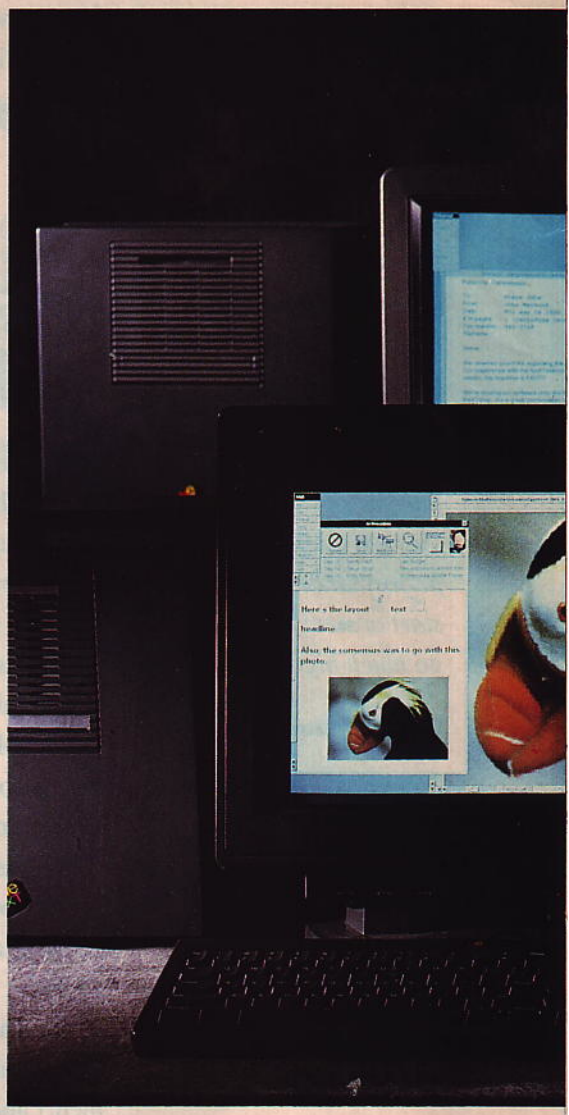
What's New at NeXT?

Aggressive pricing, impressive speed, dazzling color, some great applications — and a floppy-disk drive! Is NeXT ready to jockey for position on the confirmed Mac user's desktop?

By Henry Bortman

Some people got excited about the first Mac. Other people said, "Neat idea, but too expensive, too slow, no color, no applications — and no room in the market for another platform. It will never sell." Experts agree: It *did* have problems. But once those problems had been corrected, there was plenty of room in the market for a desktop computer that did things, well, *better*.

Some people were excited about the first NeXT machine too. And although it had similar problems, in less than a year, NeXT has responded to critics with four new CPUs. They're fast, they cost less than their Mac counterparts (see Figure 1), and two of them are color-capable. Add to this the introduction of some darn good third-party applications (see the "Where's the Spreadsheet?" sidebar), and you have a very viable new platform. Here's what they have to offer.



