

# CD-ROM → LINK

## Guidelines to Follow When Buying Your Multimedia PC Workstation

By Péter Jacsó

Many of the ads of computer manufacturers in the computer magazines tout their multimedia capabilities and offer a lock-stock-barrel solution, with CD-ROM and sound board included. Still, it is not a take it or leave it situation. Customers may opt for larger memory, faster hard drive, different monitor or even processor and get a ready-to-go pre-assembled system. The street price of a typical multimedia system is about \$3,000, which also includes three to four CD-ROM applications.

The multimedia add-on market also sizzles with nearly 100 options for those who would like to upgrade their existing PCs and enjoy the ever-increasing number of multimedia upgrade kits. The kit is either just a sound board with a pair of speakers and the controller card, or a CD-ROM drive may also be included. The faint at heart should stay away from this route as incompatibilities with the recipient (host) system are rampant, and assembly is required.

While the Multimedia Personal Computer (MPC) Council has significantly improved its specifications for qualifying a PC as a multimedia machine,



it is not a certification system widely used and advertised in the industry. A system may not have and you may not need all the features of the new (MPC-2) specification, such as the capability to display 65,000 colors, and it still could be a good multimedia PC. On the other hand,

it is necessary to warn potential customers that the original MPC logo means nothing because the specifications were so inappropriate that even a lemon could have easily qualified.

In this multimedia jungle, the best that can be offered for the readers of *Link-Up* who would like to go multimedia is to provide some insights into the alternatives, and let them decide.

### Processors

The type of processor the system should have is still mostly a question of speed as Intel and Intel-compatible processors still rule the waves in the PC world, no matter what brand your PC is. The 386DX models are soon to be passe, and the 586DX models (the Pentiums) are a bit overpriced. The 486DX models seem to provide the best price/performance. Stay away from the SX models that are crippled versions of their DX brethren for only a hundred dollar less. The new PowerPCs (featuring Motorola processors) have just hit the market as we went to press.

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## John Lennon's life will be documented on CD-ROM

*Disc will feature music, photographs, and text*

The Beatles came to the U.S. on February 9, 1964, and captured the hearts and imaginations of people of all ages. One young songwriter, John Lennon, moved the spirit of youths around the world as never before. His 60s anthems inspired a counterculture. The 70s ballads touched everyone with a message of love and world peace.

Warner Bros. Consumer Products and Compton's NewMedia announce they will jointly produce a historic chronicle and perspective of the life of John Lennon—the musician, artist, and philosopher—on CD-ROM.

Through the cooperation of the estate of John Lennon, the CD-ROM will feature home videos and art never before released to the public. The interactive journey will provide CD-quality audio of unreleased music and text from Lennon's writings, including many unpublished works.

The interactive title is a virtual gallery of John Lennon's life that will let users explore freely the Lennon legacy from his unusual childhood to his early days in clubs in Hamburg and Liverpool, to Beatlemania, and finally to his fulfillment as an artist and as an individual.

Lennon's life unfolds in the CD-ROM title in hundreds of photographs from the world's foremost rock photographers, including Leibowitz, Russell, Freeman, and more. Lennon himself, through historic and private clips and in his usual candor and acerbic wit, guides the user through the many facets of his life documented by nearly one hour of video, writings, poems, and art.

"Lennon was truly a multimedia artist," said Dan Romanelli, president of Warner Bros. Worldwide Consumer Products. "CD-ROM is an ideal medium to showcase his music, his art, his words, and his life. We are very happy to be working jointly on this innovative project with Compton's NewMedia."

The John Lennon tribute title will be released in the third quarter of 1994 in both Windows and Macintosh formats. The title will be offered in two versions, a standard retail CD-ROM for \$69.95 and a special limited edition collectors set.

For more information, contact: Compton's NewMedia, 2320 Camino Vida Roble, Carlsbad, CA 92009; Phone: (619) 929-2500.

## Elsevier Science announces release of EMBASE on CD-ROM

Elsevier Science, Secondary Publishing Division, announces the spring 1994 launch of two new CD-ROM products: EMBASE and EMBASE Alert.

EMBASE, available from both CD PLUS Technologies and SilverPlatter Information, Inc., will contain the complete contents of EMBASE, the Excerpta Medica database, from 1980 to the present with more than 3.5 million records from more than 3,500 biomedical journals published in 110 countries.

A large percentage of these records, many containing critical drug information, is unique to EMBASE. Subscribers will receive monthly updates consisting of approximately 30,000 records. Full EMTREE thesaurus features are included for the first time on an Elsevier Science CD-ROM product. Use of EMTREE, the hierarchical thesaurus containing over 37,000 EMBASE drug and medical index terms as well as MeSH terms, will enhance precision retrieval.

