ISO/IEC JTC1

STRATEGIC BUSINESS PLAN

NOVEMBER 2022

EXECUTIVE SUMMARY

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ISO/IEC JTC 1 (Information Technology) is the place in ISO and IEC where information technology standards that are applicable across domains are developed. Having information technology standards developed jointly by ISO and IEC helps to avoid duplication and conflict, and it benefits the many ISO and IEC TCs that build upon these foundational standards. JTC 1 works selectively with TCs and other organizations with domain expertise to develop domain-specific information technology standards. JTC 1 works cooperatively with liaison organizations and it has a program enabling cooperation with consortia.

The scope of JTC 1 is “Standardization in the field of Information Technology.”

Information technology standards respond to the needs of many stakeholders, including consumers, businesses, governments, and other organizations. JTC 1 standards are widely used, positively impacting the lives of nearly every person in the world.

BUSINESS ENVIRONMENT 2

2.1 | DESCRIPTION

The global information technology industry is expected to surpass $5.7 trillion in 2022[1] with a growth rate over the coming decade that exceeds the growth rate of global GDP. Information technology is utilized by every sector of the economy, enabling gains in productivity and increases in quality. Pandemic-related restrictions have accelerated reliance on information technology across many sectors, and that increased reliance is continuing as restrictions ease. Information technology touches nearly every person in the world and enables a higher quality of life. Information technology is characterized by substantial innovation and a rapid rate of change. Information technology standards are critically important because they:

- Enable interoperability among products and services from different suppliers
- Facilitate global supply chains and enable cooperation among suppliers, providing a foundation for global trade
- Promote competition that results in more choice and lower prices for consumers and business
- Establish expectations and practices that result in higher quality products and services and provide confidence to purchasers

1 Research consultancy IDC, August 2022

» Encapsulate expertise and best practice, which allows consumers and businesses to use information technology productively and safely

Because of the increasing reliance of society on information technology, many governments are increasingly interested in information technology and specifically information technology standards. Examples of such interest are concerns regarding trustworthiness of new technologies, and the societal costs and benefits associated with new technologies.

2.2 | QUANTITATIVE INDICATORS

» Size of the information technology industry

- The information technology industry is estimated to surpass $5.7 trillion in 2022.

» Sales and use of JTC 1 standards

» Number of JTC 1 projects in development and of new proposals

- JTC 1 has around 600 standards in development.

» Participation in development of JTC 1 standards

- 36 National Bodies and 4,500 experts participate in the work of JTC 1.

» Cooperative relationships with other ISO and IEC TCs and with other organizations

- JTC 1 and its SCs have more than 400 liaison relationships.

» Contributions by JTC 1 standards to society per the UN Sustainable Development Goals

- JTC 1 is in the early stages of compiling data regarding its contributions to the UN Sustainable Development Goals. So far, JTC 1 has confirmed contributions to goals 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, and 16.

BENEFITS EXPECTED FROM THE WORK OF JTC 1

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JTC 1 has a track record of effective collaboration in developing timely, high-quality standards that are well accepted by global markets. With over 3,300 published standards, there are many areas in information technology where JTC 1 standards have played an essential role in addressing market needs. Many JTC 1 standards are pervasive and have a profound impact on our world, but they are often built into the information technology infrastructure and not easy to spot. To appreciate the benefits, it helps to consider some examples:

- ISO/IEC 16963 was developed by JTC 1/SC 23 (*Digitally recorded media for information interchange and storage*) in collaboration with ISO/TC 171 and ISO/TC 42 to establish globally recognized test methods for estimating the lifetime of optical media for long term data storage.
- ISO/IEC 14496 (MPEG-4) was developed by JTC 1/SC 29 (*Coding of audio, picture, multimedia and hypermedia information*) in collaboration with ITU-T SG 16 and is one of the most widely implemented standards in the information technology sector, with literally billions of implementations in use worldwide. MPEG-4 received a Technology and Engineering Emmy Award from the National Academy of Television Arts and Sciences.
- ISO/IEC 27001 was developed by JTC 1/SC 27 (*Information security, cybersecurity and privacy protection*) to provide an information security standards management system. Used by organizations worldwide to ensure the security of all types of digital data, it is

one of the top selling standards across ISO and IEC. JTC 1/SC 27 has extended the 27000 series with ISO/IEC 27701, which addresses the need for privacy requirements, an area of increasing importance to everyone.

