PC TAP

Consumer Report

Microsoft Windows 3.0
Part I: First Impressions

Open Forum:
ChemDraft II
Chemical Structures Software

Report #8
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From the Editor's Desk

The release of Microsoft Windows 3.0 has had a profound impact on the microcomputing community, and EPA is no exception. From every geographic direction and all organizational levels have come questions about what, if any, position the Agency has taken—or intends to take—with respect to the new Windows. To address this issue, the National Data Processing Division has initiated a comprehensive Windows evaluation project. The Information Centers Branch, primarily through PC TAP, is participating in the effort, along with the Architectural Management and Planning Branch and the Telecommunications Branch's LAN Systems group. We're confident that together we can assess Windows 3.0's potential for the Agency.

PC TAP has conducted some initial investigations into the workings of Windows 3.0, and in this *Consumer Report* we present our first impressions of the product. Our immediate objective was to determine whether it is a viable platform for the Agency's basic AT-class machines, and to determine whether we should recommend replacing MS Windows/286 and MS Windows/386 with MS Windows 3.0 on the Interim PC Contract. We also began exploring the performance improvements and other enhancements that are available to users running Windows 3.0 on more powerful PCs: 286's with more memory, and those with 386 processors.

Within the next few months, we will publish a second *PC TAP Consumer Report* dealing with MS Windows 3.0. In it we will present results of more detailed testing on a greater variety of machines. By then, with input from a greater number of evaluators, we will have compiled a more complete profile of the product's features and capabilities. At that time we also expect to be able to deal more comprehensively with the issue of Windows 3.0 in the LAN environment. Meanwhile, we hope this preliminary assessment will be of help to you.

On another note, several users have asked recently whether PC TAP has evaluated any software products that handle chemical structures in publications. In *Open Forum*, beginning on page 15, there is a report on such a product. We're grateful to Dr. Leonard Keifer, of the Health and Environmental Revision Division in Washington, for sharing his experiences using ChemDraft II with our readers.

In *This & That* on page 16 there's a description of a newly-established extension of PC TAP: the External Resource Network (ERN). We're confident that the fifteen ERN representatives around the country will be a great asset in future PC TAP assessment projects. Their first opportunity will come soon, when they receive the evaluation copies of Windows 3.0 that Microsoft Corporation has agreed to provide for their use. The ERN comprises the people listed on pages 16-18. Please contact your representative to find out more about how you can take part in future evaluations.

David A. Taylor
PC TAP Coordinator

Microsoft Windows 3.0: First Impressions

Introduction

Here in our office at PC TAP we have an ominous stack of printed material. To read through it all would be a significant task, to put it mildly. It all deals with Microsoft Windows 3.0. Much has been written about this product in newspapers and trade publications, and we don't want to repeat it all here. Those of you who've been keeping up with the Windows information avalanche don't want to wade through it again, and those of you who haven't probably can do very nicely without the overload.

Our purpose in this *Consumer Report* is twofold. First, as the title reflects, we're going to tell you about the *first impressions* of a group of people who have been experimenting with the product. We hope this will give you a flavor for Windows 3.0, and that it will help you decide whether you want to explore further and perhaps get yourself a copy. We've pretty much restricted the scope of this report to describing how Windows runs on an AT-class machine like the thousands that are currently in use around EPA. There is some discussion about Windows 3.0 on more powerful machines; but we felt that it was important to verify the product's viability on the Agency's prevailing PC platform before investigating its advanced capabilities.

Our second objective, in keeping with PC TAP's responsibility to test upgrades to items on PC procurement contracts, was to decide whether to recommend replacing Windows/286 and Windows/386 with Windows 3.0 on the Interim PC Contract. We have made such a recommendation, and by the time you read this, we hope you will be able to acquire Windows 3.0 off the Atlantic Coastal Industries contract.

Evaluation Method

The hallmark of PC TAP evaluation studies is end-user participation. As we've already mentioned, however, we wanted to publish this initial report on Windows 3.0 as soon as possible. Because of the initial high demand for Windows (Microsoft says they're shipping around 200,000 copies a week!) there has been some difficulty acquiring evaluation copies. As a result, we haven't had the usual amount of user input to this report. Major sources have been the first-hand experiences of PC TAP staff, along with those of other NDPD staff and contractors, and users in the field who acquired their own copies of Windows and who chose to share their experiences with us. Nevertheless, we think our data is valid and we have made a conscious effort to compile an objective assessment.