Hardware Specs

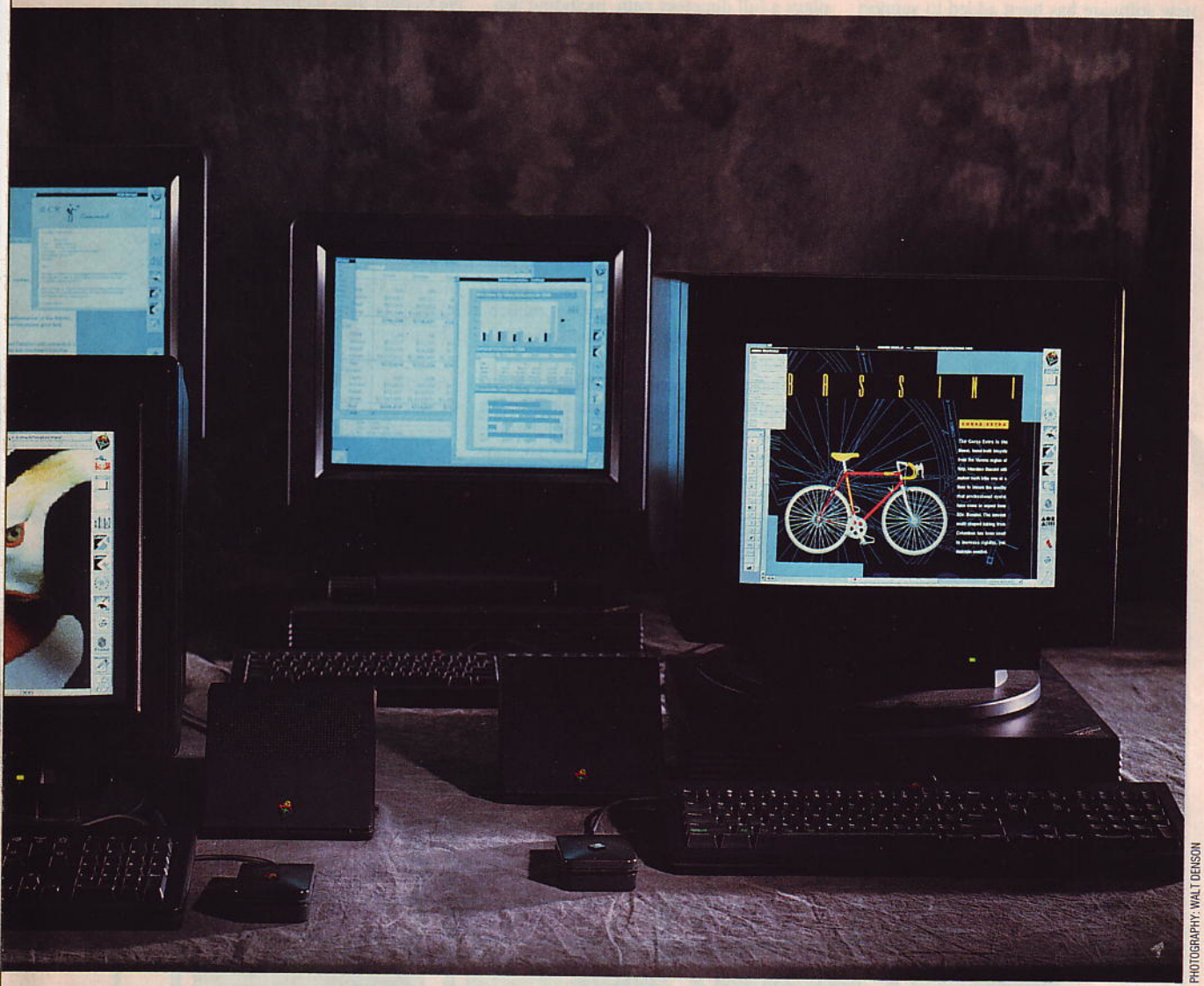
All four machines use Motorola's speedy new 68040 microprocessor, running at 25 megahertz. A hard-disk drive is standard equipment — you can get either 105 or 340 megabytes. The optical drive is now optional. (Hey, Steve, you can't win 'em all.) A 2.88-megabyte floppy-disk drive is also part of the baseline package. It can read UNIX- and DOS-formatted 720K, 1.44-megabyte, and 2.88-megabyte disks but doesn't support Mac floppies (grrr!). The minimum standard RAM configuration is 8 megabytes, expandable to 32 or 64, depending on the model. For networking, all machines come with built-in Ethernet; both thinnet and 10BASE-T connections are provided.

As mentioned, there are now four models. The vintage NeXT machine has been renamed the NeXTcube ($7,995 to $11,495). It comes with the same gray-scale MegaPixel Display as the original machine: 1,120 x 832 pixels on a 17-inch screen, 2 bits per pixel — and all the other hardware listed above. You can get an 68040 upgrade board for the original 68030 machine for $1,300 (an internal floppy is not included).

The really exciting news, however, is the top-of-the-line, 32-bit-color NeXTdimension ($14,115 to $17,615). This box will knock your socks off. It's actually a NeXTcube with an additional NeXTdimension graphics board and a 16-inch Sony Trinitron color monitor (1,120 x 832 pixels, 32 bits per pixel) in place of the gray-scale monitor.

