



Form 1: Proposal for a new field of technical activity

Circulation date: 2016-04-14 Closing date for voting: 2016-07-14	Reference number (to be given by Central Secretariat)
Proposer: Standards Australia	ISO/TS/P 258

A proposal for a new field of technical activity shall be submitted to the Central Secretariat, which will assign it a reference number and process the proposal in accordance with the ISO/IEC Directives (part 1, subclause 1.5). The proposer may be a member body of ISO, a technical committee, subcommittee or project committee, the Technical Management Board or a General Assembly committee, the Secretary-General, a body responsible for managing a certification system operating under the auspices of ISO, or another international organization with national body membership. Guidelines for proposing and justifying a new field of technical activity are given in the [ISO/IEC Directives \(part 1, Annex C\)](#).

The proposal (to be completed by the proposer)

<p>Title of the proposed new committee (The title shall indicate clearly yet concisely the new field of technical activity which the proposal is intended to cover.)</p> <p>Blockchain and electronic distributed ledger technologies</p>
<p>Scope statement of the proposed new committee (The scope shall precisely define the limits of the field of activity. Scopes shall not repeat general aims and principles governing the work of the organization but shall indicate the specific area concerned.)</p> <p>Standardisation of blockchains and distributed ledger technologies to support interoperability and data interchange among users, applications and systems.</p>

Proposed initial programme of work (The proposed programme of work shall correspond to and clearly reflect the aims of the standardization activities and shall, therefore, show the relationship between the subject proposed. Each item on the programme of work shall be defined by both the subject aspect(s) to be standardized (for products, for example, the items would be the types of products, characteristics, other requirements, data to be supplied, test methods, etc.). Supplementary justification may be combined with particular items in the programme of work. The proposed programme of work shall also suggest priorities and target dates.

The Technology of Blockchains

Blockchain and electronic distributed ledger technologies are an emerging peer-to-peer data base tool for managing and recording transactions. The technology behind blockchains is open source.

This new disruptive technology offers the prospect for sharing financial, legal, physical or electronic information more readily across multiple sites (nationally and internationally) and from government to business or business to business.

Blockchain has the potential to support efficient and secure transactions and reduce process management issues across a range of economic sectors including:

- government
- consumer products and services
- health
- minerals and precious stones
- financial services
- real estate
- business

Public vs Private Blockchains

There is a big difference in what technologies you need, depending on whether you allow anyone to write to your blockchain, or known, vetted participants. As an example, Bitcoin allows anyone to write to its ledger.

Public blockchains - Ledgers can be 'public' in two senses:

1. Anyone, without permission granted by another authority, can write data
2. Anyone, without permission granted by another authority, can read data

Private blockchains - Conversely, a 'private' blockchain network is where the participants are known and trusted: for example, an industry group, or a group of companies owned by an umbrella company. Many of the mechanisms are not needed with the use of smart contracts.

The Governance of Blockchains

There is an opportunity to define and standardise the approach to govern and interact with multiple blockchains and create the mechanism to add assurance and governance controls, similar to those used in existing financial transactions, to each transaction across all blockchains.

The proposed work will focus on technical solutions including protocols and interoperability. The work will exclude legal obligations and regulatory matters addressed by government jurisdictions.

