ISO/IEC JTC 1
SWG for Technology Watch
Secretariat: US (ANSI)

ISO/IEC JTC1 TW0041

2007-07-04

Document Type: Calling notice and call for contributions

Document Title: Calling notice and call for contributions, JTC 1 Technology Watch Workshop, Gold Coast, Australia, 11 October 2007

Document Source: Technology Watch SWG Convener and TW 2007 Host

Project Number:

Document Status: Contributions are sought from National Bodies for potential contributors to the 2007 Technology Watch session. Initial expressions of interest are invited prior to the closing date for abstracts, by e-mail to: panjan.navaratnam@standards.org.au

Action ID: ACT

Due Date: 8 August 2007

Distribution: This document is circulated to JTC 1 National Bodies for information and use by the delegates to the meeting.

No. of Pages: 10

Information and Request for Contributions

4th JTC 1 Technology Watch Workshop

Royal Pines Resort, Gold Coast, Australia

Thursday, 11 October 2007

General information

ISO/IEC JTC 1 is the joint technical committee formed by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) to establish international standards in the field of Information Technology.

JTC 1 addresses standardization needs for a seamless, secure global information infrastructure through its 17 sub-committees (see accompanying JTC 1 information).

The scope of JTC 1 work encompasses standards used in specification, design and development of IT systems and the processing and management of information. Examples include:

- JPEG and MPEG imaging standards
- ISO/IEC 17799 (now 27000-series) information security standards
- Software and Systems Engineering Processes - ISO/IEC 12207, 15288, 15504 and ISO 9000-3
- Standards in areas as diverse as: code sets for information interchange, wireless devices and networks, programming languages (e.g. SQL, C++), digital media, identification cards, geospatial information, metadata and biometrics.

At the invitation of Standards Australia, ISO/IEC JTC 1 is holding its annual plenary at the Royal Pines Resort, Gold Coast, Queensland from 8-12 October 2007.

JTC 1 holds a one day "Technology Watch" workshop during the meeting to examine emerging needs and technologies in the ICT field that are potentially relevant to JTC 1 and to understand the contributions of organisations working with these technologies.

The fourth Technology Watch workshop is scheduled for Thursday, 11 October. It provides a unique opportunity for experts from organisations in Australia to benefit from the knowledge and resources of JTC 1 and to contribute ideas and feedback to some of the leading people in this peak international IT standards forum.

The Chairpersons of the JTC 1 Sub-committees, as well as IT experts from more than 15 countries are expected to attend the plenary meeting and workshop.

Experts in industry, academia, government and NGOs are invited to make contributions on emerging technologies and the challenges of applying them efficiently, effectively, safely and reliably to benefit human society.

This call for participation also aims to solicit suggestions for appropriate topics as well as seeking participation and offers of contributions in areas relevant to JTC 1.

The following are among topics already suggested for discussion, although other topics in the ICT field relevant to the work of JTC 1 would also be potentially acceptable:

- IT in health (major theme), including:
  - Interoperability for Health and Wellness in the home and community
  - Health informatics and health information standards
  - Impact of ICT on regulation of health-care devices and therapeutic agents
- Representation and management and of genomic information for applications in health, agriculture and biotechnology
- Engineering of standard software components for re-use and reliability
- Smart transport systems – safer and more sustainable through ICT
- Managing complexity to exploit large-scale information resources
- Conducting business and life in new virtual worlds – with safety and security
- Sustainability in the use of ICT.

Further Information

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Potential Contributions

Potential contributors are invited to submit an abstract (one page) of proposed presentations by e-mail to Panjan Navaratnam at Standards Australia **by 8 August 2007.** Please also include your contact details, such as name, position and title, telephone number and email address, together with a short CV of your experience. All proposals will be reviewed by the Workshop Program Committee. Length of a presentation should not exceed 20 minutes.

Information on ISO/IEC JTC 1 and its Subcommittees

ISO/IEC JTC 1

ISO/IEC JTC 1 is the joint technical committee formed by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) to establish international standards in the field of Information Technology.

