



REPUBLIC OF SLOVENIA
MINISTRY OF ECONOMIC DEVELOPMENT
AND TECHNOLOGY



TOWARDS GLOBAL INTEROPERABLE INFRASTRUCTURE

UN/CEFACT Chain

Ljubljana, 09 July 2020

UNECE, UN/CEFACT

Motivation for the project

- *Development of EBSI*
- *Absence of global crossborder infrastructure solutions*
- *Global standardization challenges*
- *Approaching 2030 with SDGs and blockchain as a tool for efficient achievement of the Goals*

UN/CEFACT CHAIN White paper

– *crossborder interoperable blockchain infrastructure*

(1) *taking into consideration existing standards* for implementation of cross border Blockchain infrastructure in an interoperable manner, regarding

- (i) architecture reference model,
- (ii) process modelling for Smart contracts to test and implement use cases
- (iii) Blockchain application data needs

(2) *based on analysis* of

- (a) Legal interoperability
- (b) Governance interoperability
- (c) Technical interoperability

	»Relay« or Multi- DLT interoperability	DLT Systems Interoperability	Consensus Interoperability
1. Legal Interoperability	Legal frameworks, authentication and authorization identity, ...		
2. Governance Interoperability	Governance models, commercial model, on-chain, of-chain, policies, consensus mechanisms		
3. Technical Interoperability	Data standardization, token transfer, certificates, smart contracts, containerization, consensus mechanisms, ...		
4. Quantum Key Distribution	Using Quantum Key Distribution as basis for establishing secure DLT infrastructure, ...		
5. Use Cases	Use cases illustrating interoperability along legal, governance and technical areas		

UN/CEFACT project UNECE Chain working groups preparing
Whitepaper on strategy for development and implementation of interoperable global
blockchain technology infrastructure



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Questionnaire:

For Governments

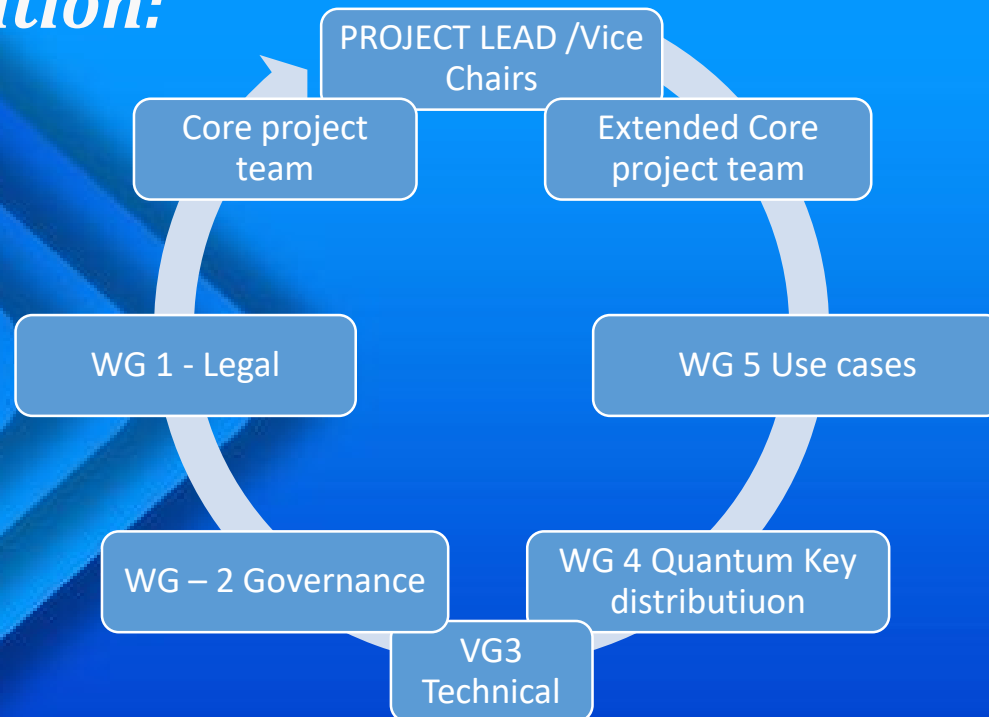
*For Blockchain stakeholders (Companies,
organizations)*