In our next report on Windows 3.0, we will include much more data from end-users. Microsoft Corporation has provided copies of Windows 3.0 to all the members of our recently-established *PC TAP External Resource Network (ERN)* (more information about the ERN appears in *This & That*, on page 16). With input from the people who receive that software, along with our own experiences with continued use and testing, we are confident the followup report will provide the in-depth data many of you will be looking for.

The material we received for this report from external sources consisted mainly of free-form comments. No structured evaluation questionnaires were available, and no direction was given to those providing input about style or format. This has led us to even less structure than has usually characterized *Consumer Reports*. Although we have timed some operations and monitored others in an effort to accumulate some quantifiable data for benchmarking, the information contained herein is predominantly descriptive. What follows is essentially a diary of our experiences, and those of others who contributed to this evaluation, with Windows 3.0.

Installing Windows

We installed Windows on a basic Epson Equity III+ with 640K of random access memory and a 40-megabyte hard disk. The hard disk has two partitions: a 30-meg C Drive and a 10-meg D Drive. The installation process was easy, and the entire operation was completed quickly and without a hitch. The install program immediately puts you into Windows' graphical user interface (GUI, for all you acronym lovers), so you experience the product's operating environment from the outset.

Speaking of GUIs, Windows is a whole new world for those who haven't experienced the graphical approach before. Macintosh users have been using it for ages; some PC users have encountered it in earlier versions of Windows. But if Windows 3.0 is accepted to the extent many experts are predicting, the days of typing DOS commands may well be over. Click-and-drag is where it's at in the microcomputers of the 90's! For the die-hards among us, it *is* possible to operate in the Windows environment sans mouse—that is, using the keyboard only. But for convenience and ease-of-use, you will probably want to use a mouse; after all, that's what the system was designed for.

During installation, Windows runs its Setup program, which asks you for details about the computer you're installing Windows on. It also allows you to specify printer, monitor, and mouse types, along with other particulars about your system configuration; and prompts you for the applications you want to run under Windows. It will even scan your hard disk for executable programs, list all their names, and allow you to select those you wish to install in the Windows environment. A nice feature of the setup program is that you can re-execute it at any time to update your configuration, install new peripherals, or add more applications. So if you forget something or make a mistake during initial installation, you don't have to re-install the whole package, as is necessary with some products. You just run Setup again and fix things.

Running Windows

Windows runs in one of three modes, depending on the microprocessor in the PC and the amount of available memory. Here is a brief description of each mode:

- *Real Mode* is the only mode available for computers with 640K of memory (like our basic Epsons and ATs). It allows switching among "non-Windows applications" and provides maximum compatibility with applications written for earlier releases of Windows (applications written for earlier versions of Windows must be upgraded to run as true "Windows applications" under release 3.0). There's more about "Windows applications" and "non-Windows applications" later in this report.

- *Standard Mode* is the normal operating mode for Windows. It provides access to extended memory and lets you switch among non-Windows applications. Access to extended memory allows you to run more applications than you can in Real Mode, and it speeds up operations.

