Chapter 20 Miscellaneous Items

20.1 ... Bits and Bytes

Early Books
    Computer Lib and Dream Machines [204] was a book authored and self-published by Theodor H. Nelson in 1974. It was part of a grass-roots, anti-establishment, computer-power-to-the-people movement in California in the early 1970's. Other organizations related to this movement were the People's Computer Company and Community Memory.

    An Introduction to Microcomputers [44] was another early influential book. It was written and self-published by Adam Osborne. It provided a practical introduction to microprocessors.

Knowledge Navigators
    Knowledge navigators evolved from the Vannevar Bush future Memex machine, Douglas C. Engelbart's augmentation of man's intellect concepts, Alan Kay's Dynabook concept and Theodor Nelson's hypertext ideas.

    Theodor H. Nelson described a "unified system for complex data management and display" called Xanadu in his 1974 book *Computer Lib and Dream Machines*. Nelson also proposed a hypertext text manipulation system.

    In 1987, John Sculley proposed "a wonderful fantasy machine called the Knowledge Navigator ..." in his book *Odyssey* [73]. Sculley described it as a tool to "drive through libraries, museums, databases, or institutional archives." This would enable an individual to convert "vast quantities of information into personalized and understandable knowledge."

    Another term used by Bill Gates in his book [89] *The Road Ahead* is "spatial navigation." Gates used the term to describe the process of navigating on the information highway.

CD-ROM and Multimedia applications

Multimedia is a technology that can integrate text, graphics and sound in a single document. The use of multimedia in personal computers received significant impetus from the development of CD-ROM technology in the mid 1980's (see Section 20.3).

Two of the earliest companies to develop CD-ROM applications were Cytation and the Activenture Corporation. The early developments were text only. Gary Kildall of Digital Research, also founded Activenture Corporation in 1984 and renamed the company KnowledgeSet Corporation in 1985. Activenture developed a CD-ROM disk based on the *Academic American Encyclopedia* that was offered by Grolier in 1985. Tom Lopez founded the Cytation company in late 1984 and developed a CD-ROM disk called CD-Write that incorporated reference texts. The Cytation company was purchased by Microsoft Corporation in January 1986. These early developments evolved to include multimedia products by companies such as Microsoft (see Sections 12.6 and 15.1).

Other Items

Stephen Wozniak created the mythical Zaltair microcomputer for the First West Coast Computer Faire in April 1977. Wozniak did it as a prank against the established MITS Altair computer. He printed twenty thousand brochures describing an "incredible dream machine" and attributed the computer to Ed Roberts, President of MITS, Inc. It also caused concern for Steve Jobs of Apple Computer who was not aware of the prank.

20.2 ... Reference Sources

Bibliographies

An extensive bibliography of microprocessor literature is contained in the "Architecture of Microprocessors" by Robert C. Stanley, in the *Encyclopedia of Microcomputers* - Volume 1, pages 269 to 281 [236].

A bibliography of various output devices is contained in "Computer Output Devices" by David Bawden,

in the *Encyclopedia of Microcomputers* - Volume 3, pages 360 to 362 [236].

History

An *Encyclopedia of Computer History* is a disk stored hyperstack history for use on MS-DOS or Microsoft Windows, that has been developed by Mark Greenia. It is available from Lexikon Services, 3241 Boulder Creek Way, Antelope, California, CA 95842.

20.3 ... Standards and Specifications

Bus Architecture Standards

Reference Section 17.8

Communications

The ITU (International Telecommunications Union) is an international organization that establishes standards for communication devices, such as modems. The V.32 standard is for communication at 9,600 bps. The V.32 bis is an expanded standard for communication at 14.4 Kbps. The V.34 is the latest standard for communication at 28.8 Kbps without compression and up to 115.2 Kbps with compression. K56flex is a 56 Kbps technology developed by Lucent Technologies and Rockwell International. X2 is a technology developed by the U.S. Robotics Corporation and operates at 57 Kbps.

The HTML (HyperText Markup Language) specification was developed by Tim Berners-Lee at CERN (CERN is the European Particle Physics Laboratory) in 1991. It was written as part of the World Wide Web (WWW) to facilitate communication among high-energy physicists. The specification was refined in 1993/94 by Dan Connelly who wrote the Standard Generalized Markup Language (SGML) and Document Type Definition (DTD) specifications for HTML.

