ISO/IEC JTC 1 N9292

2008-10--09

Replaces:

ISO/IEC JTC 1
Information Technology

Document Type:	business plan
Document Title:	SC 23 Business Plan for period October 2007 to September 2008
Document Source:	SC 23 Secretariat
Document Status:	This document is circulated to National Bodies for review and consideration at the November 2008 JTC 1 Plenary meeting in Nara.
Action ID:	ACT
Due Date:	
No. of Pages:	11

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BUSINESS PLAN FOR JTC 1 /SC 23 prepared on 2008.10.07

PERIOD COVERED: October 2007 – September 2008

SUBMITTED BY: Yoshinobu Mitsuhashi, Chair of JTC 1/SC 23

1. 0 MANAGEMENT SUMMARY

1. 1 CHAIRMAN'S REMARKS

In 2006 and 2008 JTC 1 approved modifications to the title and scope of SC 23. Following the approval in 2006, a New Work Item was proposed after a long interval by the National Body of Japan and accepted (29121: data migration method for DVDs). SC 23 is continuing to standardize this work item and it has proceeded to FDIS. Also Ecma International proposed an industrial standard (ECMA-379) for optical media archive life testing that targets recordable and rewritable DVDs. The standard was submitted for adoption by ISO/IEC under the fast track procedure and assigned to ISO/IEC JTC 1/SC 23. This standard was published as ISO/IEC 10995 in April 2008.

In 2008 an additional modification to the scope of SC 23 was approved by JTC 1, and subsequently the National Body of Japan proposed a New Work Item (on a removable Hard Disk cartridge) that is under a 3-month NP ballot (SC23 N1520)

There is increasing demand for archival storage of digital data and increasing concerns for archival life both of optical media and magnetic media and also for monitoring of stored data. In the past SC 23 focused only on specifying interchangeability of storage media. But market and users' concerns urged SC 23 to make a new step into archival related issues. In this sense, the year of 2007 was quite memorial for SC 23, which has set a new baseline to develop standards meeting users' concerns. SC 23 understands that development of test methods for the life expectancy and monitoring of stored data is important for users.

ISO/TC 42 - Photography has developed such International Standards including "methods for estimating the life expectancy of CD-R (ISO 18927:2002) and MO (ISO 18926:2006) respectively. In October, 2007, ISO/TC 42 proposed a Joint Working Group with SC 23 for the development of optical storage media longevity testing (SC 23 N1505). In 2008 experts within SC 23 and TC 42 met to explain their past activities and concepts in the respective committees. After discussions on the theme of projects to be handled in the JWG, the schedule, the administrative issues, etc. SC23 conducted a letter ballot - establishment of the JWG (SC23 N1537) that will be further submitted to JTC1 for its approval. It is now time to gain wider adoption of the test method within the total industry. One standard does not fulfill all users' requirements and it is reasonable to develop another. Moreover TC 42 and I3A (International Imaging Industry Association, Secretariat of TC42) are good at messaging the standard and products to the market, so it is beneficial for SC 23 and TC 42 to cooperate with each other.

At the last SC 23 Plenary Meeting held on September 20th, 2007, SC 23 approved the following resolutions;

Resolution 13-04: Proposal for Exemption from the 5 P-members requirement for acceptance of NWIs. SC 23 supports the Japanese proposal to JTC 1 in Document JTC 1 N 8737

Resolution 13-09: Review of ISO 2382 Part 12: Peripheral Equipment

SC 23 agrees that the SC 23 Japan National committee will review ISO 2382 Part 12: Peripheral Equipment in cooperation with China and Korea

Regarding Resolution 13-04, the letter ballot on Revisions to Section 6.2.1.3, 9.3.1.1 and 9.3.2.2 of the ISO/IEC JTC 1 Directives Regarding New Work Item Proposal Acceptance was conducted in JTC 1 and approved.

SC 23 strongly hopes that these revisions will become effective as soon as possible.

As for Resolution 13-09, SC 23 will actively participate in the Maintenance Team on IT Vocabulary when the regular update starts.

During the period from October 2007 through September 2008, two standards were published, two projects were under publication and five projects were under DIS ballot, one project progressed to FDIS, and one new work item proposal was submitted for an NP ballot.

The projects in the FDIS stage and NP stage were originally proposed by the National Body of Japan. The other projects were proposed by Ecma International.

The 14th SC 23 Plenary Meeting will be held on December 17th, 2008, at the Lotte Hotel, in Jeju, Korea. Meetings of the iVDR WG and a proposed JWG with ISO/TC42 will be held on December 16th, 2008, at the same location.