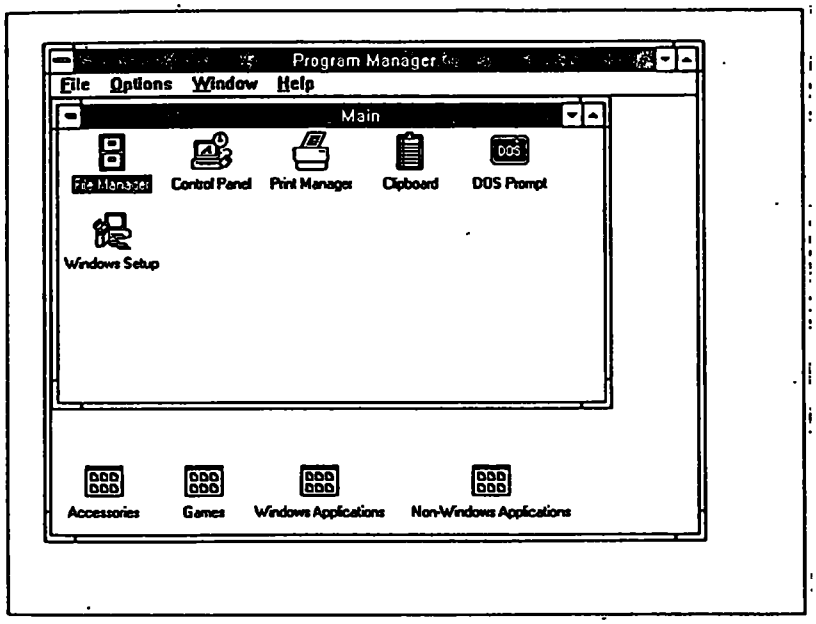
- *386 Enhanced Mode* takes advantage of the capabilities of the 386 processor, and allows true multi-tasking of both Windows and non-windows applications.

Don't be concerned if you don't understand the differences between the modes. Although you have the capability to explicitly start Windows up in a specific mode, unless you do so it automatically uses the mode appropriate to the capabilities of the machine on which it's running and the parameters specified when Windows was installed. It's one of those famous *transparent-to-the-user* features.

The Windows Desktop

Regardless of the mode in which you are running, the basics are the same. Initially, the desktop (your computer screen) contains only one window: the *Program Manager*, which allows you to start up applications and manage program execution. Program Manager is home base, and when you start up Windows the Program Manager window is where you find yourself.

Within the Program Manager window is one smaller active window in which the *Main* application group is displayed. The Main group contains the Windows system applications: File Manager, Control Panel, Print Manager, Clipboard, DOS Prompt, and Windows Setup. File Manager provides the usual file maintenance capabilities, like diskette initialization; file creation, naming, renaming, copying, deleting; tree display/search, etc. Print Manager lets you view and modify print queues. Using the Clipboard, you can cut-and-paste between applications. From the DOS Prompt, you can enter and execute DOS commands without leaving the Windows environment. Finally, the Control Panel provides some flexibility in tailoring your Windows environment: you can select display colors, configure communications ports, set mouse speed, and control a number of other system characteristics. An unmodified Windows opening screen, with the Program Manager and Main windows displayed, is shown below.



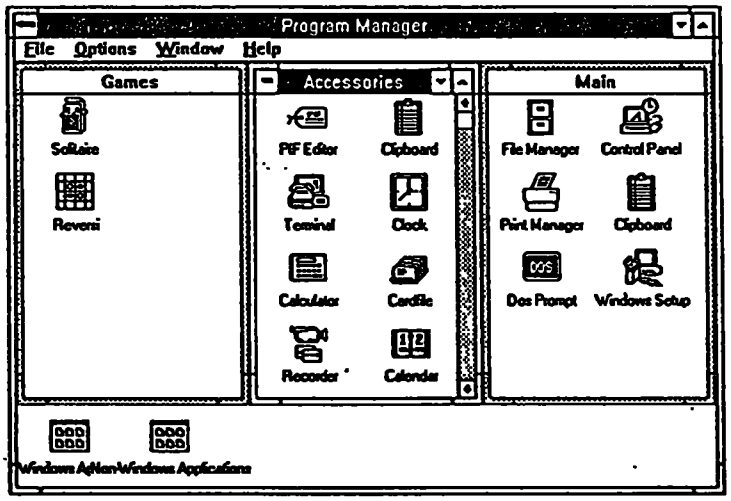
Beneath the Program Manager window on the desktop are icons representing the other available program groups: Accessories, Games, Windows Applications, and non-Windows Applications. When you activate one of these groups by clicking on its icon, another window containing icons representing the programs in that group is opened up within the Program Window. You can then start up programs within the newly activated group by double-clicking on icons within that group's window.

Unless you have a previous release of Windows on your computer, you probably won't have any Windows applications to begin with (remember, a *Windows* application is one that has been written or modified specially for the Windows 3.0 environment; anything else is a *non-Windows* application). Your non-Windows group will contain the applications you identified during installation as those you wanted to be able to run from within Windows. The group probably will include Lotus 1-2-3, dBASE, WordPerfect, and maybe Freelance, Crosstalk, or other applications you use regularly.

