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BUSINESS PLAN FOR JTC 1/SC 2

PERIOD COVERED: October 2016 – September 2017

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1.0 Executive Summary

Scope of the SC : Standardization of graphic character sets and their characteristics, including string ordering, associated control functions, their coded representation for information interchange and code extension techniques. Excluded: audio and picture coding.

SC 2 experts have been working hard to develop Universal Coded Character Set , ISO/IEC 10646, and related standards which are the fundamental basis of Information systems and being referred from every standards involving character based information exchange and/or processing.

The first version of ISO/IEC 10646 standardized 32,884 characters and published in 1993. Edition 5 of it, the latest version currently under development, will cover over 130,000 characters.

SC2 will keep quality and speed of its work to develop standards for character. And close cooperation between SC2 and other all committees to develop standards involving character codes is important.

2.0 CHAIRMAN'S REMARKS

Every thing is becoming connected via network and communicating each other. And the area of connected thins are spreading at a furious pace. In most case, coded characters are used to convey meaning. To avoid digital divide in this situation, technologies and standards should be developed in deference to cultural and linguistic diversity. As given in [Section 5 “Objectives of JTC 1 and strategies for their achievement” of ISO/IEC JTC 1 N12713 JTC 1 Strategic Business Plan 2015, Directives – Supplement – Procedures specific to JTC1, section 2.1.2,](#) one of the basic objectives of standardization is “cultural and linguistic adaptability”, and SC2 has to work always keeping mind of this direction.

SC 2 experts have been working hard to develop the Universal Coded Character Set, or ISO/IEC 10646, and helped various language/script users in the world to achieve their goals of local language computing together with the support of the string ordering and comparison standard, ISO/IEC 14651. Quality and speed of the work of SC2 is crucial for every other standards referring character code standards.

The first version of ISO/IEC 10646-1 was created in 1993. At that time 32,884 characters were given positions in the standard. Edition 5 of it, the latest version under developing, will cover over 130,000 characters.

These two standards are serving as fundamental platforms in the information society and are the indispensable elements which make various products and services (mobile devices, telecommunication, library, government, education, financial, social networking, open data, etc.) to serve for multilingual, multicultural, diversified societies of today.

2.1 Market Requirements, Innovation

The area of application of connected device are rapidly spreading. And in many case, character codes are used to convey meaning in information.

Coded character sets and their orderings are basic infrastructure for all information and communication technologies.

Mobile devices which exist close to human needs more characters to convey information and emotion.

New technologies/standards such as distributed ledger which is discussed at JAG, should be developed under being aware cultural and linguistic diversity on the earth and interoperability over them. Close cooperation between SC2 and committees developing standards involving character code is very important.

We also need to recognise potential requests from user groups of minority and historic scripts are still strong. In these days, almost all scripts for currently used major and national languages are already encoded. However, there are a huge number of dialects and minority languages.

2.2 Accomplishments

The following standards have been published during this reporting period.

- ISO/IEC 10646:2014/Amd.2: 2016, Information technology — Universal Coded Character Set (UCS) -- AMENDMENT 2: Bhaiksuki, Marchen, Tangut, and other characters.
It also introduced “Emoji Modifire” to change colour of emojis.
- ISO/IEC 14651:2016, Information technology -- International string ordering and comparison -
- Method for comparing character strings and description of the common template tailorable ordering -- Fourth edition

2.3 Resources

From the view point of the active work items, SC 2 has a few work items. However, the number of P-members, O-members, and related organizations are great in number. The number of current P-member National Bodies is 27 and O-member National Bodies is 22. There are also several, but not many, invited guests in WG meetings and plenary meetings from developing countries, which have no official membership, but have script expertise.

SC 2 has IRG (Ideographic Rapporteur Group) under the control of WG 2. This Rapporteur group focuses its work on Eastern Asia’s ideographic characters, i.e. Han-characters. The participating countries are not limited to P and O members of SC 2, but other related countries and areas are also actively participating as liaison members or guests, i.e. Taiwan has been participating through TCA (Category C liaison), and Macao as a guest.

SC 2 has been continuously co-working with the Unicode Consortium from the first stage of the development of ISO/IEC 10646 for more than twenty years. The Unicode Consortium has been assigned as an Approved RS Originator Organization (ARO) of JTC 1.

SC 2 also has the established C liaison between its WG 2 and UC Berkeley to develop particular minority and historic scripts. Besides these official relationships, SC 2 has active and close relationships with several academic institutions, such as Tokyo University of Foreign Studies.

2.4 Competition and Cooperation

SC 2 is the key organization in the area of coded character set standardization, and has official liaisons with the following organizations. There are no competitive international standards or standardization organizations. The Unicode Standard is a related industrial standard for character encoding and that SC2 and The Unicode Consortium have been working cooperatively for over twenty years to develop ISO/IEC 10646 and The Unicode Standard in a compatible and synchronous manner.

