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SPECIAL NEWS SUPPLEMENT TO

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STACK

Editors' Note

Coming up with ways to serve you better isn't something we think about only occasionally. It's something we focus on continuously. It's what you deserve, and have every right to expect, from the premier magazine for experienced computer users.

One of the most challenging areas for a monthly magazine to address is bringing you timely, value-added news. Microbytes, What's New, Short Takes, First Impressions, and BYTEweek are all responses to that challenge.

This BYTE Special News Supplement is another such response. It features just one thing: news and analysis that we would not normally be able to include in the regular magazine. The material in this section is written and edited by BYTE staffers, and is provided courtesy of our sister publication BYTEweek.

The subjects cover a wide area, ranging from Quarterdeck's interesting patent of its multitasking technology, to color LCD screens. There is even a report on the rather unusual MacDex portion of the recent Comdex show.

We think this section will provide an interesting backdrop to the information in the regular magazine. Of course, you're the final judge of that, and we'll be glad to hear your opinions.

-The Editors

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Quarterdeck Patents Multitasking Technique

Award for display method could have implications for other environments, including Windows and OS/2

Quarterdeck, the company that brought us the multitasking DESQview environment, has been doing some multitasking of its own. In addition to developing and marketing software, it was also doing some legal work. Last week the company announced that it had been granted a patent for the way DESQview is able to run several DOS applications at the same time. The patent may have important implications for other multitasking environments such as Windows and maybe even OS/2.

Quarterdeck Office Systems (Santa Monica, CA) acquired a new asset last week, courtesy of the US Patent Office. A patent, applied for in 1984 and awarded on April 18, 1989, concerns the way the DESQview environment is able to run multiple DOS programs at the same time. Of course, running multiple programs simultaneously is nothing new in the computer world. What is new—and apparently patentable—is Quarterdeck's approach to handling "ill-behaved" software, programs that

don't follow DOS's rules for putting displays on the screen.

In designing DESQview, Quarterdeck's developers used a simple technique similar to the one mainframes use: They lined the programs up in a circle, then went from program to program, running each one for a short period of time. By switching quickly from program to program, DESQview could make it appear that all the programs were running simultaneously.

That would work fine if all DOS programs used the procedures they were supposed to use for putting information on the screen. But Quarterdeck's designers discovered that Lotus 1-2-3 (and many other programs as well) broke those rules. Instead of using operating system calls to display information, 1-2-3 ignored the operating system and wrote directly to the video buffer. It's easy to understand why Lotus's programmers used this trick: DOS

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Quarterdeck Patents Multitasking Technique Used in DESQview

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display calls could be painfully slow on an original 4.77-MHz IBM PC, and there was no harm done as long as 1-2-3 was the only program running on the PC. But to make DESQview work, Quarterdeck's design team had to come up with a new way to intercept 1-2-3's habit of writing directly to the video buffer.

And they did. In simple terms, the Quarterdeck system waits until an applications program has written something to the video buffer; then, before the display adapter has a chance to put that information up on the screen, the Quarterdeck system quickly grabs what has been written and stores it in a separate buffer in memory. From the buffer for each application, the Quarterdeck system then constructs the set of windows that are supposed to appear onscreen and makes sure that's the information that's fed to the display adapter.

The Quarterdeck system is more complicated than that, of course. The details are outlined in Quarterdeck's patent. In the patent is a whole collection of pointers, offsets, and screen maps, along with a description of Quarterdeck's technique for estimating where the next display write is likely to be. But it all comes down to one thing: finding a way to keep those ill-behaved programs from colliding, and doing it so efficiently that the user doesn't notice a slowdown.

The time it has taken for Quarterdeck to get its patent might have drained away some of its best opportunities for licensing fees. With faster processors (up to 20 MHz for the 286 and 33 MHz for the 386), slow DOS response is much less of a problem than it once was, making it practical for software developers to create "well-behaved" programs.

And many newer PC operating systems, especially those designed to accommodate multitasking, simply don't allow cheating. OS/2 has rigorous guidelines for handling displays, and Unix requires output to be handled through the operating system as well. (And probably the most strongly enforced rules for handling displays belong to the Macintosh, where developers have been told for years that breaking the rules would eventually get them into trouble.)

But there are still plenty of DOS programs that break the rules—and any multitasking system that wants to run those programs has to find some way of solving their display conflicts. If that solution conflicts with Quarterdeck's new patent, someone will owe a licensing fee to Quarterdeck.

Patents Pending

Patent number 4,823,108, awarded to Quarterdeck's Gary Pope, has a mouthful of a title: "An Improved Display System and Memory Architecture and Method for Displaying Images in Windows on a Video Display." Since 1984, said company president Therese Myers, Quarterdeck has also filed "continuations" with the Patent Office. These cover changes and updates to the basic methodology, but they are not automatically included with the initial issue of a patent.

Quarterdeck lawyer Gary Hecker told us that some patents the company has applied for since 1984 are "still pending." However, he assured us that the initial patent award covers use of the process for either text or graphical information in a window, and for systems that are single-tasking as well as multitasking.

What will this mean for the company? "It means we have a new asset," said Myers. "And we'll do what a small, pragmatic company does," study how to best put that asset to work. Myers said she expects the company to center into licensing and cross-licensing arrangements with vendors who are using the patented technology in their products.

