

Blockchain standardization for innovative companies and startups

My journey in
the world of
standards



Opinions expressed here are mine only

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Who am I?

- Founder of the Italian Standardization Committee for Blockchain and DLT (UNINFO/CT 532)
- Founder of the CEN CENELEC JCT 19 for BDLT, member of the CEN CENELEC Focus Group on BDLT
- Member of ISO/TC 307, specifically JWG4 (Security, privacy, identity), WG6 (Use cases). Project leader for TR23249 “Overview of DLT systems for identity management”
- Company representative for many associations including: EEMA, INATBA (founder and founder of WG Identity), ECSO (WG6 Strategic Research and Innovation Agenda), GAIA-X (1st day member), Italia4Blockchain (Founder), CifrisChain
- My company actually pays me to manage innovation projects in the field of digital identity and blockchain

What standards are for?

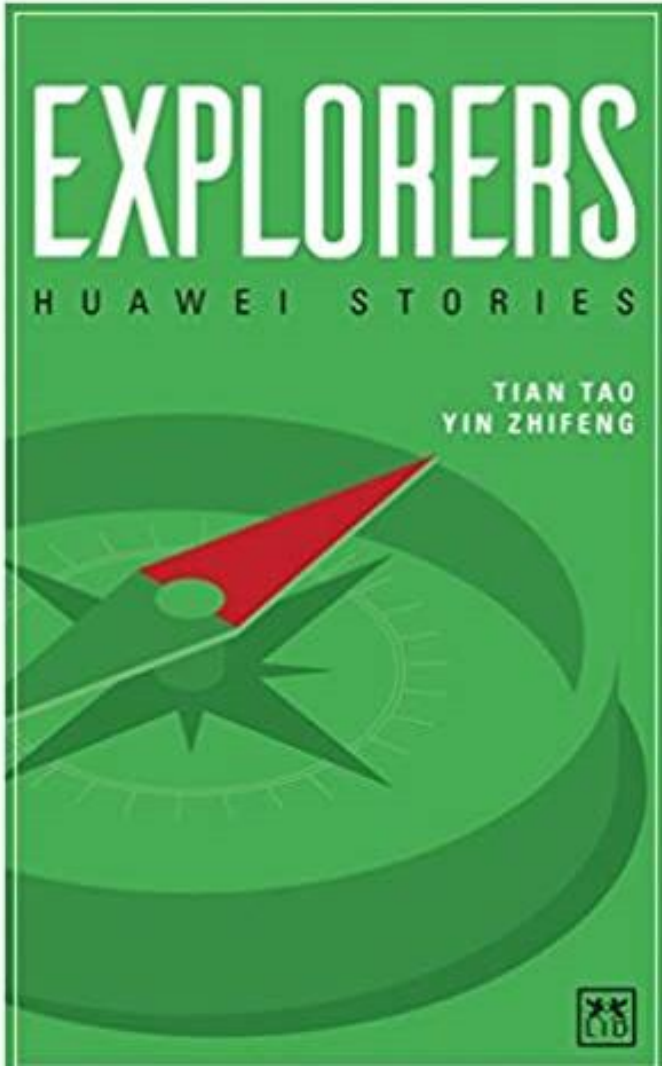
- Have your product be **interoperable** with others
- Protect your investment (no need to **adapt** to others, but follow a **common** approach)
- A standard acts as a **reverse charge** (“I followed the standard, Your honour, ...”)

Why standard are critical for every business



The Nickel Directive imposes limits on the amount of nickel that may be released from jewellery and other products intended to come into direct and prolonged contact with the skin. These limits, known as migration limits, are:

- 0.2 $\mu\text{g}/\text{cm}^2/\text{week}$ for post assemblies which are inserted into pierced ears and other pierced parts of the human body
- 0.5 $\mu\text{g}/\text{cm}^2/\text{week}$ for other products intended to come into direct and prolonged contact with the skin.