In brief, JTC 1 addresses the standardization needs for a seamless, secure global information infrastructure. As presented on the JTC 1 website,[1] its formal **Scope** is:

> **Standardization in the field of Information Technology.**
>
> Note: Information Technology includes the specification, design and development of systems and tools dealing with the capture, representation, processing, security, transfer, interchange, presentation, management, organization, storage and retrieval of information.

and its **Mission Statement** is:

> [To] develop, maintain, promote and facilitate IT standards required by global markets meeting business and user requirements concerning:
>
> - design and development of IT systems and tools
> - performance and quality of IT products and systems
> - security of IT systems and information
> - portability of application programs
> - interoperability of IT products and systems
> - unified tools and environments
> - harmonized IT vocabulary
> - user friendly and ergonomically designed user interfaces

Organisation of Activities

JTC 1 operates through 17 sub-committees (SCs), which are listed and discussed in more detail on the following pages. Most SCs operate through a series of specialised Working Groups (WGs), some of which have their own separate secretariats and websites.

The JTC 1 membership comprises National Standards Bodies of which 30 are Participating (P) members that have a vote and have committed resources to JTC 1 work and 43 are Observing (O) members, who can take part in JTC 1 activities but do not have a vote.

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[1] http://isotc.iso.org/livelink/livelink?func=ll&objId=755080&objAction=browse&sort=name
Accessed 25 Jun 2007.

JTC 1 and its SCs have formal liaisons with many other ISO and IEC Technical Committees, Subcommittees and external standards organisations such as ITU-T, WIPO, UNECE, W3C, Unicode, WMO, ECMA, IATA, ICAO, SWIFT, UPU, OASIS, ETSI, UNCTAD, EUROPAY, OMG.

Much of the formal activity occurs at the JTC 1 Plenary meetings held once every twelve months.

JTC 1 publishes between 100 and 150 standards each year with its work being supported by approximately 2100 technical experts from around the world. A list of standards for JTC 1 and/or each of its SCs can be found through the "By committee" compound reference search on the IEC Webstore site:
http://webstore.iec.ch/webstore/webstore.nsf/$$search?openform

JTC 1 standards are used to support the work of some 40 "registration authorities" – which are organizations approved by ISO/IEC for performing international registration in various technical areas (e.g. The American Bankers' Association, which registers the issuers of identification cards according to ISO/IEC 7812-1:2006).

JTC 1 Sub-committee structure

The following are the current JTC 1 Sub-committees, which give cover a broad range of ICT interests:

JTC 1/SC 2	Coded character sets
JTC 1/SC 6	Telecommunications and information exchange between systems
JTC 1/SC 7	Software and systems engineering
JTC 1/SC 17	Cards and personal identification
JTC 1/SC 22	Programming languages, their environments and system software interfaces
JTC 1/SC 23	Digitally recorded media for information interchange and storage
JTC 1/SC 24	Computer graphics, image processing and environmental data representation
JTC 1/SC 25	Interconnection of information technology equipment
JTC 1/SC 27	IT Security techniques
JTC 1/SC 28	Office equipment
JTC 1/SC 29	Coding of audio, picture, multimedia and hypermedia information
JTC 1/SC 31	Automatic identification and data capture techniques
JTC 1/SC 32	Data management and interchange
JTC 1/SC 34	Document description and processing languages
JTC 1/SC 35	User interfaces
JTC 1/SC 36	Information technology for learning, education and training
JTC 1/SC 37	Biometrics

More information on each of these 17 SCs is provided on the following pages.

ISO/IEC JTC 1 Sub-committees

JTC 1/SC 2 Coded character sets

Responsible for the standardization of graphic character sets and their characteristics associated control functions, their coded representations for information interchange and code extension techniques. Excluded are standards for audio and picture coding. Widespread use of the Internet technologies, such as the Internet, means that even an ordinary person now is faced with and has to use systems based on standards such as the ISO/IEC 8859 series of standards and ISO/IEC 10646. Easy access to SC 2 standards is crucial to avoid confusions between developers, implementers and users.

For more details see: http://std.dkuug.dk/jtc1/sc2/

JTC 1/SC 6 Telecommunications and information exchange between systems

This SC is responsible for standardization in the field of telecommunications dealing with the exchange of information between open systems including system functions, procedures, parameters and equipment, as well as the conditions for their use. This standardization includes both the lower layers that support the physical, data link, network and transport services, including private integrated services networking, as well as the upper layers that support the application protocols and services such as Directory and ASN.1. A vital aspect of this work is done in effective cooperation with ITU-T and other worldwide and regional standardization bodies.

