

New Year's Update on Human Computer Interaction Standards: Part 1: The U.S.

I am pleased to say that the Standards column in the SIGCHI Bulletin will be returning as a regular feature. I deeply apologize to those of you who look forward to the regular appearance of these columns. The absence of this column was an unfortunate consequence of my own scheduling problems, and it was a further misfortune to have this occur at the same time that the Bulletin began appearing irregularly. Moving forward, I expect this column to appear several times during the year, and the length and nature of the column will adapt as the Bulletin itself changes format in the year 2000. Please send any comments, observations, opinions, and topic suggestions to me at heb@acm.org.

I will begin this year by backing up to standards committees I have discussed before and catching up with their latest activities. In this column, I will start with U.S. standards on human computer interaction.

Since 1985, the Human Factors and Ergonomics Society has sponsored the HFES Human Computer Interaction Standards Committee (HFES/HCI), a technical subcommittee of user interface professionals chartered with the responsibility of monitoring and directing standards on user-computer interaction and design of software user interfaces. The HFES/HCI Committee is now usually referred to as the ANSI/HFES 200 Committee. As stated in a society Bulletin in 1986 (Karat, 1986), the aim of the committee was to advise HFES and direct its technical resources to influence human-computer interaction standards. Part of that mission quickly became the creation of HCI standards documents.

Through the reminder of the 1980s and into the 1990s, this committee went through a period of authoring and revision of documents on human-computer interaction. In this period, the committee saw that the most effective way to influence the technical content of HCI standards was to work closely

with an ISO (International Organization for Standardization) committee, ISO TC159/SC4/WG5, then referred to as the ISO Software Ergonomics subcommittee. The committees had an active collaboration, with HFES/HCI providing its technical documents as initial source material for some of the ISO standards. Much of that material forms part of ISO 9241 Parts 10-17, the software sections of the document entitled "Ergonomic Requirements for Office Work with Visual Display Terminals (VDTs)," which will soon be available in its entirety as a released ISO standard. (An update on this committee will be covered next time.)

In 1993, the focus of the committee began to change, when a formal plan was created for the committee to issue a document of its own that would be an ANSI standard in the United States. (ANSI is an independent non-government standards management agency which sponsors much of the basic industrial standards used in the U.S.) The resulting document to be produced is called HFES 200, and after ANSI approval, will be referred to as ANSI/HFES 200.

(I have been asked why this document has such a unique, low ANSI number to it. The answer is that the numbering belongs to HFES, and does not refer to an overall ANSI sequence of documents. The cooperative ANSI and HFES document series begins with ANSI/HFES 100, a published standard on ergonomics of workstation design and computer hardware. ANSI/HFES 200 is the second in a series of several ANSI/HFES ergonomics standards which will be appearing in the future.)

With the full cooperation of ANSI and ISO, the ANSI/HFES 200 document will republish Parts 12-17 of ISO 9241, with some minor wording

changes for U.S. content, some examples changed to U.S. relevant subject matter, and the addition of just a few further recommendations. The parts of the HFES 200 document which republish ISO 9241 will be exhaustively annotated to document even the most minor changes and deviations from the 9241 documents. It will be documented to the level of detail necessary for a user of the document to ensure compliance to ISO 9241 Parts 12-17 while using the ANSI/HFES 200 document as the primary source for design. In addition, however, ANSI/HFES 200 has added three substantial sections of new material not currently covered in ISO 9241.