Dai Xizeng

- Ph. D. at Tsinghua University
- Started working at Huawei in 2008
- Focus on standards

Huawei approach to standardisation

«In the 2G **standards**, we were just an observer. In the 3G, a follower. In the 4G/4.5G, an active participants and a leader. This progress has been possible because we keep high the attention level and we invested the needed amount of time and resources. Now the 5G has begun. Huawei's teams are embracing the 5G with more enthusiasm than ever. Today, Huawei is a fundamental player for **global standards.**»



(backversion from an Italian version from A. Aresu)

The bad part of standards

- Making standards takes time
- Making standards takes money
- The process is very complex, not well known outside of the standards community, so the barrier to entry is high
- There are many, many acronyms...

The good part of standards

- You could meet innovators from all over the world
- You travel a lot
- If you don't like a specific standard, remember that “the good part about standards is that there are so many to choose from” (A. Tanenbaum)

Many standardization organizations (SDOs)



Categories for SDOs

Geographic coverage

- Worldwide: ISO, OASIS, IEEE, ...
- Region (Europe): ETSI, CEN, CENELEC
- National: ANSI (USA), AFNOR (France), DIN (Germany), UNI (Italy), ...

Legally binding standards (standards “de jure”)

- ISO, CEN, CENELEC, ETSI, ANSI, UNI



Standards recognized by peers (standards “de facto”)

- IEEE, OASIS, IETF, W3C

Typical example of two competing standards: TCP/IP is a “de facto” , while the ISO-OSI stack is “de jure”

We focus on ISO and CEN CENELEC

- CEN CENELEC Joint Technical Committee (JTC) 19 is on “Blockchain and Distributed Ledger Technologies”
- ISO Technical Committee (TC) 307 is on “Blockchain and Distributed Ledger Technologies”



- And yes, they are cooperating!

How you join ISO

- ISO is an international organization, whose member are **states**
- You cannot join ISO directly: you join a national standardization organization which has set up a mirror committee, and this committee delegates you to work in ISO as an expert

Blockchain Will Be Theirs, Russian Spy Boasted at Conference

By Nathaniel Popper

April 29, 2018

SAN FRANCISCO — Last year, representatives of 25 countries met in Tokyo to work on setting international standards for the blockchain, the technology that was introduced by the virtual currency Bitcoin and has ignited intense interest in corporate and government circles.

Some of the technologists at the meeting of the International Standards Organization were surprised when they learned that the head of the Russian delegation, Grigory Marshalko, worked for the F.S.B., the intelligence agency that is the successor to the K.G.B.

They were even more surprised when they asked the F.S.B. agent why the Russians were devoting such resources to the blockchain standards.

“Look, the internet belongs to the Americans — but blockchain will belong to us,” he said, according to one delegate who was there. The Russian added that two other members of his country’s four-person delegation to the conference also worked for the F.S.B.

ISO/TC 307
is quite an
interesting
place

How ISO/TC 307 is organized

- SG (Study Groups): initial discussion on a specific matter
- WG (Working Groups): more structured with a clear mission
- Also there are Advisory Groups and coordination groups

SDOs are connected together

- Every TC has some liasions (connections) from or to other TCs
- Also, specific organizations could have a liasion

ISO/TC 307 structure

REFERENCE ↓	TITLE ↓	TYPE ↓
ISO/TC 307/AG 1 ⓘ	SBP Review Advisory Group	Working group
ISO/TC 307/AG 2 ⓘ	Liaison Advisory Group	Working group
ISO/TC 307/AHG 2 ⓘ	Guidance for Auditing DLT Systems	Working group
ISO/TC 307/CAG 1 ⓘ	Convenors coordination group	Working group
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	Working group
ISO/TC 307/SG 7 ⓘ	Interoperability of blockchain and distributed ledger technology systems	Working group
ISO/TC 307/WG 1 ⓘ	Foundations	Working group
ISO/TC 307/WG 2 ⓘ	Security, privacy and identity	Working group
ISO/TC 307/WG 3 ⓘ	Smart contracts and their applications	Working group
ISO/TC 307/WG 5 ⓘ	Governance	Working group
ISO/TC 307/WG 6 ⓘ	Use cases	Working group