- JTC 1/SC 37 (*Biometrics*) has published the main parts of the ISO/IEC 39794 standard supporting the incorporation of biometric data in e-Passports. Data conforming to the first generation of these standards is contained in upwards of 1.4 billion passports issued by nearly 140 states. The revised standards, requested by the International Civil Aviation Organization (ICAO) and developed with liaison to JTC 1/SC 17, will be mandatory from 2030 onwards. The key innovation is for fingerprint, iris, and other data to reside in extensible data structures using a mechanism to define future extensions in a backwards- and forwards-compatible manner.
- ISO/IEC 18000-63 was developed by JTC 1/SC 31 (*Automatic identification and data capture techniques*) and is the most widely implemented radio-frequency Identification standard for item management. More than 20 billion RFID tags compliant to this standard are sold annually. The initial version of the standard was based on a submission from GS1 in 2004. The RAIN RFID Alliance was founded in April 2014 to promote the adoption of the standard in Retail, Healthcare, Aviation, and many other sectors.
- ISO/IEC 9995 was developed by JTC1/SC 35 (*User Interfaces*) to define a framework for the layout of all keyboards across the widest spectrum of today's and upcoming applications using keyboards. JTC1/SC 35 has extended this framework to virtual keyboards using gesture-based interfaces across devices and methods (ISO/IEC 30113), and voice commands (ISO/IEC 30122) as an input modality. JTC1/SC 35 has recently initiated work on user-interfaces based on affective computing to consider the users' emotions when interfacing with ICT devices.
- ISO/IEC/IEEE 9945 (Portable Operating System Interface — POSIX) was developed by JTC 1/SC 22 (*Programming Languages, their Environments and System Software Interfaces*) in collaboration with IEEE and the Open Group, through a joint working group called the Austin Group, to define the operating system with the widest applicability of any in the world. It is used on large numbers of systems ranging from embedded devices to smartphones to supercomputers. POSIX is more widely implemented than all other operating systems combined.

» ISO/IEC 7812 - Identification cards — Identification of issuers — Part 1: Numbering system was developed by ISO/IEC JTC 1/ SC 17 (*Cards and security devices for personal identification*) in conjunction with the American Bankers Association (ABA) and card services providers such as AMEX, VISA, and MasterCard. The standard provides a numbering system for the identification of card issuers operating within an interchange environment, the format of the issuer identification number, and the primary account number, as well as application and registration procedures for card issuers who operate a card program in an international interchange environment. A revision was published to transfer from 6- to 8-digit identifiers to ensure that financial organizations can continue to issue new cards globally with complete confidence in the identifiers and numbering scheme. ISO/IEC 7812 is used by virtually all credit cards worldwide.

» ISO/IEC 9075 (Database languages – Structured Query Language) was developed by JTC 1/SC 32 (*Data management and interchange*) and is the foundation of an industry that far exceeds US$10 billion per year. Companies of all size worldwide rely on ISO/IEC 9075 to manage financial transactions, purchasing, manufacturing, sales, and many other aspects of conducting business.

By developing timely, high-quality standards that are well accepted by global markets, JTC 1 enables information technology to make the world a better place.

REPRESENTATION AND PARTICIPATION IN JTC 1

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4.1 | MEMBERSHIP

JTC 1 currently has:

- 36 P-members with more than 4,500 experts participating
- 65 O-members
- 3 category A liaisons (Ecma International, ITU-T, European Commission)
- 15 PAS Submitters

Additional membership information is available here.

4.2 | ANALYSIS OF THE PARTICIPATION

JTC 1 appreciates the participation by its P-members, liaisons, and PAS submitters. It seeks to:

- Grow participation by developing countries
- Increase use of virtual meetings to enable increased participation from all members
- Encourage consumers and governments to participate in JTC 1's work to a greater degree
- Attract more of the world's information technology experts to participate in the work program

OBJECTIVES OF THE TC AND STRATEGIES FOR THEIR ACHIEVEMENT

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JTC 1 recognizes its role is to provide information technology standards that are applicable across domains (sometimes referred to as horizontal or foundational standards), and to work together with other ISO and IEC TCs that are utilizing information technology to develop domain-specific standards.

