STRATEGIC BUSINESS PLAN
ISO/TC 307

EXECUTIVE SUMMARY

Blockchain technology holds immense promise to revolutionize not only the financial domain, but a whole host of things from societal inclusion to efficiencies in government, health and all areas of business.
ISO/TC 307, blockchain and distributed ledger technologies, has been set up to meet the growing need for standardization in this area by providing internationally agreed ways of working with it to improve security, privacy and facilitate worldwide use of the technology through better interoperability. This is especially relevant due to the number of SMEs, across various sectors, that are developing blockchain and distributed ledger technologies as a product.

The scope of ISO/TC 307 reads: “standardisation of blockchain technologies and distributed ledger technologies*.”*
As of 2018-03-13, the standardization work of ISO/TC 307 has been divided into six groups:

- WG 1 Foundations;
- WG 2 Security, privacy and identity;
- WG 3 Smart contracts and their applications;
- SG 2 Use cases;
- SG 6 Governance;
- SG 7 Interoperability.

Blockchain and distributed ledger technologies is a rapidly evolving and expanding area. The need for collaboration and cooperation has been identified and ISO/TC 307 is liaising with the relevant ISO and IEC committees, as well as external organizations, to minimize any overlap.

1. INTRODUCTION

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 164 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

2. BUSINESS ENVIRONMENT OF THE ISO/TC

2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards.

ISO/TC 307 is responsible for standardization in relation to blockchain and distributed ledger technologies (DLT). This may include standards relating to terminology, reference architecture, security and privacy, identity, smart contracts, governance and interoperability for blockchain and DLT, as well as standards specific to industry sectors and generic government requirements.

Blockchain and DLT are still in the early stages of development and implementation, but they are developing rapidly and need standards quickly. They show much potential because they provide capabilities that cannot normally be met in any other way; but they require other technologies to be able to operate. It is this linkage and mutual dependency with other technologies that necessitates a mutual dependency and interoperability of standards. These ISO/TC 307 standards will be interoperable with and supportive of other relevant standards.

Operational blockchain and DLT implementations already exist at scale with potential applications across all industry sectors, financial and payment systems, border controls, internet governance and operations, logistics, export controls, patient records and more. In general, wherever requirements for traceability, accountability, regulatory compliance and authoritative data exist, there is a potential requirement for blockchain and DLT. Therefore, a priority for ISO/TC 307 is to ensure that any standards developed are sufficiently flexible so as to be applicable to the broad range of potential applications. Standards will then need to be continually updated in a feedback loop with governments and the private sector to ensure ISO/TC 307 is developing standards that meet their needs. The workplan for ISO/TC 307 should be requirements-led, based on a continually updated strategic context.

The broad scope of application for blockchain and DLT also means that this work area has a broad base of affected stakeholders. This includes governments and the private sector broadly, with particular relevance for the finance and information technology industries, also manufacturers and suppliers of physical and virtual products and assets, those working or specializing in data and records management, as well as citizens and consumers.

The majority of blockchain and DLT will operate in situations involving personal, private, company, government or otherwise sensitive data, all subject to regulation. Most notable, are those blockchain and DLT involving financial activity and information security because they are ubiquitous across all industry and government organisations. Globally significant regulations today that are relevant to blockchain and DLT include:

- the EU General Data Protection Regulation (GDPR), which sets a benchmark for the protection of personal data and privacy. Its scope is any system including personal data, even pseudonymised. It recognizes requirements for public safety and other fundamental human rights;
- EU Payment Services Directive 2, which affects all financial institutions, commercial organisations and retail services. It requires Strong Customer Authentication. This is based on G20 requirements;
- EU Anti-Money Laundering Directive 4, which increases the scope and depth of anti-money laundering measures. It also includes virtual currencies, based on blockchain and DLT. This is based on G20 requirements.

Consequently, standards for information security and privacy will be of paramount importance to any user or developer of the technology, including a legal requirement to ensure that data is kept up to date.

Another application of blockchain and DLT is in relation to smart contracts; these are already having implications in the legal sphere, with issues around the language used, compatibility with existing legal frameworks, jurisdictional differences, enforceability, and awareness of companies, government and industry employees, citizens and consumer regarding the legal standing of these smart contracts, as well as their use in automated and artificial intelligence-based systems and services.