Compact Disk

Standard specifications were created by Sony Corporation of Japan and N. V. Philips of the Netherlands following compact disk development in 1976. In 1982 a Red Book specification for CD audio and in 1983 a Yellow Book specification for CD-ROM were released. This was followed by a Green Book for CD-I (Compact Disk - Interactive) specifications detailing requirements for interleaving of audio and video data. An Orange Book has also been issued for specifications on CD-R (Compact Disk - Recordable) drives.

In November 1985 a group of companies met to consider a standard format for organizing data files on CD-ROM. This standard became known as the High Sierra Proposal and was approved as ISO (International Standard Organization) standard 9660.

CD-ROM XA was an audio and graphics standard developed by Sony and Philips in late 1988.

Graphics

IGES (Initial Graphics Exchange Standard) is a standard for defining the format of geometry for CAD (Computer Assisted Drafting) data. It enables the communication of CAD data files between different computer platforms.

Hardware

Apple Computer, IBM and Motorola announced in November 1994 that they would develop a common hardware specification for PowerPC based computers.

Memory

EMS (Expanded Memory Specification) was developed by Intel Corporation. It was first called Above Board then the specification became known as LIM (Lotus, Intel and Microsoft) due to an agreement between those companies in June 1985. This specification was developed to overcome the PC memory limitation of 640K bytes.

XMS (eXtended Memory Specification) was the result of a collaborative effort between AST Research, Intel, Lotus and Microsoft and was introduced in August 1988. XMS is a more sophisticated system than EMS and

utilizes a eXtended Memory Manager (XMM) to control the transfer of data in memory above one megabyte.

Video Standards

MDA (Monochrome Display Adapter) was introduced in August 1981 for the IBM PC computer. It had a maximum resolution of 720 by 350 pixels with 1 color.

CGA (Color Graphics Adapter) was introduced by IBM in August 1981 for the IBM PC computer. It had a maximum resolution of 320 by 200 pixels with 4 colors.

MGA (Hercules Monochrome Graphics Adapter) was introduced in 1982 and had a maximum resolution of 720 by 350 pixels with 1 color.

EGA (Enhanced Graphics Adapter) was introduced by IBM in late 1984 for the PC AT computer. It had a maximum resolution of 640 by 350 pixels with 16 colors.

PGA (Professional Graphics Array) was introduced by IBM in 1984 and had a maximum resolution of 640 by 480 pixels with 256 colors.

VGA (Video Graphics Array) was introduced by IBM in April 1987 for the PS/2 series of computers. It has a maximum resolution of 640 by 480 pixels with 16 colors.

MCGA (Multi-Color Graphics Array) was introduced by IBM in 1987 and had a maximum resolution of 640 by 480 pixels with 2 colors.

8514/A was an IBM standard which was introduced in 1987 and had a maximum resolution of 1,024 by 768 pixels with 256 colors.

Super VGA was introduced in 1989 and has a maximum resolution of 800 by 600 pixels with 16 colors.

XGA (Extended Graphics Array) was introduced by IBM in 1990 and has a maximum resolution of 1,024 by 768 pixels with 256 colors.

20.4 ... Terminology: Clarification and Origins

Bit

The first documented use of the term "Bit" was in an internal memo by John W. Tuckey at the AT&T Bell Laboratories in January 1947. It was used in a table defining terms to describe an individual character in the binary system.

The first use of the term bit in a publication was by Claude E. Shannon in the *Bell System Technical Journal*, July 1948 issue. Shannon used the term bit to describe a binary digit in a measuring system related to a mathematical theory of communication. Shannon stated that it was "a word suggested by J. W. Tuckey".

Bug

The first use of the term "Bug" in computer technology is attributed to Grace Murray Hopper during the summer of 1945. During the development of the Harvard Mark II computer an operational failure was caused by a moth getting in one of the computer relays. Subsequently when determining an operational problem it would on occasion be described as "debugging the computer".

There has been some question as to the origin of the problem on the Mark II computer in 1945. Also Fred R. Shapiro has shown in a Commentary of the April 1994 issue of *BYTE* magazine that the terms "bug" and "debugging" had usage prior to 1945.