5.1 | DEFINED OBJECTIVES OF JTC 1

- Initiate programs of work at the right time, responding to emerging market trends
- Grow participation in JTC 1's work
- Deliver high quality standards when the market needs them
- Collaborate across JTC 1 and with other ISO and IEC TCs
- Cooperate with consortia and other standards setting organizations
- Work effectively and collaboratively in areas that require a systems approach

5.2 | IDENTIFIED STRATEGIES TO ACHIEVE THE DEFINED OBJECTIVES

Initiate programs of work at the right time, responding to emerging market trends

Initiating new programs of work at the right time and responding to emerging market trends is critically important for JTC 1. JTC 1 has a very effective Advisory Group, JTC 1 Emerging Technology and Innovation (JETI), that proactively tracks emerging technology

trends and market innovations, explores opportunities for new standards development, and facilitates timely action by JTC 1. This process led to the creation of JTC 1/SC 42 (*Artificial intelligence*), now recognized as the leading international committee developing global standards in artificial intelligence, a JTC 1 WG on Quantum Computing, and JTC 1/SC 43 (*Brain-computer Interfaces*). Many JTC 1 subcommittees employ a similar approach within their scopes; they attract participants from industry and consumer organizations who share their knowledge of market trends.

Grow participation in JTC 1's work

JTC 1 seeks to make the public more aware its work so that they have an opportunity to contribute and to participate. For example, more public input on use cases would benefit many efforts, and new projects would benefit from greater diversity of participants. JTC 1 and some JTC 1 SCs invest in outreach and workshops co-located with meetings to make the public more aware of the committees' work, and some SCs have established relationships with consumer and other stakeholder organizations. JTC 1 makes some documents, such as technology trend reports, publicly available to encourage awareness and feedback. JTC 1 SCs maintain websites to communicate about their work. JTC 1 has an Advisory Group on Communications to enable the TC's public communications activities, and JTC 1 works closely with the ISO Central Secretariat and the IEC Secretariat to share information about JTC 1's activities via their marketing communications programs. JTC 1 has an advisory group on outreach that aims to encourage more participation, especially from countries that are not currently involved. JTC 1 also seeks to engage stakeholders whose engagement in the TC's work program could be enhanced, including consumers and governments/regulators. The JTC 1 Advisory Group on standards and regulations is studying JTC 1's approach regarding engagement by governments/regulators.

With more than 4,500 active experts from 36 participating National Bodies, JTC 1 has a strong interest in helping to improve experts' productivity through improved ISO and IEC practices and infrastructure. JTC 1 has worked with ISO Editorial Program Managers to improve JTC 1 and ISO editing practices, and JTC 1 experts have participated in pilots of ISO IT tools. JTC 1 encourages ISO and IEC to work more closely together on policies, practices, procedures, and infrastructure, allowing JTC 1 to focus more fully on information technology standards development.

Deliver high quality standards when the market needs them

JTC 1 has worked to improve the speed of standards development, while maintaining a high level of quality. Many NPs now include preliminary drafts, justification studies, and design specifications, as appropriate. In addition, many Working Groups under JTC 1 meet virtually, to enable timely decisions and faster progress in standards development. While standards development has accelerated, there is an opportunity to further improve timeliness of standards delivery by speeding up and improving the quality of the publication process. While JTC 1 has been responsive to market needs, there are opportunities to improve the utility of standards themselves. Standards are evolving to include more embedded intelligence with features such as referenced software code and smart identifiers. Although standards are unlikely to become machine readable overnight, a proactive initiative to embrace near and long-term opportunities to make them smarter and more useful than paper documents will be important for the success of ISO and IEC.

Optimizing the structure of the TC also supports delivering high quality standards when the market needs them. While the JTC 1 structure works well, JTC 1 is proactive in pursuing opportunities for improvement. JTC 1 has also utilized Advisory Groups to study new areas of opportunity, and to establish practices that apply across JTC 1, such as the Systems Integration approach. JTC 1 will continue to evaluate opportunities to strengthen its structure and approach in the coming years.

Collaborate across JTC 1 and with other ISO and IEC TCs

Because information technology is used by nearly every sector of the global economy, it is critically important for JTC 1 to cooperate and collaborate with other ISO and IEC committees. Through that cooperation and collaboration, JTC 1 develops deliverables that are more responsive and relevant to the needs of other sectors, and JTC 1 contributes to the development of application specific standards that incorporate information technology.

JTC 1 collaborates with other ISO and IEC TCs by utilizing liaison relationships, Joint Working Groups, and less formal interactions. There are more than 400 liaisons in place across JTC 1 and its SCs. As examples, JTC 1/SC 27 has 85 liaison relationships, utilizes co-editors with other TCs, and develops common text with ITU-T SG 17. JTC 1/SC 27 has also formed a JWG with ISO/TC 307 to address the cybersecurity aspects of blockchains. JTC 1/SC 41 has

established JWGs with IEC/TC 65 and the IEC Syc on Smart Energy. JTC 1 has pursued new approaches to cooperation and collaboration, including an Enhanced Liaison approach (with ISO/TC 307, for example).

