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ITU issues guidance on the adoption of blockchain

ITU

6-7 分鐘

“We are providing potential blockchain adopters with a clear view of this new technology and how it could best be applied,” says Wei Kai, China Academy of Information and Communications Technology, Chair of the ITU Focus Group on the ‘Application of Distributed Ledger Technology’.

Use cases of blockchain and distributed ledger technology (DLT) are emerging in telecom, finance, energy, supply chain and government, to name just a few of the many sectors interested in DLT application.

“Our aim has been to help industry and government undertake their DLT journeys with greater certainty,” says Wei Kai.

The Focus Group has developed a toolkit to serve all DLT innovators and practitioners, recognizing that DLT applications will take a wide variety of forms.

DLT terms and definitions will provide the foundation for greater cohesion in the development and application of DLT.

A set of ‘assessment criteria’ will support efforts to understand the strengths and weaknesses of DLT platforms in different use cases.

A high-level DLT reference architecture details the key elements

of a DLT platform to build clarity around how DLT platforms should be described and assessed.

The group has documented and analyzed some 60 use cases of DLT, an analysis that includes insight into the relevance of DLT to the pursuit of the United Nations Sustainable Development Goals.

It has also offered a framework for the consideration of DLT's regulatory implications. And it has forecast future technological developments in view of their expected impact on DLT.

< Download the guidance documents free of charge >

The most promising use cases?

"We are still at the very early stages," says Wei Kai. "With the exception of cryptocurrency, we don't yet see any killer apps."

The guidance documents analyze DLT use cases of maturities ranging from ideas and concepts to Proofs of Concept and full-fledged implementations.

"DLT is so broad, it's very difficult to compare the different use cases," says the Focus Group's Vice-Chair, Suzana Maranhão, Brazilian Development Bank.

"Supply chain, however, looks to be an area where DLT applications could deliver considerable benefit in the near term. The Focus Group received many use cases in this field."

With all participants sharing the same view of supply chain data, DLT can increase the efficiency of supply chain management and greatly simplify dispute resolution.

DLT's tamper-proof chain of events can strengthen traceability, increasing the transparency of products' provenance and limiting the time and expense required to verify conformance with quality standards.

And in their simplest form, adds Maranhão, these DLT applications do not require a transfer of assets, with the result that there are far fewer regulatory implications.

“Use cases involving an exchange of assets have more complex implications, and they are maturing more slowly as a result,” says Maranhão.

A new world without central authority?

Blockchain and DLT can support trusted exchanges without a central authority to intermediate these exchanges. Innovation in the field has the potential to support a shift towards more distributed models of establishing trust.

“But the idea of a new world without need for central banks or governments is simply too radical,” says Wei Kai. “We will see a compromise between this new world and traditional law and regulation. It will be more evolution than revolution.”

ITU is the United Nations specialized agency for information and communication technology (ICT). Its global membership includes 193 Member States and some 900 leading companies, universities, and international and regional organizations.

“ITU’s diverse membership will help us to strike an appropriate balance between different stakeholders’ interests,” says Wei Kai.

“ITU international standards will be influential in meeting the dual objective of supporting DLT innovation while respecting the purposes of established institutions.”

The power of standard terms and definitions

The Focus Group has brought together a diverse range of interests, from governments and their regulators to multinational companies, civil society organizations, and SMEs and start-ups.

“It was a very honest and open exchange of views,” says Skylar

Hurwitz, consultant at Jelurida and founder of Demetrius Consulting, two of the many SMEs that participated in the Focus Group.

Hurwitz highlights the value of the DLT terms and definitions agreed by the Focus Group.

“DLT projects tend to use the terms friendliest to their platforms,” says Hurwitz.

“This Focus Group was the first neutral place to collaborate on standard terms and definitions. Marketing was put aside, recognizing the potential to move towards international standards.”

Hurwitz makes an example of the definition of ‘smart contracts’.

“It’s empowering. With the support of an agreed definition, we can now progress to the next stage of comparing the different types of smart contracts and their competitive benefits.”

Join the ITU standardization community

ITU Focus Groups are open to all interested parties. These groups accelerate ITU studies in fields of growing strategic relevance to ITU membership.