The HFES 200 draft standard, now titled "Human Factors Engineering of Software User Interface," has gone through several re-organizations since I first reported on it, but it now has been finalized to five sections. The sections can be considered semi-independent standards documents (analogous to the sub-parts of ISO 9241). Here is the current composition of ANSI/HFES 200 and their status (Reed, 1999):

The contents of the five sections are as follows:

- Part 1, the Introduction, provides an overview of the document and a summary of each part, and how the parts relate to one another. This section also provides advice on how to

Section	Title	Status
HFES 200.1	Introduction	Completed, in Canvass Committee
HFES 200.2	Accessibility	Completed, in Canvass Committee
HFES 200.3	Interaction Techniques	To be Completed and in Canvass 1Q2000
HFES 200.4	Visual Presentation	To be Completed and in Canvass 1Q2000
HFES 200.5	Voice Input/Output and Telephony	Completed, to be in Canvass 1Q2000

use this document in the process of system development

- Part 2, Accessibility, provides standards for designing human-computer interaction with increased accessibility of applications for users with disabilities. This section provides recommendations for computer software applications, operating systems, and drivers. The goal is to provide some recommendations that increase accessibility of software to more users "out of the box" and to provide other recommendations that make the software compatible with assistive hardware devices and assistive software add-ons.
- Part 3, Interaction Techniques, consolidates the contents of ISO 9241 Parts 13-17. These include recommendations on the design of menu dialogs, form-filling dialogs, direct manipulation techniques, command systems, and user guidance. (User guidance includes help systems but also includes material on facilitating user interaction within the human-computer dialog).
- Part 4, Visual Presentation, incorporates material from ISO 9241 Part 12, Presentation of Information, and then adds substantial new material on the use of color in computer user interfaces.
- Part 5, Voice I/O and Telephony, contains entirely new material on the design of voice-based user interfaces as used from computers and from telephone systems. This includes user interfaces utilizing automatic speech recognition (ASR) from a desktop computer or workstation. It then includes recommendations on the design of Interactive Voice Response (IVR) applications used in telephone systems. These systems

include IVR systems that use ASR and systems in which the user uses the touch-tone keypad of a telephone for input.

The HFES 200 document is being approved by ANSI using the ANSI Canvass procedure. In this process, after a standards committee has created a draft standards document, a separate list of representatives is formed, called the Canvass Committee. The Canvass Committee should be composed of people and representatives of entities who have an interest in the content of the standard. This should include balanced representation from industry, academics, user groups, and other relevant categories. The Canvass Committee reviews, provides comments, and votes on the standard. ANSI then tallies the votes and determines whether there is a consensus, which would allow the standard to be published as an ANSI standard in the U.S.

Because HFES 200 is composed of separable parts, the ANSI/HFES 200 Committee has decided to send out the parts to vote in separate units. There will be a separate Canvass Committee formed for each combination of HFES 200 sections sent out for vote. Currently, Parts 1 and 2 are complete and a Canvass Committee has been formed to review Parts 1 and 2 as one unit. Applications to be on that voting committee are closed. These sections should soon be sent out to the Canvass Committee, and the voting and comment process will be underway.

At this point, early in 2000, HFES 200 fully expects that the remaining parts will be sent out for vote in the first

quarter of 2000. However, it is not yet certain whether parts 3, 4, and 5 will be sent out for vote together, or in some combination of two or three separate canvasses. At any rate, it is still not too late to file an application to be on the ANSI Canvass Committee(s). This is, of course, limited to people and entities residing in the U.S. or international companies with a presence in the U.S. marketplace. For further information about applying to be on the HFES 200 Parts 3, 4, and 5 Canvass Committee(s), you may contact Lynn Strother, who is Executive Director of the Human Factors and Ergonomics Committee, at P.O. Box 1369, Santa Monica, California 90406-1369, USA, telephone (310) 394-1811, fax (310) 394-2410, or by Internet email at Lynn_Strother@compuserve.com.

References

Karat, John (1986). A brief history of the Human Factors Society Human-Computer Interaction Standards Committee. *CSTG Bulletin*, 12(4), 10-12.

Reed, Paul S. (1999, Sep.). HFES 200 software ergonomic standards. *HFES Bulletin*, 42(9), 5-6.

Any opinions expressed in this column are not necessarily those of AT&T, ACM, or ACM SIGCHI.

Please contribute information, corrections, and thoughts to this column by sending Internet email to heb@acm.org, or call my office at +1 732 420-2819, or fax +1 732 368-1245.