

Multiyear Expert Meeting on



**Transport, Trade Logistics and Trade
Facilitation, Seventh session:
Trade facilitation and transit in support
of the 2030 Agenda for Sustainable
Development**

7 to 9 May 2019

Blockchain for Trade Facilitation

Presentation by

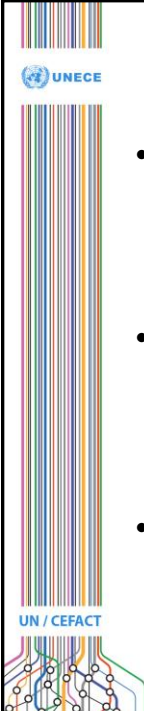

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UNCTAD Multi-year Expert Meeting

Session 3: Technology for Trade Facilitation
Blockchain for Trade Facilitation

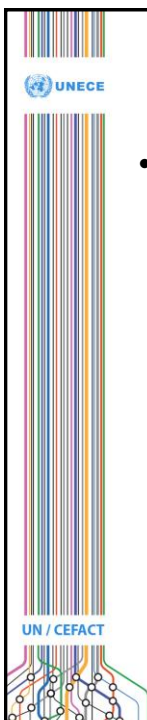
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UNECE – UN/CEFACT
8 May 2019



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
- [Sectoral Use Cases](#)
 - Presenting 31 case studies in 10 Industry sectors
 - Work in progress

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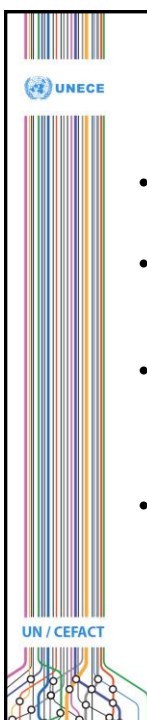
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Blockchain opportunities

- Blockchain has the potential to deliver significant improvements to trade and electronic business transactions because :
 - Immutable and verifiable transactions recorded in a blockchain can allow the elimination of paper in areas where today it is still required;
 - Automated (and immediate) reconciliation algorithms can facilitate faster payments
 - The tracing of digital assets through 100s or 1000s of transactions can support the tracking of sensitive goods and digital rights (for example IPR)
 - Immutable “original” electronic certificates, licenses and declarations can be linked with goods through digital twins in order to facilitate regulatory procedures.

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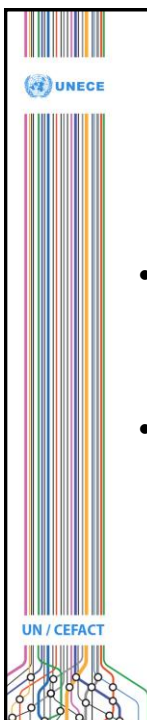



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The potential TF benefits of Blockchain

- The most valuable Blockchain applications for trade are based on Smart Contracts within a secure environment.
- Smart contracts usually require that blockchains process **external information**, from the **IoT** or other forms of “**oracles**”
- For example, if a sensor inside a container indicates that its temperature has exceeded a permitted level, a smart contract could send a request for an inspection or trigger an insurance payment.
- The concept of Smart Contracts was invented in the 1990s by Nick Szabo; the proposal to programme a blockchain for implementing them was made by Vitalik Buterin in late 2013 and Ethereum went live in July 2015.

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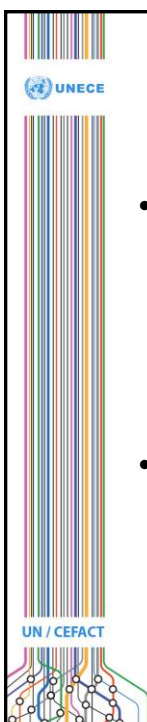
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Some Figures for Smart Ledger Technology benefits

- Estimated potential boost to World Trade: between \$35 and \$70 billion per year
- An estimated reduction in the cost of importing a single container of \$45

From: The Economic Impact of Smart Ledgers on World Trade, The Centre for Economics and Business Research, the Cardano Foundation and the Z/Yen Group, April 2018

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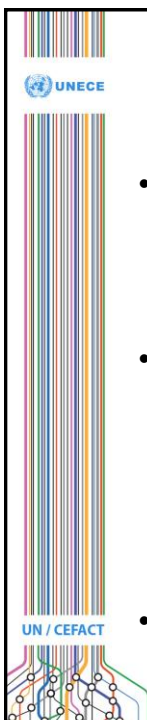
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Blockchain and the SDGs

