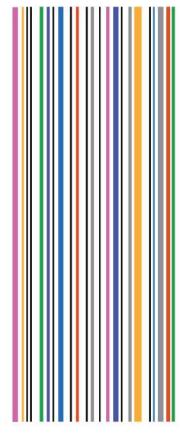# Evaluating impact of new technologies on transforming trade

The 4th CAREC Think Tanks Development Forum (CTTDF)

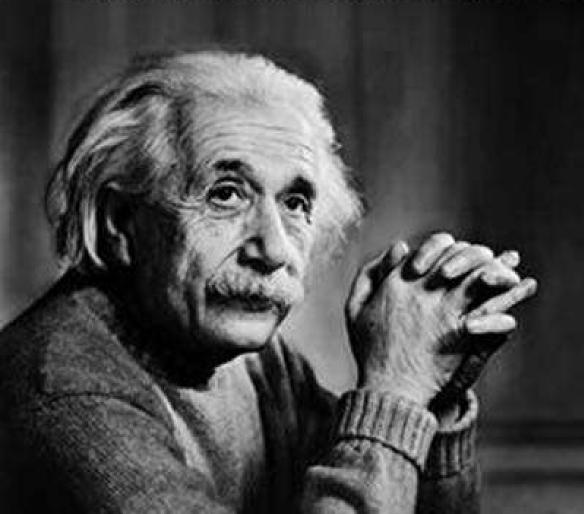## 27-28 August 2019| Shangri-La Hotel, Xian, Shaanxi, People's Republic of China (PRC)

Mr. Ian WATT
UN/CEFACT Vice Chair
International Supply Chain - Program Development Area
Email: iwatt@nextrade.world
27 August 2019

If you can't explain it **simply**, you don't understand it well enough.

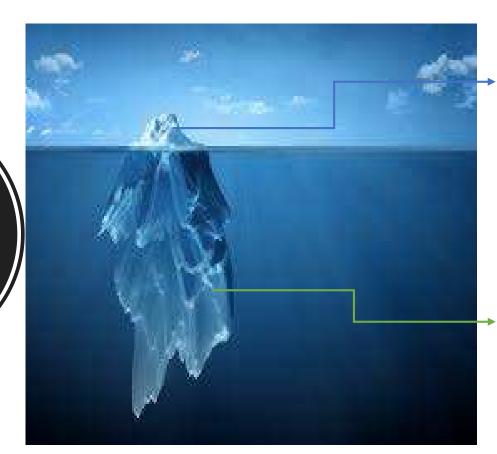– Albert Einstein

Importer & Exporter ('MSMEs')
Participation in global trade is typically undermined (World Trade Report 2016, 3)

Problem –
Landscape of
Global Trade
for Medium
and Small Size
Enterprises
('MSMEs')

Visible: Importer & Exporter ('MSMEs') participation is estimated on average just 10% of total sales in developing countries compared to 27% for larger entities. In developed countries, the share of MSMEs (Importers & Exporters) in gross exports is 41% (World Trade Report 2016, 150)

Hidden: 365-445 million MSMEs in emerging markets facing barrier to participate in trade (The World Bank <https://www.worldbank.org/en/topic/smefinance>)

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Something had to change...

- we did not try to fix the 400 year old road infrastructure in our cities
- we created super highways to support physical movement

- Similarly we have now developed Reference Data Models for defining required process driven information flows to be exchanged along super highways for information

Frictionless Global Trade for importers and exporters

REQUIRES

'Trustworthiness & Transparency'

'Trustworthiness & Transparency' Necessity

USD1.5 trillion of unmet trade finance demand, primarily affecting Micro & Small to Medium Sized Enterprises ('MSMEs'), with 21% due to the financier requiring more information.

(The Asian Development Bank ('ADB') *Trade Finance Gaps, Growth and Jobs Survey, September 2017*)

MSMEs (Importers, Exporters & Service Providers) have the potential to contribute in excess of 60% of the value of goods traded and represent approximately 80% of consignments shipped

(Organization for Economic Cooperation and Development ('OECD'), *SME Ministerial Conference Discussion Paper, 2018*)

Approximately 50% of MSME requests for trade finance are rejected by banks and in more than 70% of these cases finance is wholly unavailable

(International Chamber of Commerce ('ICC'), *Global Trade – Securing Future Growth, May 2018*)

"What will it take for the Internet to be useful to the importer and exporter trader?"

