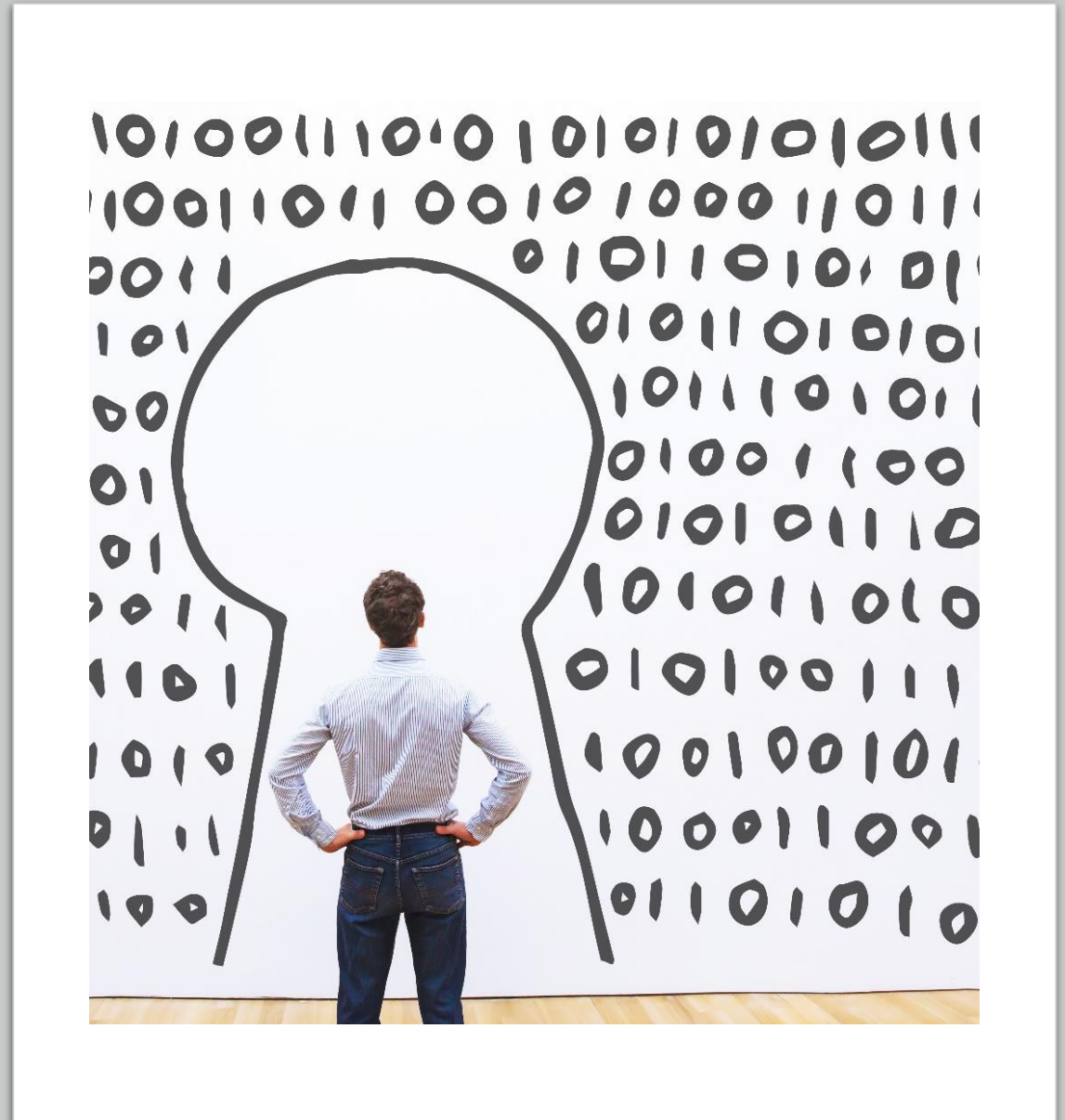
# One link in a global supply chain
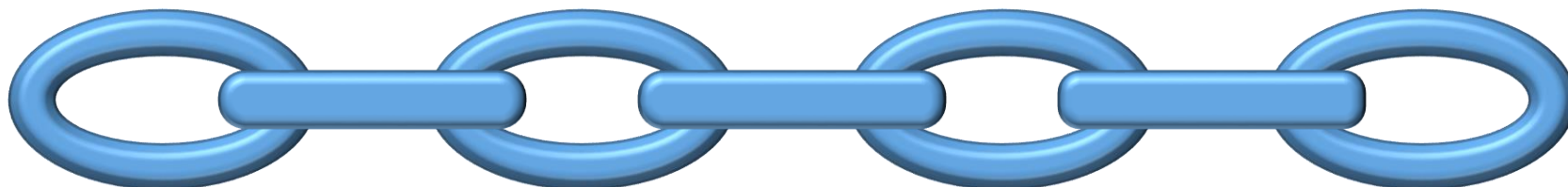
- Multiple standards in international trade
  - UNECE is working on aligning these and proposing clear reference models for Transport procedures, Supply Chain procedures, Regulatory procedures
  - The international supply chain is very complex (multiple actors and multiple relations in data exchanges)

- A wholistic view and approach are needed
  - Information will not be purely goods-related or purely transport or purely financial…
  - There are clear links between the information in each part of the global supply chain

# UN/CEFACT – Semantic Hub for Standardization

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| Buy | Ship | | Pay |
|---|---|---|---|

### Commercial Procedures

- Establish sales contract
- Order goods
- Advise on delivery
- Request payment

### Transport Procedures

- Establish transport contract
- Collect, transport and deliver goods
- Provide waybills,
- Goods receipts, etc.