EMBASE features comprehensive coverage of drugs and toxicology; clinical medicine; basic biological sciences; biotechnology; bioengineering and biophysics; health affairs; psychiatry; environment and pollution; and forensic medicine.

Also scheduled for spring 1994 release in cooperation with SilverPlatter is the complementary companion file: EMBASE Alert. The successful implementation of measures to further streamline the EMBASE production cycle has resulted in the production of this extremely current alerting service. Updated biweekly with approximately 14,000 records, EMBASE Alert will feature a three-month rolling file of current information.

EMBASE and EMBASE Alert will be available in IBM, NEC, and Macintosh versions as well as with Windows platform support. Multisite and LAN agreements will be offered. CD PLUS and SilverPlatter are both offering 30-day free examination

trials.

"Joining EMBASE Online, Excerpta Medica CD Specialties Series, and the Excerpta Medica Abstract Journals, the introduction of EMBASE and EMBASE Alert on CD-ROM significantly expands the range of Elsevier Science products and services designed to disseminate the world's biomedical literature to the widest possible audience," said Geoff Worton, senior product manager of Elsevier's Secondary Publishing Division.

"Much of this information is not covered in other biomedical databases," he added. "EMBASE is designed for comprehensive and retrospective searching, while EMBASE Alert monitors the most recent biomedical and drug literature."

For more information, contact: Elsevier Science, Secondary Publishing Division, 655 Avenue of the Americas, New York, New York 10010-5107; Phone: (212) 633-3980.



## Multimedia Workstation

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The model itself does not specify the speed as it used to do a few years ago, but rather the speed range. The minimum speed I would recommend is 33 MHz, but for about \$100 more a 50MHz CPU is a better deal. The clock-doubled and clock-tripled PCs with 66MHz and 99MHz are likely to be an overkill. The former is also referred to as DX2 processor and the latter as DX4 (in spite of the fact that it does not offer quadruple processor speed). It is one of those maddening baptizing anomalies of the PC industry, like Word 2.0 followed by Word 6.0 with no version in between.

### Bus architecture

Theoretically, you could choose between ISA (Industry Standard Architecture), EISA (Extended ISA), MCA (Micro Channel Architecture), and PCI (Peripheral Component Interconnect). There is no reason to hesitate here: ISA is the best solution. EISA and MCA have been trying for many years and still could not get a decent market share, while PCI has yet to prove itself, and Intel, its developer, is likely to be busy in the near future trying to retain its hegemony in the processor world for PCs.

Far more important is the issue of having a local bus that is like having a special elevator for VIPs. The local bus concept was primarily introduced for relieving the common bus of transporting video data (the real bottleneck in multimedia). Its specifications were formulated by the Video Equipment Standards Association (VESA), and hence the name VESA local bus, also known as VL-bus. This is a very important component. There are some systems that offer proprietary local bus. It is better for the long run to stick with the standard local bus. A few systems on the market already offer local bus also for the hard disk that can further improve the performance of the system.

### Random Access Memory

You know the adage: you cannot have enough money and enough RAM. It is true. Most multimedia applications are, or will be, Windows-based, and Windows is a memory hog to say the least. Do not pinch pennies here. The minimum is 8 MB, and not even the IRS would consider it extravagant expense for about \$50 per megabyte. Make sure that the memory board can accommodate more chips later as applications will need more and more space to run efficiently. It is usually indicated by the notation 4/16 Mbyte RAM, which means that the system is offered with 4MB and can be expanded with memory chips later up to a maximum of 16 Mbytes on the motherboard. It indeed makes much of a difference to run the same application with a 4MB system and with an 8MB system.

### Hard disk

The same can be said of this as of the memory, you can't have enough of it. The bare minimum is 300 Mbytes, but a 540 Mbyte hard disk not only gives more leg-room for you to store data and programs, but also helps in improving the performance of all the applications providing larger virtual memory, and workspace. The system is as much likely to work faster in a generously allocated area as you are in a larger office versus a tiny room made of a cloth cabinet. Make sure that the capacity quoted is the real net capacity and not the one squeezed out of it by Stacker, or the now discontinued DoubleSpace feature of MS DOS 6.0.

The speed of the hard disk is also an important factor for multimedia applications that are extremely data transfer intensive. In many applications you have the option to store data and programs on the hard disk rather than on the CD-ROM disk that is an order of magnitude slower. I would not consider any drive with an average access time higher (i.e., slower) than 20 msec. If the hard disk has its own local bus it can improve performance significantly.