"we are talking about capturing data once, from the accountable source (although possibly in stages) and then sharing this data, as required, with the many players in the supply chain. All done electronically and no manual re-inputting"
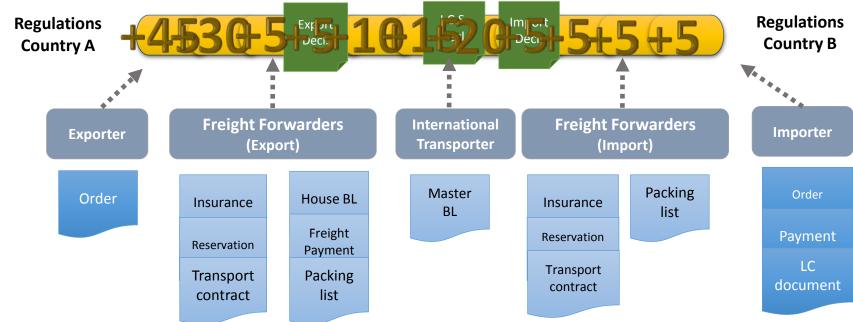
Improving Data Quality

- ## Data Pipeline
  - Results from three EU projects (Cassandra, CORE & SELIS).
  - Innovative methodology to recuperate data at the source and thus improve data quality.
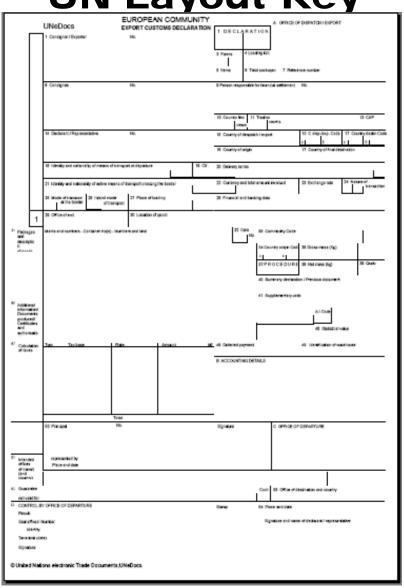
- Specifically endorsed in the WCO Revised Kyoto Convention and the WTO TF Agreement

- Provides a common basis for the layout of trade-related documents and the information they contain
  - Basis for the EU Single Administrative Document (SAD)
  - Endorsed by key international organizations

- All data elements in UNLK aligned documents have electronic equivalents in UN/EDIFACT, ebXML, …
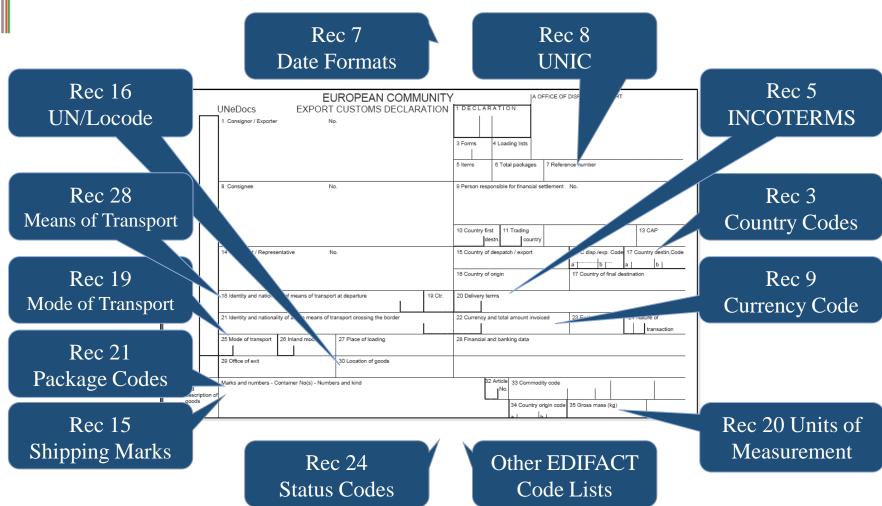
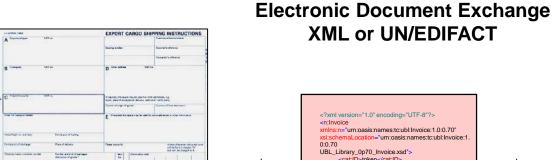- Recommendation has recently been revised