The specs of the NeXTdimension board are just short of incredible: An Intel i860 33-megahertz RISC-based graphics coprocessor. Eight megabytes of RAM (expandable to 32 megabytes) dedicated to the i860, plus another 4 megabytes of VRAM for the display. A JPEG coprocessor for real-time image compression and decompression. And NTSC video input and output, with genlock. You can get a NeXTdimension graphics board for a NeXTcube (or for an original 68030 NeXT) for $7,115.

The NeXTdimension is fast. How fast? Try this on a Mac IIfx: Open two 24-bit-color images in an image-retouching program. Arrange the windows so they're overlapping.



PHOTOGRAPHY: WALT DENSON

NeXT's new lineup, clockwise from bottom left: the NeXTdimension 32-bit-color system, the NeXTcube, the low-cost NeXTstation, and the 16-bit NeXTstation Color

Move the top window. Watch the bottom one redraw. Now try it on a NeXTdimension. No visible redraw. The underlying picture's just there.

Although the price of these cubes is more than reasonable, NeXT has also added two pizza-box models for the budget-minded. The NeXTstation ($4,995 to $6,995) is a stripped-down version of the NeXTcube. It has the same basic hardware and monitor, but it's not expandable. The NeXTstation Color ($7,995 to $10,995) is a 16-bit-color system. It includes the 16-inch Sony Trinitron but has only (!) 12 megabytes of RAM and no i860 graphics coprocessor, JPEG hardware, or NTSC video in/out. There's no upgrade path from the NeXTstation to the NeXTstation Color and no announced trade-in policy.

The Next Step for NeXTstep

That's how the silicon lines up. What about the software? Software Release 2.0 includes the Mach version of UNIX, NeXTstep 2.0, and several bundled applications (an extended version provides a complete set of development tools as well). Release 2.0 offers several significant improvements over version 1.0A.

The Workspace Manager (NeXT's

equivalent of the Finder) and NeXTmail have had face-lifts. In addition, fax-modem send-and-receive capability is now an integral part of the system, and powerful new software has been added to support the color machines.

The Workspace Manager. Those of you who have had occasion to use the original NeXT machine probably appreciated the hierarchical view of the file directory that the Browser provided and cursed the process that made you open two copies of the Browser and drag an icon from one to the other in order to copy a file. This feature has been decommissioned in NeXTstep 2.0. The Browser is now one of three views of the file directory that can be displayed in the bottom of the new File Viewer (see Figure 2) — the other two are the Icon and Listing views.

The top part of the File Viewer contains two elements. One is an expandable "shelf," a temporary holding place for your working files and folders. You can park them temporarily on the shelf so they're readily accessible for copying, moving, or launching. This lets you handle all your files from a single window. Below the shelf is an "icon history," which displays a full directory path, including network connections, to the currently selected file or folder.

NeXTmail. The built-in E-mail system was one of the distinguishing features of the original NeXT machine. It let you attach a file to a mail message by dragging its icon into the message window. When the message arrived at its destination, the recipient could view the attached file by clicking on the message icon, which would launch the required application and open the file. Very civilized. And the original NeXTmail also had Lip Service, which allowed you to attach recorded sounds to mail messages.

Release 2.0 goes even further. Mail recipients can now drag file icons directly out of mail messages and save them locally as files. EPS and TIFF files get special treatment: If you drag a file of either of these image types into a mail message, the full image is displayed. Drag the image out on the receiving side, and it obediently reverts to being a file. The new NeXTmail also includes a provision for sending mail to non-NeXT systems.

Fax Modem. The ability to send and receive fax images is built in to Release 2.0. Sending faxes is now a print option (see Figure 3). You enable fax reception by attaching a fax modem to a NeXT machine and setting up a special folder to receive incoming faxes. If several users are on a network, this folder can be made accessible to everyone. However, users must peruse the folder for their own files, much as they would leaf through the incoming-fax basket that sits next to the office fax machine.