1. 2 JTC 1/ SC 23 STATEMENT OF SCOPE

Title: Digitally Recorded Media for Information Interchange and Storage

Scope:

Standardization in the field of removable digital storage media ~~(other than hard disks)~~ utilizing optical, holographic and/or magnetic recording technologies for digital information interchange and/or storage, including:

- Algorithms for the lossless compression of data.

- Volume and file structures.

- Methods for determining the life expectancy of digital storage media.

- Methods for error monitoring of digital storage media.

1. 3 PROJECT REPORT

The following summarizes the progress of SC 23 projects since the last JTC 1 Plenary Meeting held in Gold Coast, Australia, October, 2007.
http://www.itscj.ipsj.or.jp/sc23/

(a) Optical Media

Total number of projects: 50

Total number of ongoing projects: 8

- ISO/IEC FDIS 29121, Information technology -- Data migration method for DVD-R, DVD-RW, DVD-RAM, +R, and +RW disks

- ISO/IEC DIS 11976, Information technology -- Data interchange on 130 mm rewritable and write-once-read-many ultra density optical (UDO) disk cartridges -- Capacity: 60 Gbytes per cartridge -- Second generation

- ISO/IEC DIS 25434, Information technology -- Data interchange on 120 mm and 80 mm optical disk using +R DL format -- Capacity: 8,55 Gbytes and 2,66 Gbytes per side (recording speed up to 16x)

- ISO/IEC DIS 12862, Information technology -- 120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD recordable disk for dual layer (DVD-R for DL)

- ISO/IEC DIS 17341, Information technology -- Data Interchange on 120 mm and 80 mm Optical Disk using +RW format -- Capacity: 4,7 Gbytes and 1,46 Gbytes per side (recording speed up to 4x)

- ISO/IEC DIS 17344, Information technology -- Data interchange on 120 mm and 80 mm optical disk using +R format -- Capacity: 4,7 Gbytes and 1,46 Gbytes per side (recording speed up to 16x)

- ISO/IEC DIS 26935, Information technology -- Data interchange on 120 mm and 80 mm optical disk using +RW HS format -- Capacity: 4,7 Gbytes and 1,46 Gbytes per side (recording speed 8x)

- ISO/IEC DIS 29642, Information technology -- Data interchange on 120 mm and 80 mm optical disk using +RW DL format -- Capacity: 8,55 Gbytes and 2,66 Gbytes per side (recording speed 2,4x)

Total number of planned withdrawals: 0

Work items progressed to the next stage: 10

(b) Magnetic Media

Total number of projects: 83

Total number of ongoing projects: 0

Total number of planned withdrawals: 0

1. 4 CO-OPERATION AND COMPETITION

SC 23 has three internal liaisons within ISO and IEC (ISO/TC 42, ISO/TC 171 and IEC/TC 100/Technical Area (TA) 6 & 7), one Category A external liaison (Ecma International) and one Category B liaison World Intellectual Property Organization (WIPO).

1.4.1 Ecma International

SC 23 has a close relationship with Ecma International (TC 31). This relationship has been one of fruitful cooperation for many years.

1.4.2 IEC/TC 100/TA 6&7

SC 23 has been concerned about the activity of IEC/TC 100/TA 6&7 because the tasks of both TAs are so vast that the Scope of SC 23 might be involved. So far, their work programmes have not yet posed any problems. SC 23 will continue to make efforts to avoid competition with IEC/TC 100/TA 6&7 by maintaining a very good liaison relationship.

1.4.3 ISO/TC 42 & TC 171

As a large number of optical disk cartridges are used in various fields, the life and preservation conditions of optical disks have become very important for users.
ISO/TC 42 - Photography has developed International Standards on "methods for estimating the life expectancy of CD-R (ISO 18927:2002) and MO (ISO 18926:2006),. These standards were developed from the viewpoint of the photo film industry. SC 23 has submitted comments on these standards from the viewpoint of the optical disk and drive manufacturers.

In October, 2007, ISO/TC 42 proposed a Joint Working Group with SC23 for the development of optical storage media longevity testing (SC 23 N1505). In 2008 experts within SC 23 and TC 42 met to explain past activities and concepts in their respective committees. After discussions on the theme of projects to be handled in the JWG, the schedule, administrative issues, etc., SC23 conducted a letter ballot on establishment of the JWG (SC23 N1537) that will be further submitted to JTC 1 for its approval.