UN/CEFACT – Code Lists

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UN/CEFACT – Electronic Docs

**Electronic Document Exchange
XML or UN/EDIFACT**

**Paper Document
aligned to UN Layout
Key**

Electronic Edit Form
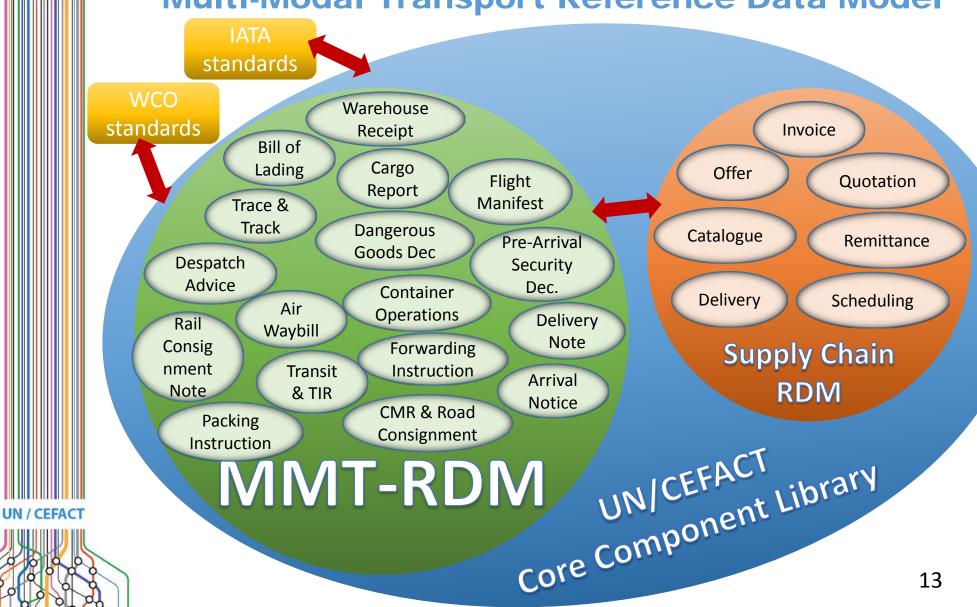
UN/CEFACT
Multi-Modal Transport Reference Data Model

IATA standards

WCO standards

MMT-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
- Air Waybill
- Rail Consignment Note
- Transit & TIR
- Forwarding Instruction
- Arrival Notice
- Packing Instruction
- CMR & Road Consignment

Supply Chain RDM

- Invoice
- Offer
- Quotation
- Catalogue
- Remittance
- Delivery
- Scheduling

UN/CEFACT Core Component Library

Declaration Information

Border Transport Means

Master Bill Information

Master Consignment Item Info

House Bill Information

House Consignment Item Information

Trade Item Information

Trade-Related Transaction Info

UN/CEFACT Pipeline Data Exchange Standard (PDES)
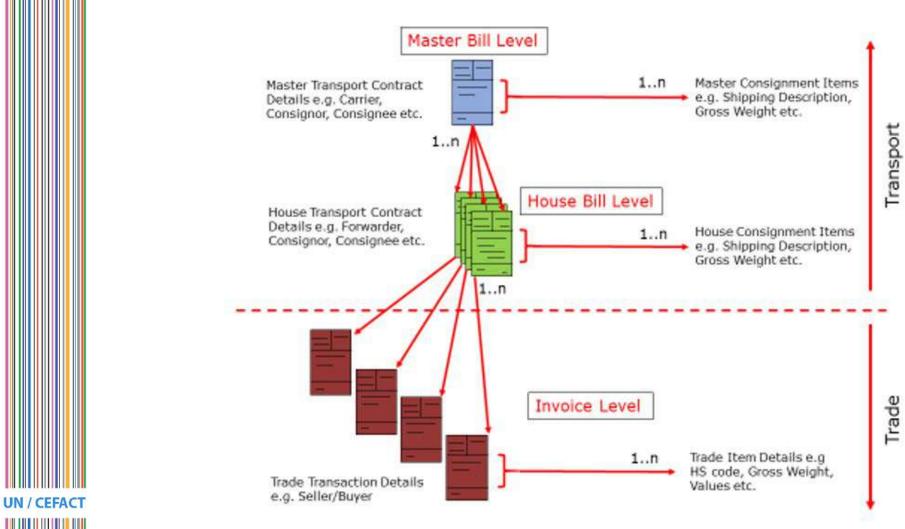
Three distinct levels of information are identified as related to the Master Bill, the House Bill and the Commercial documents; some information may be repeated on each level with interpretations which may vary slightly because of the use – but which should remain consistent