The Colors Panel. I made a passing reference to 32-bit color on the NeXTdimension. What I didn't tell you is that this is true 32-bit — not 24-bit — color. NeXT doesn't let those other 8 bits lie around with nothing to do. It uses them as

Figure 1: The Price of Power

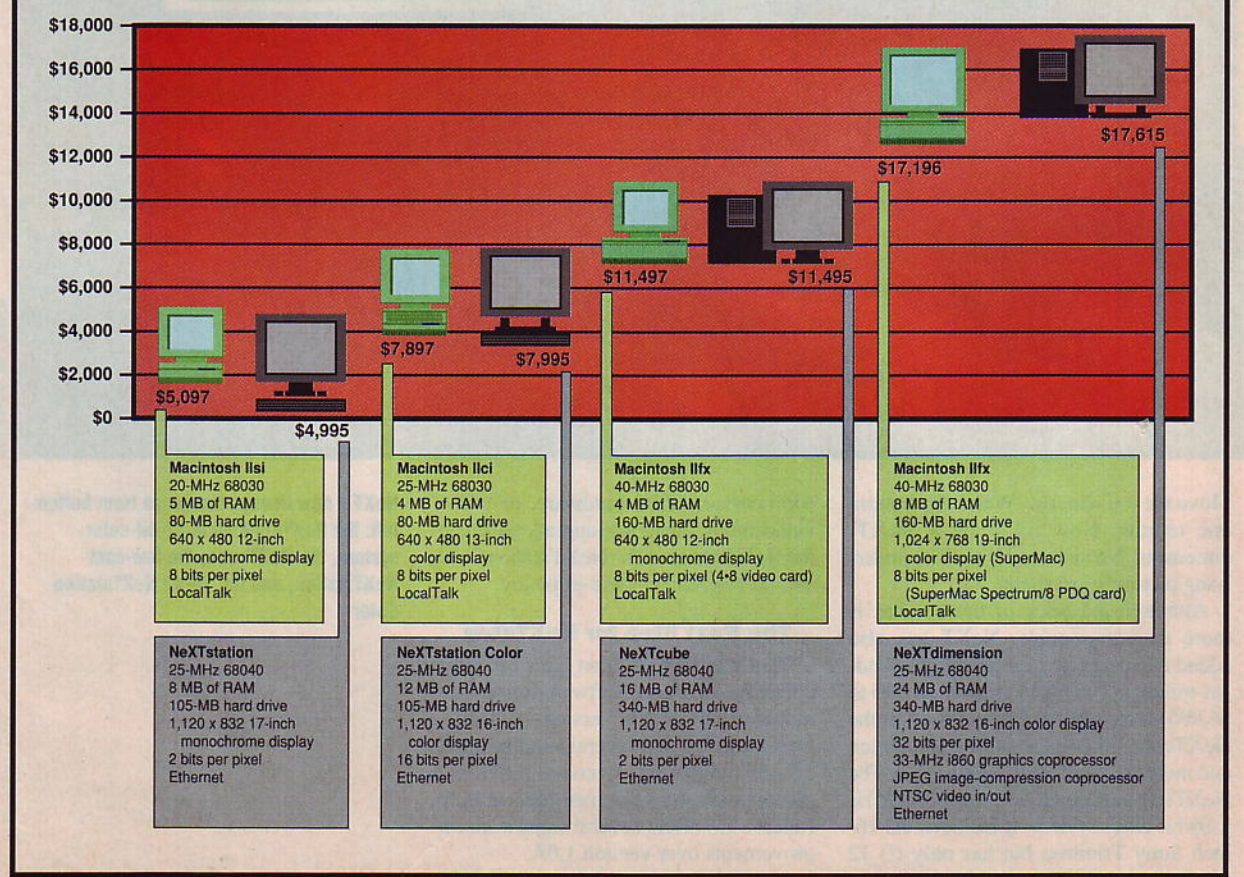


Figure 1: Compared with similarly priced Mac configurations, NeXT systems deliver far more bang for the buck.

