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Contribution by UNECE

to the CSTD 2020-2021 priority theme on "Harnessing blockchain for sustainable development: prospects and challenges"

PRIORITY THEME 1: Harnessing blockchain for sustainable development: prospects and challenges

United Nations Commission on Science and Technology for Development (CSTD)

Could you share specific examples, projects or initiatives that have used or plan to use blockchain technology for the SDGs? What are the main challenges confronted while trying to implement these projects/initiatives? (Examples may include blockchain solutions for financial inclusion, trade facilitation, supply chains, health, energy, e-Government, etc.)

There are several examples of use of blockchain to realize SDGs. Most of them come from the private sector but however, NGOs and IOs are also working on this domain. For example, in the United Nations Centre for Trade Facilitation and e-business (UN/CEFACT) – a subsidiary body of the UNECE - we are running a UN-interagency round table called "Blokchain for SDGs" in the aim to update each UN organisation on the on-going work with regards to this new Distributed Ledger Technology as well as share know-how. This project has been on-going since the month of May 2019 and groups organizations such as SDG Lab, UNECE, IOM, ITC, ITU, JIU, UNAIDS, UNCTAD, UPU, WFP, WHO, WIPO, and WTO. Sharing updates on each other's work and know how, mean that we are looking to understand the full possible implementation of blockchain to realize each and every SDG of the 2030 agenda.

UNECE has an active project focused on enhancing transparency and traceability in the garment and footwear sector through blockchain. In this particular casis, UNECE is looking at promoting SDG12. It has been proven by UNECE experts that brands only have a limited overview of their value chains. Most can identify and track their immediate (Tier 1) suppliers who manufacture and assemble garments, but information is often lost about the suppliers of their suppliers. A UNECE study demonstrates that only around 34% of fashion companies implement tracking and tracing in their supply chain – and most of these reach Tier 1 only (UNECE study, 2019). This means that fashion companies only have a control/overview of the value chain process that does not go further than the manufacturing and assembling of the product. UNECE, alongside its partners (ILO and ITC), is launching a pilot to create a digital identity for a cotton shirt by connecting it to sustainability certificates. It is proven that the cotton sector has major environmental and social impacts, which are higher than for other textile fibers.

Using blockchain technology, the UNECE pilot project seeks to keep track of cotton production from the field to the shop by exchanging immutable information throughout the value chain. The overall purpose being to test the use of blockchain technology for enhancing traceability and due diligence in the cotton value chain with regard to social and environmental sustainability risks through increased transparency and information exchanges in support of responsible sourcing.

More details about this project: http://www.unece.org/tradewelcome/traceability-for-sustainable-garment-and-footwear.html

Another example of active project is UN/CEFACT Chain – Guidance for cross-border interoperable blockchain infrastructure 4.0. This project is following two main directions:

1) To establish a framework/mechanism for development and implementation of the UN/CEFACT blockchain services infrastructure, which will be compatible and in line with other services infrastructure and usable or extendable globally, and
2) To prepare a whitepaper on the strategy for development and implementation of interoperable global blockchain technology infrastructure, taking into consideration existing relevant standards

Encouraging goverment collaboration on international level encounter many obstacles, but in recent years blockchain and other distributed ledger technologies (DLT) have emerged as a leading contender in new technology to address these challenges. Use cases create opportunities for blockchain to increase trust and transparency among actors, to secure immutable data and increase efficiency in transactions, and incentivize actors to act responsibly according to the rules of a system. Many of these

use cases have the characteristics of utilities, which could lead to a vendor lock-in and a disproportionate balance of power in favour of large blockchain solution providers, unless their development is managed carefully. For this reason, interoperability has become a priority for both governments and industry actors conducting pilot projects.

The project's whitepaper aims to explore the challenges to actually implementing blockchain interoperability from legal, technical, and governance points of view. Interoperability is complex, and the fact that blockchain is still an emerging technology further complicates efforts to solve interoperability in the general case. With most pilot projects being conducted by private sector actors, there is a risk of the dominant technology being chosen by market forces alone. At the same time, there is an opportunity for the public sector to take an active role in guiding the development of the technology towards incorporating interoperability-by-design, as well as distributed governance models for DLT infrastructure .

More details about this project:
https://uncefact.unece.org/display/uncefactpublic/UNCEFACT+Chain+project

Blockchain technology, however, include some issues as well: these issues mainly concern privacy and security. These two points are the issues that are at stake with the blockchain technology and need regulation/recommendation, coming from international organisations.

For this reason, the UN/CEFACT, alongside its adivisory group on advanced technologies, is continuesly looking at developing a blockchain-based environment/framework in which trustworthy, common identification and communication interchange is facilitated. This aims at creating a trustworthy context for Blockchain, with the aim of enhancing its benefits and reducing its risks. UN/CEFACT is looking at developing interoperability of message exchange to promote a global regulation and framework for blockchain, enabling blockchain to fully deploy its benefits for all the 2030 agenda SGS, while minimizing the risks.

Indeed, UN/CEFACT created UN/CEFACT Standards and UNECE Recommendations to provide a global basis for interoperable semantic data exchange including UNECE Recommendation 33 on Single Window21 and Recommendation 37 on Single Submission Portals (SSPs)22 together with 200+ UN/CEFACT data exchange standards of UN/EDIFACT UNSMs23 and the UN/CEFACT Reference Data Model subset XML Schemas24 which are based on UN/CEFACT Core Component Library (CCL) 25. These include the Electronic Sanitary and Phytosanitary Certificate (eCERT) schemas26, the Electronic Consignment Note (e-CMR)27 schema.

What are the challenges that governments have faced or may face for promoting innovation and competence building in blockchain, to contribute to their national development priorities and accelerate the progress towards the SDGs?

Challenges that government may face when implementing blockchain to realize SDGs include the realization of proper public-private partnerships, realize and implement data privacy and security. There is a need for global guidance and rules on this matter. Governemnts are also facing the lack of knowledge on this new technology and interoperability issues, when implementation is done without high-level coordination. For some policy makers, as well as some citizens, blockchain still represents an abstract technology, from which they do not know the benefits. Governments need to be work with IOs, such as our advisory group or our inter-agency round table on blockchain, to be better educated on the issue of blockchain to fully capture its benefits, limits, issues and its nature.

What are the actions that the international community, including the CSTD, can take to contribute to harnessing blockchain for sustainable development?

The international community should create inter-agency meetings to share know-how, experiences and ways forward to realize SDGs through blockchain. The international community should look at existing

and developing standards, recommendations, regulations to explain blockchain, harness its potential, promote its privacy and security. This can also be done through studies, reports, white papers and any other relevant documentation.

4. Could you suggest some contact persons in your agency responsible for projects/policies and international collaboration in this context as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

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5. Do you have any documentation, references, technological assessments, future studies or reports on the priority theme?

A briefing note on blockchain for SGS:
http://www.unece.org/fileadmin/DAM/cefact/cf_plenary/2018_plenary/ECE_TRADE_C_CEFACT_2018_25E.pdf
A white paper on blockchain:
http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-457E_WPBlockchainTF.pdf
A white paper on blockchain application through UN/CEFACT recommendations:
http://www.unece.org/fileadmin/DAM/cefact/GuidanceMaterials/WhitePaperBlockchain_TechApplication.pdf
Blockchain in Trade Facilitation: Sectoral challenges and examples :
https://www.unece.org/fileadmin/DAM/cefact/cf_plenary/2019_plenary/CEFACT_2019_INF03.pdf