Other concerns in relation to blockchain and DLT include aspects such as criminal misuse, consumption of energy, governance, immutability as both a benefit and a risk, public safety, consumer protection and a lack of public understanding.

Though no ISO standards currently exist for blockchain and DLT, a number of related standards have been identified that the group will need to be conscious of in development of standards for blockchain and DLT. These include, at a minimum:

- ISO 20022 series Financial Services – Universal Financial Industry Message Scheme;
- ISO/IEC 17788 Information Technology – Cloud Computing – Overview and Vocabulary;
- ISO/IEC 17789 Information Technology – Cloud Computing – Reference Architecture;
- ISO/IEC 18384 series Information Technology – Reference Architecture for Service Oriented Architecture;
- ISO/IEC 19086 Information Technology – Cloud Computing – Service Level Agreement (SLA) Framework;
- ISO/IEC 27000 series Information Technology – Security Techniques, with profile standards for many industries;
- ISO 29000 series on identity management and privacy;
- ISO 31000 series Risk Management – Principles and Guidelines;
- ISO 10962 series Securities and Related Financial Instruments;
- ISO 6166 series Securities and Related Financial Instruments;
- ISO/IEC 38500 series Information Technology – Governance of IT for the Organization;
- ISO/IEC JTC 1 SC 17 standards on identity related documents, including passports and driving licences.

ITU-T has Recommendations that are relevant to ISO/TC 307, particularly on the structured and operation of networks, and on cybersecurity and cyber incident management.

IETF, OASIS and W3C also have standards that are relevant to ISO/TC 307, including detailed specifications for the operation of the Internet, cyber threat intelligence and supply chain traceability and quality assurance.

2.2 Quantitative Indicators of the Business Environment

Quantitative indicators describe the business environment in order to provide adequate information to support actions of the ISO/TC. Indicators may include:

- adoption and use of ISO/TC 307 standards;
- ongoing engagement of industry and stakeholders with ISO/TC 307;
- industry and global trends in relation to blockchain and DLT.

In order to measure the adoption and use of ISO/TC 307 standards as well as ongoing engagement of ISO/TC 307 with appropriate industry and stakeholders, the technical committee may review indicators such as:

- sales of ISO/TC 307 standards and other deliverables;

- number of participating and observing ISO Member Bodies on the TC and number of active mirror committees at national level;
- number of standards adopted by ISO Member Bodies and referenced in national programmes;
- stakeholder balance in national mirror committees and in delegations for TC meetings;
- number of organisations implementing or certifying to standards;
- number of organisations in liaison to ISO/TC 307 and actively participating;
- number of standards and other deliverables translated for use in ISO Member Body countries and other local languages;
- continuity of active participation by ISO Member Bodies in work of ISO/TC 307;
- number of standards used in regulations or market-driven contracts at the national and international level;
- conformance by service providers to ISO/TC 307 standards;
- number of standards under the work programme of ISO/TC 307; and
- speed of developing and updating standards within the portfolio of ISO/TC 307.

Industry and global trends which may serve as quantitative indicators of the business environment may include:

- number of real world applications of blockchain and DLT, beyond proof-of-concept stage;
- number of companies, including SMEs, offering blockchain or DLT as a product or service;
- estimated value of digital currency stored in blockchain or DLT;
- estimated value of assets stored in blockchain or DLT;
- estimated number of transactions having taken place on blockchain or DLT.

In gathering data regarding the above areas, ISO/TC 307 will consider running a survey of participating and observing members, for each ISO Member Body to complete. The survey will gather data on aspects such as extent of adoption, use of standards nationally, and status of the market in their country, among the other aspects as detailed above.

Some data may be more difficult to gather, in particular that around the value of assets and/or digital currency held in blockchain and DLT. ISO/TC 307 will explore through its member base the extent to which public reporting is available regarding the above, and may need to draw on the results of other industry surveys or studies undertaken that have access to such data.

3. BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC

Benefits expected to be realised due to standardization for blockchain and DLT include:

- support of innovation, competition, governance, development and growth in the field, especially in cross-organization, cross-border usage scenarios to improve services for citizens;
- unified terminology and reference architecture in the field;
- increased understanding and adoption confidence of blockchain and DLT;
- a potential reference or repository for use case applications for guiding adoption;
- increased adoption of blockchain and DLT by industry and government;
- facilitation of compatibility between the technology and legal frameworks across a range of jurisdictions;
- aiding users and purchasers in being able to validate the quality of blockchain and DLT available in the market;
- for service providers, improved trust and reputation, with a reduction in perceived risk;
- interoperability between different ledger technologies and between ledger technologies and other system components;
- removing barriers to entry by facilitating accelerated time to market;
- lowered risk of getting “locked-in” to particular technical or non-standardised approaches which may prove unsuccessful or problematic in the future;
- increased investment in blockchain and DLT;
- improved security and privacy outcomes through the provision of robust requirements, leading also to consumer confidence in these technologies;
- reduced cost of implementation by providing transparent baseline requirements.

With a view to the above, the priority areas for ISO/TC 307 are reflected in the groups that the committee has established. Please refer to the TC homepage: https://www.iso.org/committee/6266604.html.

4. REPRESENTATION AND PARTICIPATION IN THE ISO/TC

4.1 Membership

Details of the ISO/TC 307 membership and liaisons can be found on the committee homepage: https://www.iso.org/committee/6266604.html

4.2 Analysis of the participation

The below breakdown and analysis is accurate as of 2018-03-18. Refer to the committee membership homepage for up to date information: https://www.iso.org/committee/6266604.html?view=participation.

Breakdown by region

Region	P-members	O-members
Africa	0	1
Americas	4	2
Asia-Pacific	7	5
Europe	20	4
Middle East	0	2

NOTE: For the purposes of this table, Russia has been classified as part of Europe.

Analysis

From the above, it can be seen that the current membership of ISO/TC 307 is heavily in favour of developed members, with a dominant European presence amongst the participating members, and participating members from North America being the United States and Canada. The other trend that emerges is a heavy presence in the Asia-Pacific region, with a significant number of participating and observing members across varying development statuses in that region.

This representation is reflective of the highly technical nature of the work, with heavier participation from nations with higher levels of industry and expertise in this area, leading to the heavy imbalance towards developed nations in Europe and North America, and those in transition in the Asia-Pacific. Members have noted that Estonia stands out as an exclusion from the list, and have sought to encourage participation from this member as a result.

There is notably little participation on the committee from Central and South America, and Africa, with only Brazil (P-member), Jamaica (P-member), South Africa (P-member), Argentina (O-member) and Uruguay (O-member) representing these regions. The Middle East also has limited participation so far, with just Israel and Iran listed (both O-members). Heavier participation should be encouraged in these regions, and the secretariat member body, Australia, may wish to consider a twinning arrangement with another member in order to encourage this.

In terms of liaisons, ISO/TC 307 has five external liaisons to date, with SWIFT, the European Commission, the International Federation of Surveyors, the International Telecommunication Union and the United Nations Economic Commission for Europe. There has been much interest from industry and external organisations in liaising to ISO/TC 307; the amount of interest indicates that industry is aware of the establishment of ISO/TC 307 and is keen to be involved in the process. In addition, ISO/TC 307 is actively engaging with relevant organizations and bodies in the market and industry to encourage liaisons and ensure that the work developed by ISO/TC 307 is and remains relevant.

Appropriate liaisons have been established internally with other ISO and ISO/IEC committees, and again this list is expected to grow a little over time. Individual members of ISO/TC 307 have

displayed an eagerness to work collaboratively with other ISO and ISO/IEC committees and avoid any duplication of work.

5. OBJECTIVES OF THE ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT

5.1 Defined objectives of the ISO/TC

ISO/TC 307 will:

- produce a set of International Standards and reports that will encourage adoption of blockchain and DLT and support innovation, governance and development in the industry. These International Standards and reports will include topics that support both cross-organization, cross-border usage scenarios. The committee aims to have these International Standards and reports available no later than 2021;
- develop a terminology International Standard that will provide a unified vocabulary for blockchain and DLT. The committee aims to have this International Standard available no later than 2020;
- develop a reference architecture International Standard that will provide a unified view of blockchain and DLT. The committee aims to have this International Standard available no later than 2021;
- develop a repository of use cases to aid in understanding the applications and implementations of blockchain and DLT. This repository will be an ongoing initiative;
- elaborate on a package of International Standards and Technical Specifications to address the compatibility between technology and legal frameworks to aid in adoption of blockchain and DLT by industry and government, which will be available by 2021;
- produce Technical Reports in the areas of security, privacy and identity then investigate the potential International Standards that would need to be developed as the aspects are better defined and identified;
- address interoperability between different ledger technologies and between ledger technologies and other system components as the aspects are better developed and defined.