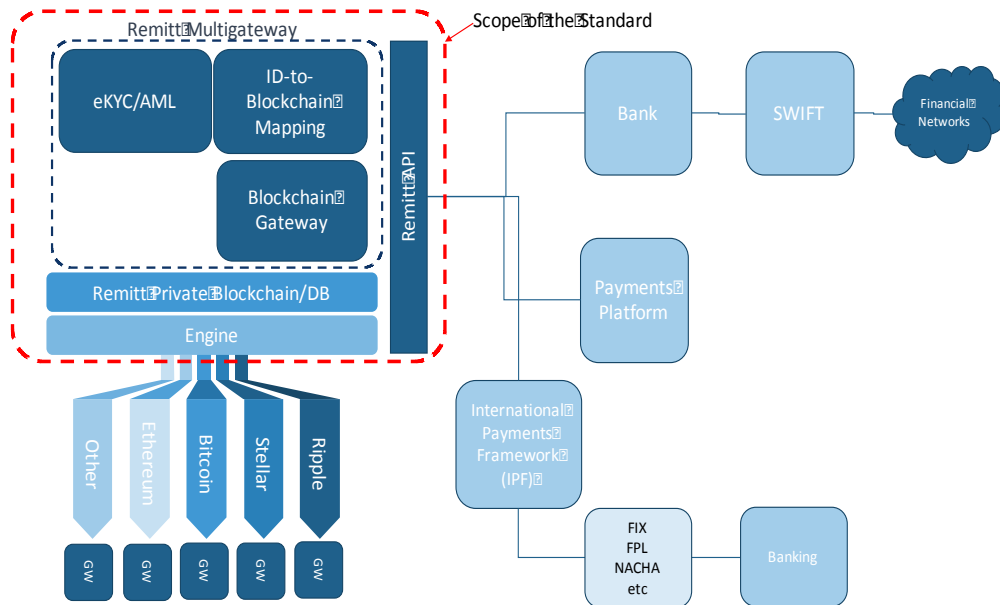
There are currently a number of different blockchain protocols in use. The technical committee will consider key protocol differentiating elements including permission models (private and public), smart contracts (contracts whose terms are recorded in computer language rather than legal language), application programming interfaces and other elements.

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 following diagram explains the scope of the proposed suite of Standards to allow interoperability and governance across blockchains.



Existing Standards

Leveraging existing work, a proposed approach can be similar to the SWIFT ISO 20022 Standard which defines the fields and controls within messages and transactions between entities thus allowing interoperability.

```

<CdtTrfTxInf>
<IntrBkSttlmAmt Ccy='USD'>12500</IntrBkSttlmAmt> <IntrBkSttlmDt>2009-10-
29</IntrBkSttlmDt>
<Dbtr>
  <Nm>ACME NV.</Nm>
  <PstlAdr>
    <StrtNm>Amstel</StrtNm>
    <BldgNb>344</BldgNb>
    <TwnNm>Amsterdam</TwnNm>
    <Ctry>NL</Ctry>
  </PstlAdr>
</Dbtr>
  <DbtrAcct>
    <Id>
      <Othr>
        <Id>8754219990</Id>
      </Othr>
    </Id>
  </DbtrAcct>
  <DbtrAgt>
    <FinInstnId>
      <BIC>EXABNL2U</BIC>
    </FinInstnId>
  </DbtrAgt>
</CdtTrfTxInf>

```

The above example is an excerpt from ISO 20022 Financial services -- Universal financial industry message scheme series of standards.

To achieve these objectives, as a priority the work program would support the development of specific standards to address key areas such as:

- Terminology – Developing a common language and terminology to define the interoperability of blockchain
- Process and Methods – Developing the mechanisms and messaging standards around inter-blockchain communication including routing.
- Trust and Interoperability - Developing 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: Developing standards to ensure that the confidentiality, integrity and availability of users and entities are maintained. Embed compliance to money laundering and Know Your Customer (KYC) requirements.
- Authentication – Mechanisms 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)

Indication(s) of the preferred type or types of deliverable(s) to be produced under the proposal (This may be combined with the "Proposed initial programme of work" if more convenient.)

The proposed initial programme of work would see a range of deliverables developed which would include a series of ISO/IEC JTC 1 Standards and technical specifications to assist in the development, deployment, use and growth of this key enabling technology platform. It is proposed that this work be undertaken by a new ISO/TC.

A listing of relevant existing documents at the international, regional and national levels. (Any known relevant document (such as standards and regulations) shall be listed, regardless of their source and should be accompanied by an indication of their significance.)

Does Blockchain Technology Need a Global Standard to Thrive?

http://www.afponline.org/pub/res/news/Does_Blockchain_Technology_Need_a_Global_Standard_to_Thrive.html?utm_content=buffer298&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer accessed on 05/04/2016. This topic opened the Money 20/20 Europe conference in Copenhagen, Denmark with a panel discussion on the difficulty governments are having coming up with regulations for the digital ledger technology and the need for an international standard.

