

ITU

Working Together for DLT Interoperability

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ISO TC307 Liaison for INATBA

Chair of DLT/1 – BSI Mirror Committee

History of Blockchain Standard

- 2009 **At HM Treasury**
- Introduced UK Government to Bitcoin and Blockchain
 - Economic assessment and policy review
 - Concluded that “this will not have any material impact to the UK’s economy”
 - Kept on working in this space – after all, it is really **cryptography**
- 2014 **Mainstream**
- A lot of talk about what we can do with the Bitcoin underlying technology
 - Ethereum concept. Ripple, Stellar, xCoins etc
 - “**Blockchain**” name became popular
- 2015 **Business Problem from Government**
- Wasn’t happy that blockchain was progressing in **silos**
 - Came up with the concept and architecture of **Interoperability** and **Governance**
 - Started talking about identifying use cases – NSW Health for electronic records and data sharing
- 2016 **ISO**
- Started drafting the idea and proposal with Standards Australia
 - **Pushed** to get people behind it. “Too early”, “Stifle innovation”, “Why??”
 - **October 2016 – ISO Approval**

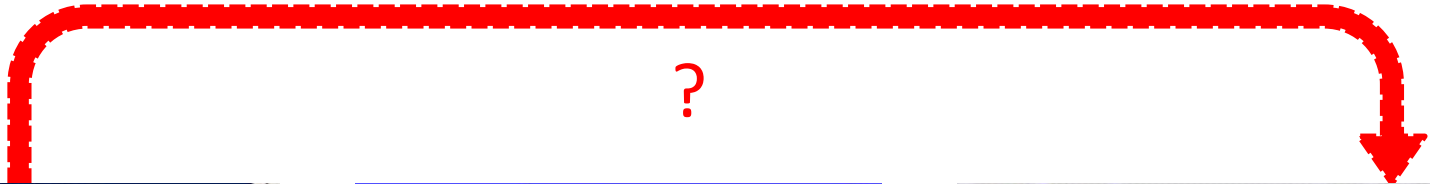


Why are we building closed proprietary technology in isolation?

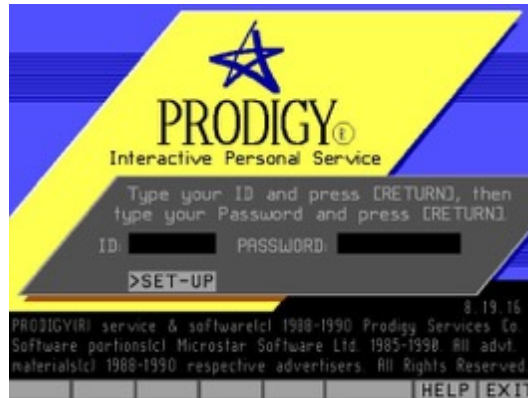


We've been here before

1990's: Online Service Providers - Proprietary Networks are limited



CompuServe



Prodigy



America Online



2015: Need for Blockchain ISO Standards

Russian Finance Firms Form Blockchain Consortium

A group of Russian banks and financial services companies has formed a private-sector consortium focused on blockchain applications.
- Coindesk 1 July 2016

Blockchain: Standards Wanted

Long reliant on collaborative standard-setting, the financial industry looks for more of the same to realize the operational and risk-mitigation potential of blockchain
- GARP – Global Association of Risk Professionals 8 April 2016

Australia's peak standard-setting body, Standards Australia, is calling on the International Standards Organisation to begin work on global standards for blockchain.

The organisation has asked the Geneva-based ISO to begin working on standards for blockchain, the technology behind digital currency bitcoin, offering the assistance of Australian expertise.

China creates blockchain coalition ChinaLedger Union

The country's blockchain industry organises distributed ledger-based coalition in Beijing supported by Chinese National Assembly and aiming to standardise the application of blockchain.
- 20 April 2016



2015: Proposed Blockchain ISO Standard

Proposed ISO Standard

The proposed work is to:

- define this standard
- create the mechanism to be a gateway to multiple blockchains
- create the **governance** framework
- have **interoperability** and compatibility with existing financial standards
- provide legal and **regulatory compliance** to each transaction across blockchains
- work towards a **regulatory framework** that provides a mix of legal and technical rules



The image shows a document titled "Form 1: Proposal for a new field of technical activity" from ISO.org. The document includes a table with the following information:

Creation date: 2015-04-14	Reference number: (to be given by Central Secretariat)
Closing date for voting: 2016-01-14	
Proposer: Standards Australia	ISO/TSP 258

Below the table, there is a section for the proposer to fill out, including fields for the title of the proposed new committee and a scope statement. The scope statement field contains the text: "Standardisation of blockchains and distributed ledger technologies to support interoperability and data interchange among users, applications and systems."