- Some Blockchain implementations can be used to support SDGs for example:
 - The establishment of identities
 - Tracking information linked to identities
 - The distribution of resources
 - Tracing goods and their content/origin
- Briefing note on Blockchain for the United Nations Sustainable Development Goals
 - http://www.unece.org/fileadmin/DAM/cefact/cf_plenary/2018_plenary/ECE_TRADE_C_CEFAC_T_2018_25_E.pdf


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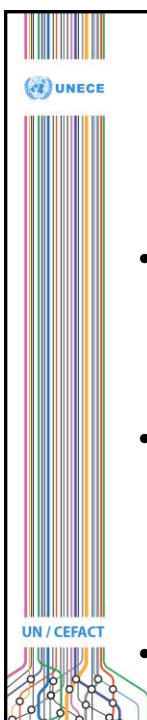



 **SDG 1: No Poverty - End poverty in all its forms everywhere**

- The World Bank has supported Kenya in the development of a mobile phone-based bond issuance project called 'M-Akiba', which will assess the use of Blockchain technology to simplify the platforms used for the issuance and sale of bonds.
- 'M-Akiba' will allow users to purchase government bonds in very small amounts, without the need for a bank account, with transactions ranging from US\$30 to US\$140. The pilot phase of this mobile-only government bond platform was launched in March 2017, for US\$1.5 million. After the first week of the pilot launch, 40,000 users had registered on the platform.
- <http://www.m-akiba.go.ke/>









 **SDG 2: Zero Hunger – End hunger, achieve food security and improve nutrition and promote sustainable agriculture**

- The United Nations World Food Programme (WFP) is working extensively to provide refugees from the Syrian conflict with an effective way to pay for their food in the refugee camps.
- The pilot of this implementation, 'Building blocks', was conducted in Jordan's Azraq Camp, where 10,000 refugees have now the means to pay for their food through a blockchain-based system.
- <https://innovation.wfp.org/project/building-blocks>





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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UN/CEFACT Process driven approach

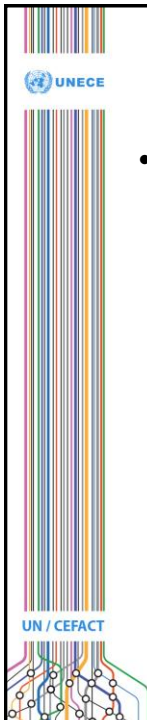
UN/CEFACT evolution


- From Document centric to Process driven artefacts
(*Contextualized Business Artefacts*)
- Supports Document centric & Process driven workflows
- Standardized syntax-neutral data exchange structures, based on common Master data exchange structure
(*from which complete documents and/or snippets of documents can be created in any chosen syntax e.g. XML, JSON or UN/EDIFACT etc.*)

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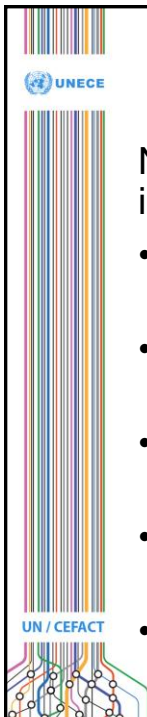
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 **Benefits of UN/CEFACT Standards**

- Blockchain implementations can benefit from existing UN/CEFACT standards
 - Semantics standards such as Core Component Library (CCL)
 - Controlled vocabulary
 - Complex data structures e.g. EDI Messages
 - Extensible Marked-up Language Naming & Design Rules (XML NDR)
 - Business Exchange models in multiple areas (Transport, Logistics, Commercial, Finance ...)
 - Modelling methodologies and standards
 - (Business Requirement Specifications and Requirement Specification Mappings)
- All deliverables at <https://unece.org/cefact/>


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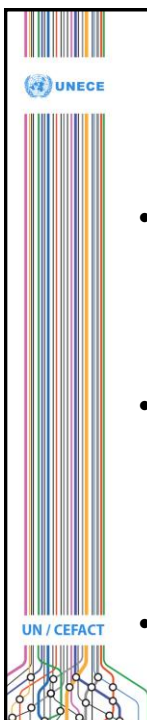


 **Blockchain challenges**

Not all Blockchains and DLTs are equal, they vary in:

- **Vulnerability** (to hacking and other system failures)
- **Robustness** (how well they handle problems such as flawed code or being hacked)
- **Cost** (transaction cost, sometimes referred to as «gas»)
- **Speed and ability to scale up** (to large transaction volumes)
- **Degree of Privacy** (no anonymity vs pseudo anonymity vs total anonymity)

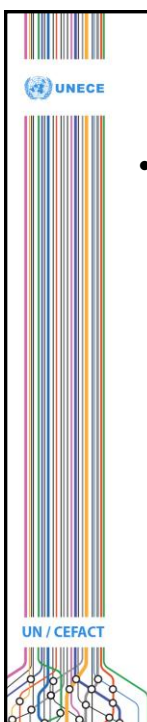
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Blockchain challenges