### Regulatory Procedures

- Obtain im/export licenses etc.
- Provide Customs Declarations
- Provide cargo Declarations
- Apply security measures
- Clear goods

### Financial Procedures

- Provide credit rating
- Insurance
- Execute payment
- Issue statements

# Semantic interoperability

- Need to ensure that everyone understands the <u>same data</u> in the <u>same way</u>

- Simple terms like Date/Time of Arrival can be interpreted in many different ways
  - Arrival in a Country
  - Arrival in a Port
  - Arrival at Berth
  - Arrival in a Warehouse
  - Arrival at Consignee
  - …

- Blockchain can help secure the data and help parties collaborate… but they need to understand the same thing



ABC-123

XYZ-987
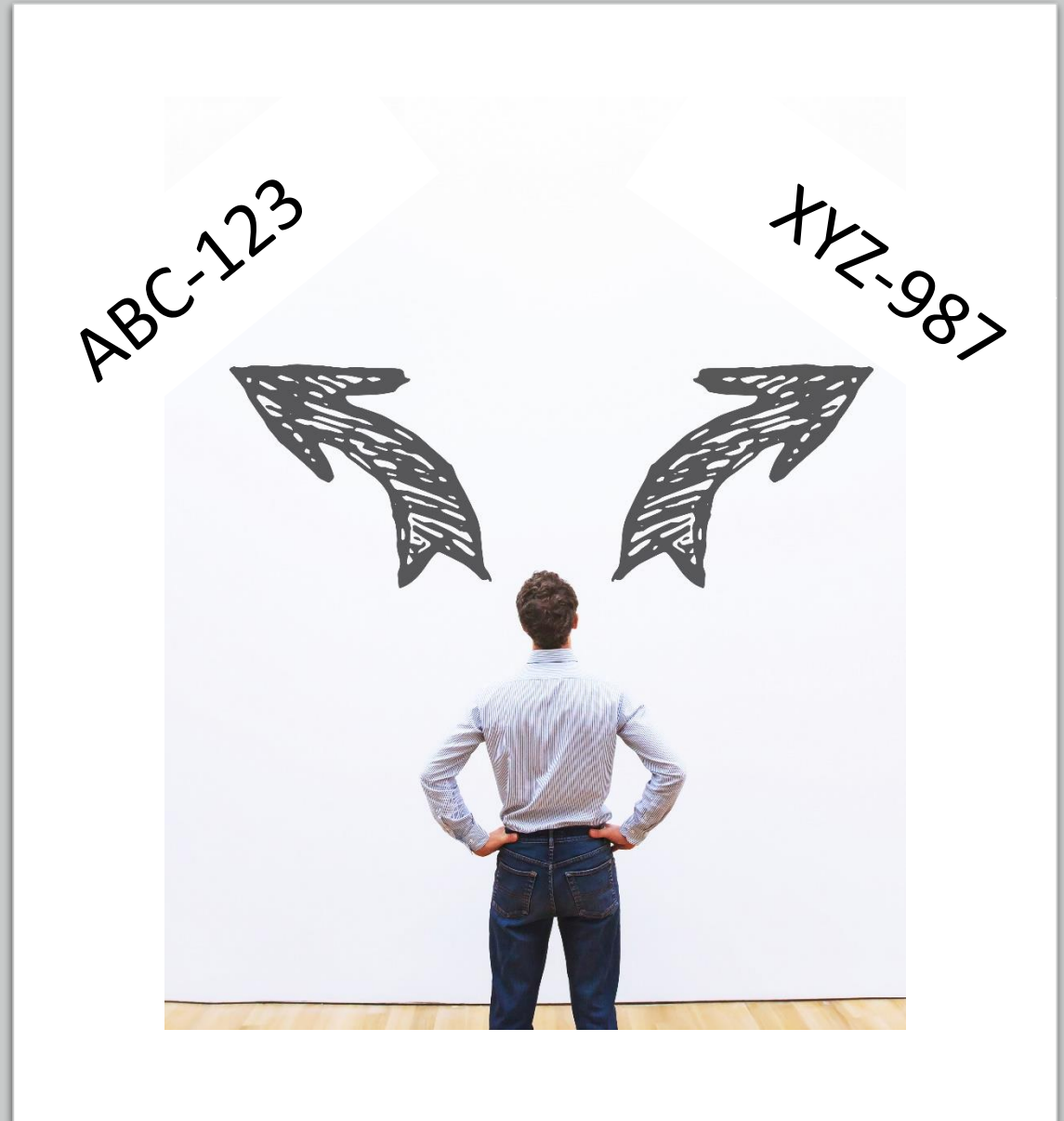
# Global Trade – Semantic Anchors