Many optical disk manufacturers participated in developing a practical and effective testing method, ISO/IEC 10995:2008, that clarifies differences in optical media quality. Thus optical disk archival test standardization moved into a new phase.
SC 23 intends to continue to contribute to the development of such standards, based on SC23's experience and technology, much more than in the past, as allowed by modifications to its Title and Scope.

In the past. ISO/TC 171-Document Management invited SC 23 to join a JWG with ISO/TC 171/SC 1 and ISO/TC 42 but there is still no official proposal and no action was taken. Experts in ISO/TC 42 have contacted experts in ISO/TC 171 and proposed, unofficially, a JWG among ISO/TC 42, ISO/TC 171 and JTC 1/SC 23. This idea was not discussed officially, however.

2. 0 PERIOD REVIEW

2. 1 MARKET REQUIREMENTS

(a) Optical media market

Today CDs and DVDs are everywhere. It is reported by Fujiwara-Rothchild, Inc. that the number of optical disk drives that were sold in the world in 2007 exceeded 550 million with a market value of 21 Billion dollars. It is said with surprise that global optical disk sales will exceed 3 billion drives and 20 billion disks in 2008. In another major development, the post DVD race was settled this year. The winner is the BD (Blu-ray Disc). The other (HD-DVD) group announced its withdrawal after a year - long struggle last February.

In just a few short years, DVDs have become the most successful consumer electronics entertainment product in history, quickly eclipsing the success of VCRs, CDs, and laser disc players. Users continuously request media with higher capacity and higher data transfer rate. The key to meeting these requests is in the type of laser, and the new format uses blue laser light of 405 nm wavelength. Blu-ray Disc products are currently selling about the same volumes as DVDs did 10 years ago. While the Optical disk market enjoys the current expansion of BD sales, but it has been said that their sales will saturate in the near future. One reason for this saturation is that BD is replacing DVD only in its existing applications to video recording. DVD, on the other hand, offered a completely different function from CD, which was mainly used for audio recording, and the influence of DVD has tremendous. Markets for CDs for audio and DVDs for video have now co-existd for many years. Because BD is required for High Definition TV recording, while DVD is adequate for standard TV, the impact of BD is not as strong.

Another blue laser disk is UDO (Ultra Density Optical disk), developed by a UK company and standardized by Ecma International and fast-track processed in SC 23. UDO 60D having 60 GB storage capacity on a 130 mm diameter two-sided disk and a 12MB/sec data rate for reading, was introduced in the market in April, 2007.

It is expected that the demand for blue laser diodes will reach more than 140 Million units in 2010.

If a 3D TV and or a super HD-TV that has 16 times higher information capacity than that of present HD-TV will be realized, optical disk having much greater capacity will be required.

Various technologies aiming to realize sub-Tera Byte capacity in 2010 and 1 Tera Byte capacity in 2015 have been discussed in academic conferences, and a road map is available on the ISOM home page. http://www isom.jp/

In addition, MO technology sales remain steady for professional data storage. There are 90 mm diameter MO disks having capacities from a 1st generation of 128 MB to the 5th generation of 2,3 GB that are all compatible, and 130 mm diameter MO disk having capacities that also increased over time by a factor of 14. There are currently no standardization activities for future MO disks.

Meanwhile in China, a different format for HD-TV using cheap red laser diodes is being developed, as blue laser diodes are still expensive. Chinese delegates introduced their NVD (Next-generation Versatile Disc) format at the last SC23 Plenary Meeting held on September 20th, 2007 in Montreux, Switzerland. The NVD-12 disk has specifis a data rate of 10 Mbps and 12 GB capacity, using a 0.60 NA lens, and the NVD-15 disk has a data rate of 12 Mbps and 15 GB capacity, using a 0.65 NA lens. NVD utilizes AVS decoding that is a Chinese standard similar to H.264 (MPEG-4 P10). They reported that the 12 GB NVD will go into mass production at the end of 2007 or at the beginning of 2008.

Various optical disk applications, such as audio, video and data interchange between computers, are gradually being taken over by flash memory. It is becoming clearer and clearer that broadband internet will threaten the optical disk market, though formats such as "DVD-download" and "BD-LIVE are expected to grow with help from the internet. There was good news both for users and manufacturers of optical disks on July 4th, 2008 in Japan when the regulation of "copy-once" of the content of digital TV broadcasting was relaxed to "dubbing ten" effective immediately. Sales of optical disks are expected to expand accordingly.