- Cannot reasonably expect that all exchanges in a single operation be centralized on a same blockchain
- Issues of interoperability on several levels
 - Semantics
 - Syntax
 - Trust
- Scalability

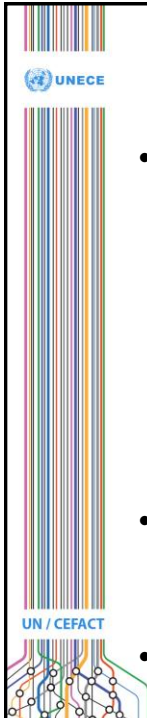
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New UN/CEFACT Project

- Cross-border Inter-ledger exchange for Preferential Certificates of Origin using Blockchain
 - B2G and G2G exchanges covered
 - Looking at key issues to consider while creating, administering and using such platforms
 - Need for standards

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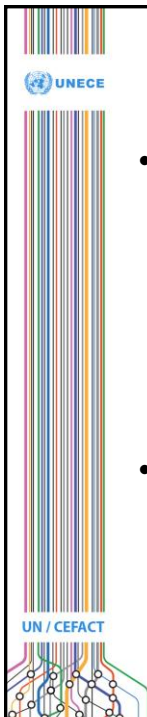
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Blockchain challenges

- Use of this technology has an implied computational cost
 - Distributed ledger (duplication of data on multiple platforms)
 - Implementation of authentication technology (Digital signature/Public Key Infrastructure signatures)
 - Implementation of hash technology
 - Current implementations are energy – and computing power - intensive
- May create a barrier
 - For developing/transitioning economies
 - For MSMEs
- May force investment in non-core aspects of an economic operator's business

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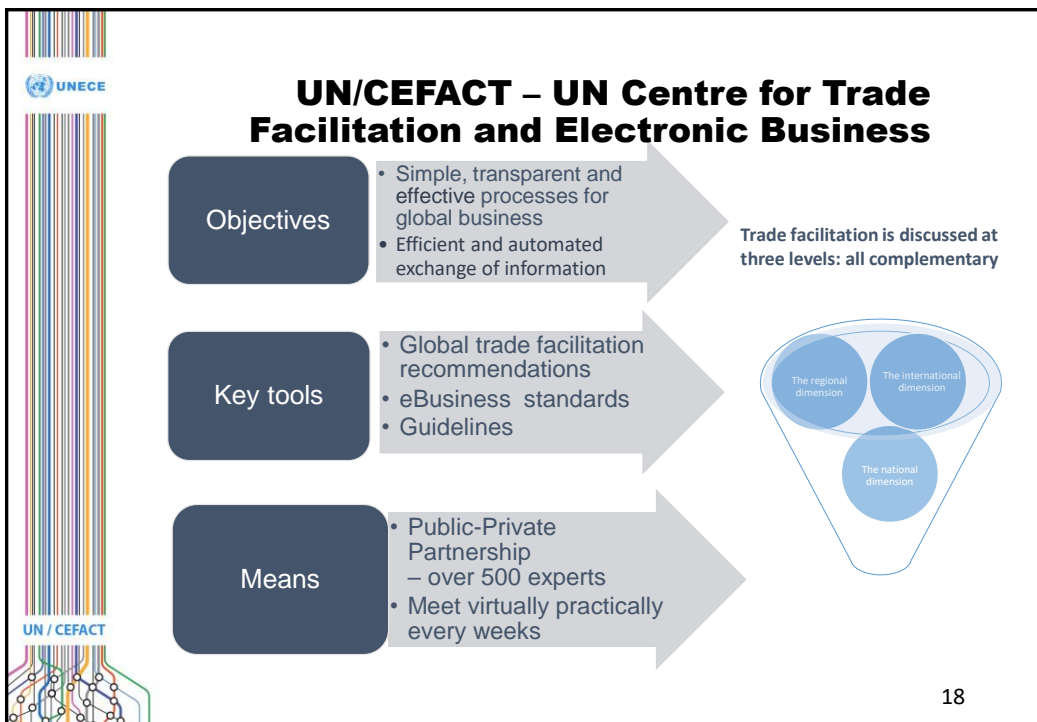
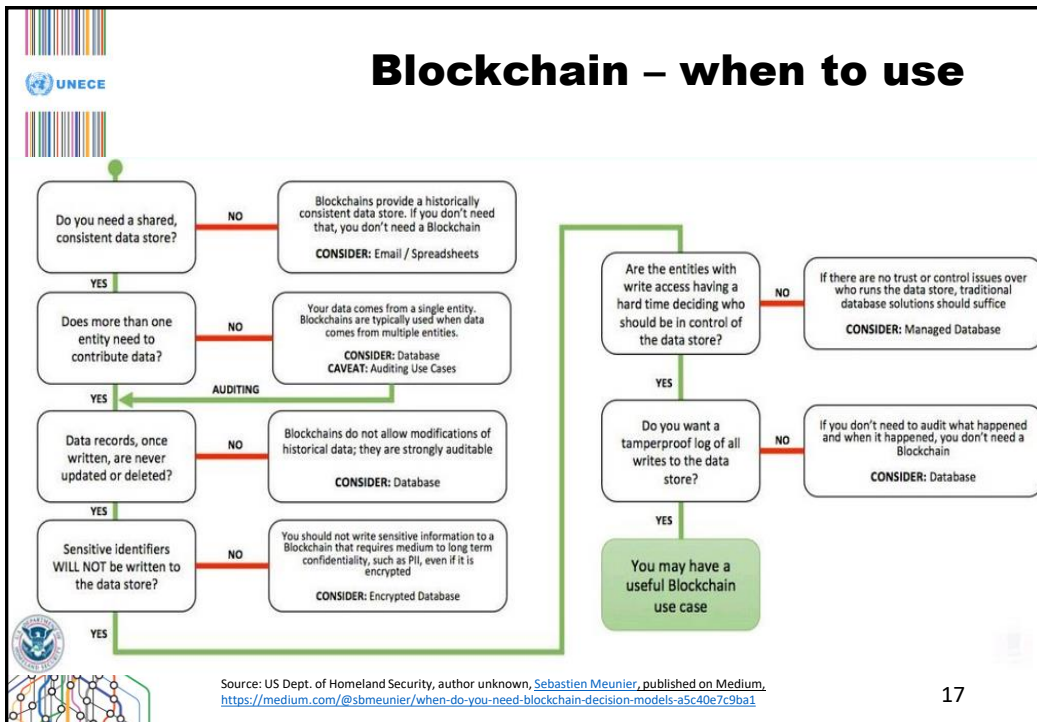
Blockchain challenges

