

## PERSPECTIVES

# Over the Hill

*New Technology. Upkeep Costs Are Forcing Old PCs Into Retirement*

BY ALICE LAPLANTE

**A**lthough the phrase "If it ain't broke, don't fix it," supposedly epitomizes the American work ethic, the fact is that unbroken machines get "fixed" or replaced all the time.

Perfectly functioning cars are traded in for the latest models; stereo components are bought and then replaced at the speed of light, and even kitchen appliances and children's toys are subject to the whims of perceived obsolescence. We even have disposable commodities such as cameras and calculators, which are specifically designed to be thrown away when their owners tire of them.

In some of these cases, the advantage of purchasing "new and improved" products as replacements for older models is little more than marketing hype on the part of the manufacturer. But in many instances the technology has actually moved rapidly enough for the older products to be legitimately judged outdated, and thus superseded.

Both cases are true in the PC market.

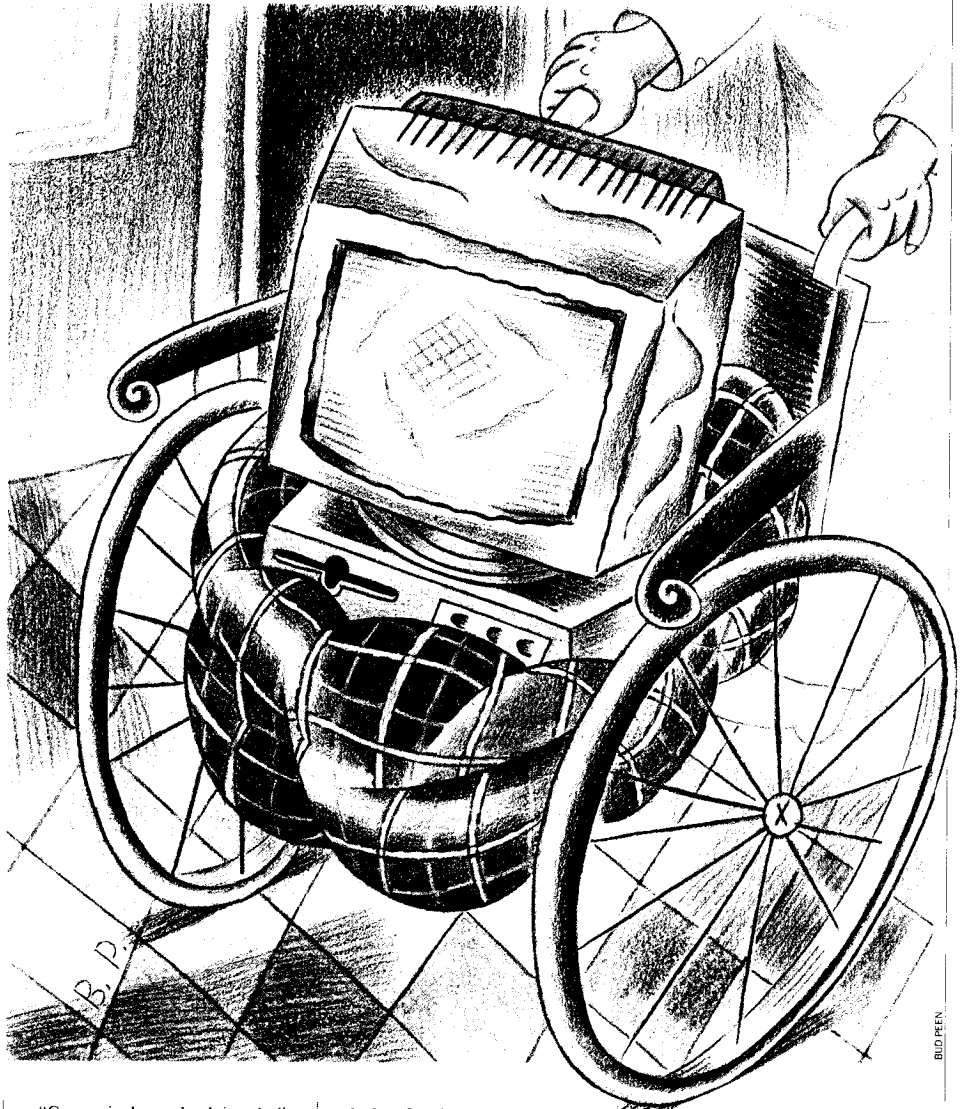
Although many PCs purchased in the early 1980s — at the advent of the industry — still flawlessly perform the same jobs they were originally purchased for, many are on the verge of being retired and replaced with newer equipment.