Distributed Ledger Technology: beyond Blockchain. A report by the UK Government Chief Adviser, Government Office for Science, London, 2016 – This is a new report from the UK Government Office for Science that has recommended a broad government effort to explore and test Blockchain and distributed ledger technology.

ISO/IEC 29115:2013 Information technology -- Security techniques -- Entity authentication assurance framework – this key international standard provides a framework for managing entity authentication assurance in a given context.

ISO/IEC 9594-8: Information Technology - Open Systems Interconnection - The Directory: Public-key and Attribute Certificate Frameworks – this standard defines a standard certificate format for public key certificates and certification validation.

ISO 20022 Financial services -- Universal financial industry message scheme (Parts 1-8)

ISO 27000 Information technology -- Security techniques (series of standards developed by ISO/IEC JTC 1/SC 27 IT Security techniques)

ISO 7372:2005, Trade data interchange — Trade data elements directory
[This the joint ISO and UN/CEFACT publication]

ISO 9735 series, Electronic data interchange for administration, commerce and transport (EDIFACT) —Application level syntax rules

ISO 17369:2013, Statistical data and metadata exchange (SDMX)

ISO 10303 series, Industrial automation systems and integration — Product data representation and exchange

ISO 29002 series, Industrial automation systems and integration — Exchange of characteristic data

Swan Melanie, Blockchain: Blueprint for a New Economy, O'Reilly Media Inc, 2015, see <https://ahkyee.files.wordpress.com/2015/09/swan-2015-blockchain-blueprint-for-a-new-economy.pdf> - this book outlines the growing importance of the role of blockchain as a public ledger with the potential a decentralised record for the registration, inventory, transfer of assets (both tangible and intangible). The author argues that blockchain could become the fifth game changing technology after mainframes, PCs, the internet and mobile/social networking.

Scott Brett, How Can Cryptocurrency and Blockchain Technology Play a Role in Building Social and Solidarity Finance?, Working Paper 2016-1, United Nations Research Institute for Social Development (UNRISD), Geneva, Switzerland, February 2016.

A statement from the proposer as to how the proposed work may relate to or impact on existing work, especially existing ISO and IEC deliverables. (The proposer should explain how the work differs from apparently similar work, or explain how duplication and conflict will be minimized. If seemingly similar or related work is already in the scope of other committees of the organization or in other organizations, the proposed scope shall distinguish between the proposed work and the other work. The proposer shall indicate whether his or her proposal could be dealt with by widening the scope of an existing committee or by establishing a new committee.)

ISO leadership in developing standards for blockchain as a new field of technical activity will significantly benefit other ISO and ISO/IEC JTC 1 works streams. Most notably, standards for blockchain may reference existing standards relating to risk, security, data management and interchange as well as IT governance. This may include referencing of standards developed by committees including:

- ISO/IEC JTC 1/SC 22 Programming languages, their environments and system software interfaces
- ISO/IEC JTC 1/SC 27 IT Security techniques
- ISO/IEC JTC 1/SC 32 Data management and interchange
- ISO/IEC JTC 1/SC 34 Document description and processing languages
- ISO/IEC JTC 1/SC 35 User interfaces
- ISO/IEC JTC 1/SC 38 Cloud Computing and Distributed Platforms
- ISO/IEC JTC 1/SC 40 IT Service Management and IT Governance
- ISO/TC 68 Financial services
- ISO/TC 251 Asset management
- ISO/ TC 279 Innovation management
- ISO TC 262 Risk management
- ISO TC 292 Security techniques
- ISO TC 154 Processes, data elements and documents in commerce, industry and administration
- ISO TC 184/SC 4 Automation systems and integration — Industrial data

The proposed suite of blockchain standards may also support the development and revision of standards to include technical advances by informing existing technical committees:

- ISO/TC 215 Health Informatics
- ISO/ TC 46 Information and documentation
- ISO/TC 68 Financial services
- ISO/TC 251 Asset management
- ISO/TC 259 Project committee: Outsourcing
- ISO/ TC 279 Innovation management
- ISO/PC 295 Audit data collection
- Others

A listing of relevant countries where the subject of the proposal is important to their national commercial interests.

