The Importance of IEEE Computer Standards

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Whenever I make a presentation, I include in my brief biography that I am vice chair of the IEEE Posix (Portable Operating System for Unix) Standards Committee and a member of the IEEE Standards Activity Board. I watch the audience reaction to these credentials, and no one ever seems impressed. In fact, they get the same glazed look people get when they hear "acronym speak."

Perhaps my biography induces that glazed look in general. Or perhaps people just don't appreciate the importance of IEEE computer standards, even though the IEEE Computer Society's standards development efforts take a lot of work and have produced impressive results.

Standards are developed by the following committees: Bus Architecture, Design Automation, Distributed Interactive Simulation, Local Area Network/Metro Area Network, Microprocessor and Microcomputer, Optical Disk and Multimedia Platforms, Portable Applications, Security and Privacy, Software Engineering, Storage Systems, and Test Technology.

The following examples demonstrate the impact that standards developed by these groups have had on the computing industry:

IEEE 754: Floating-point format

IEEE 754 specifies how floating-point values are represented and how floating-point computations are performed. Only 10 years ago, computer vendors used a variety of floating-point formats, each with differing accuracy. However, every significant computer architecture created during the past 10 years has adopted IEEE 754. So today, perhaps a trillion floating-point operations that comply with the IEEE 754 standard are performed every second.

IEEE 1003.1: Posix part 1system application program interface

IEEE 1003.1 specifies the programmatic interface that an application program uses to access operating-system services. By establishing open-systems standards, IEEE Posix 1003.1 and related standards came a steadying influence in what had been an often-confusing open-systems market. This had a significant impact on the past decade's open systems revolution.

The Posix standards have enabled portability between Unix systems and such non-Unix systems as Digital Equipment Corp.'s VMS and IBM's MVS. As Windows NT-based and Unix-based operating systems battle for enterprise-computing dollars during the next 10 years, the IEEE Posix Standards Committee will be in the middle and may help find some common ground.

IEEE 802.3: Local network for computer interaction

IEEE 802.3 specifies the local area network protocol for Ethernet-type networks. The Local Area Network/Metro Area Network Standards Committee, which developed IEEE 802.3, has been at the center of computer networking since the battle between Ethernet and token ring. Today's committee works on standards for a wide range of network solutions, from 100-Mbps Ethernet to high-performance computer networking over the cable television network infrastructure. Perhaps a trillion bits per second that comply with IEEE 802 standards are transmitted across networks throughout the world.

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A better appreciation of the process

These and other IEEE standards have had a dramatic and fundamental impact in our industry. However, few people outside the standards community appreciate the excellent work of the IEEE Computer Society's standards committees.

Recently, I read a book that explains the work these committees do—IEEE Standards Companion, produced by IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. The book can be found on the World Wide Web at http://stdsbbs.ieee.org/development/devguide/index.html.

The author, IEEE Standards Activities Department staff member Mary Lynne Nielsen, has extensive standards development experience. The book carefully describes every step in the standards development process and provides valuable insight into IEEE standards activities and their importance.

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