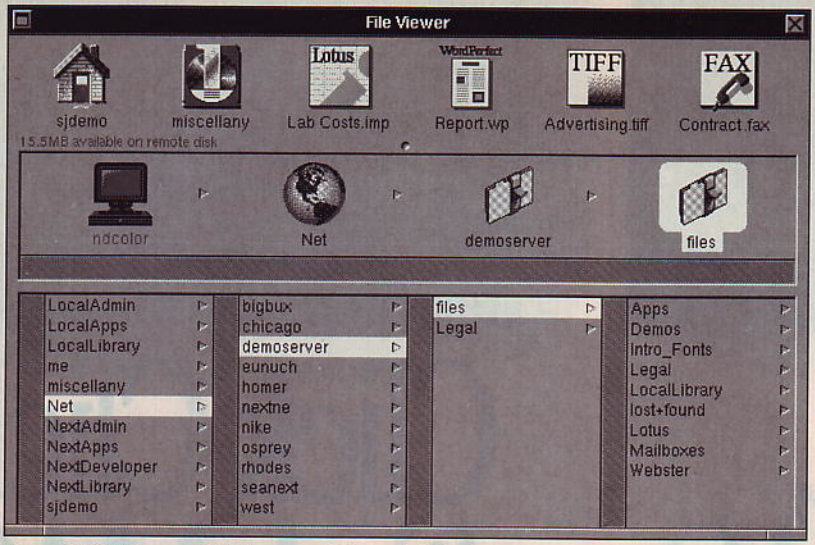


Figure 2: NeXT's new File Viewer contains a shelf (top) where you can store files and folders you are working with for easy one-window file management. Just below the shelf, the icon history displays a complete directory path to the currently selected file or folder. On the bottom is the familiar NeXT Browser.

The NeXT's alpha channel lets you assign transparency values to color images for easy image compositing.

an *alpha channel,* which lets you assign transparency values as well as color values to images. This is, in effect, an extension of Display PostScript; one of the PostScript model's greatest shortcomings is its inability to handle transparent images. NeXTstep's Colors panel — similar to the Mac's Color Picker but more advanced — is where color and transparency values are assigned.

Support for creating composite images is also built in to the system (see Figure 4). You can overlay multiple images to create a single composite image, but each component image remains a separate, floating

object that can be moved ad infinitum without permanently changing the final image. Transparency lets you see through one image — a window in a car, for example — to another image — such as a tree by the side of the road — behind it. Macs can't do this — at least not without a bunch of extra fancy programming.

Icon, a demonstration application that comes with Release 2.0, includes Composite Lab, a feature-laden image-processing program. This is only a start, however. Expect to see some phenomenal image-processing, video, and multimedia applications appear on NeXT machines in the coming year — applications that may well run circles around competing offerings for the Mac.

What's Missing?

There are a few things missing, of course. The primary one, in my opinion, is connectivity to other systems. Some 3270-connection products have been announced. Insignia is developing SoftPC for NeXT, which will give NeXT users the ability to run DOS applications directly. But this field needs a lot of filling out.

I expect NeXT machines to find themselves in many of the same places Macs are found now and that they'll be able to share files. Yet NeXT computers can't currently access data on AppleShare servers easily, nor can they print to any of the LaserWriters on the AppleTalk networks to which they are connected. NeXT needs to license the AppleTalk protocol stack from Apple and implement it as part of system software. (And I think it'd let even *you* do that, Steve.)

Similarly, Novell has announced that it will provide NetWare client software for NeXT machines, but it hasn't said when. Sooner would be better than later.

Full integration with other mail systems, including the ability to exchange attached files and sound recordings with the systems that support those features, will also help speed NeXT systems' acceptance.

Database access is another area in which NeXT systems need work. Sybase and

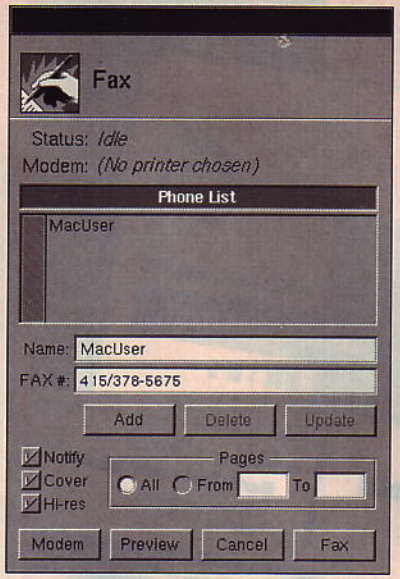


Figure 3: The ability to send (and receive) PostScript-quality faxes is built into Release 2.0 as part of the standard Print dialog box.