In 2021, JTC 1 convened a joint workshop with ISO/TC 20/SC 16 to focus on information technology aspects of Unmanned Aircraft System standards and an Advisory Group continues to guide cooperation between JTC 1 and ISO/TC 20/SC 16. In 2022, JTC 1 formed an Advisory Group to guide cooperation between JTC 1 and ISO/TC 268/SC 1 in Smart Community Infrastructures. Recently formed subcommittees include collaboration in their scopes; JTC 1 is interested in exploring other new methods for improved collaboration and cooperation. Through the work of an ad hoc group, JTC 1 has developed principles for cross-domain cooperation and collaboration that apply to the full JTC 1 program of work.

Collaboration across JTC 1 is also important and is facilitated by interactions among SC chairs at JTC 1 meetings. As an example of such collaboration, JTC 1/SC 37 (*Biometrics*) worked with JTC 1/SC 17 (*Cards and security devices for personal identification*) and JTC 1/SC 27 (*Information security, cybersecurity and privacy protection*) to provide timely standards that support secure biometric systems which are widely used today.

Cooperate with consortia and other standards setting organizations

Recognizing the significant role that consortia play in information technology standards, JTC 1 has sought to work cooperatively with them, through liaison relationships that may enable joint work, and through the JTC 1 PAS process. The JTC 1 PAS process has enabled JTC 1 to fill gaps in the ISO/IEC portfolio of information technology standards where consortia have developed standards with wide market acceptance. Consortia are interested in becoming JTC 1 PAS submitters because they would like the increased international acceptance and legitimacy of having select specifications become ISO/IEC standards. Instead of viewing consortia only as competition, JTC 1 has built bridges with consortia, facilitating cooperation and collaboration via the JTC 1 PAS process across many different areas. As an example, the approved JTC 1 PAS submitter World Wide Web Consortium (W3C) has submitted several specifications that are essential elements of the Web to be approved as ISO/IEC standards. JTC 1 would like to further leverage the partnerships it has developed with consortia.

JTC 1 has a longstanding liaison relationship with ITU-T, allowing for various types of cooperation. One example of that cooperation is joint development of MPEG standards.

Work effectively and collaboratively in areas that require a systems approach

To develop standards in areas where cross-functional expertise is required and where deliverables may need to be coordinated across JTC 1 entities and with external entities, JTC 1 developed a systems integration approach (documented in JTC 1 Standing Document 24). The approach is evolutionary, borrowing from existing frameworks (eg. IEC's) and fitting within the ISO/IEC directives. The JTC 1 Advisory Group on Systems Integration Facilitation supports this work and advises JTC 1 on issues that may arise and actions that should be taken. To illustrate JTC 1's systems approach with an example, trustworthiness is a characteristic that is important to a range of JTC 1 SCs and to other ISO and IEC TCs. JTC 1 established JTC 1/WG 13 (*Trustworthiness*) in 2019 to develop horizontal deliverables for guiding trustworthiness efforts throughout JTC 1 and upon which other deliverables can be developed. The Systems Integration approach is also being applied in the Internet of Things (JTC 1/SC 41) and Artificial Intelligence (JTC 1/SC 42).

FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE WORK PROGRAM

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JTC 1 faces significant competition in development of information technology standards. Many new IT standards start their development in consortia instead of JTC 1, because working in consortia is sometimes perceived to be easier/faster than in ISO/IEC and because most consortia make their deliverables publicly available at no cost. There are hundreds of consortia that compete with JTC 1 for attracting new proposals, and more are created each year. Open source software development is also gaining in popularity as an alternative to traditional standards development—its proponents highlight faster development speed, greater flexibility, and no cost availability as advantages. JTC 1 must continue to improve while also cooperating with consortia and exploring ways to cooperate with the open source community.

In recent years, JTC 1 has systematically aligned its JTC 1 Supplement with the ISO/IEC Directives Part 1 or adopted ISO or IEC Supplement text, reducing the number of unique JTC 1 processes. In addition, JTC 1 withdrew six JTC 1 standing documents in 2019, eliminating 47 pages of unique JTC 1 guidelines, further aligning with ISO and IEC Directives Part 1. In the last 4 years, JTC 1 has brought forward proposals to the ISO/IEC JDMT aiming to improve the ISO/IEC Directives and has proposed no new JTC 1 specific procedures. Closer alignment between ISO and IEC on policies, practices, procedures, and infrastructure helps JTC 1, and JTC 1 believes it benefits ISO and IEC overall.