It has also been pointed out that for a "green IT" strategy, an optical disk data center will play an important role becuase of its low system power consumption. SC 23 will contribute to development of data centers using optical disks through standardization of a life expectancy test method and a data migration method, for optical disks and by developing their methods to reduce operating system power.

(b) Magnetic media market

(b-1) Magnetic tape

The annual global market for flexible magnetic media products supported by former SC 11 standards for digital data interchange, representing both media and drives, is estimated to have been around US $5 billion per year as of 2002/2003. Some sudden shrinkage of drive markets occurred starting from the year 2000 because of a rapid transition to high end products. The estimate remained about stable in 2004/2005 and continues in 2008 with a slight increase, but the storage data capacity of media is approximately doubling about every 1, 5 years. An additional estimate, for tape drives only, put the global installed base at 36 million units in 2000. It is expected to have increased slightly in 2006 and later years.

Magnetic tape has often been used in total and concentrated data base backup and archival systems in recent years. These applications depend mostly on merits of tape-automation systems and relatively inexpensive media and low power consumption. Another advantage of magnetic tape systems has been data interchange ability between several generations. Magnetic tape systems are also configured in disaster recovery system, and WORM (Write Once Read Many) magnetic tape technologies have also been realized. This makes the tapes useful for proof of documentation records.

LTO (Linear Tape-Open) series technology has dominated recently because of its high reliability and upgraded storage capacities in parallel with the explosive increase of the HDD (Hard Disk Drive) capacities. The 4th LTO generation product with 800 GB per tape reel appeared in the market in late 2006, and products with over 3 TB per reel are being planned to appear in the market in a few years. Most systems from medium to high-end are using an increasing percentage of LTO tapes. However various types of tape storage and media, such as DDS/DAT series, DLT series, VXA series, AIT series, Half-inch cartridge series, etc., are still marketed. They are used in various fields ranging from entry-level PCs or servers to large enterprise systems and aresupported by many existing International standards

Users appear to be content with the progress of LTO technologies. The progress of LTO series technology has coincided with a contraction of the global market in recent years and this trend will continue unless a new and larger scale application for tape system is released.

Standardization proposals for upgrading the capacity of tape systems have not been submitted in recent years because users are satisfied with de facto appliances, even though the initial format specifications were already published as IS's.

As mentioned above, magnetic tape media is widely and increasingly used for archival storage. The life, preservation conditions, and monitoring of stored data on magnetic tape media have become very important for users. Japan's domestic committee started further life testing of currently available LTO media products after discussing the measuring methods. They also discussed domestic standardization of the full logical format of LTO and its coding interchange between various information systems.

New Standards Proposals to JTC 1 in the magnetic tape field seems unlikely by the 5 P members rule for NP approval, or two-thirds of the P members rule for the DIS approval, because only a few active player P member countries still have Magnetic Tape or Drive industries at this time.

(b-2) Removable Hard Disk Drive (R-HDD)

Research firm IDC (International Data Corp.) expects the hard disk drive (HDD) industry to more than quadruple by 2011 the total HDD capacity shipped in 2006. This increase in HDD shipments comes in response to the growing storage requirements of an expanding digital universe, Worldwide HDD unit shipments will increase to 675 million units in 2011, while revenue will rise to approximately US$ 37 billion. The HDD industry must however remain vigilant to several emerging trends and realities. Other research forecasted that in 2010, HDD shipments will expand to 500 million drives including SSD (Solid State Drive), which will grow to 38 million drives and surpass HDD in 2014.

In February 2008, IDC released the industry's first market size and forecast for the worldwide removable hard disk drive (R-HDD) market, revealing that the opportunity looks bright for R-HDD adoption. Worldwide shipments are expected to increase at a 65% compound annual growth rate (CAGR), totalling over 3 million R-HDD solutions and additional disk cartridges in 2012. Meanwhile, total worldwide R-HDD revenue will grow equally as strong with a 52% CAGR.

iVDR is a R-HDD but is just emerging and its market forecast is not clear.

All HDD should create space for an Expanding Digital Universe, examines the market opportunity for HDDs in various applications, including portable and desktop PCs, enterprise storage systems, personal storage devices and other consumer electronic applications

2. 2 ACHIEVEMENTS

In this period, as outlined below, two standards were published.

Standards published:

- ISO/IEC 29642, Information technology -- Data interchange on 120 mm and 80 mm optical disk using +RW DL format -- Capacity: 8,55 Gbytes and 2,66 Gbytes per side (recording speed 2,4x)

  Project Editor: J. Nijboer

- ISO/IEC 10995, Information technology -- Digitally recorded media for information interchange and storage -- Test method for the estimation of the archival lifetime of optical media

  Project Editors: M. Irie, C. Smith, K. Tanaka

2. 3 RESOURCES

Adequate resources are available for all current and anticipated projects.