## 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

# Process driven data exchange

- Document centric exchanges will force stakeholders to repeat information unnecessarily

- UN/CEFACT is mapping the relationship between the information in each business process

- Creating a process-driven approach of data exchange which can be greatly enhanced by blockchain technology

**A clear semantic base is key!**
**UN/CEFACT Core Component Library (CCL)**
**& Reference Data Models (RDMs)**

# UN/CEFACT
## Reference Data Models

**Regulatory RDM**
- Certificates
- Declarations

**MultiModal Transport RDM**
- Warehouse Receipt
- Bill of Lading
- Cargo Report
- Flight Manifest
- Trace & Track
- Dangerous Goods Dec
- Pre-Arrival Security Dec.
- Despatch Advice
- Container Operations
- Delivery Note
- Rail Consignment Note
- Air Waybill
- Forwarding Instruction
- Arrival Notice
- Transit & TIR
- Packing Instruction
- CMR & Road Consignment

**Supply Chain RDM**
- Invoice
- Offer
- Quotation
- Catalogue
- Remittance
- Delivery
- Scheduling

**Buy-Ship-Pay RDM**

# UN/CEFACT brings it all together

- Under the United Nations umbrella
  - Non-competitive; inclusive by nature; free to participate and free for use
- Base semantic definitions
  - Developed in an open, public-private partnership
  - Mature, robust and trusted; developed over twenty years
  - Covers the entire international supply chain; all sectors and all countries
- Base technical specifications
  - Reused by many organizations, promoting interoperability
- International code lists
- Standard messages and processes

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# For more
# information…

# Some UN/CEFACT work

## SINGLE WINDOW

UN/CEFACT developed the first guidance on Single Window and that definition has been used as the basis for all subsequent work. Our guidance covers implementation, data, legal, interoperability.

## DOCUMENT LAYOUT

Since the 1960s UN/CEFACT and its predecessors have provided standards for the standardization of the layout of trade documents. The UN Layout Key is the basis of almost all cross border trade documents.

## eINVOICING

The UN/CEFACT Cross-Industry Invoice has been chosen as one of the obligatory formats for all public procurement for certain countries and its use will facilitate cross border exchanges.

## PROCESS DRIVEN

Traditional electronic messages reflect their original paper documents rather than supporting modern process collaborations such as blockchain. UN/CEFACT is leading the path in this new approach.

These are some examples of UN/CEFACT's deliverables. The full list can be found and downloaded free of charge on our website: www.unece.org/cefact

## UN/EDIFACT

The first global electronic data interchange format, UN/EDIFACT is still today the most important centrally developed and maintained EDI standard covering transport, regulatory, supply chain and more.

## NTFB (National Trade Facilitation Bodies)

Trade facilitation is not just the domain of the public sector. To be truly effective, private sector concerns and input must be fully considered. This is reflected in UN/CEFACT Recommendations 4 & 40.

## TOURISM

Improving tourism capabilities at a local level helps to improve lives and economies. UN/CEFACT develops and maintains a series of messages designed to enable small scale lodgings to enter markets.

## SUSTAINABLE FISHERY

The UN/CEFACT FLUX messages are used in more and more countries to declare fish catches, conformity to regulations & port entries. Their use allow cross-border communication of the information seamlessly.

## eSPS CERTIFICATES

Sanitary and Phytosanitary certificates are a regular part of imports and exports. The UN/CEFACT eCert is used to communicate these in international trade.

# UN/CEFACT
# Where to find documents
## www.unece.org/cefact

# UN/CEFACT
# Where to find documents

tfig.unece.org

# UN/CEFACT
## more information & contacts

All UNECE and UN/CEFACT Recommendations, codes, standards and publications are available for free on our website at:

- www.unece.org/
- www.unece.org/trade
- www.unece.org/cefact/
- tfig.unece.org

- Secretary of UN/CEFACT, Head of UN/CEFACT Support Unit:
  - Lance THOMPSON, UNECE
  - lance.thompson@un.org

# Upcoming events of UN/CEFACT

- **UN/CEFACT 34th Forum**
  - 28 October – 1st November, London, UK

# Thank you

Rhamat

Дякую

Ďakujem

Merci

Рақмет сізге

Tack

Çox sağ ol

Dziękuję Ci

Hvala

Obrigado

Ευχαριστώ

Dankon

მადლობა

Aitäh

Gracias

Хвала вам

Спасибо

Diolch

Faleminderit

Danke

Grazzi

Paldies

Mulţumesc

Ačiū

Благодаря ти

Grazie

Շնորհակալություն

Takk skal du ha

Ви благодарам

Köszönöm

Дзякуй

Děkuji

Tak skal du have

Gràcies

תודה

Рахмат сага

Go raibh maith agat

Kiitos

teşekkür ederim

Dank je

Þakka þér fyrir

UN / CEFACT

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**UNECE** – UN/CEFACT
Geneva, 2 August 2019