International Supply Chain Contracts

Global Trade – Semantic Anchors

Buy/Ship/Pay –
Cross-Border Trade, Transport & Customs
Business Entity Overview

Trade Data

Regulatory Data

Transport Data

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Leveraging advancing technologies

Platforms – DLT - IoT

A Hypothetical Scenario: an ecosystem utilizing advancing technologies and international standards for international trade facilitation

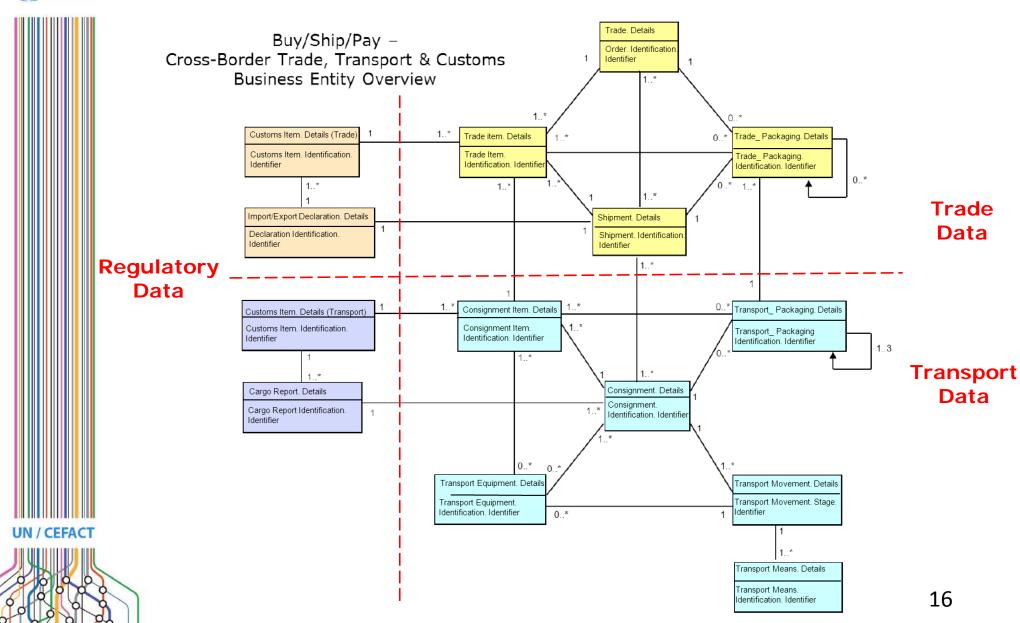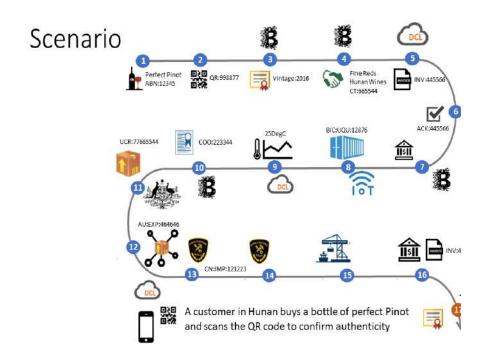• A fictional but absolutely feasible conceptual model

• A hypothetical scenario of a technical platform performing end to end supply of wine from an Australian exporter to a Chinese importer using new technologies and international standards

• A key difference between such a trade ecosystem and current state reality is that the model provides each authorized party direct access to the single source of trustworthiness about each entity and that all key data is notarized in a blockchain ledger

• Ensuring delivery of data with the highest level of reliability that can be independently verified

UN/CEFACT, Blockchain White Paper on the Technical Application of Blockchain to UN/CEFACT Deliverables, P1049 Plenary approved Q2/2019

Scenario

A customer in Hunan buys a bottle of perfect Pinot and scans the QR code to confirm authenticity

Hypothetical Scenario: Script

- 1) Wine producer Perfect Pinot Ltd. is a registered business on the Australian national business register at abr.gov.au with Australian Business Number (ABN) 111222 and is located in New South Wales (NSW).