2015: Proposed Blockchain ISO Standard

To address key areas such as:

- **Terminology** - Having a common language and terminology to define the interoperability of blockchain
- **Process and Methods** - the mechanism and messaging standards around inter-blockchain communication including routing.
- **Trust and Interoperability** - Develop the standards that incorporate messaging protocols and methods to route, trust and connect to different blockchains. Establishing a standard API (Application Programming Interface) and set of routines and tools for building blockchain software and applications
- **Privacy and Security** - Ensure the confidentiality, integrity and availability of users and entities are maintained. Embed compliance to money laundering and KYC (know your customer) requirements.
- **Authentication** - ability to map blockchain transactions to individual users and entities in a secure manner. Store credentials on the blockchain or align/federate to a sidechain (off blockchain)



1st Plenary – Sydney April 2017



National, European and international standards

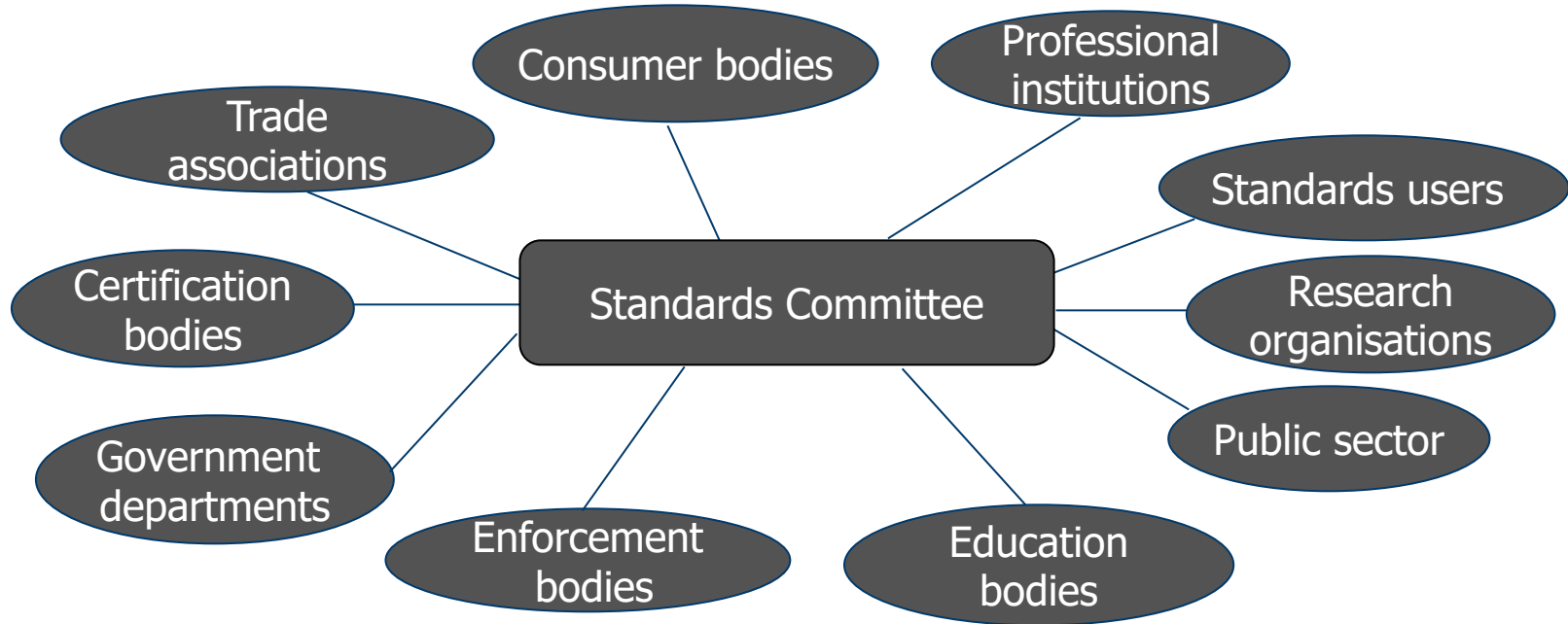
BSI as NSB manages
BS, EN & ISO, IEC
standards.

All EN and most
international
standards are
"adopted" as British
Standards

Private &
professional
standards,
codes and
guidance



National Standards Bodies do not write standards, the stakeholder committees do



TC307 Standards under development

[ISO/CD TR 3242](#) Blockchain and distributed ledger technologies – Use cases

[ISO/FDIS 22739](#) Blockchain and distributed ledger technologies — Vocabulary

[ISO/CD TR 23245.2](#) Blockchain and distributed ledger technologies — Security risks, threats and vulnerabilities

[ISO/CD 23257.3](#) Blockchain and distributed ledger technologies — Reference architecture

[ISO/WD TS 23258](#) Blockchain and distributed ledger technologies — Taxonomy and Ontology