The Games and Accessories program groups are included with Windows. According to the user's guide, the games are there for you to practice and hone the skills you need to operate with the graphical user interface, like clicking and dragging. Hmmm . . . (If disk space and memory are tight on your system, you might want to consider deleting the games files). The Accessories group contains useful tools like a rudimentary word processor, a paint program, a clock, a calculator, and a number of others. Rather than describing them all here, we'll let you enjoy exploring among them yourself.

Customizing Your Desktop

Windows allows you to resize windows and move them around on your desktop. As we mentioned earlier, you can also select your own display colors and backgrounds. This flexibility permits you to tailor your own desktop to suite your own personal tastes and requirements. When you exit Windows, you're asked whether you want to "save changes." If you respond with a "yes," then the next time you start Windows up (and forever after, until you change it), you will find your desktop just as you left it. The windows you had open will be there for you, sized and positioned the way you left them. And all the items on the desktop will be presented in the colors you selected. It enables you to add a nice personal touch to your computer working environment. The picture below shows the Games, Accessories, and Main program groups in open windows within the Program Window, with the Windows and non-Windows groups represented as icons at the bottom of the screen.



Optimizing Windows

This very brief overview has described the basic look and feel of Windows. As we mentioned earlier, to *really* appreciate the product, you have to use it yourself. To help you make sure you're using it to its fullest advantage, you can optimize the package for your own system. There's a whole chapter in the *Microsoft Windows User's Guide* dealing with ways to ensure you have configured Windows for maximum efficiency on your particular computer.

Windows in the Media

In the introduction to this review, we referred to the mountain of material that has been written about Windows. Before we begin describing our own personal impressions, we'd like to present a few excerpts from media reports.

Windows 3.0 was developed over a period of about two years, during which a number of vendors were involved in beta testing the product. That's why, despite the fact that there aren't Windows 3.0 versions of *all* the products that ran under previous versions, a significant number of 3.0-compatible applications were available the minute Windows 3.0 hit the marketplace. The point here is that Microsoft has delivered a very thoroughly tested product in 3.0, so few notable problems have been reported. On the contrary, most of the media reviews have been full of glowing praise for the product. Here are some examples:

> So it's finally here, later than Microsoft had originally planned, and the question of the year is: Was it worth the wait? For many people . . . the answer will be a definite, unhesitating "Yes." . . . the vendor and user response to Windows 3.0 to date has been phenomenal. The product promises to be everything Windows was supposed to be at its inception and much more.—*Michael J. Miller, InfoWorld, May 28, 1990.*
>
> Windows 3.0 is arguably the most widely heralded software program the PC industry has ever produced. For good reason: Microsoft's graphical environment promises to solve PC users' single most vexing problem—memory constraint—while offering a consistent iconic interface that approaches the Apple Macintosh's in ease of use.—*Rob Garretson, PC Week, June 4.*
>
> If users alone called the shots in the PC five-year plan, the decision between Windows and OS/2 would be a foregone conclusion: Windows wins. . . . The raging debate over Windows and OS/2 is far from over. In the meantime, I suggest users go ahead and enjoy the benefits of the next-generation Microsoft Windows.—*Jack Stone, Federal Computer Week, June 4, 1990.*
>
> Users of DOS PCs rejoice! Windows 3.0 will breathe new life into your machine. . . . and its great news for the silent majority: 286 owners who've lately been made to feel that they have bought an Edsel.—*Jon Udell, BYTE, June, 1990.*
>
> The new version of Microsoft Windows is finally here. And with its greater speed, memory, and controls, plus its enhanced print manager and improved screen font handling, desktop publishers are going to find that Windows 3.0 was well worth waiting for.—*Rick Altman, Publish, July 1990.*

Few problems of significance have been found with Windows. There was a report in several trade publications that hard disks have been corrupted on machines running Windows 3.0 and Ontrack's Disk Manager, or with Windows' own SMARTDrive disk-caching program activated. As described in the media, it sounded like EPA's Epson Equity III+ machines would be vulnerable.