- 2) Perfect Pinot Ltd. produced and bottled 100,000 bottles of its 2016 vintage. Each bottle has a unique serial number identified by a signed Quick Reference code (QR code) on each bottle using a system from Smart Tags Inc.

- 3) Smart Tags Inc. writes the batch of QR codes to an Ethereum blockchain-anchored goods provenance system that they run on behalf of wine producers.

- 4) Wine exporter Fine Reds (ABN 222333) negotiates an export deal with Chinese wine importer Hunan Wines which is registered on the China National Enterprise Credit Information system with an Administration for Industry and Commerce number (AIC number) 444555.

- 5) Hunan Wines places an order for 1,000 bottles of Perfect Pinot Ltd. with Fine Reds. Using a resource discovery framework, Fine Reds' platform looks up the Hunan Wines platform and e-invoicing internet address and sends the commercial invoice directly to the target platform in accordance with UN/CEFACT semantic standards.

- 6) Because Fine Reds and Hunan Wines are on different platforms and because the commercial invoice is one of the foundations of trust, the invoice is also notarized/registered on a public blockchain using an inter-ledger notary framework. Hunan Wines indicates their acceptance of the invoice, which is also notarized.

- 7) Fine Reds grants permission to access the notarized invoice to their bank, which provides lower-cost trade finance when transactions are notarized.

- 8) The conditions of carriage require that the wine remains under 25 degrees and above 5 degrees centigrade during the shipment, so Fine Reds engages the services of Cool Shippers for freight forwarding. Cool Shippers have instrumented containers with IoT temperature sensors and Global Positioning System (GPS) tracking.

- 9) Cool Shippers provides Fine Reds with the container ID and Fine Reds uses a resource discovery framework to find the container's Internet address and subscribe to the container data feed.

- 10) Cool Shippers provides the signed and notarized invoice and the Smart Tags blockchain reference to the NSW chamber of commerce, which verifies the data and issues an automated and signed certificate of origin which is registered on a blockchain.

- 11) Cool Shippers creates a consignment reference using their logistics platform and provides the consignment ID to Australian customs via an authenticated session established by the single window API. Australian customs use the resource discovery framework to locate the consignment data and subscribes to data feeds about the consignment.

- 12) The consignment data includes a reference to the notarized invoice, the container ID, the carrier ID, and the certificate of origin ID - so Australian customs can discover full data about each entity, verify integrity, and create an approved export declaration. The export declaration, with links to supporting data, is recorded as a smart contract on an inter-organization ledger.

- 13) The importer clicks a button to review and approve all export & shipping documentation and submit the import declaration.

- 14) China Hunan province customs authority observes a new import declaration. China customs use blockchain technology to verify the trade documents and confirms that Fine Reds and Hunan Wines have a sufficient history of high integrity trading. The consignment is pre-cleared by Hunan customs.

- 15) On arrival in Dadukou Port, the container data feed indicates that the cargo has landed and has been unpacked. The temperature history is notarized and confirms that temperature has remained below 25 and above 5 degrees centigrade for the duration of the journey.

- 16) When the pallet of wine is scanned into Hunan Wines warehouse, the consignment resource IoT device emits the "received" event. This, together with other notarized transactions is sufficient information for Fine Wines' bank to release an invoice finance payment at very reasonable terms.

- 17) Hunan Wines releases the Perfect Pinot Ltd. wine to a number of retail outlets in Hunan province. A customer buys a bottle and scans the QR code on the bottle. The Smart Tags platform confirms the authenticity of the wine and records the scanning event against the specific bottle serial number.

