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Secretariat, ISO/IEC JTC 1, American National Standards Institute, 25 West 43rd Street, New York, NY 10036; Telephone: 1 212 642 4932; Facsimile: 1 212 840 2298; Email: lrajchel@ansi.org

BUSINESS PLAN FOR JTC 1 /SC 23 prepared on 2009.09

PERIOD COVERED: October 2008 – September 2009

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

1. 0 MANAGEMENT SUMMARY

1. 1 CHAIRMAN'S REMARKS

There is increasing demand for archival storage of digital data and also for monitoring of stored data. In the past, SC 23 focused on interchangeability of storage media. But market and users' concerns urged SC 23 to make a new step into archival-related issues.

At the 12th SC 23 Plenary held in Kyoto, Japan in 2005, SC 23 resolved to propose modifications to its title and scope. Following JTC1's approval, Ecma International proposed an industrial standard (ECMA-379) for optical media archive life testing that targets recordable and rewritable DVDs. This standard was submitted for adoption by ISO/IEC under the fast-track procedure and assigned to ISO/IEC JTC 1/SC 23. It was published as ISO/IEC 10995 in April 2008. The June 2008 issue of ISO Focus magazine interpreted the concept and contents. National Body of Japan also proposed a new work item on data migration method for DVDs, which was published as ISO/IEC 29121 in February 2009. Together, these two standards support a reliable archiving application. SC 23's Chair also contributed an article in the April 2009 issue of ISO Focus explaining the two standards under the title "*Optical data storage – How long will it last?*"

ISO/TC 42 - Photography has also developed an International Standard on a method for estimating the life expectancy of CD-R (ISO 18927:2002). In October, 2007, ISO/TC 42 proposed a Joint Working Group with SC 23 for the further development of optical storage media longevity testing. 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. SC 23 requested JTC 1 to approve the establishment of the JWG.

After approval of the JWG in November 2008, SC 23 discussed the matter in the 14th SC23 Plenary that held in Jeju, Korea in December 2008. SC 23 proposed dates for a first meeting with TC42, two times, in February and June of 2009, but the meeting was postponed both time because few experts were available from TC 42. In July of 2009, SC 23 proposed again the JWG meeting on October 9th, 2009 in Tokyo collocated with TC42 Plenary and WGs meeting.

I will report the result of its first JWG meeting at JTC 1 Plenary in Tel Aviv in October 2009.

Recently, even in the field of data backup or archival application, HDD and SSD have begun to penetrate into large data centres, partly replacing magnetic tape. However only optical disk among various storage media currently has standards for estimating useful lifetime and data migration. Optical disk archival system will save more energy than any other storage media in data centre and contributes to a green IT strategy.

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) to be developed in an accelerated time frame. The NP was narrowly approved by 5 P-members of SC 23. Under this (period covered by this report?), JTC 1 proposed to modify the JTC1 Directives for the NWI approval criteria for an SC with a small number of P members. In March, ISO approved the modification. The industry and SC 23 were encouraged by its revision.
The ISO/IEC FDIS 29171, Information technology — Digitally recorded media for information interchange and storage — Information Versatile Disk for Removable usage (iVDR) cartridge, is under Voting that terminates on 2009-10-25.
During the period from October 2008 through September 2009, 8 standards were published, 1 project was under publication, and one project was under FDIS ballot.

The project at the FDIS stage and one of the published standards were originally proposed by the National Body of Japan. The other projects were proposed by Ecma International.

The 14th SC 23 Plenary Meeting was held on December 17th, 2008, at the Lotte Hotel, in Jeju, Korea. Ad-hoc meetings on the iVDR cartridge standard and Joint Work with ISO/TC 42 were 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 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 Nara, Japan, November, 2008. (SC23's documents are posted online at http://www.itscj.ipsj.or.jp/sc23/.)

(a) Optical Media

Total number of projects: 52

Total number of ongoing projects: 2

- ISO/IEC DIS 13170, Information technology -- 120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD Re-recordable disk for Dual Layer (DVD-RW for DL)

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: 1

- ISO/IEC FDIS 29171, Information technology -- Digitally recorded media for information interchange and storage -- Information Versatile Disk for Removable usage (iVDR) cartridge

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 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. However, TC171 has designated a liaison (Mr. Robert Blatt) to SC23s's JWG with TC42.

1.4.4 Joint Working Group

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 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., SC 23 conducted a letter ballot on establishment of the JWG (SC23 N1537) that will be further submitted to JTC 1 for its approval. After JTC1's approval and the discussion in the 14th SC 23 Plenary held in Jeju, Korea, in December 2009, SC 23 proposed a meeting with TC42 but the planned meeting was postponed two times, February and June of 2009, because few experts were available from TC42 side on the schedule. In July 2009, SC 23 proposed again the JWG meeting on October 9th, 2009 in Tokyo collocated with TC42 Plenary and WGs meetings.
As a resolution of the 14th SC23 Plenary Meeting, SC 23 proposed a JWG with TC42 or the development of optical storage longevity testing, for DVD media under the same test conditions specified in ISO 18927.

SC23 understands that TC42 has used different optical media and test conditions. ISO 18927 (TC42) specifies 5 severe longevity test conditions for CD-R media, and ISO 10995 (JTC1/SC23) specifies 4 simple conditions for DVD media. Thus a new standardization candidate will be a combination of the two types of media and test conditions.. SC23 has already proposed one such combination. On the other hand, some users have requested a simple test method for CD-R/CD-RW life time estimation. The JWG will discuss the concept of optical storage media longevity testing and how to develop the new standard. It is noted that experimental data is needed to develop a new standard.