PC TAP contacted Microsoft and Ontrack Computer Systems for more information. During a thorough investigation, Ontrack was unable to replicate the alleged problem. They did acknowledge that a modification is required in the SYSTEM.INI file when running Ontrack's DMDRVR.BIN with Windows 3.0 on a 386 machine. However, there is not now, and never has been, a problem with the Ontrack driver on 286 machines. Microsoft also recommends a SYSTEM.INI modification and disabling of SMARTDrive when running with Disk Manager. This situation should be remedied in an upcoming Windows update.

User Assessment of Windows

So far we've discussed the general characteristics and capabilities of Windows, and we've related what other people have said about it. Now we'd like to talk about our own experiences, along with the views of others in the Agency who have given us feedback about their testing.

Setup and Customization

We said earlier that installation wasn't a problem on our 640K Epson Equity III+. Although we don't recommend it as a standard practice, we went through the installation without reading the user's guide first. We didn't have any trouble at all. But since we weren't totally confident about what we *thought* we should be doing all the time, we didn't install all the applications we would want if Windows were going to be our standard operating environment. As non-Windows applications to be available under Windows, we included only WordPerfect 5.1 and RightWriter, a grammar checker we're looking at in another PC TAP evaluation project. Printer installation and other hardware setup was a piece of cake. We should point out here, however, that we've heard reports of more painful installation experiences on computer configurations different from ours. Configuration of extended memory has been mentioned as troublesome.

Once we got Windows running, we quickly became fascinated with customizing our desktop. It's fun experimenting with the color palette in the Control Panel program to select colors for the various components of the desktop, and it's surprising how much time you can spend with this seemingly trivial task. We quickly found out that what you think will be a pleasing color combination doesn't always turn out to be attractive.

The next step in the customizing process was to decide how we wanted "home base" to look; that is, the layout of the Program Manager screen that's presented when you start Windows, and to which you always return when you exit other applications. We settled on two windows within the large Program Manager window: one for the *Main* set of programs that comes with Windows, and another for our own *non-Windows* group. We set them up as two windows of the same size, side-by-side within the Program Manager window. Beneath them, at the bottom of the screen, are the icons for the Accessories and Games groups (no we haven't deleted the games yet). When Windows is started on our machine, this arrangement provides convenient access to all the programs we normally would want to use, and any one of them can be launched simply by double-clicking on the appropriate icon. This desktop layout was preserved by checking the "save changes" box when we exited the Windows session during which it was created.

After we began feeling at home within Windows, we decided to test the user's guide's assurances that adding applications after installation was a simple process. To complete our set of non-Windows applications, we ran Setup from Program Manager and followed the same procedure we went through during installation. Only this time, we knew what we were doing. We accepted Windows' offer to search the hard drive for executables, and selected Lotus 1-2-3, dBase III, and Freelance as applications we wanted to add. So now our non-Windows Applications window contains icons representing the programs we've been running from the Automaxx menu for years.

While setting up the desktop, we experimented quite a bit with sizing and re-sizing windows, and positioning windows and icons. We found that we got the hang of it fairly quickly. Chapter two of the user's guide is devoted to "basic skills," and as new Windows users we found it to be a valuable source of information. Furthermore, the entire user's guide is excellent. It's well organized, written in easy-to-understand language (not jargon-laden), and achieves a good balance between providing useful information while avoiding overly complex discussions of technical details that new users aren't likely to understand.

Running non-Windows Packages

It's important to keep in mind that most of our test data relates to running Windows in what is, from a performance standpoint, the worst-case situation: a 640K Epson. Our rationale was that, if it's acceptable in that configuration, it should be fine on the other more powerful machines on which Windows is likely to be used around EPA. So as you consider the descriptions of our experiences, remember that it can only get better if you add more memory to your AT-class machine; and if you have a 386, you'll really get the full benefits of Windows' multi-tasking capabilities.

We had no trouble at all executing the standard EPA supported software from Windows. Furthermore, none of the feedback we've had from other Windows 3.0 users included any reports of problems with the software that's included in the standard EPA Automaxx menu package. Remember, none of our agency standards are written for Windows (although Windows 3.0 versions of some—notably WordPerfect—are said to be in the works).