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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

Upcoming events of UN/CEFACT

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

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

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UN/CEFACT & Internet of Things

- Smart Container project
  - Looking at the data which would be shared with the rest of the supply chain
  - This could trigger smart contracts and events like invoicing

- IoT general project
  - Launching early 2019 will be looking at other use cases of IoT and how they relate to UN/CEFACT standards
  - Could potentially have the same type of events triggered

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White Papers on Trade Facilitation

http://www.unece.org/tradewelcome/un-centre-for-trade-facilitation-and-e-business-uncefact/outputs/guidance-material/doc.html

- White Paper overview of Blockchain for Trade
- White Paper on Technical Application of Blockchain to UN/CEFACT Deliverables
- White Paper for Smart Containers
- White Paper on Data Pipeline Concept for improving data quality in the Supply Chains
- White Paper on Trusted Transboundary Environment
- Technical Note on terminology for Single Window and other electronic platforms
- White Paper on Reference Data Models
- White Paper on Paperless Trade

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UN/CEFACT Bureau From 05/2018

Sue PROBERT Chair

Communicat° Focal Point

Anders GRANGÅRD

Estelle IGWE	ITP PDA	ITPD	Int'l Trade Procedures	SWD	Single Window	TFIG Focal Point	TFA Focal Point	M+T PDA		

| Ian WATT | International Supply Chain PDA | | ISC Orchestration | SC+P | Supply-Chain & Procurement | T+L | Transport & Logistics | SPEC | Specificat° | |
| Raffaele FANTETTI | | A+A | Accounting / Audit | F+P | Finance & Payment | INS | Insurance | | Library Maintenance Focal Point | |

| Tahseen KHAN | Regulatory PDA | CBM | Cross-Border Mgmt | EGOV | e-Governmt | ENV | Environmt Mgmt | | Syntax Focal Point |
| | | | | | | | | | Validation Focal Point |

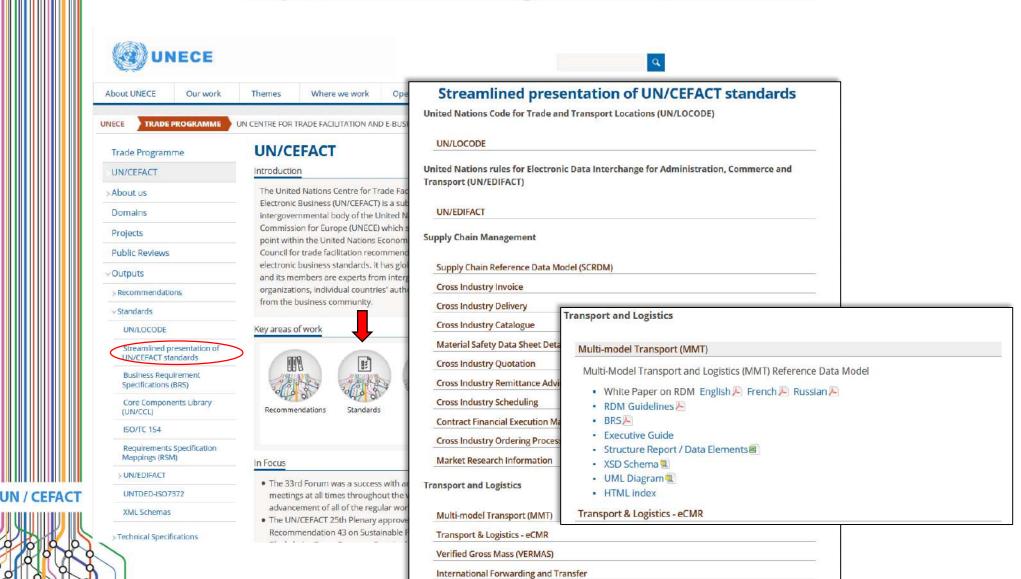| Harm Jan VAN BURG | Sectoral PDA | AGRI | Agriculture Fisheries & Agri food | T+T | Travel & Tourism | UTIL | Utilities | | Project Review & Support Focal Point |

UN/CEFACT - Where to find documents

http://www.unece.org/uncefact/tfrecs.html

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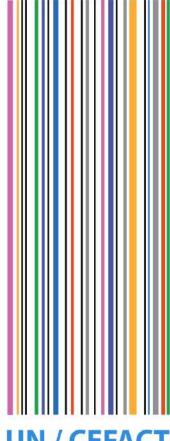
- www.unece.org/
- www.unece.org/trade
- www.unece.org/cefact/
- tfig.unece.org

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

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Thank you

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27 August 2019