(some) Liasons to TC/307

ISO/IEC JTC 1	Information technology	ISO/IEC
ISO/IEC JTC 1/SC 7	Software and systems engineering	ISO/IEC
ISO/IEC JTC 1/SC 27	Information security, cybersecurity and privacy protection	ISO/IEC
ISO/IEC JTC 1/SC 31	Automatic identification and data capture techniques	ISO/IEC
ISO/IEC JTC 1/SC 32	Data management and interchange	ISO/IEC
ISO/IEC JTC 1/SC 37	Biometrics	ISO/IEC
ISO/IEC JTC 1/SC 40	IT service management and IT governance	ISO/IEC
ISO/IEC JTC 1/SC 41	Internet of things and digital twin	ISO/IEC
ISO/IEC JTC 1/SC 42	Artificial intelligence	ISO/IEC
ISO/TC 20	Aircraft and space vehicles	ISO
ISO/TC 46/SC 11	Archives/records management	ISO
ISO/TC 68	Financial services	ISO
ISO/TC 68/SC 2	Financial Services, security	ISO
ISO/TC 154	Processes, data elements and documents in commerce, industry and administration	ISO
ISO/TC 184/SC 4	Industrial data	ISO
ISO/TC 211	Geographic information/Geomatics	ISO

(some) Liaisons from TC/307

ISO/IEC JTC 1	Information technology	ISO/IEC
ISO/IEC JTC 1/SC 7	Software and systems engineering	ISO/IEC
ISO/IEC JTC 1/SC 17	Cards and security devices for personal identification	ISO/IEC
ISO/IEC JTC 1/SC 27	Information security, cybersecurity and privacy protection	ISO/IEC
ISO/IEC JTC 1/SC 29	Coding of audio, picture, multimedia and hypermedia information	ISO/IEC
ISO/IEC JTC 1/SC 31	Automatic identification and data capture techniques	ISO/IEC
ISO/IEC JTC 1/SC 32	Data management and interchange	ISO/IEC
ISO/IEC JTC 1/SC 37	Biometrics	ISO/IEC
ISO/IEC JTC 1/SC 38	Cloud computing and distributed platforms	ISO/IEC
ISO/IEC JTC 1/SC 40	IT service management and IT governance	ISO/IEC
ISO/IEC JTC 1/SC 41	Internet of things and digital twin	ISO/IEC
ISO/IEC JTC 1/SC 42	Artificial intelligence	ISO/IEC
ISO/TC 46	Information and documentation	ISO
ISO/TC 46/SC 11	Archives/records management	ISO
ISO/TC 68	Financial services	ISO



Organizations with liasion

Blockchain & Climate Institute	Blockchain & Climate Institute	A
EC - European Commission	European Commission	A
EEA Inc.	Enterprise Ethereum Alliance Inc.	A
FIG	International Federation of Surveyors	A
GS1	GS1	A
IEEE	Institute of Electrical and Electronics Engineers, Inc	A
INATBA	International Association for Trusted Blockchain Applications	A
ITU	International Telecommunication Union	A
OECD	Organisation for Economic Co-operation and Development, OECD	A
SBS - Small Business Standards	Small Business Standards	A
SWIFT	Society for Worldwide Interbank Financial Telecommunication	A
UNECE	United Nations Economic Commission for Europe	A