Of course, there are the machines that do die of actual mechanical failure. Dealers and PC managers say components such as monitors and disk drives are the first to go; entire motherboards, unless they fail immediately, usually last without incident for upwards of four years.

Obviously, whether a machine is in good working order is not always the issue. Instead, a multitude of other issues join together to form a complex web, making "life cycle" decisions difficult — at least at first.

**STILL WORKING AFTER ALL THESE YEARS.** For many people, the bottom-line fact that the hardware still works is enough to delay any thoughts of replacement. "If a machine does the job, and aids in the productivity of the person using it, there isn't necessarily any reason to retire it," said Bob Holmes, manager of systems evaluation at Southern California Gas Co., in Los Angeles.

But sometimes there are compelling reasons to throw in the towel on a particular model or class of PCs. Such important considerations as the cost of annual maintenance contracts for an aging PC fleet, the need for a more powerful CPU, being able to run the latest version of a software application, or perhaps the desire to standardize all end-users on a particular hardware or software technology all play critical roles in determining the life of a PC.



"Companies have a hard time dealing with machines that have some utility left in them, but not for their organization," said Bruce Johnson, PC manager at Sullivan and Cromwell, a New York-based law firm.

But for most PC managers, this has become an issue only recently. Many firms started buying microcomputers at the XT or AT generation, and therefore until now have had little cause to be concerned.

Only now are corporate PC managers beginning to comprehend the enormous

task they face in the next few years when the first wave of "archaic" machines bought in the mid-80s must somehow be disposed of. "No plan has been reached at this point, although we will probably need to work out something this year," said Holmes, whose firm started buying XT-class machines in 1983 — machines probably reaching the end of their usefulness in corporate microcomputing.

Of course, the word *archaic* — like everything else in the fast-moving PC

industry — is a relative term.

PC professionals live in a world where entire generations are measured not in terms of decades or even years, but in months, and merely tracking the successive products of Intel's 80X86 family doesn't tell the whole story.

Instead, advances in related components such as size and speed of hard drives, quantity of memory installed on the system board, and sophistication of graphics technology are just a few of the factors that mean as much — if not more

INFOWORLD

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IBM MODEL	FEATURES	PRICE
PC 5150	255K, (2) 360K FL, KBD	\$ 180
XT 5160	640K, (1) 360K FL, 10MB, KBD	\$ 265
AT 6170	512K, 8MHz (1) 1.2MB FL, 30MB, 101 AT-enhanced KBD	\$ 785
IBM PS/2 MODEL	FEATURES	PRICE
30-021	640K, 720K FL, 20MB, KBD, 8088-based	\$ 575
50-021	80286 1MB, 1.44MB, 20MB, KBD	\$ 800
60-041	80286 1MB, 1.44MB, 44MB, KBD	\$1,000
90-111	80386 20MHz, 2MB, 1.44MB, 115MB, KBD	\$3,700
70-061	80386 16MHz, 1MB, 1.44MB, 60MB, KBD	\$2,600

SOURCE: EXSEL INC.

— as the speed or power of the CPU.

**SOFTWARE PLAYS ITS PART.** But it's not only the hardware that determines whether a PC has outlived its usefulness. Software is equally important to life cycle decisions.

Applications are updated constantly, sometimes at the rate of two or three versions per year. Usually those updates contain additional features that take advantage of the industry's technological advancement — and which require additional memory or other hardware components not available on an older micro-computer.