[ISO/AWI TS 23259](#) Blockchain and distributed ledger technologies — Legally binding smart contracts

[ISO/CD TR 23576](#) Blockchain and distributed ledger technologies — Security management of digital asset custodians

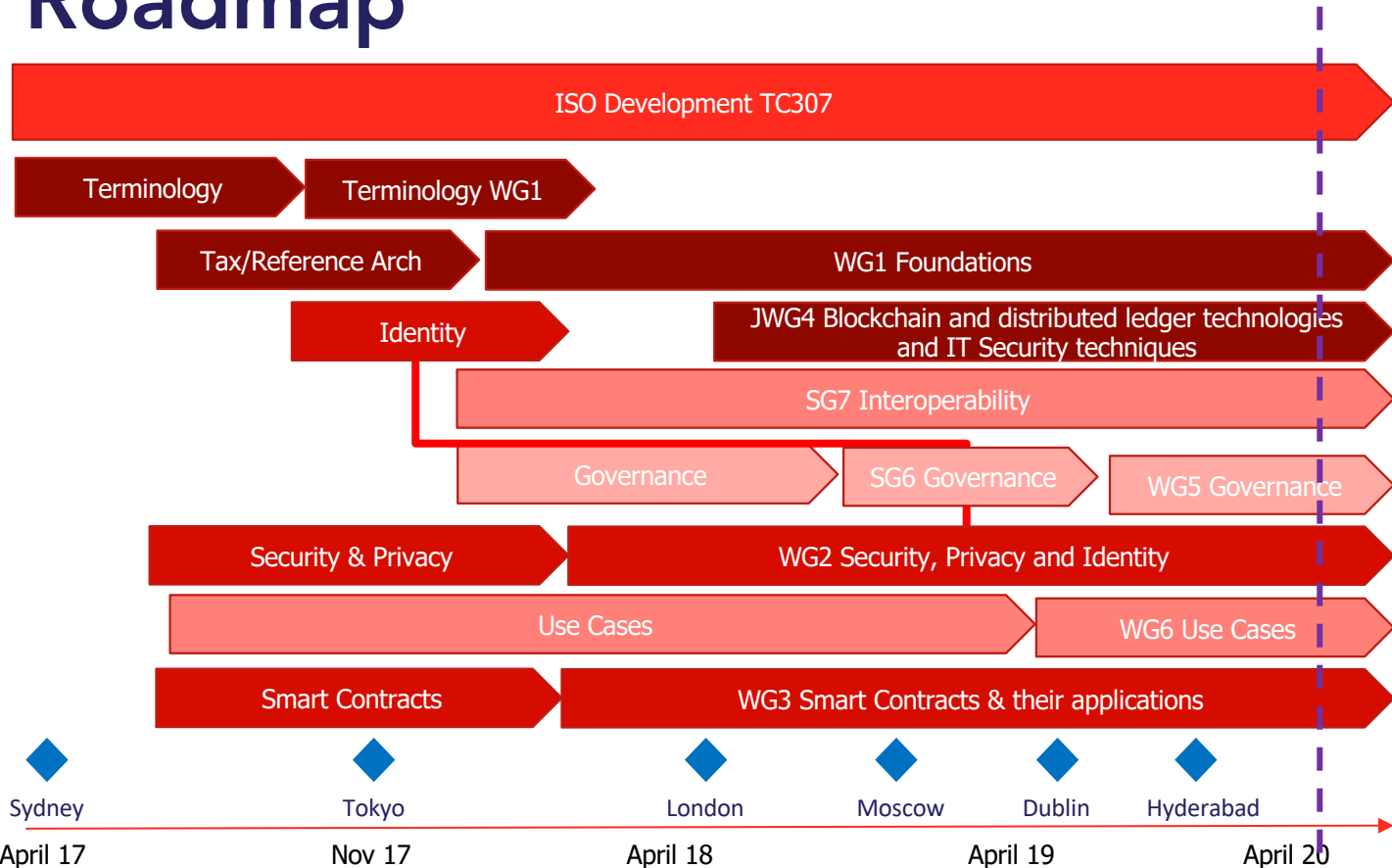
[ISO/WD TS 23635](#) Blockchain and distributed ledger technologies — Guidelines for governance

[ISO/CD TR 3242](#) Blockchain and distributed ledger technologies – Use cases

[ISO/FDIS 22739](#) Blockchain and distributed ledger technologies — Vocabulary



TC307 Roadmap



TC307 Working Groups

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

JOINT WORKING GROUPS UNDER THE RESPONSIBILITY OF ANOTHER COMMITTEE

REFERENCE	TITLE
ISO/TC 46/SC 11/JWG 1	Joint ISO/TC 46/SC 11 - ISO/TC 307 WG: Blockchain



SG7 - Interoperability

- Defining an Interoperability Framework
- Leveraging Cloud Interoperability Standard
 - ISO/IEC 19941:2017
- Providing a framework to cover
 - Governance Interoperability
 - Business Interoperability
 - Technical Interoperability



Transport Facet

- DLT is often thought of operating in an Internet-based environment; however, DLT can operate in other networking environments as well. The Transport facet deals with the communications infrastructure – how to get bytes of data from one system to another.