For Blockchain Actors (Developers, innovators)

Planned for end of July

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Organization:



UN/CEFACT CHAIN White paper

(5) WG 5: Use cases: analysed through three dimensions of interoperability: legal, governance and technical interoperability

Energy efficiency

Challenges for legal interoperability:

- (i) legal certainty*
- (ii) GDPR related issues*
- (iii) Conflict of laws in different jurisdictions for crossborder interoperability*

Challenges for governance interoperability:

- (i) Governance models (consortium blockchains for each energy community)*
- (ii) Market related issues*

Challenges for technical interoperability:

- (i) The number of transactions, which can be cleared is often smaller than through conventional electronic payments*
- (ii) Radical transformation in energy markets in short period of time*

Energy efficiency

Solutions for legal interoperability:

- *Defining trusted data and identity sources and their locations for SC validation and execution (market places fully managed and regulated by local legislation of energy communities)*
- *Detailed determination of trust related aspects*
- *Semantic interoperability (through agreed vocabularies)*
- *Regulatory guidances*

Energy efficiency

Solutions for governance interoperability

- *Governance model to be refined for each community for single mother blockchain network*
- *Inter chain dispute resolution mechanisms*

Solutions for technical interoperability

- *Semantic interoperability of SC*
- *Interoperability between blockchains, which will enable consensus mechanisms and identity management between communities and project pilots*

Value chain/Supply Chain

Challenges within legal interoperability:

- *Identification of data involved and complexity of supply chains*
- *Competition law: in case of supply chain tracking (fear of monopoly)*
- *Sensitive information in food industry – challenge for tracking*

Challenges within governance interoperability:

- *Security on data access governance (protocols for blockchain sourcing must be open and decentralized)*
- *Economic incentives: blockchain participants are provided with a high degree of confidence and economically incentivized for participating at the platform*

Challenges with technical interoperability:

- *Feasibility of technological interoperation with more blockchains*
- *Data flow between 2-layer protocols*
- *Interoperability by design: blockchains designed to be self consistent*

Value chain/Supply Chain

Solutions within legal interoperability:

- *Guidance for parties participating in permissioned blockchains across borders (choice of law, arbitration clauses)*
- *Encryption which solves visibility issues*
- *Parts of information to be shared between parties and part publicly shared*

Solutions for governance interoperability

- *Nested encryption can allow for governance interoperability within hybrid ecosystem when keys to access data are encrypted*
- *Integration of API to link legacy systems with blockchain*
- *Building templating system for allowing blockchain participants to create custom „white label“ apps to structure data collection*

Solutions for technical interoperability:

- *“Internet-style” approach of a single agreed-upon protocol, with service providers running their own nodes*
- *Combination of certification and blockchain layer: securing certificates which contain files with due diligence information chosen by the company*
- *Solution to data authentication challenges lie in combining AI & IoT with DLT for establishing smart agriculture paradigm*

Digital identity

Challenges for legal interoperability

- *sending personal data through the blockchain*
- *GDPR related challenges*

Challenges for governance interoperability

- *the challenge lies in single and multiple cross-platform DLT governance interoperability and content user governance*
- *Questions: How to trust identity in different Blockchains, How to certify a credential whose proof is stored in a different Blockchain, How to share credentials in different jurisdictions.*

Challenges for technical interoperability

- *how to interact between different DLTs and be compatible within the Multi-DLT systems*
- *challenge with digital identity solutions is establishing a privacy-respecting, legally recognized, secure channel of identity between any two participants without universal trust in any single identity provider*

Digital identity

Solutions for legal interoperability

- *transaction is authorized by the user*
- *no personal information is located in the blockchain transaction*

Solutions for governance interoperability

- *choosing the platform that will be most compatible and Governance interoperable according to deployment needs*
- *Governance is created up-to-down, where a main parachain is used as the root of Identity for different Blockchains and as a way of discovery for all of them.*

Solutions for technical interoperability

- *Multi DLT interaction Solution—The easiest solution would be to adopt the single DLT standard*
- *issuing credentials that can then be used to provide identity-related information such as name, date of birth, age, nationality, or to verify facts about that information without sharing the information itself.*



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Thank you for your attention,
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