The guidance documents developed by the Focus Group were approved by last week’s meeting of the ITU Telecommunication Standardization Advisory Group.

These documents will support ITU standardization in working groups including Q22/16 (Distributed Ledger Technologies and e-Services) and Q14/17 (Security aspects of Distributed Ledger Technologies).

ITU standardization for blockchain and DLT will benefit from ITU’s efforts to accommodate SMEs and start-ups with a pilot project offering free-of-charge participation. This pilot project will be

succeeded by a new category of ITU membership for SMEs characterized by a greatly reduced membership fee.

< Learn more about the SME programme >

- Was this article Helpful ?
- yes no

Question 22

5-6 分鐘

(New Question)

Motivation

A distributed ledger is a consensus of replicated, shared, and synchronized digital data geographically spread across multiple sites, countries, or institutions. There is no central administrator or centralized data storage.
Distributed ledger technologies (DLT) are secure by design and exemplify a distributed computing system with high Byzantine fault tolerance. Decentralized consensus has therefore been achieved with a DLT system. This makes DLT potentially suitable for the recording of events, medical records, and other records management activities, such as identity management, transaction processing, documenting provenance, food traceability, and voting.

A range of standardisation-related and industry initiatives have commenced across the globe examining different aspects of DLT/Blockchain. Various activities, including exploratory workshops and cross-industry collaboration initiatives, such as the Hyperledger project have served as forums for discussion of potential technical challenges around the widespread adoption of DLT.

An ITU-T Focus Group on Application of Distributed Ledger

Technology (FG DLT), was established May 2017 under the auspices of TSAG. The focus group addresses a number of topics of DLT, for example, use-cases and applications, requirements for the implementation, regulatory and policy aspects, security and privacy aspects, among many other aspects.

ISO/TC 307 develops standards on DLT/Blockchain based on the market need.

ITU-T SG16 is a leading group of e-services and multimedia applications. DLT technology has a good potential of new technology and multimedia applications that needs trusted infrastructure. SG16 does not have the explicit group to discuss the above problems.

This Question develops Recommendations on Distributed Ledger Technologies and DLT based e-services.

Study items

Study items to be considered include, but are not limited to:

- concepts, coverage, vision and use cases of multimedia applications and e-services based on DLT;
- characteristics and requirements for multimedia applications and e-services based on DLT;
- architectural framework and communication technologies of multimedia applications and e- services based on DLT;
- analyse and evaluate the current status of DLT and its maturity to support multimedia applications and e-services;
- research on consensus algorithm for different multimedia applications and e-services with various requirements on DLT;
- investigation of digital assets of multimedia applications and e-service on DLT, including management, exchange and etc.;

- general requirements and framework for DLT;
- research security and privacy aspects related to multimedia applications and e-services based on DLT;
- examine means for extending on-line trust in the context of multimedia applications and e-services using DLT;
- identify stakeholders with whom ITU-T could collaborate further on and potential collective actions and specific next steps.

  NOTE – This Question will take into consideration identified policy and regulatory implications of application of DLT in multimedia applications and e-services.

  Tasks

  Tasks include, but are not limited to:

- Utilize the deliverables related to DLT that were produced by relevant ITU-T Focus Groups (e.g. FG DFS, FG DFC, FG DLT), and study gaps among those groups and what need to be achieved;
- Develop documents which reflect how technologies enable applications and services by the underlying nature of the ecosystem taking into account existing applicable best practices of risk assessment methodologies and business models;
- Develop Recommendations on the definitions of terminologies, taxonomy, reference architecture, testing and evaluation for DLT infrastructures and DLT for multimedia applications and e-services;
- Study and analyse the implications of mandating interoperability and interconnection of services based on DLT. This will include the development of a standardization roadmap for interoperable services based on DLT taking into consideration the interoperability challenges and best practices;

- Study and analyse technology competitiveness issues that may hinder the deployment of multimedia applications and e-services based on DLT;
- Develop technical reports describing and addressing the standardization gaps and identifying future standardization work for ITU-T study groups in the area of multimedia applications and e-services based on DLT.