Neither Myers nor Hecker, would specify companies that they think might be affected by the patent award. However, Myers confirmed that Quarterdeck is "looking at Unix" products as well as DOS products. And Hecker confirmed that several product categories are being scrutinized very closely at this time, including DOS extenders, Unix-based DOS "boxes," and other windowing systems whether they are multitasking or single-tasking.

Phar Lap, maker of a DOS extender for 386-based systems, worked out an interface with Quarterdeck a year and a half ago, to allow extended DOS programs like Paradox/386 to work with DESQview. This agreement and the fact that his company's product is not multitasking would put it outside the scope of the Quarterdeck patent.

Digital Research isn't sure yet whether it is outside the scope of the patent or not. Spokesperson Eliska Amyx said that DR's lawyers had been in touch with Quarterdeck but probably would not have anything to say about the matter for another two weeks. Digital Research makes GEM, a windowing system for DOS, and Concurrent DOS, a multitasking, multiuser DOS environment.

Companies that make so-called DOS boxes that run on Unix systems and allow one or more DOS programs to operate in screen windows are an interesting grey area here. Locus Computing (maker of Merge/386) did not return our calls by press time, and Insignia, which produces Soft PC, did not want to comment until it had seen the Quarterdeck patent.

Major Player

If vendors of DOS boxes and DOS extenders end up paying royalties to Quarterdeck, that will no doubt provide a tidy sum to the company. But the real payoff would come from Microsoft, which may not take kindly to the idea of paying a licensing fee for Windows/386 or OS/2 1.2 to a tiny Southern California company. Some analysts estimate that Microsoft has sold over two million copies of Windows. The number of Windows/386 environments is quite a bit smaller, however. Nevertheless, large sums of money would be involved.

Perhaps the biggest impact of the patent will be to call attention to the powerful DESQview environment

With stakes that high, Microsoft could try to buy the privately held Quarterdeck. Several years ago, Microsoft bought out a small company that produced an impressive clone of IBM's own multitasking environment, TopView. Or Microsoft could decide to contest the patent and go to court, a drain on energy and resources that Quarterdeck and its 38 employees might not survive.

A Microsoft spokesperson said that the company had not yet seen the patent and had no statement to make about it. The spokesperson also fell back on the favorite industry ploy: My product trumps your product. "Windows does so much more than DESQview. DESQview is just a subset of Windows," the Microsoft spokesperson said.

Subset? Well, not quite. Which points up one of the problems of DESQview: relatively few people know much about it. Without the tremendous marketing muscle

of Microsoft, Quarterdeck has been hard-pressed to make DESQview into a household name.

Perhaps the most important impact of the new patent will be to call attention to the powerful, and often overlooked, DESQview environment. And any attention paid to a worthy product is a good thing.

A second potential impact could be a greater interest in patent protection by software developers. Although we have little need for more software; there is always room for ingenious new software techniques. Unfortunately, as anyone who has seen patents can attest, the relationship between patentability and ingenuity is not a strong one. But if this greater emphasis on patents results in a few more ingenious techniques, then we will all be better served.

Patents and Copyrights: What's the Difference?

Most recent lawsuits involving software, such as Apple's suit against Microsoft and Hewlett-Packard, and Ashton-Tate's against Fox, have focused on copyrights. But last week's Quarterdeck announcement is part of a new wave of software patents—patents that could change the balance of power in the software industry. To see why software patents are important, it's important to understand the difference between patents and copyrights.

A copyright protects a particular expression—a novel, for example, or a piece of software—from being copied. Copyright doesn't protect ideas or concepts—just the particular way those ideas are expressed. To be copyrighted, a work must have what's called "originality," which mostly means that it hasn't been copied from somewhere else. (Though that sounds simple, it's one of the issues in the Apple vs. Microsoft lawsuit. Microsoft has suggested that Apple simply copied the Mac's look and feel from Xerox.) Copyrights are easy to get; in fact, US law a copyright exists as soon as a work is created.

A patent protects an invention; that is, a machine or process that's not obvious and that no one has thought of before (this characteristic is called "novelty"). To be patented, an invention must have substantial novelty, and the inventor must file an application with the US Patent Office. The approval and challenge process is much lengthier and more rigorous than for copyrights (Quarterdeck filed its application five years ago); however, it's also much harder to have a patent voided, and a patent gives its holder much more control than a copyright. A copyright only protects against copying, so someone who never saw the copyrighted work could independently create something similar. But a patent owner controls the technology—period. Even if someone else independently comes up with the same idea, they still must get permission from the patent owner.

Software patents offer more protection than copyrights, since it's not just the program that's protected, but the process by which the program works. But software patents still don't protect generalized concepts—just specific processes. For example, Quarterdeck's patent doesn't protect the idea of using windows in a multitasking environment. What it does protect is a method for dealing with ill-behaved software that circumvents the operating system for its displays, allowing it to work properly in a multitasking environment—a much more specific process.

In fact, the Quarterdeck patent doesn't even cover all the ways of dealing with that problem of ill-behaved displays—just the Quarterdeck way. If other people come up with a radically different technique, one that doesn't overlap with Quarterdeck's process, they don't have to license the Quarterdeck patent. On the other hand, if other companies want to use the Quarterdeck technique for some other purpose, they do have to license the patent. Quarterdeck owns the process, regardless of what it's used for.