BLOCKSTAND

DLT Standardisation in and Evolving Landscape

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Introduction

I am sure that anybody working in standards, has often been asked why they do so. It is not an easy question to answer. The process of standardisation is relatively unheralded, and certainly doesn't get much media attention. That doesn't mean standards don't play a critical role in ensuring that industrial sectors, and the technology that drives them, don't develop for the betterment of the economy and wider society.

Imagine that many different companies design and manufacture hardware components, spread out across the world. Now imagine how these hardware components are screwed together using screws. If every manufacture had their own type of screws, there would be hundreds of thousands (if not millions) of different types, not to mention the thousands of different sizes. If you had to replace a screw in your piece of hardware, how would you get the correct size and style? Would you have to get in touch with the manufacturer? What happens if you didn't even know who the manufacturer was? You might be trying a long time to get the correct size, shape, and style!

Luckily – there have been international standards for screws in place since 1947. In fact, the International Standards Organisation's first international standard[1] was about setting out the international agreements on screw type, shape, and style.

Ok, but the whole world is not about screws now, is it? What about all the other international standards? Well, they are trying to do the same thing. They are trying to set up agreements between multi-level stakeholders such as national standards bodies, academia, industrial partners, SMEs, civil society groups, NGOs, etc – about how to do something.

That 'something', can be anything. It can be screws, it can be vehicle part design (e.g., car light bulbs), it can be methods for tracking airlines (e.g., air traffic control methods), as well as emerging technologies such as AI, IoT, and Distributed Ledger Technology (DLT).

Europe and EU Standards

In Europe, the core document that outlines the overall strategy for the role of standards in the European Union (EU) was published in 2022 and is entitled "An EU Strategy on Standardisation Setting global standards in support of a resilient, green and digital EU single market"[2]. The document outlines that European standards should be at the core of the European single market, sometimes known as the European Economic Area.

European standards, developed by Standards Development Organisations (SDOs), should also support the Green and Digital transitions: "The digital and green transition of EU industries and

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[1] ISO 68-1: ISO general purpose screw threads — Basic profile — Metric screw threads.

[2] Communication from the Commission to the European Parliament, The Council, The European Economic And Social Committee and the Committee Of The Regions, An EU Strategy on Standardisation Setting global standards in support of a resilient, green and digital EU single market. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0031.

a well-functioning and resilient single market rely on a standardisation system that adequately reflects EU policy priorities"[3]. The document outlines the European Commission's commitment to "the EU's role as a global frontrunner in the development of standards, supporting EU values and providing industries with a competitive edge"[4].

To support the development of these standards, the European standardisation system directs overarching goals through the "Rolling Plan for ICT Standardisation", now in its 2024 version[5]. The plan targets specific ICT standardisation areas of need and directs attention from the European SDO to respond to certain requirements, specifically those that achieve policy objectives including those with legal mandates. Legal mandates arise when a legislative framework requires the development of technical specification as it is specifically references in the text. These standards are viewed as 'harmonised standards'. A harmonised standard is one that is harmonised with compliance obligations within a specific legal framework.

DLT Standards

There are several initiatives at the international and European level focused on DLT. These are housed at SDOs such as the ISO, IEC, CEN, CENELEC, ETSI, and the ITU. Currently, there are two primary technical committees dedicated to the evolving DLT sector. One is housed at the International Standards Organisation (ISO), within the wider Security 27 Working Group. It is entitled TC307, and the other is housed within a joint technical committee, entitled CEN/CLC JTC 19.

ISO/TC 307/JWG 4

Within this technical committee is a joining working group, which is a joint standardisation effort between the ISO and the IEC, entitled ISO/TC 307/JWG 4 "Joint ISO/TC 307 - ISO/IEC JTC 1/SC 27 WG: Security, privacy and identity for Blockchain and DLT"[6]. Currently, TC 307 is have published 12 international standards[7] and have 8 standards in development[8].

One of these is newly approved work item "ISO/AWI 24946 Requirements and guidance for improving, preserving, and assessing the privacy capability of DLT systems"[9]. This newly created work item is a project that started life as provisional work item 12833, in 2022. At the time, it was clear to that work was required to further develop an existing technical report, "ISO/TR 23244:2020 Blockchain and distributed ledger technologies Privacy and personally identifiable information protection considerations"[10].

Now that the work item has been approved, the long road of developing an internationally agreed technical standard can begin, and the standards community can start to build consensus on privacy requirements for DLT systems – a topic that requires critical support, given the transparent nature of some public and permissionless systems and the distributed nature of data storage - but also privacy assessment methods (how do we determine the privacy capability of any DLT system).