"When you look at the older XT



Exsel buys, repairs, and resells used PCs, a business that has made it one of the nation's fastest-growing start-ups.

machines, you are probably at the point where you can't use them with current versions of software." Holmes said. "You are really constrained by hard disk space — 10 megabytes just won't do it anymore."

For example, newer versions of popular applications can require different classes of graphics, from CGA to EGA to VGA. Or perhaps they support the use of a mouse as an inherent part of the program; or the use of function keys to help speed ease of use. Or, they require two or even three times the memory available on older machines.

**THE GRAPHICAL INTERFACE.** In this area, as in virtually all other areas of micro-computing these days, the omnipresent graphical user interface raises its head. As more and more firms adopt a policy of having the same interface standard across as many computer platforms as possible, a lot of the older machines — those incapable of running Windows or Presentation Manager — are being left out in the cold.

"You reach a point where it's a good business decision to get rid of older PCs," said Sullivan and Cromwell's Johnson. "That happens when it impedes your ability to have a common user interface. In such cases, extending the life of a machine just isn't worth it."

"How to make an 8088 or 8086 machine live in a graphical interface world? The answer is, you probably won't," agreed Holmes.

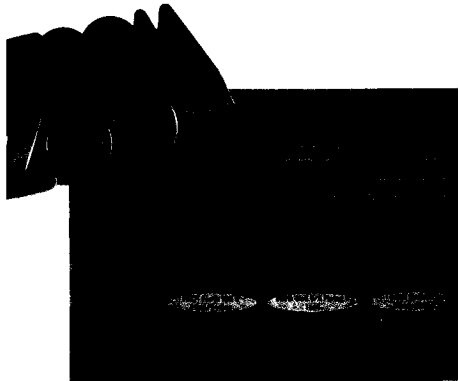
**COST/BENEFIT ANALYSIS.** PC managers say the most compelling reason to retire a PC — even one still functioning — is when the cost of maintaining it becomes too high. Maintenance contracts rise sharply as a PC ages.

"The thing that will force the decision to retire more than anything else is economics," Holmes said. "When we contract for maintenance, whoever is bidding on those contracts will specify that machines over a certain age will carry a significant surcharge."

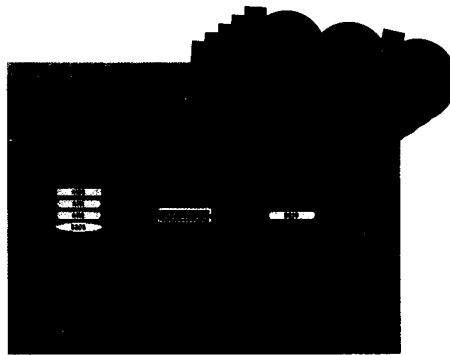
This, plus the fact that it can cost more than the price of a new, more powerful PC to fix an older one, means that corporations often retire still-working PCs.

"We had a situation where a partner had an older machine, an old PC without a hard disk or the power supply to drive a hard disk," Johnson said. "We realized that after adding the cost of fixing the machine up that it would be cheaper to buy new. These days, you can get a more durable and functional machine for under \$2,000 than fixing an old one up for a much higher cash outlay."

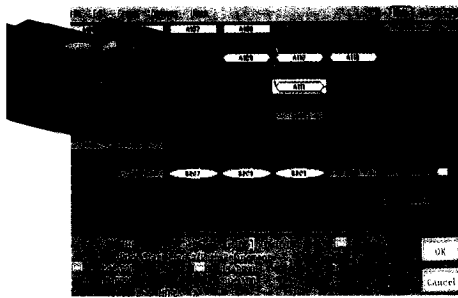
At Exsel Inc., in Rochester, New York, an entire business has been built around acquiring large quantities of used PCs, XTs, ATs, and now, PS/2s, refurbishing them, and reselling them. According to Sean Repko, the founder of the company, the No. 1 reason that corporations want to sell older machines is in fact that cost of



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maintenance.

"Newer machines, in addition to being far more competitively priced, cost less to support," Repko said. "It comes down to dollars and cents; when a machine is three to four years old, and IBM and Compaq are offering large street discounts on new machines, it's a logical decision."