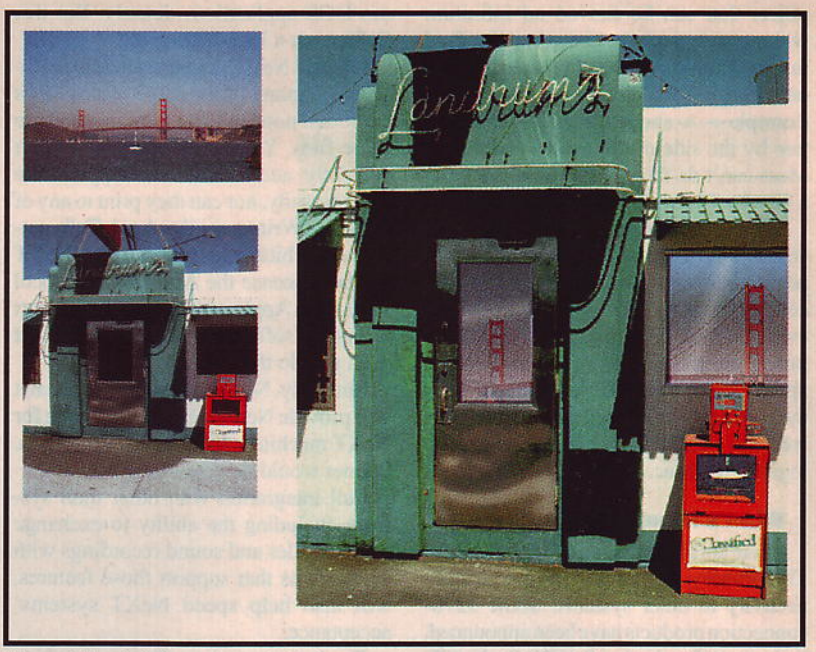


Figure 4: For defining colors, the NeXTstep software uses 24 bits of the 32 available for RGB values and the other 8 for an *alpha* channel, allowing users to specify transparency as part of a color definition. To create the composite image on the right, portions of the bottom left image were made partially transparent and the image was floated in front of the image of the Golden Gate bridge. The two images remain separately manipulable in the composite.

Oracle have announced plans to implement their relational-database systems on NeXT computers. More important, though, is that the Data Base Kit for developers — Steve Jobs alluded to it in the rollout of the new machines, but it hasn't been officially announced — be completed as soon as possible. This would make it as easy for a NeXT application to access data from any relational database on a network as it now is to print.

Another missing thing is HyperCard. Not HyperCard, the Claris application, but HyperCard, the functionality. NeXTstep, being object-oriented, is promoted as the easiest application-development environment yet conceived by humanity. When Steve shows off a NeXT machine, he runs through a little exercise in which he drags some buttons and fields onto a window, connects them to objects that do things such as get some data and make a graph, and — voilà! — he's created a usable application. But try to do that as J. Q. User — I have, and it ain't all that easy. The power of the NeXT user interface hasn't been brought to the user.

I can write a computer program if I have to. But I hate programming. And I've never managed to fathom the depths of *Inside Macintosh*. Often, however, I can create something with HyperCard that works the way I want it to. NeXT doesn't have anything similar, which is a shame. It has a real opportunity here. It could — and should — create a way to build a program that's *so* easy that users can create custom applications without even realizing they're programming. A graphical, interactive development environment for the complete idiot.

So, Will They Sell?

Gee, I left my crystal ball at home. But I hope so. The innovations in the NeXT machines' user interface, their seamless integration of applications, and their object-oriented development environment are technological advances that earned even the first NeXT machine a place in computing history. Granted, the sluggishness of what should really be termed the "beta box" made it more a proof of concept than a functional computer. Its lack of applications consigned it to the realm of curiosity. NeXT is now giving Apple some serious competition in the mid to high end of desktop functionality. The performance of the new machines, together with the growing list of available software, makes these second-generation NeXT systems serious contenders for a place on the corporate desktop.