### Monitor and video controller

This is literally the most visible part of your configuration, and it is in your face all the time. You must not cut corners here. The easiest to decide is the size of the monitor. The ones with a 15-inch screen diagonal make more than an inch of viewing pleasure versus the most common 14-inch monitors. The larger (17-20 inch) monitors are in proportionally more expensive. Be careful with the claims of the vendors. Many include the bezel in calculating the size, and deliver a 13.5-inch screen hyped as a 15-inch monitor.

Resolution is a critical issue. The bare minimum is 640\*480 pixels, but 800\*600 resolution provides sharper image. The 1024\*768 and higher resolution cannot be appropriate for applications with text and images because the text characters become uncomfortably small. Though you can switch to a lower mode it usually requires rebooting the system unless you have a special program that can spare you that inconvenience by on-the-fly switching of display mode.

Flickering screens are sure to cause a headache, literally. Flicker has to do with the way the screen is refreshed. On some monitors only every second line is refreshed in every cycle. These are the interlaced monitors. The ones that refresh every line in each cycle are called non-interlaced monitors, and you had better pamper yourself with the latter. The frequency with which the screen is refreshed is measured in KHz. It is often quoted only at the lowest resolution, and you may wish to find out what is the refresh rate at the different resolution levels. The ideal rate is 72KHz, but anything beyond 60KHz is still acceptable at 1024\*768 resolution.

An often overlooked issue is the dot

pitch, the distance between the picture elements (pixels), i.e., the dots. The smaller this figure, the less gappy is the text made up of the dots. It is measured in millimeters (probably because of the metric Japanese system that rules the market). It should be below 0.30 millimeters.

The color depth is the maximum number of colors that can be used by the monitor to paint a picture. The common sense way to refer to it would be like 16-color, 256-color, etc. However, it is often quoted as 4-bit, 8-bit, etc., alluding to the fact how the video controller stores color information. Sixteen-color (4-bit) is not only unacceptably hazy and washed out for the human eye but more and more programs are not even willing to install themselves (let alone run) on 16-color systems. The controller should have its own 1MB memory, and preferably connected to a VESA standard local bus described above.

For full motion, full screen video you must have a decompressor board (like ReelMagic or Xing-It) that sets you back about \$300-350 but software decompressors just do not cut the mustard.

### Sound board and speaker

Sound is the weakest and most cumbersome part of your configuration. The sound board should be able to play back CD-Audio quality music, which means recordings at 16-bit sampling width, and 44 KHz sampling rate. The latter means how often a sample was taken, and the former refers to how much information was recorded in each sample. While 8-bit, 22KHz board would be appropriate for business sound, you will want the stereo-quality for music recordings, and the difference in price is not that big.

You also need good quality speakers where most of the bundles shortchange you with speakers that sell for \$12 at K-mart. I still need to be impressed by a sound board, speaker, and CD-ROM combo to donate my stereo deck to a charity. Bear in mind that your audio (and multimedia in general) will be as good as the weakest component in the system, so have a more powerful (and more expensive) speaker if you want to enjoy quasi CD-audio quality sound for an extended period of time. For about \$200 you can buy a magnetically shielded, self-amplified speaker with low Total Harmonic Distortion (less than 1 percent), a frequency range of 20Hz-20KHz, and about a 65-70 decibel undistorted volume (known as the signal to noise ratio measured in decibel).

### CD-ROM player

Multimedia means CD-ROM, and you need to be able to get those humongous files off your CD-ROM drive into memory fast enough to provide smooth and synchronized audio and video. I discussed the requirements for CD-ROM players in detail a year ago in *Link-Up*, so now I will focus only on the new and

essential features, such as access time, transfer rate, and multi-session capability.

Access time can range between 250-500 msec. Access time (getting to a file) in multimedia applications is less critical than the transfer rate (sending picture frames of megabytes for even a short clip), so anything around 300 msec is decent enough. Drives with double speed transfer rate (300 KB/sec) are essential, and triple and quadruple speed drives that have recently been released help to make better video playback if you have software-only video decoder.

Multi-session capability is not as important as Kodak would like you to believe. Commercial titles are produced in one session rather than incrementally in multiple sessions. This feature and the related capability of reading the proprietary format developed for Kodak Photo-CD is important if you want to view your photos printed on a CD roll after roll, or if you need to read a disk that stores files recorded on the CD at different times, such as a back-up disk.

No matter what you choose today, you will see a better, less expensive, more attractive alternative tomorrow. It may also happen that your hardware is better than the multimedia title that you buy, e.g., you have high-quality audio but the sound recording is available only in 22 KHz sampling rate. Those titles will soon catch up with the hardware development. The most important idea in your buying strategy should be upgradability, and expandability through slots for add-on cards, drive bays for new devices, like tape backup drives, and memory, memory, memory.



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