Further project details can be found under the committee work programme: https://www.iso.org/committee/6266604/x/catalogue/p/0/u/1/w/0/d/0.

5.2 Identified strategies to achieve the ISO/TC's defined objectives

Strategies to be employed by ISO/TC 307 in achieving the above listed objectives include the following:

- prioritise projects within ISO/TC 307, such as terminology and reference architecture as foundational concepts for other standards to build upon;
- study groups will be formed as appropriate, to investigate potential areas for standardization in blockchain and DLT;
- collaborate with other ISO committees, IEC, and other SDOs, to avoid duplication of work;
- leverage related work where applicable, from both other ISO and ISO/IEC committees, and from industry and the market more broadly;
- conduct ongoing market and industry surveillance of use cases and applications, to ensure standards developed are not exclusive to particular industries;
- develop technical reports where applicable, to assist in understanding of blockchain and DLT.

To rapidly progress the work of ISO/TC 307, the TC has agreed on an ambitious meeting schedule. For more information refer to the meeting schedule on the TC homepage: https://www.iso.org/committee/6266604.html.

The Committee may consider the establishment of formal sub-committees at a later stage.

6. FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME

Factors that have the potential to negatively impact the work of ISO/TC 307 include those that are characteristic of standardization, and those that are industry specific. The two types of risk have been grouped accordingly below.

Factors characteristic of standardization that could affect the work of ISO/TC 307 include:

- the ISO committee Chairperson, Secretary, Convenor or Project Leader positions are vacant;
- expert resources are not sufficiently available (for certain projects);
- specific expertise for a project is lacking, which could affect the project's development as well as the credibility of the resulting standard in the business community;
- validation of a test method is dependent upon funding being available to undertake the necessary pre/co-normative research;
- legal/regulatory issues such as uncertainties regarding a possible EC Directive or jurisdictional requirements and conflicts, which in turn may necessitate modifications of the content and target dates for projects in the work program;
- members may have difficulty reaching consensus, due to the diverse geopolitical and market interests present.

Factors that are industry specific that could affect the work of ISO/TC 307 include:

- the current market environment for blockchain and DLT is dominated by both open source and proprietary projects. These groups may be unwilling to conform to ISO standards, and/or see little value in doing so;
- parallel industry-led standardization initiatives in specific market sectors may lead to duplication or conflict;
- the field of blockchain and DLT is a rapidly changing one, with much innovative work being conducted by small startups globally. These groups may see standards as stifling innovation or creativity;
- the blockchain and DLT industry is one that is very fragmented, addressing many different problems. Additionally, the industry draws on some technologies that are already standardized. This may present a challenge in being able to produce a cohesive set of standards relevant to all stakeholders, and that are compatible with and cognizant of existing standardized technologies in use.
- for some existing industries, there is resistance to blockchain and DLT in and of themselves, as they present a threat to certain industries and may be disruptive. Examples may be in the areas of logistics or online services;
- in areas such as smart contract, there are legal implications of this technology. The Standards therefore need to ensure they are compatible with legislative requirements across a range of jurisdictions. Given the global nature of the ISO standards process and specifically ISO/TC 307, this may prove an insurmountable challenge;
- use case applications that have a very high transaction rate, for example in the Internet of Things, or in Financial Trading, may not be able to use this technology, with the potential that other alternatives emerge as a result.

7. STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

Information on ISO online

The link below is to the TC's page on ISO's website:
https://www.iso.org/committee/6266604.html

Click on the tabs and links on this page to find the following information:

- about (secretariat, Secretary, Chair, date of creation, scope, etc.);
- contact details;
- structure (subcommittees and working groups);
- liaisons;
- meetings;
- tools;
- work programme (published standards and standards under development).

Reference information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO's technical work