STANDARD AND/OR PROJECT UNDER THE DIRECT RESPONSIBILITY OF ISO/TC 307 SECRETARIAT (15) ↓	STAGE ↓	ICS ↓
<p>🕒 ISO/DTR 3242</p> <p>Blockchain and distributed ledger technologies – Use cases</p>	30.20	35.030 35.240.40 35.240.99
<p>🕒 ISO/WD TR 6039</p> <p>Blockchain and distributed ledger technologies - Identifiers of subjects and objects for the design of blockchain systems</p>	20.20	
<p>🕒 ISO/WD TR 6277</p> <p>Blockchain and distributed ledger technologies – Data flow model for blockchain and DLT use cases</p>	20.20	
<p>🕒 ISO 22739:2020</p> <p>Blockchain and distributed ledger technologies – Vocabulary</p>	90.92	35.030 01.040.35 35.240.40 35.240.99
<p>🕒 ISO/AWI 22739</p> <p>Blockchain and distributed ledger technologies – Vocabulary</p>	20.00	
<p>🕒 ISO/TR 23244:2020</p> <p>Blockchain and distributed ledger technologies – Privacy and personally identifiable information protection considerations</p>	60.60	35.030 35.240.40 35.240.99
<p>🕒 ISO/DTR 23249</p> <p>Blockchain and distributed ledger technologies – Overview of existing DLT systems for identity management</p>	30.60	35.030 35.240.40 35.240.99

How activities are organized at WG level (1)

- Each WG meets face to face twice a year
- In this meeting the activities for the next month are planned:
 - Starting a Study Group, a Technical Report, a Technical Specification
 - Discussing and disposing the comments received on the current version of those documents

How activities are organized at WG level (2)

- All activities are based on **consensus**
- Documents are written in very specific format, following specific guidelines
- All that is written, discussed, voted, is based on written documents, and you usually have months to provide comments, integrations, cast a vote

How activities are organized at TC level (1)

- The TC is organized as a plenary that meets twice a year
- At WG level, you represent yourself: at TC level, **you represent your country**

How activities are organized at TC level (2)

- The plenary decides on the structure of the TC: working groups, convenors (chair) of the working groups, liasions
- The plenary votes on resolution (at country level), on the final publication of the documents (Technical Report, Technical Specifications, ...)

Why ISO is a “de jure” SDO

- Once something is published by an ISO TC, all the countries that are member of it have to accept the document into their national body of standards
- They could choose not to include it, but they cannot create a national version that is in conflict with the ISO standard
- The national standard is very “similar” to a law, i.e. provides legally binding definitions

TR23249 started November 2019



A Technical Report (TR) is a description of relevant projects and initiatives, and it could pave the way for the Technical Specification

TR23249 scope

The TR describes DLT systems for identity management and specifically is about:

- Managing identity for individuals, organizations, things, functions and processes with DLTs
- Describing actors and their interactions
- Architectures
- Existing standards and frameworks

TR23249 insights

- A taxonomy for DLT systems managing digital identity
- Around 10 major DLT systems from USA, Europe, China, Russia, South America
- 50+ standards, frameworks, associations

TR23249 is quite mature

- Now in Draft Technical Report phase
- Expected release date: mid of 2021
- To work on this join ISO/TC307/JWG4 (which is a joint WG between ISO/TC 307 and ISO/IEC JTC1/SC 27)

CEN CENELEC JTC 19

- It is an European SDOs
- You join it in the same way as ISO/TC 307 (through your national standardization body)

What CEN CENELEC JTC 19 is for

- Define technical guidelines on how to implement blockchain and DLT systems that are compatible with relevant EU legislation (GDPR, eIDAS, NIS, OOP, Cybersecurity Act, ...)
- Now we are focused on identity management

A common myth on standardization

Innovative companies are afraid in participating into SDOs because they fear that someone could steal their ideas.

Some considerations

- 1) If you have a good idea, protect it with a patent (otherwise is protection by obscurity, and it won't work in the long term)
- 2) Don't think that you are the smartest guy in the world, you are not
- 3) If your idea involves a specific business model/network difficult to replicate, standards don't interfere with that
- 4) Standards are at a very high level, they don't discuss your code, nor you have to share with others what you do not want to share
- 5) **Standardization happens, with or without you. It's up to you to decide if you want your competitors deciding on your behalf**