

MAN-MACHINE NEURAL INTERACTION : CD'S AND MULTIMEDIA AT THE TWILIGHT OF KNOWLEDGE REVOLUTION.

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1. Introduction

The computer Industry is in the midst of an evolutionary "Leap forward" which is every bit as significant as the introduction of the personal computers in the Information Environment. Most nascent technologies grope through three basic stages in their primitive

market evolution____
Unbridled optimism____
Pessimistic depression____and

Real benefit and real value, where the technology can establish a firm foundation for growth in the real world. The compact disc read-only storage medium and Multimedia have been greeted with great optimism by the sagging industry and enjoying an abundance of positive coverage and response by the "Knowledge Seeking" publishing industry.

They are clearly in their final stage of evolution. The optical disc was hailed with great optimism, survived an ensuing depression and has actually climbed out and establish itself in a variety of market niches that ensures its long term viability.

CD's and Multimedia are positioned exclusively as a computer peripheral. The ever emerging standardization efforts enhances its value and versatility. CD's and multimedia are magnificent innovations; but their instant success, or even its ultimate triumph in the market place is best assured. One of the brutal realities of commercial life is that users want what they want rather than what is technically feasible- These Technologies have revolutionized the concept of users varying needs. Far from upsetting matters, however new technologies have predominantly made life better and considerably easier for most people and so it must be accepted that they should be welcomed.

What and why of CD-ROM:

- * Maximum storage on a miniature disc
- * 600 MB
- * 270,000 pages of a text, A4 size

- * 1500 floppy disc
- * 18000 pages of computer graphics
- * 75 minutes of music
- * Entire text of a 20 volume Encyclopedia
- * 10 magnetic tapes
- * 4,500 hours of digitized voice

Components of a CD-ROM search software

Two major components of a CD-ROM search software are the retrieval interface and (or USERS) and the retrieval engine. The user interaction with the CD-ROM database is the user friendly retrieval interface. It is the 'Front end' of the software which facilitates the users to search the database, view the result on the screen, print etc., through function keys, commands and menus. Retrieval engine is the 'bridge' between the retrieval interface and the database. It takes search and retrieval commands from the retrieval interface invokes appropriate routines to process these on the database and provide the result back to the retrieval interface. Besides these two more softwares (hidden) usually in the background are essential for using the search software. These are MSCDEX(Micro Soft Extension to CD-ROM) and CD-ROM device programmes.

CD-ROMS software relationships

retrieval interface	CD-ROM
Retrieval engine	Search Software
MS DOS	
MSCDEX	
CD- ROM Device driver	
CD- ROM Disc	

CD- ROM Operation

CD- ROM is a reflective light system, where laser light is shone against turns of track which are encoded with digital data using pits and areas of Land. Pits scatter the laser light while areas of land produce reflected light. Reflected light is directed to a photo Detector that produces a series of digital pulses corresponding to encoded data. Like all

random access storage devices, encoded information has to be organized into manageable data blocks so as it may be located and retrieved. A CD-ROM disc rotates at a speed to produce a constant average read rate of around 75 blocks/sec, because data is embedded in the tracks of a CD-ROM at a uniform density (which equates to 0.6 bits) the disc must spin fast when the read coversages on the centre (and vice versa).

Searching CD-ROM databases

Searching CD-ROM databases is a two step process.

- Searching and
- Processing the search results for
- Display
- Print and
- Transferring the results to a Disc File (downloading).

Searching:

- Selection of search term by browsing through dictionary, thesaurus and from displayed records
- Direct entry of search term
- Boolean searching (AND, OR, and NOT)
- Search term truncation (eg., COMPUT?)
- Proximity searching
- Range searching on numeric fields
- Creation, deletion and review of search sets
- Saving, recalling and delegation of search strategies.

Processing of search results : include,

- Selection from pre-defined format
- creation, saving and recalling of user defined display and user format
- Sorting of retrieved records
- Merging selected records.
- Display and printing
- Setting up print parameters
- Printing of records and
- Transferring records to a file.