Recommendations:

- N/A

Questions:

- 13/16, 21/16, 24/16, 28/16

Study groups

- ITU-T SG17 Q14/17, "Security aspects for Distributed Ledger Technologies"
- ITU-T SG3, SG11, SG13 and SG20

Other bodies

- ITU-T JCA-MMeS
- ISO/TC 307
- ISO/TC 307/JWG 4 (Joint ISO/TC 307 - ISO/IEC JTC 1/SC 27 WG: Blockchain and distributed ledger technologies and IT Security techniques)
- ISO/IEC JTC1/SC 29 WG11
- GSMA
- Financial institutions
- United for Smart Sustainable Cities (U4SSC) initiative

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Question 14/17

4-5 分鐘

(New Question 14/17)

Motivation

Distributed Ledger Technologies (DLT), also known as Blockchain, are a new type of secure database or ledger that is shared across multiple sites, countries or institutions with no centralized controller. Data is controlled by multiple parties.

As a specific distributed database technology, DLT are inherently resistant to modification of the data - once recorded, the data in a block cannot be altered retroactively. This prominent feature of DLT is well known after the success of its early digital cryptocurrency applications known as Bitcoin.

DLT has become one of disruptive technologies with great potential to change our economy, culture and society. DLT enables innovative financial/non-financial decentralized applications that eliminate the need for third party intermediaries. DLT will introduce new data management infrastructure that will accelerate a services revolution in industries (for example, banking and finance, government, healthcare and super logistics) based on telecommunications.

Distributed ledger technologies will have a profound impact for telecom users and industries including telecom service providers.

There is a need for identifying the roles and responsibilities of telecom users, operators and service provider with regards to

security aspects in the DLT environment.

Standardization of the best comprehensive security solutions is vital for DLT that has many use cases for every sector including telecom industry. Due to some specific characteristics of the DLT, providing security becomes an especially challenging task that deserves study.

Recommendations and Supplements under responsibility of this Question as of September 6: None.

Texts under development: X.sardlt, X.strdlt, X.sct-dlt, X.ss-dlt, X.dltsec, X.sadlt, X.stov.

Question

Study items to be considered include, but are not limited to:

1. How should security aspects (e.g., security architecture and subsystems) be identified and defined in a DLT environment?
2. How should threats and vulnerabilities in applications and services based on DLT be handled?
3. What are the security requirements for mitigating the threats in a DLT environment?
4. What are security technologies to support applications and services based on DLT?
5. How should secure interconnectivity between entities in a DLT environment be kept and maintained?
6. What security techniques, mechanisms and protocols are needed for applications and services based on DLT?
7. What are globally agreeable security solutions for applications and services based on DLT, which are based on telecommunication/ICT networks?
8. What are best practices or guidelines of security for applications

and services based on DLT?

9. What PII (Personally Identifiable Information) protection and information security management are needed for applications and services based on DLT?
10. What stakeholders should SG17 collaborate with?

Tasks

Tasks include, but are not limited to:

1. Perform a gap analysis on ongoing security relevant work in other organizations for distributed ledger technologies.
2. Produce a set of Recommendations providing comprehensive security solutions for DLT based applications and services.
3. Study further to define security aspects of applications and services based on DLT, which are based on telecommunication/ICT networks.
4. Study and identify security issues and threats in applications and services based on DLT.
5. Study and develop security mechanisms, protocols and technologies for applications and services based on DLT.
6. Study and develop secure interconnectivity mechanisms for applications and services based on DLT.
7. Study and identify PII protection issues and threats in applications and services based on DLT.
8. Study and develop information management system for entities providing applications and services based on DLT.

Recommendations:

- X-series and others related to security

Questions:

- ITU-T Qs 1/17, 2/17, 3/17, 4/17, 5/17, 6/17, 7/17, 8/17, 9/17, 10/17, 11/17 and 13/17.

Study Groups and Focus Groups:

- ITU-T SGs 11, 13, 16 and 20;
- ITU-T FG on Application on Distributed Ledger Technology;
- ITU-T FG on Digital Currency including Digital Fiat Currency.

Standardization bodies:

- ISO TC 307;
- ISO/IEC JTC 1/SC 27.

Other bodies:

- GSMA, W3C;
- ATIS; CCSA; TIA; TTA; TTC.