STRUCTURE, CURRENT PROJECTS, AND PUBLICATIONS OF THE TC

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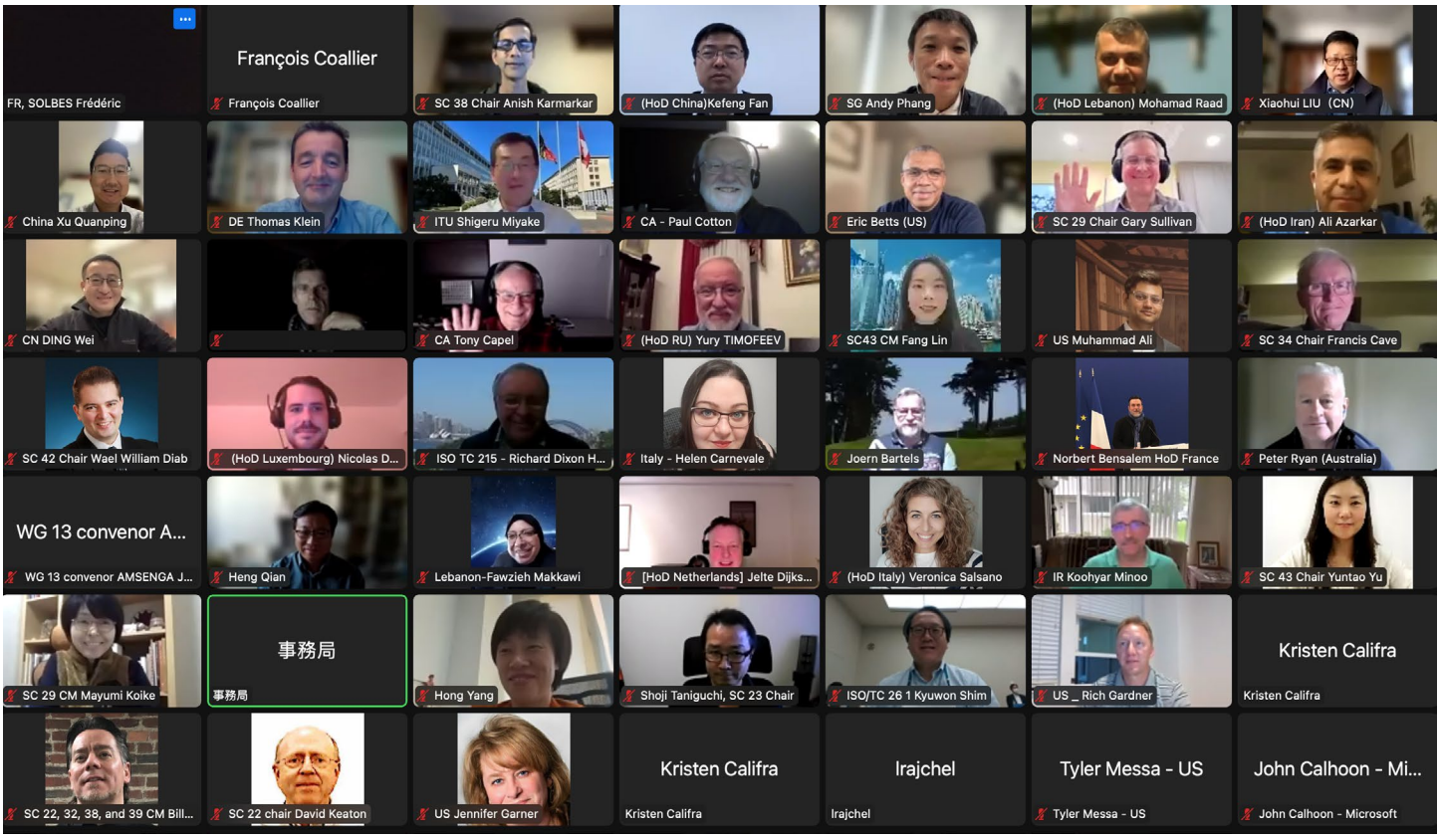
JTC 1 currently has 23 subcommittees and 4 JTC 1 level working groups. It has 11 Advisory Groups that have a range of functions, including carrying out JTC 1 strategies, facilitating cooperation with other committees, and evaluating areas to potentially expand the work program.

JTC 1 has published over 3,300 standards; around 600 are in development.

JTC 1 meets twice per year to monitor the progress and plans of its subgroups, consider proposals from members, refine its strategies, and make timely decisions.

More information is available from ISO here and from ISO and IEC at http://www.jtc1info.org

SC business plans are available from https://sd.iso.org/documents/ui/#!/browse/iso/iso-iec-jtc-1/library/2/2022%20business%20plans



ISO/IEC JTC 1 Plenary in Tokyo, November 2022 with a remote component