Data traffic for Internet continues to grow faster and the requests for data transfer facilities with multimedia quality of service (QoS) attributes are more widespread . The standards developed in SC6 are challenged to increase speed and provide greater quality in service. Local Area Networks continue to be a major worldwide industry with the increased speed of Ethernet from 10 Mbps to 1 Gbps with an estimated market base of $50 Billion per year. New standards in LANs are now at the 10 Gbps level.

Wireless LAN standards have found a major global market that is rapidly growing into multi-Billion dollar business, with an increased speed near 10 Mbps. Private telecommunications networking standards should find greater application inside the enterprise structure as increased appetite for multimedia time controlled latency bandwidth occurs over the private telephone networks. Transportation of PISN signaling through IP Networks is a future growth area. In addition, internetworking of PISN networks with IP telephony is likely to become a major trend.

Some further information can be found through documents on the official ISO web site:
http://isotc.iso.org/livelink/livelink?func=ll&objId=329504&objAction=browse&sort=name

JTC 1/SC 7 Software and systems engineering

Responsible for the standardization of processes, supporting tools and supporting technologies for the engineering of software products and systems. The vision of SC7 is a unified set of software and system engineering standards widely accepted by the intended class of users. These standards will be organized in a framework, which establishes the relationships among SC 7 standards and between SC 7 standards and those of other disciplines, e.g. engineering, information technology, and quality management.

The range of ICT applications is wide and continually expanding, from cardiac pacemakers and traffic control systems to business and entertainment systems. The interests of consumers using these applications must be protected, and risks of all kinds that may arise from the failure of such software systems must be minimized. Never has it been more important for software and system engineers to deliver reliable and safe systems to business, to industry and to society at large. Challenges still abound because of the pressure to build more complex applications and products in an ever-shorter time frame (a Web Year is now approximately 3 months).

Looking forward, the challenge of developing increasingly complex information systems increasingly quickly will remain. In addition, many of these software-intensive systems will also perform more and more critical tasks in our society. All this will not only drive the formalization of the software and system engineering discipline, but also the market for re-usable software components.

For more details see: http://www.jtc1-sc7.org/

JTC 1/SC 17 Cards and personal identification

Responsible for the standardization in the area of identification and related documents, cards, and devices associated with their use in inter-industry applications and international interchange. This area is growing very quickly as more applications are found for “smart” cards, and for increased security in various applications, such as electronic information in passports and visas.

For more details see: http://www.sc17.com/

JTC 1/SC 22 Programming languages, environments and systems software interfaces

Responsible for the standardization of programming languages, their environments and systems software interfaces such as specification techniques and common facilities and interfaces. There are a number of working groups focusing on specific languages such as C, C++, POSIX, Lisp, Fortran, etc.

For more details see: http://www.open-std.org/jtc1/sc22/

JTC 1/SC 23 Digitally recorded media for information interchange and storage

Responsible for the standardization of Optical Disk Cartridges for Media and Information Interchange between Information Processing Systems including their Volume and file Structure. Today, the use of DVD-ROM drives and CD-R/RW drives is pervasive. The demands for larger-capacity and lower-cost network storage and storage for personal computers are increasing. To respond to these market requirements larger capacity MO, CD-R and DVD have been developed. As large amount of optical disk cartridges are used in various fields the life and the preservation conditions of optical disks has become very important for users.

For more details see: http://www.itscj.ipsj.or.jp/sc23/

JTC 1/SC 24 Computer graphics, image processing and environmental data representation

Responsible for the standardization of interfaces for information technology based applications relating to computer graphics, image processing, virtual reality, environmental data

representation and interaction with, and presentation of, information. Included are the following related areas: modeling and simulation, related reference models; application program interfaces; functional specifications; representation models; interchange formats, encoding specifications, including metafiles; device interfaces; testing methods; registration procedures; presentation and support for creation multimedia and hypermedia documents.