In a parallel development, some of the experts who developed ISO/IEC 10995 have proposed modification and improvement of its content. These experts are discussing the revision based on additional experimenal data. Ecma Int. will revise ECMA-379 and submit under the Fast Track procedure as before.

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.

2. 0 PERIOD REVIEW

2. 1 MARKET REQUIREMENTS

(a) Optical media market

Today CDs and DVDs are everywhere. Fujiwara-Rothchild, Inc. has reported that 30 billion units of optical disk media were sold annually since 2005, including approximately equal numbers of read only and writable media. No change is expected until 2010, after which later a gradual decrease is likely. CD-R is still the dominant writable media, but it is gradually decreasing will be overtaken by DVD-R in 2009 when about 8 billion CD-Rs will be sold.. BD-R is increasing but will not surpass DVD-R for several years or more. In industrially advanced countries, Blu Ray disc sales are increasing, but in developing countries DVD sales are likely to increase for several years.

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. The two main applications of optical disk will be data distribution and archival .

In matured optical disk industry it is quite important to discuss application of data storage. Therefore ISOM2009 (International Symposium on Optical Memory, http://www.isom.jp/), which will be held in Nagasaki, Japan, during October 4-8, 2009, will have a special session on the “ Application Roadmap”, It will include such presentations as We-H-06 on “Optical Data Storage for Archive Application” and We-H-07 on “Optical Disc based Archive for Sustaining Society.” There is another paper Tu-G-05 with the title “Towards a True Archival-Quality Optical Disc.”

It is noted that users are being encouraged to understand quality of optical disk. In the US market, for example, an Archival Gold DVD-R has been advertised to “safely store your images for more than 100 years” and BD-R for 200 years (http://www.delkin.com/)

Recently a so-called high quality CD is also being differentiated for audio applications.

It has also been pointed out that for a “green IT” strategy, an optical disk archive system will play an important role because of its low system power consumption.

SC 23 will (continue to?) contribute through standardization of methods for life expectancy testing and data migration for optical disks.

(b) Magnetic media market

(b-1) Magnetic tape

Magnetic tape has often been used in total and concentrated data-base backup and archival systems in recent years. Various magnetic tape technologies are used in the Entry, Low End, Midrange, and Enterprise segments, and the global market including media and drives s estimated at around 6 Billion US $ in 2009. The market has been steady in recent years but will be slightly decreasing because, even in archival applications, HDD and SSD will are beginning to be used instead of magnetic tape. These applications depend mostly on the advantages of tape-automation systems including relatively inexpensive media and low power consumption. Another advantage of magnetic tape systems has been data interchange ability between several generations. It is said that data migration is scheduled only every two generations. . Magnetic tape systems are also configured for disaster recovery, and WORM (Write Once Read Many) magnetic tape technologies have also been realized. This makes the tapes useful for documenting the creation or updating of records, although overwriting is usually inhibited only at the system level. 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 (6th LTO) are expected to appear in the market in a few years.
Users appear to be content with the progress of LTO technologies.

Standardization proposals for upgrading the capacity of tape systems have not been submitted in recent years. Users seem to be satisfied with de facto appliances, even though the initial format specifications were 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 have become very important for users.

New Standards Proposals to JTC 1 in the magnetic tape field seem unlikely because only a few countries still have Magnetic Tape or Drive industries.

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

Research firm IDC (International Data Corp.) expects the total capacity of hard disk drives shipped in 2006 will more than quadruple by 2011. In response to the growing storage requirements of an expanding digital universe, worldwide HDD 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 has forecasted that by 2010, HDD shipments will have expanded to 500 million drives. this includes SSD (Solid State Drive) shipments, 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, 8 standards were published.

Standards published:

- ISO/IEC 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

  Project Editor: F. Le Carvennec

- ISO/IEC 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)

  Project Editor: S. Taniguchi

- ISO/IEC 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)

  Project Editor: J. Nijboer

- ISO/IEC 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)

  Project Editor: J. Nijboer

- ISO/IEC 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)

  Project Editor: J. Nijboer

- ISO/IEC 26925, 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)

  Project Editor: J. Nijboer

- 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 29121, Information technology -- Digitally recorded media for information storage -- Data migration method for DVD-R, DVD-RW, DVD-RAM, +R, and +RW disks

  Project Editors: H. Takeshima, N. Park

2. 3 RESOURCES

Adequate resources are available for all current and anticipated projects.

2. 4 ENVIRONMENTAL ISSUES

Within SC 23, there are no direct environmental issues.

2. 5 PARTICIPATION METRICS

Among 9 P-members, 7 NBs responded to the recent letter ballot conducted within SC 23, and 5 NBs participated in the 14th plenary meeting, held in Jeju, Korea in December of 2008. One NB changed its membership status from P- to O-member in this period..

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 by Ecma International under the fast-track procedure

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 work, after the modification of its scope in 2008, standardization of the information Versatile Disk for Removable usage cartridge.

The standard has developed in an accelerated time frame and it is smoothly processed and satisfactorily.

A proposal for its upper-layer standardization is also expected in the near future.

After the success of DVDs, the industry launched a larger-capacity optical-storage format, the 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 (monitor) 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 optical-memory technologies are being developed throughout the world. New standards are anticipated for optical memories that will be developed based on such new technologies

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

(b) Magnetic Media

SC 23 will cooperate with the iVDR onsortium on further standardization of iVDR.

SC 23 will continue to pay attention to(monitor) 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

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 is 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.

The 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. For N 1015 or later (the latest is N 1620) □ All are available on the SC 23 website.

4.0 APPRECIATIONS

The Chair extends his appreciation to Dr. Terence Nelson (Hod of USA), Prof. Lisong Hou (HoD of China) and Ms. Ayuko Nagasawa (Secretary of SC23) for reviewing this Business Plan.

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