Privacy technology is advancing at a rapid pace within the DLT ecosystem, and hopefully this standard can start to align work done on privacy preserving protocols, technologies, and assessment methods all in one place. This will help ensure that the DLT ecosystem can support

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[3] Ibid.
[4] Ibid.
[5] Rolling Plan for ICT Standardisation: https://joinup.ec.europa.eu/collection/rolling-plan-ict-standardisation/about-rolling-plan-ict-standardisation-rp2024
[6] https://www.iso.org/committee/6266604.html
[7] https://www.iso.org/committee/6266604/x/catalogue/p/1/u/0/w/0/d/0
[8] https://www.iso.org/committee/6266604/x/catalogue/p/0/u/1/w/0/d/0
[9] https://www.iso.org/standard/88614.html?browse=tc
[10] https://www.iso.org/standard/75061.html?browse=tc

fundamental European rights such as privacy and data protection, both internally but also in the international sphere.

This is especially important given the emergence of crypto-asset (MiCA, Article 76(3))[11] and anti-money laundering legislation (AMLR, Recital 93)[12] that has effectively prohibited the wide deployment of privacy-preserving features in DLT systems.

CEN/CLC/JTC 19 "Blockchain and Distributed Ledger Technologies"

The European DLT standards initiative is housed within the joint committees of CEN and CELEC. CEN and CENELEC are international non-profit associations that are officially designated as European Standardisation Organizations (alongside ETSI, the European Telecommunications Standards Institute)[13].

The joint technical committee "CEN-CLC/JTC 19 'Blockchain and Distributed Ledger Technologies' was established based on the recommendations presented in the CEN-CENELEC White Paper on 'Recommendations for Successful Adoption in Europe of Emerging Technical Standards on Distributed Ledger/Blockchain Technologies'[14]. One of the primary goals is to focus on "specific European legislative and policy requirements, in support of the development of the EU Digital Single Market"[15].

Currently, the joint technical committee is working closely with ISO TC307 to adopt international standards into the European community, but also to work on establishing Europe as a market leader within specific sub-domains. One of the sub-domains that has a tremendous amount of activity is CEN/CLC/JTC 19/WG 2 "Environmental Sustainability".

This work group is attempting to lay the foundation for a technical specification for the environmental sustainability assessment of DLT systems, especially with respect to consensus mechanisms. There has been much said in the media over the last few years about how certain types of DLT systems (e.g., Proof of Work) rely on a large amount of electricity to underpin their security model. This is mostly to do with the decentralised nature of the system, and the way in which distributed consensus is achieved in a secure manner. However, there is no formal method for calculating how much energy is used. There are, however, some excellent attempts such as the Cambridge Bitcoin Electricity Consumption Index[16], and further work conducted by the DLT consultancy CCRI, with their Crypto Sustainability Index[17].

The working group at CEN/CELEC need to analyse these efforts and ascertain if the assessment criteria and methods are robust enough to be used in the standardisation realm, or if they need to be supplemented with additional criteria, methods, or assessment policies. The WG is at the start of what should be an interesting standardisation process, a process that supports both crypto-asset legislation, and European Sustainability Reporting Standards for companies subject to the Corporate Sustainability Reporting Directive[18]. This effort supports the DLT ecosystem as we move further through the green and digital transitions.

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[11] https://data.europa.eu/eli/reg/2023/1114/2024-01-09
[12] https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?lang=en&reference=2021/0239(COD)
[13] https://www.cencenelec.eu/european-standardization/
[14] https://www.cencenelec.eu/media/CEN-CENELEC/Areas%20of%20Work/CEN%20sectors/Digital%20Society/Emerging%20technologies/fg-bdlt-white_paper-version1-2.pdf
[15] https://www.cencenelec.eu/areas-of-work/cenelec-sectors/digital-society-cenelec/emerging-technologies/
[16] https://ccaf.io/cbnsi/cbeci
[17] https://docs.api.carbon-ratings.com/v2#/network
[18] https://finance.ec.europa.eu/news/commission-adopts-european-sustainability-reporting-standards-2023-07-31_en

Conclusion

There is a lot of work being conducted at European and International SDOs, and this blog has touched on just a few of the initiatives. What is clear is that Europe wants to work in harmony with the evolving legislative space for DLTs and set examples for the wider international standards community.

The key challenge remains to keep on par with the considerable pace of development as new technologies, protocols, architectures, governance mechanisms, and use-cases continually push our limits of understanding of what DLTs can be, what they can support, and the change they might prosper in wider society.

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