Syntactic facet

- Syntactic interoperability is defined as “interoperability such that the formats of the exchanged information can be understood by the participating systems.”



Semantic Data facet

- Semantic data interoperability as interoperability such that the meaning of the data model within the context of a subject area is understood by the participating systems.



Behavioural facet

- Behavioural interoperability is defined as interoperability so that the actual result of the exchange achieves the expected outcome.



Policy facet

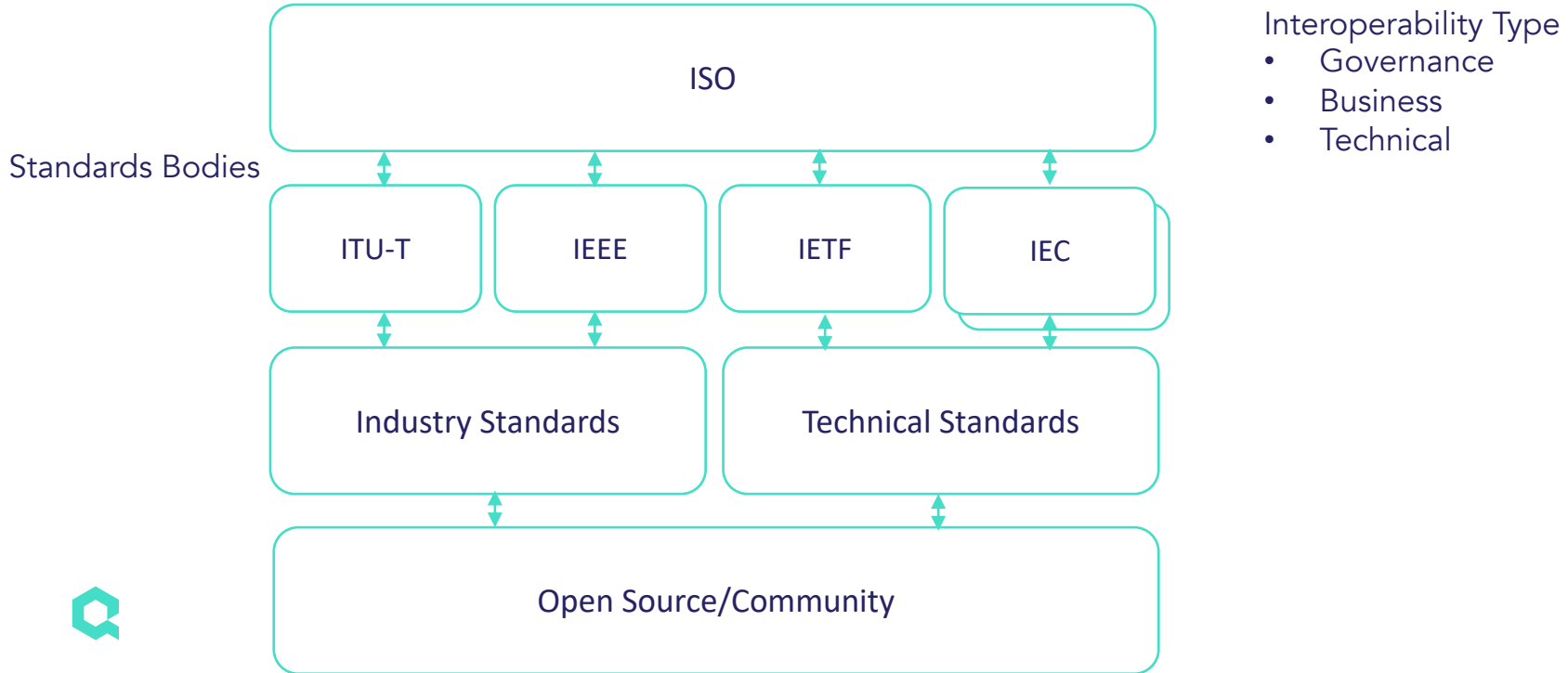
- Policy interoperability while complying with the legal, organizational and policy frameworks applicable to the participating systems.



Interoperability Standardisation Collaboration

Possible framework for collaboration

Interoperability "Stack"



Interoperability Standardisation Collaboration

- Annual “Check-in” – INATBA
- Cross-domain experts
 - Working in IEEE, ISO, ITU-T, companies, Gov, open-source etc
 - Workgroup material sharing
- Liaisons between all parties
 - Formal and informal
- Open to participation
- Collaboration for progression





Thank you

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