I want one.

Where's the Spreadsheet?

Common wisdom has it that no computer can succeed in the desktop market without a spreadsheet program. NeXT offers a choice of several, including Ashton-Tate's PowerStep and WingZ from Informix. But Lotus Improv is the real killer (see "Twin Peeks," December '90, page 27). If you thought 1-2-3 was all Lotus was capable of, the company has a surprise for you. Improv redefines the spreadsheet. Say goodbye to *D4 = B4 – C4* and hello to *Profit = Revenues – Expenses*. Moreover, if your spreadsheet has categories within categories, you can rearrange the view of your data dynamically by dragging category names from one part of the spreadsheet to another (see Figure A).

There are also bread-and-butter applications in several other categories. WordPerfect will soon join WriteNow with a NeXT version (but no word on Word). For desktop publishing, QuarkXPress will migrate to NeXT systems (FrameMaker is already available). Adobe will bring out a NeXT version of Illustrator 3.0. And Altsys, creator of Aldus FreeHand, is developing a very FreeHand-like but as-yet-unnamed drawing program.

NeXT has also spawned some innovative software that's not available on other computers. For example, TouchType from RightBrain Software is a typesetting program that lets you adjust the spacing of individual characters or groups of characters simply by dragging them closer together, farther apart, up, or down. As a side benefit, kerning-pair changes can be saved automatically into the NeXT machine's global font tables.

Then there's optical-character-recognition software from HSD. That's not innovative, you protest. Ah, but it is. Because this OCR is designed to be a "service" on the NeXT system, meaning that it can be accessed from *any* NeXT application. So when you receive that fax over a network and need to turn it into editable text, OCR is just a menu-click away.

There will be other applications, particularly in the graphics-processing and multimedia fields. NeXT provides developers with a tremendous amount to work with. You can expect them to take advantage of it.

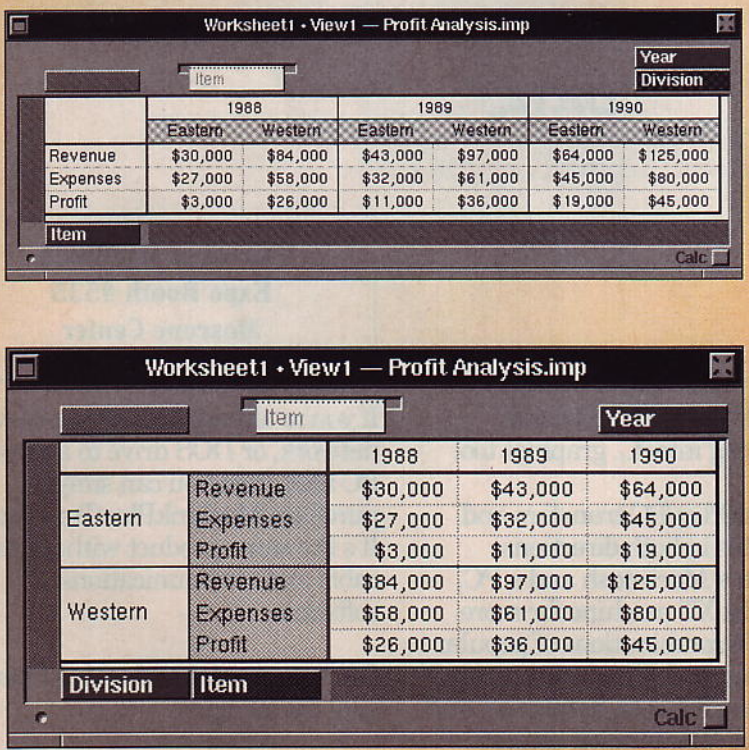


Figure A: With Lotus Improv's "flexible views," modifying your view of your spreadsheet data is as easy as dragging an icon. Here, the Division category icon has been moved from the top right of the screen to the bottom left, rearranging the spreadsheet to reflect new relationships.