Exsel, which last year made *Inc.* magazine's list of the fastest growing 500 firms in the United States, in addition to dealing directly with the firms themselves, works through dealers nationwide.

"Dealers trying to sell new equipment to corporate customers will use us to offer trade-ins on used equipment," Repko said.

**HAND-ME-DOWN PCs.** By far the most common means of taking care of obsolete PCs is by recycling them, or handing them down to other employees in an organization.

Because often the employees who get the biggest and best PCs are usually the "power users," they are the ones most likely to continue to demand — and get — newer technology as it becomes available. In such cases, it makes sense, PC managers say, to give the power users what they clamor for, passing down the older, less powerful equipment to employees with less stringent systems requirements.

In most firms, this is currently done on an informal, ad hoc basis: Based on subjective assessments by PC professionals, computers are shifted around until everyone is more or less satisfied.

This can cause some management problems, however. Just as younger children forced to wear hand-me-downs complain about never getting the new clothes, employees can be disgruntled about such arrangements. Precisely because this approach can result in unequal sharing of computer wealth — and lead to complaints on the part of end-users — many companies are starting to formalize the process.

One San Francisco-based brokerage house, which used to have a policy of whoever shouted the loudest got the biggest and newest PC, has developed a system that ranks each job category and prescribes a standard PC configuration, according to a company PC manager. When a decision is made to upgrade a certain category of user, the older machines go into a pool and are outfitted and reassigned to the appropriate "class" of user.

For example, secretaries and administrative help are automatically assigned AT-class machines, whereas traders and analysts are now getting 386 machines. Having a corporationwide policy makes dealing with employee requests much easier, according to the PC manager.

There is also another, fairly recent development that PC managers have to face: the conventional wisdom of providing "power users" or people at the top of an organization with the most powerful machines no longer holds true. Instead, some PC professionals are finding out that employees in administrative functions actually need the more sophisticated equipment. This dramatically changes any "hand-me-down" policy.

"People at the bottom are getting more demanding than people at the top, so we are starting to give them the newer technology," Johnson said.

There is even the "appearance" issue: Firms that send computer-toting employees out to client sites in the field — accounting, auditing, or sales personnel, for example — feel it hurts their image to be seen with older technology in hand.

"It depends on the user community;

## Let's Make a Deal: Finding Buyers for Old Computers

**T**echnological obsolescence is in the eyes of the beholder, according to Alexander Randall, founder of the Boston Computer Exchange (BCE), a used personal computer brokerage business.

Founded in 1982, Randall's firm, like Rochester, New York-based Exsel (see main article) specializes in bringing together potential buyers and sellers of used computer equipment. "I guessed there would be a time when the marketplace would need us," he said.

Randall and his wife, BCE cofounder Cameron Hall, have been gathering data on the second-hand computer market since their organization was founded, and they have come up with some interesting analyses of the relative value of a microcomputer during its life cycle.

Basically, the "value" — or the street price — of almost every personal computer dives immediately after its purchase. After some stabilization, the value then takes another hit whenever the vendor announces a machine of similar make. After that, the value of most personal computers levels and remains at virtually the same level for years.

In fact, Randall has a book coming out in the next month from Microsoft Press, *Alexander Randall's Used Computer Handbook*, which he hopes will be the first definitive work on what until now has been a rather inexact science.

"We found out that almost every machine follows the same life cycle," Randall said.

Because Cameron Hall, who plotted the ups and downs of the life cycles of various PCs, is the vice president of finance and chief economist of BCE, Randall calls the graphical results of the research "Cam Curves."

"For the original IBM PC, the initial trading value of a used machine started at about \$2,000 soon after the machine was first shipped. But [it] has gradually gotten to the \$500 price point," Randall said. "And it has been there ever since," he said.

Following the pattern, the street price of a Macintosh 512 took a nosedive when its successor was announced. Similarly, the value of IBM's PC AT took a sharp turn downward when the PS/2 family was announced (see charts).

Because of these patterns, Randall said, any organization that wants to trade in older machines should wait until immediately before any anticipated announcement of replacement machines by the same vendor in order to ensure getting the maximum value for its equipment.