Building virtual environments that are based on existing features of the earth and existing features of humanoid interaction provide us with opportunities to design and test possible environments, possible objects, or tools within those environments and test the ability of a human to interact with that object or tool. The relevant stakeholders cross the spectrum of categories, including the gaming industries, modeling and simulation (including for training and education applications), design industries, government and civilian planners, defense and public safety sectors.

For more details see:
http://isotc.iso.org/livelink/livelink.exe?func=ll&objId=327973&objAction=browse&sort=name
and: http://www.sedris.org/wg8home/index.htm

JTC 1/SC 25 Interconnection of information technology equipment

Responsible for the standardization of microprocessor systems; and of interfaces, protocols and associated interconnecting media for information technology equipment, generally for commercial and residential environments, for embedded and distributed computing environments, storage systems, and other input/output components. Excluded is the development of standards for telecommunication networks and of interfaces to telecommunication networks.

There has been a proliferation of home networking specifications and WG 1 is pursuing the development of generic standards that facilitate the interconnection of otherwise incompatible networks. The market for systems and peripherals has been enhanced by wide acceptance of information technology interfaces within the scope of SC 25. These standards are typically developed by INCITS, IEEE and other technical committees and internationally standardized by SC 25.

For more details see: http://sc25.iec.ch/

JTC 1/SC 27 Security techniques

Responsible for the standardization of generic methods and techniques for IT security. This includes:

- identification of generic requirements (including requirements methodology) for IT system security services,
- development of security techniques and mechanisms (including registration procedures and relationships of security components),
- development of security guidelines (e.g., interpretative documents, risk analysis), and security evaluation criteria, and
- standardization of cryptographic algorithms for integrity, authentication and non-repudiation services,

Organizations deploying electronic services (e.g., e-business, e-government) need to ensure control over who gets into applications and what users are allowed once they are in. User identification, authentication and authorization management technologies address these issues. Electronic signatures provide data integrity and non-repudiation and thus help to accelerate the growth in secure electronic business and subsequently to eliminate paper-based transactions. Standardized security techniques are becoming mandatory requirements for e-commerce, health-care, and many other application areas.

For more details see: http://www.nia.din.de/cmd?level=tpl-untergremium-home&committeeid=54738935&subcommitteeid=54769404&languageid=en

JTC 1/SC 28 Office equipment

Responsible for the standardization of basic characteristics, performance, test methods and other related aspects of office equipment and products, including printers, copying equipment, digital scanners, facsimile equipment and systems composed of combinations of office equipment.

For more details see:
http://isotc.iso.org/livelink/livelink/fetch/2000/2122/327993/327996/customview.html?func=ll&objId=327996&objAction=browse&sort=name

JTC 1/SC 29 Coding of audio, picture, multimedia and hypermedia information

Responsible for the standardization of coded representation of audio, picture, multimedia and hypermedia information and sets of compression and control functions for use with such information. Several application of JPEG 2000 are found in image processing/display program installed on personal computers. New video compression plug-ins using MPEG-4 have been found in video display program for personal computers. MPEG-4 is also used for mobile phone, PDA (Personal Digital Assistance), digital movie camera applications as well as surveillance system. Many of MPEG-7 metadata descriptions are incorporated into some specifications of TV-Anytime Forum.

For more details see: http://www.itscj.ipsj.or.jp/sc29/

JTC 1/SC 31 Automatic identification and data capture techniques

Responsible for the standardization of data formats, data syntax, data structures, data encoding, and technologies for the process of automatic identification and data capture and of associated devices utilized in inter-industry applications and international business interchanges. Generally speaking, SC 31 activities centre on the identification of things and management of related information as against people and animals, the provinces of SC 17 and TC23 respectively. It includes RF techniques, except those related to transportation and to card-based systems.

For more details see:
http://isotc.iso.org/livelink/livelink?func=ll&objId=327946&objAction=browse&sort=name

JTC 1/SC 32 Data management and interchange

Responsible for the standards for data management within and amongst local and distributed information systems environments. Provides enabling technologies to promote harmonization data management facilities across sector-specific areas. Specifically includes reference models

and frameworks for the coordination of existing and emerging standards, definition of data domains, data types and data structures, and their associated semantics languages, services and protocols for persistent storage, concurrent access, concurrent update and interchange of data, and methods, languages, services and protocols to structure, organize and register metadata and other information resources associated with sharing and interoperability, including electronic commerce.