Internal Liaisons:

ISO/IEC JTC 1/SC 22	Programming Languages, their Environments and System Software Interfaces
ISO/IEC JTC 1/SC 29	Coding of audio, picture, multimedia and hypermedia information
ISO/IEC JTC 1/SC 34	Document description and processing languages
ISO/IEC JTC 1/SC 35	User Interfaces
ISO/TC 37/SC 2	Terminographical and lexicographical working methods
ISO/TC 46/SC 4	Information and documentation – Technical interoperability
ISO/TC 204	Intelligent transport systems
ISO/TC 211	Geographic information/Geometrics
ISO/TC 215	Health informatics

External Liaisons

IETF/ISOC	Internet Society	A
ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	A
UNICODE	The Unicode Consortium	A
EC	European Commission	B
CCSDS	Consultative Committee for Space Data Systems	B
UNCTAD	United Nations Conference on Trade and Development	B
UNECE	United Nations Economic Commission for Europe	B
WIPO	World Intellectual Property Organization	B
WMO	World Meteorological Organization	B
UC Berkeley	University of California, Berkeley	C
UNU-IIST	United Nations University International Institute for Software Technologies	C
HKITF	Hong Kong Information Technology Federation	C
W3C	World Wide Web Consortium	C
TCA	Taipei Computer Association	C

3.0 PROJECT REPORT

Ongoing Projects:

- ISO/IEC 10646:2016 (Ed. 5)/PDAM 1, Information technology -- Universal Coded Character Set (UCS) - AMENDMENT 1:
- ISO/IEC CD 10646 (Ed.5), Information technology -- Universal Coded Character Set (UCS)

Withdrawn project: 0

3.1 STRATEGIES

SC 2 should focus in the following five issues;

1) Quick and precise standardization of newly proposed characters and scripts, especially proposals from developing countries, user groups of minority and historic scripts.

Note: SC 2/WG 2 has its own guideline to accelerate standardization work and make the criteria of standardization clear to all experts and user communities as "Principles and Procedures for Allocation of New Characters and Scripts and handling of Defect Reports on Character Names" (SC 2 N 4318).

2) Synchronization of 14651 to 10646.

Note: 14651 has been developed and maintained by SC 2 directly. Practical editing work will be done by the Project Editor supported by an ad-hoc group when necessary. Also, Canadian national body kindly has been taking responsibility for its French version, in accordance with the ISO/IEC directives.

3) Maintaining consistency with countries' and areas' standards.

4) Maintaining consistency with related standards which refer to SC 2's standards.

5) Establish relationship with real user group of targeted scripts and characters.

3.2 RISKS

1) RISK: Possible criticism from cultural, political concerns. As the topics of SC2 closely relates with **identity and dignity of user communities**, if the standardization process is not represented by appropriate experts from the user community, or if appropriate input is not given to the standardization process, the standards produced may have a risk of criticism from user communities.

SOLUTION: Effort to establish relationship with the user communities with the cooperation of other international organizations, governments and academic research institutes.

2) RISK: Delay of synchronization of other standards which closely refer UCS.

STRATEGY: Promote quick publication of standards, together with the information disclosure of newly standardized scripts and characters.

3) RISK: Possible deviation of related national standards from ISO/IEC 10646. National standards that reference or are referenced by SC2 standards may change in ways that create incompatibilities.

SOLUTIONS: The mitigation strategy is to encourage NBs to communicate to SC2 any plans to make changes to national standards that may affect interoperability and to consider input from other SC2 members how risks to interoperability between national and international standards might best be avoided.

4) RISK: Ad hoc solution to the requests from other SCs and standardization organizations outside JTC 1 which harm the consistency of ISO/IEC 10646 itself.

SOLUTIONS:

Welcome the requests from other SCs and other standardization organizations.

Establish close relationship with the requesters and strive to recognize the actual requirements.

Seek solutions which will not harm the consistency of the standard and satisfy the requesters' needs as the experts.

5) RISK: Confrontation between different expert/user communities of scripts to be encoded in UCS. Such situations prevent the progression of developing work.

SOLUTIONS:

It is not so easy to let different positions to be compromised. However, the effort to provide the occasion for discussion is very important.

3.3 OPPORTUNITIES

1. Expansion of usage in technical areas such as XML, Programming and Scripting Languages, Internet, e-Government, etc., and in a very broad global business application environment that positively impacts developed, as well as developing, countries such as the U.S., Japan, China, Cambodia, Ethiopia, and many others.

2. Consolidation and harmonization of huge coded character sets.
3. Infrastructure for improvement of information and communication technology in developing countries, areas and minority scripts users.
4. Support as ICT environment for vast area of academic research.

3.4 WORK PROGRAMME PRIORITIES

All working programs have to be developed simultaneously, and ISO/IEC14651 should catch up the modification and additional repertoires of ISO/IEC 10646 as quickly as possible.