Australia

Canada

China

Estonia

European Union, particularly, France, Germany and the United Kingdom

Finland

India

Israel

Japan

Korea

Russia

Singapore

Sweden

Switzerland

United Arab Emirates

United States

A listing of relevant external international organizations or internal parties (other ISO and/or IEC committees) to be engaged as liaisons in the development of the deliverable(s). (In order to avoid conflict with, or duplication of efforts of, other bodies, it is important to indicate all points of possible conflict or overlap. The result of any communication with other interested bodies shall also be included.)

The new TC or SC will actively seek opportunities on an on-going basis to collaborate, co-ordinate and liaise with all the relevant ISO and ISO/IEC JTC 1 entities below.

ISO/IEC JTC 1/SC 22 Programming languages, their environments and system software interfaces

ISO/IEC JTC 1/SC 27 IT Security techniques

ISO/IEC JTC 1/SC 32 Data management and interchange

ISO/IEC JTC 1/SC 38 Cloud Computing and Distributed Platforms

ISO/IEC JTC 1/SC 40 IT Service Management and IT Governance

ISO TC 154 Processes, data elements and documents in commerce, industry and administration

ISO TC 184/SC 4 Automation systems and integration — Industrial data

As blockchain technology is an emerging and cross-sectorial technology, there may be other technical committees that seek to liaise with the newly proposed blockchain committee.

With ISO taking a lead on this new standardization activity there will be a significant opportunity for ISO to work with a large range of external organizations and bodies with a current or future interest in blockchain, including:

United Nations Conference on Trade and Development (UNCTAD)

United Nations Information and Communication Technologies Task Force

World Economic Forum

R3 Consortium

Association of National Numbering Agencies

Bank for International Settlements

Coalition of Automated Legal Applications

Digital Assets Transfer Authority (W3C)

Electronic Frontier Foundation

Global Legal Entity Identifier Foundation

Internet Governance Forum

MasterCard International

Society for Worldwide Interbank Financial Telecommunication

UN/ECE CEFACT

Visa International

W3C: Cryptolegders Community group & Web Payments Working Group

A simple and concise statement identifying and describing relevant affected stakeholder categories (including small and medium sized enterprises) and how they will each benefit from or be impacted by the proposed deliverable(s).

The purpose of the blockchain is to provide a trusted immutable record across a distributed cryptographic ledger network that stores a copy and validates each transaction on each node.

The blockchain has been created to allow verification and immutable validation between peers, without the need of middlemen or 3rd parties. In practice, this means once data has been written to a blockchain no one, not even a system administrator, can change it.

The verified data can have pre-conditions and logic attached to it to allow it to be executed. These are called Smart Contracts. As an example, in the delivery of a parcel can use blockchain technology. When you purchase an item online, three parties can form a Smart Contract.

The Buyer, Seller and the courier. The item can be purchased as normal and purchase can be placed into a smart contract which can mandate the release of money only when the buyer has received the item from the courier and it is in satisfactory condition. When the buyer is satisfied of the condition and delivery, then the money is released to the seller and the courier is paid for the delivery automatically, without the need for human intervention in this process. This example can be used for the transfer of titles, digital and physical assets and financial products.

In the private sector, blockchain can support transaction and reduce process management issues related to lengthy supply chains. The blockchain can in a wide range of economic sectors including:

- consumer products and services
- health, minerals and precious stones
- banking
- real estate
- transport and automobiles
- small and medium enterprise

The benefits of blockchain technology reduce the need for duplication and reconciliation between parties, allowing for near realtime settlement without the need for a middleman.