Retrieval interface

Retrieval interface of most of the CD-ROM search software provides two modes of database searching namely, MENU SEARCHING and COMMAND SEARCHING by making extensive use of function keys.

What and why of Multimedia

Multimedia an old concept that has been given a new meaning by the computer industry through their efforts to create multimedia capable computing

platforms. The multimedia denotes the evolving phenomenon that includes interactive use of multiple digitized media in all aspects of computing. Multimedia enables the addition of "real-world" media to any application on a personal computer or workstation to improve the effectiveness of the communication of information or the transfer of knowledge by providing their desired information what it is needed, where it is needed, and how it is needed. Multimedia revolutionize the way the information is communicated by

- * Increase the overall competency the work
- * Improving productivity of individuals and work groups
- * Improving decision-making skills and processes
- * Reducing the cost of operating the business
- * Increasing revenues

Recent Technological have made it economically feasible to digitize and compress real-world media so they can operate effectively in digital computer and Net-Working environment. As a result audio, images and video media can be stored, retrieved, manipulated and transported in the digital world, just as text, graphic and animation.

Multimedia Database Management Systems

A comprehensive set of tools are needed to intergrate the information available in a variety of digital media. Without such tools, multimedia applications will result in an incompatible integration. the features of the current database management systems must be extended to handle the new types of information (audio, video, and images) that are used in multimedia applications. In addition to support for large data objects which may span several physical blocks, the database system may need to support dynamically changing blocks. The following extensions will need to be supported:

- * The storage manager needs to be able to manage dynamic data types. Audio and Video information must be compressed to appropriate levels before it is stored on a disk
- * Users need to be able to retrieve and/or modify part of a document, image, audio, or video file because the files may be large
- * Logically, the database system must provide the capability to define the logical schema containing multimedia objects in a uniform manner
- * Objects must be shown in the media that is appropriate. for example, text will be shown by ma browser, pictorial data as

graphics interchange format(GIF) file, image as pictures, and records as a table

- * The database system must provide a level of performance that is acceptable for the application, even with the large files associated with audio, images, and video.

Advantage of CD and Multimedia Workstations

- * No Telecommunication hurdles? Charges?
- * No connect hour charges
- * Unlimited access
- * No financial pressure while searching
- * Makes users familiar with computerised IRS
- * Powerful software
- * More access points
- * Online interfacing possible
- * Combination of text, graphics, audio, animation
- * Space saving in library (compact library)
- * Increased prestige of libraries
- * Can operate under difficult conditions of heat, humidity, dust
- * Enhancement of library material usage
- * Advantages for developing countries

Disadvantages

- * Prohibitive costs
 - Repetitive
 - more for LAN & WAN
- * Licensing problems
- * Customs
 - Tedious procedure
 - Extra costs
- * Access to one or few persons at a time
- * Updation not very frequent
- * Compatibility problems
- * Slower response
- * Lack of standard retrieval software
- * Limited portability
- * Single file searching
- * Duplicates removing not possible
- * Substantial investment on equipment & maintenance
- * Security
- * Training needed for users

Posterior Trends

- * Domination of multimedia CD's
- * Usage by school children & business community
- * Diversity and growth of titles in high usage database
- * Lower prices of drives
- * Symbiotic databases/subset databases
- * Processing power in reader itself multidrive interface
- * Improvements in compatibility problems

- * Predominance of enduser oriented products

Conclusion

Bill Gates, has rightly observed, "Today, in software, Print publishing, and entertainment companies large and small around the world, growing numbers of talented people are working hard to develop the great Multimedia products that will fulfil the immense potential of this medium. To accomplish this, we need to develop a common language, and we need better understand what each of our points of view has to offer. We need mechanisms for resolving issues, and we need procedures for cooperative ventures. We've made great progress toward these goals since 1984, but we've also raised our expectations of what is possible.

For as much as we've accomplished, the need for better understanding of common issues has never been greater..

..... I am excited by the quality and vision of the work now underway on Multimedia products throughout the industry. I believe more than ever that these products will be a major force in the expansion of the information industry, extending the benefits of personal computing to a much wider market.

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