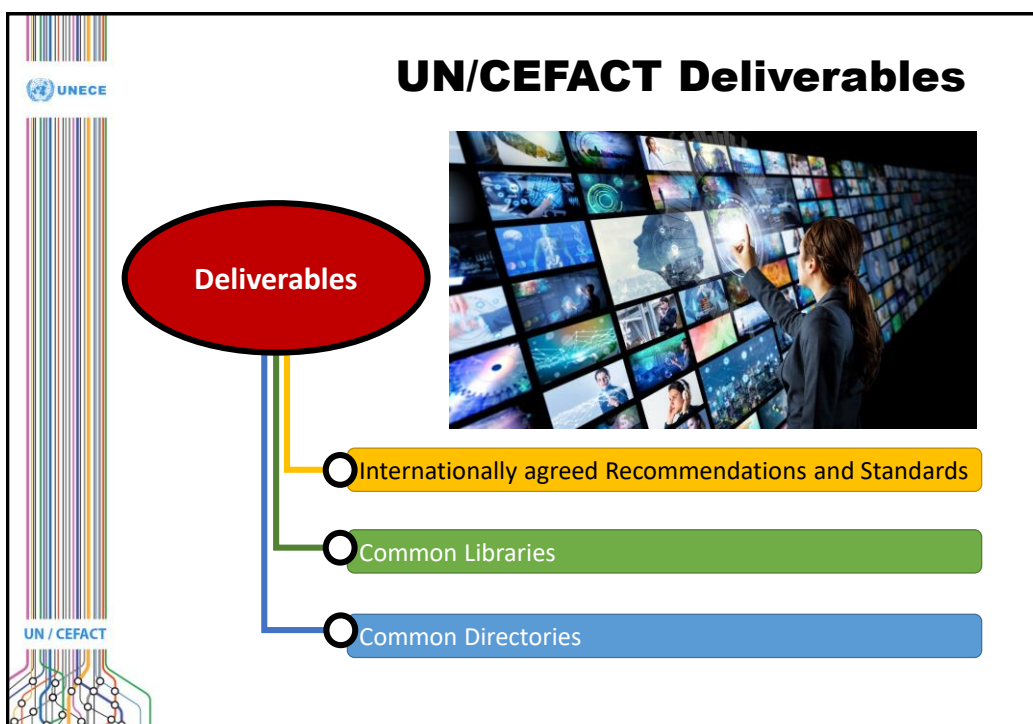
- The chosen method of authentication should be “as reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all the circumstances, including any relevant agreement.”
- Blockchain is a very high level of reliability and not all data transactions require the highest level of reliability

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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.

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More information on UN/CEFACT

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

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Thank you

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