2. 4 ENVIRONMENTAL ISSUES

Within SC 23 there is no direct environmental issue.

2. 5 PARTICIPATION METRICS

Among 10 P-members only 6 NBs responded to the recent letter ballot conducted within SC 23 and 6 NBs participated in the 13th plenary meeting, held in Montreux, Switzerland, in September 2007. Four NBs should change their membership status from P- to O-member unless their responsibilities are fulfilled.

3. 0 FOCUS NEXT WORK PERIOD

3. 1 DELIVERABLES

The standardization of DVDs is almost completed and new proposals are not expected. Some of the published DVD standards need corrections and additional editorial changes, and revisions have already been proposed, under the fast track procedure by, Ecma International.

In accordance with its New Title and Scope, SC 23 has started to develop a data migration method for DVDs and a test method for the estimation of the archival lifetime of data on optical media. A proposed JWG between ISO/TC 42 and JTC 1/SC 23 will develop another standard for optical disk longevity test methods. Related standardization for magnetic media is also expected in the near future.

As for a removable Hard Disk, SC 23 started, after the modification of its scope in 2008, standardization of the information Versatile Disk for Removable usage cartridge. A proposal for its upper layer standardization is also expected in the near future.

After the success of DVDs, the industry launched larger capacity optical storage format, Blu-ray Disc, and is developing holographic storage. Other new optical media will be proposed in the near future.

3. 2 STRATEGIES

(a) Optical Media

For the past few years, manufacturers have been using a fast-track procedure through Ecma International and the National Body of Japan for standardization of optical disks based on established and well-recognized technologies. SC 23 will carry forward

international standardization in collaboration with Ecma International and the National Body of Japan. SC 23 will continue to pay attention to the activities of format creation parties, such as the Blu-ray Disc Association and others, and encourage them to propose their specifications for adoption as International Standards. Other new technologies for future optical memory are being developed throughout the world. New standards for optical memories that will be developed based on such new technologies are expected to appear in the near future.

The vital application of optical media in future will be archival storage. Since, in the 12th SC 23 Plenary Meeting in 2005, SC 23 resolved to modify its Title and Scope in order to handle standards for new optical storage technologies in the near future and the modification was approved in the JTC 1 Plenary in 2006 and further a minor modification in 2008.

We have started to develop standards for the archival life testing and migration methods, and will investigate further related issues. A Joint Working Group with ISO/TC 42 will be established to work with optical storage media longevity testing.

(b) Magnetic Media

SC 23 will cooperate with iVDR consortium on further standardization of iVDR.

SC 23 will continue to pay attention to the activities of dominant manufacturers and encourage them to propose "de facto" specifications for adoption as International Standards.

(c) Terminology

SC 23 understands that terminology is important

Magnetic storage industries, as well as optical disk industries, have an interest in IT vocabulary and reviewing of ISO/IEC 2382 (Part 12: Peripheral), as requested by JTC 1. It is necessary to add new terminologies according to developing technology and to use unified meanings among manufacturers and also users. Experts in these industries are willing to take responsibility for reviewing ISO/IEC 2382 (Part 12: Peripheral), but only in English.

3.2.1 RISKS

There is a risk that other standardization groups will take leading roles in standardization issues within the Title and Scope of JTC 1/SC 23.

SC 23 should continue to watch standardization groups outside JTC 1

3.2.2 OPPORTUNITIES

There are many advanced storage media within scope and their standardization will be expected in the near future.

Magnetic media are used for practical archival storage and life expectancy methods and monitoring of stored data may be proposed in the near future just as for optical archive storage media.

3. 3 WORK PROGRAMME PRIORITIES

Industrial consensus mainly determines priorities.

3.3.1 ARCHIVAL POLICY

SC 23 will follow the JTC 1 policy for maintenance of archives.

SC 23 Secretariat retains all of the SC 23 N numbered documents either in hardcopy or electronically. From N 551 to N 1014: All are available in hardcopy. Some are available on the SC 23 website. N 1015 or later (the latest is N 1440): All are available on the SC 23 website.

4.0 APPRECIATIONS

The Chair extends his appreciation to Ms. Ayuko Nagasawa (SC23 Secretary) and Dr. Terrence Nelson (HoD of USA), for reviewing this Business Plan.

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