Reduced market friction, making it easier for small and medium-sized enterprises (SMEs) to interact with local and national authorities

- Promotion of innovation and economic growth possibilities for SMEs

Other applications of this can also apply to Government transacting with citizens including for transactions relating to:

- Voting (local, state and national elections)
- Registration, transfer and management of land/property titles
- Passports
- Industry licenses
- Vehicle licenses
- Others

The Australian Treasury notes that blockchain technology will have a positive impact on the Australian tax and banking systems, and may require potential amendments to Commonwealth law including:

- Treating digital currency as money for taxation purposes
- Including digital currencies in legislation related to anti-money laundering

Furthermore, the Australian Government is currently consulting with a wide range of stakeholder including Standards Australia regarding the potential impact of blockchain technology on the Australian economy.

The UK's Government Office for Science notes the following examples:

- Reduced cost of operations, including reducing fraud and error in payments
- Greater transparency of transactions between government agencies and citizens
- Greater financial inclusion of people currently on the fringes of the financial system
- Reduced costs of protecting citizens' data while creating the possibility to share data between different entities, allowing for the creation of information marketplaces
- Protection of critical infrastructure such as bridges, tunnels etc.

Collectively these very broad range of possible benefits are delivered through the application of distributed ledgers in three different ways:

- Within currency applications
- To manage contracts and create new forms of contracts
- To prompt new applications by third parties, and provide more efficient ways of structuring and carrying out activities

Each of these opportunities and its application to the different technical implementations can achieve outcomes such as:

- Protecting critical infrastructure against cyber attacks
- Reducing operational costs and tracking eligibility for welfare support, while offering greater financial inclusion
- Transparency and traceability of how aid money is spent
- Creating opportunities for economic growth, bolstering SMEs and increasing employment
- Reducing tax fraud.

An expression of commitment from the proposer to provide the committee secretariat if the proposal succeeds.

Standards Australia is willing and committed to provide the international secretariat and Chair if approved by TMB.

Purpose and justification for the proposal. (The purpose and justification for the creation of a new technical committee shall be made clear and the need for standardization in this field shall be justified. Clause C.4.13.3 of Annex C of the ISO/IEC Directives, Part 1 contains a menu of suggestions or ideas for possible documentation to support and purpose and justification of proposals. Proposers should consider these suggestions, but they are not limited to them, nor are they required to comply strictly with them. What is most important is that proposers develop and provide purpose and justification information that is most relevant to their proposals and that makes a substantial business case for the market relevance and the need for their proposals. Thorough, well-developed and robust purpose and justification documentation will lead to more informed consideration of proposals and ultimately their possible success in the ISO IEC system.)

Detailed below are the key justifications that provide a compelling narrative for the start of this new field of technical activity.

Justification 1: Establishing Blockchain standards will position ISO as a leading contributor to develop global solutions to facilitate data movement and information flows thus enabling more efficient and timely transactions.

Justification 2: There is no one blockchain standard or protocol currently in use. International standards will allow for interoperability and implementation and use of multiple blockchain related protocols.

Justification 3: The development of blockchain and electronic ledger standards through ISO will assist this new emerging technology to be rolled out and deployed with greater clarity, certainty and market confidence.

Justification 4: The widespread adoption and use of international blockchain standards could facilitate a new wave of innovation, productivity, employment and industry opportunities.

Justification 5: The possibility of contributing to making the provision of public and private services more cost effective and efficient.

Justification 6: The growing burden of KYC compliance could be significantly reduced through the development of international blockchain standards which utilize shared database(s) for undertaking business and transacting payments.

Justification 7: Blockchain has the potential to create significant benefits for developing countries by unlocking banking and other applications. For instance, realtime transfers of remittances can deliver financial independence for individuals in developing economies. Similarly blockchain can document land titles and owner registrations.

Justification 8: The development of international standards to support smart contracts has the potential decrease contracting, compliance and enforcement provision costs.

Justification 9: The development of international blockchain standards will reduce transaction costs for SMEs when dealing with governments and businesses.

Signature of the proposer

[Click here to enter text.](#)

Further information to assist with understanding the requirements for the items above can be found in [the Directives, Part 1, Annex C](#).