Byte

The first use of the term "Byte" was on the IBM Stretch computer development in an internal memo written in June of 1956. Initially it referred to any number of parallel bits from one to six. Shortly after August 1956 the Stretch computer design was changed to incorporate 8-bit bytes.

The first published reference using the term byte was in the *IRE Transactions on Electronic Computers*, June 1959 issue. It was stated by W. Buchholz that "The

term is coined from bite, but respelled to avoid accidental mutation to bit".

Hypertext

Theodore H. Nelson is attributed as being the originator of the term hypertext. Nelson described it as "non-sequential writing -- text that branches and allows choices to the reader," non-sequential information retrieval and perusal. It is related to his Xanadu text manipulation system.

Microcomputer

Gilbert Hyatt stated in an article "Micro, Micro: Who made the Micro ?" [328] that "I trademarked the name microcomputer" in 1968.

Microprocessor

In an article entitled "A History of Microprocessor Development at Intel" [342], Robert N. Noyce and Marcian E. Hoff stated that "The term "Microprocessor," first came into use at Intel in 1972." Prior to the development of LSI computer chips the term "microprocessor" referred to a processor of a microprogrammed computer.

Minicomputer

The origin of the term minicomputer is attributed to John Leng of Digital Equipment Corporation (DEC). Leng was responsible for establishing a DEC presence in the United Kingdom in the mid 1960's. In reporting sales activity he stated that "Here is the latest minicomputer activity in the land of miniskirts as I drive around in my Mini Minor." The term then became used at DEC and throughout the industry.

Personal Computer

Competing claims have been made in two periodicals. An *IEEE Computer* magazine article states that "Kay and others ... coined the term "personal computer" at Xerox PARC in 1973." *BYTE* magazine claims to have "coined the term, in our May 1976 issue."

Portable Computer

The term portable computer requires clarification because of the way it has evolved into different forms or categories over the years. Generally it is a computer that can be carried by an individual from place to place. Initially it could only be operated from an AC power source, today it is battery operated. The following are the different designations for the various types of portable computers:

The *transportable* computer, also known as a *luggable*, is the earliest form of a portable computer. It weighed fifteen pounds or more and generally ran off an AC power source. The IBM 5100, announced in 1975, is the first commercially produced portable computer (weighed 50 pounds). The Osborne and Compaq portable computers released in 1981 and 1982 are other examples of this type.

The *laptop* computer weighing around seven to fourteen pounds, that could be placed on a persons lap was the next stage in portable computing. It could be operated from a battery or an AC power source. It is also a generic name used by the press for today's lighter notebook computers. The GRiD Compass that was introduced in 1982 is an example of the laptop type of portable

The *notebook* computer is the current popular portable computer and typically weighs between five to eight pounds. The physical size is similar to a paper notebook, with approximate dimensions of nine by twelve by two inches. Of increasing popularity are the "light and thin" versions with a weight of less than five pounds and a thickness of less than 1.5 inches. The NEC UltraLite introduced in 1989 is an early example of this type of portable.

Other variations of even lighter portables are known as the *Ultraportable* with a standard keyboard, and the *Subnotebook* weighing four pounds or less with a smaller keyboard and screen.

The *tablet* is a portable type of computer that does not have a keyboard and uses a pen or stylus for input. The GRiDPad portable announced in 1989 is an early example of this type.

Silicon Valley

The term "Silicon Valley" has been attributed to Don Hoeffler, who was a journalist for *Electronic News*. Hoeffler used the term to refer to the region of Santa Clara Valley, south of Stanford University in a series of articles in January 1971.

Vaporware

The term "Vaporware" came into vogue during 1983/84 to describe software that was announced, highly publicized, long awaited but still not available. Some of this may have been attributed to the Microsoft announcement, prolonged development and delayed release of Windows software. The term was first coined by the *InfoWorld* publication.

Winchester (hard drive)

The term "Winchester" was an early internal code name for a sealed hard disk developed by IBM between 1969 and 1973. It was derived from a disk storage unit development that had two spindles, each with a disk capacity of 30 megabytes. The unit was initially called "30 - 30" and because of the similar designation to a popular rifle from the Winchester Company it became known as the Winchester hard drive.

Wintel

A long-standing relationship between Microsoft and Intel resulted in the term "Wintel." It refers to Microsoft Widows running on an Intel microprocessor.

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