Every week, the Boston Computer Exchange publishes the "low" and "high" prices of various makes and models of PCs, providing the information to interested daily, business, or trade publications. Randall's organization also matches possible donors of used computer equipment with those institutions — usually charities or nonprofit organizations — seeking donations.

"We average five calls a day asking to be put on the list," Randall said. "It provides the donating companies with a tax write-off, and the receiving companies with working, if not exactly state-of-the-art, machines."

with a professional organization such as a law office or CPA firm, you don't want your employees in the field carrying 22-pound Compaqs when one of the new 6-pound machines would be more appropriate," Johnson said.

In a twist on the same story, many older PCs are relegated to being home computers for key employees to use as business machines in order to be productive during off hours.

### OTHER DISPOSAL METHODS: LIFE AFTER LIFE.

Then there are other disposal options for PC managers anxious to unload old equipment: Either sell them used, or give them away as donations in order to receive a tax write-off.

In addition to sending equipment to a used-computer broker such as Exsel, one very common way to dispose of unwanted computers is to sell them at greatly reduced prices to employees. Because most PCs have been completely depreciated off the company books in five years, even getting a nominal price for them is worth not having to manage an obsolete inventory, say PC managers.

At Deloitte Haskins and Sells, the PC inventory was clogged with old, dedicated IBM Displaywrite machines — holdovers

from the pre-PC days when word processing was done on dedicated systems rather than microcomputers. Johnson, who used to manage the PC support center at Deloitte, in New York, said that although the firm tried selling the machines to employees, few wanted them, and inventory control began to bog down. The firm ended up giving the machines away.

Theoretically, there should be some value left in the technically obsolete but still-functioning PCs. Although some industry observers have predicted for years the emergence of a strong used computer market, most attempts at a national service have failed miserably.

Even IBM's had trouble cracking this market: Recognizing that it could sell more PS/2s if customers could be persuaded to get rid of old PCs, XTs, and ATs, IBM crafted a trade-in program in 1987. Potential PS/2 buyers could receive cash discounts if they brought in still-working older IBM equipment to authorized IBM dealers.

Aside from generating a lot of attention for being the first of its kind, the program failed miserably. *InfoWorld* couldn't find a single dealer who made a trade-in for a large corporate customer, and even IBM eventually admitted the

idea was a bust.

Still, proponents of used computers said IBM simply didn't offer a good enough deal. "The cash IBM was willing to give for trade-ins was much too low," said Exsel's Repko. "For the \$250 rebate IBM was willing to give for a machine, a user could go out on the street and get \$500. It just wasn't worth it," Repko said.

A sample of current prices Exsel is willing to pay for used microcomputers is shown in the chart on Page 46.

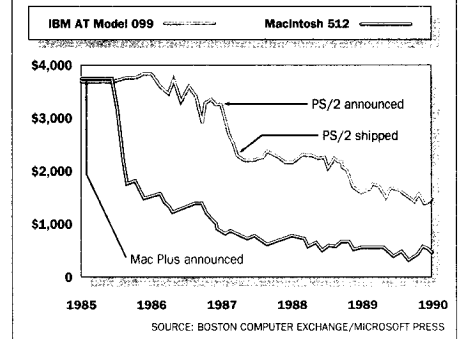
**PRACTICE MAKES THE BEST POLICY.** Eventually, say PC managers, this issue will become much more settled. In the next two years it will become commonplace to have a standard way of disposing of unwanted equipment; and dealers and managers alike agree that the emergence of a strong, commodity-like used computer market is likely to become a reality within that period.

For now, they say, a priority is still setting corporationwide computing standards — particularly those involving a consistent graphical user interface. Once those issues are settled, it will become much more obvious how to create a policy for dealing with an aging PC population. □



Alexander Randall and Cameron Hall have tracked PC values' steep decline when vendors introduce new models.

### Computer Life Cycle Price Deterioration



SOURCE: BOSTON COMPUTER EXCHANGE/MICROSOFT PRESS