This SC's standards are driven by the rapid pace of hardware and software advancement as well as by the explosive growth of World Wide Web/Internet/Intranet/Extranet applications. The data management market continues to grow rapidly in line with the geometric increase in the volume of data stored and served. Users are driving the market demand for metadata registries that describe the structure and meaning data. Major organizations are implementing metadata registries according to SC 32 standards and in the process are creating demand for extensions and broader coverage. This work is especially driven by the public access requirements of users and by market forces requiring the capability to share metadata between organizations.

The market demand for SQL database products remains strong. The clear acceptance of the SQL standards by the database vendors is very encouraging. The development of new parts and new features within the ISO/IEC 9075 family of standards continues to be driven by perceived market priorities; the effort applied and the scheduling of the various parts has been adjusted accordingly.

For more details see: http://jtc1sc32.org/

JTC 1/SC 34 Document description and processing languages

Responsible for the standardization of languages and resources for the description and processing of compound and hypermedia documents, including Standard Generalized Markup Language (SGML) and support facilities. Recognition that HTML was based on SGML raised the visibility of SC34's work considerably. Recognition of the limitations of HTML led to the creation of XML, and interest in that, particularly from the area of electronic commerce, has exploded in the past year. Attendance at the conferences sponsored by the Graphic Communications Association, which have been the historical forum for SGML activities, reflects this growth of interest, the increase has become almost exponential.

For more details see: http://www.jtc1sc34.org/

JTC 1/SC 35 User interfaces

Responsible for the standardization in the field of User-system interfaces between users (including people with special needs) and systems encompassing input and output devices in information technology environments, with a priority of meeting the JTC 1 requirements for cultural and linguistic adaptability. Included are interfaces between users and devices such as keyboard, mice, pointers, pens; visual displays, and forms of audio and tactile input/output, with the emphasis on functionality, rules for system control by voice, vision, movement, gestures, etc., presentations of technical mechanisms, icons, graphical symbols, etc. , and dialogue control and navigation in interactions between humans and systems assistance and tutoring.

JTC1/SC 36 Information technology for learning, education, and training (ITLET)

Responsible for standardization in the field of information technologies for learning, education, and training to support individuals, groups, or organizations, and to enable interoperability and

reusability of resources and tools. Excluded are standards or technical reports that define educational standards, cultural conventions, learning objectives, or specific learning content.

Much effort is being spent on information technology and its integration within the learning environment. Regional entities, such as the EU, are spending much effort on multi-cultural learning resources and environments. The "learners" include home users, nomadic users, institutional users, children and adult users. The variety of learning environments includes standalone, classroom, networked, internet-based, nomadic, federated (groups of resources), distance, collaborative, asynchronous, synchronous, and so on. With all these environments and international participants, international standards are critical for high interoperability and convergence in the marketplace.

For more details see: http://jtc1sc36.org/ and:
http://isotc.iso.org/livelink/livelink?func=ll&objId=806742&objAction=browse&sort=name

JTC 1/SC 37 Biometrics

Responsible for the standardization of generic biometric technologies pertaining to human beings to support interoperability and data interchange among applications and systems. Generic human biometric standards include: common file frameworks; biometric application programming interfaces; biometric data interchange formats; related biometric profiles; application of evaluation criteria to biometric technologies; methodologies for performance testing and reporting and cross jurisdictional and societal aspects.

Biometric technologies are starting to play a crucial role in a wide range of applications. In addition to supporting national security and preventing ID fraud, biometric-based solutions are able to provide for confidential financial transactions and personal data privacy. Enterprise-wide network security infrastructures, the protection of buildings from unauthorized individuals, employee IDs, secure electronic banking, investing and other financial transactions, retail sales, law enforcement, and health and social services are already benefiting from these technologies. A range of new applications can be found in such diverse environments as amusement parks, banks, mobile devices, passport programs and driver licenses, colleges, and school lunch programs. Biometric technologies are also being required in multiple government and commercial applications worldwide. SC 37’s efforts are helping to ensure that future standards-based systems and applications are more interoperable, scalable, reliable, and secure.

For more details see:
http://isotc.iso.org/livelink/livelink?func=ll&objId=2262372&objAction=browse&sort=name