When you run non-Windows packages from Windows, they run "full screen." This means that after you double-click on the application icon your Windows desktop disappears, and your entire computer screen is occupied by the application you're running. It's just like running it outside the Windows environment in that respect. When you exit the application, you return to the Windows Program Manager. However, there's another way to return to Program Manager without exiting the application. You use the ALT-ESC "hot key" combination to *switch* out of the application. When you do this, the application stays active (although all processing is suspended), and you return to the Program Manager. To return to the application, you just double-click on its icon again; but you don't start over from scratch in the application, you return to where you were when you switched out. We'll talk more about context switching in a few minutes.

To give you an idea of times involved in executing non-Windows applications, we timed the launching of Lotus, dBASE III Plus, and WordPerfect 5.1, and we also checked times to switch between Program Manager and those three active DOS-based applications. So we would have a base for comparison, we also checked the times for starting these same programs from the Automaxx menu. Here are the results:

Application Launched	From Windows Program Mgr.	From Automaxx
WordPerfect 5.1	10 Seconds	5 Seconds
dBASE III Plus	9 Seconds	4 Seconds
Lotus 1-2-3	8 Seconds	2 Seconds

Switching from an active application program, or exiting from the application and returning to the Program Manager takes an average of 10 seconds, while exiting from these applications back to Automaxx takes an average of 2-3 seconds. For those of you who are familiar with running from the WordPerfect Office platform, application launch times from Office are about the same as those from Windows, while exit times from applications back to Office are more in line with Automaxx's.

Clearly, for getting into and out of programs (at least on a 640K Epson or AT), Windows is slower than Automaxx. So what does Windows buy you with the speed penalty you pay? Cut-and-paste, for one thing. Although in comparison with Windows on a 386 machine this capability is fairly primitive, you can cut and paste unformatted text between non-Windows applications. From within the source application, the print

screen function writes your screen contents to the Windows Clipboard. You then go to the destination application and place your cursor at the point where you want to insert the contents of the Clipboard. Finally, you "switch out" of the destination application to the Program Manager window, where you select "Paste" from the *Control* menu for the destination application. At that point you are switched back to the destination application, and the contents of the Clipboard is then written into that application at the cursor location.

Context Switching

The second benefit Windows delivers is the capability to context-switch among multiple non-Widows applications in real mode. To explain how this works, we're going to describe what we were able to do on our 640K Epson.

Picture the Windows desktop on your terminal screen, with two small windows within the larger Program Manager window—the way we described it on page 9. One small window contains Windows' *Main* program group; the other holds the *non-Windows* group (Lotus 1-2-3, dBASE III Plus, WordPerfect 5.1, Freelance Plus, and Crosstalk). You double-click on the "About Program Manager" selection from the Program Manager Help menu, and you're informed that you have 378K of memory available.

Now, one-by-one, you activate your four primary applications—Lotus, dBASE, WordPerfect, and Freelance—switching back to Program Manager from each (in order to start up another application), but not exiting from the application. Your desktop now contains the Program Manager window with your two application group windows, just like it was when you started; but now you also have four icons at the bottom of your screen, one for each of the active applications. You check "About Program Manager" again to see how much memory you have left, and find that 296K is still available. So you have four application programs active (although none of them are actually running at this point), and you still have 296K available in memory for data files. To preserve memory, Windows has retained a small piece of each application in memory, and swapped the rest of the code to your hard disk, from which it can be reloaded as needed.

In the situation just described, you can use another "hot key" combination, the ALT-TAB, to switch between Program Manager and any of the applications, or among the applications without passing through Program Manager. Say you're in the middle of a WordPerfect document and you want to check a Lotus spreadsheet value. You hold down the ALT key while pressing and releasing the TAB key. A bar appears at the top of your computer screen as you leave WordPerfect, and within that bar the name of another active non-Windows applications appears. While continuing to hold down the ALT key, you press TAB again and another application name appears. As long as you hold ALT down, you can use the TAB key to toggle through the names of all your active non-Windows applications, along with the name of Program Manager. When you release the ALT key, you will be switched to the application whose name is in bar at that time. In the current example, you will release ALT when "Lotus 1-2-3" appears in the bar, and you will be switched to Lotus. You check the spreadsheet figures, and are ready to return to WordPerfect. Press ALT-TAB again, start toggling through the application names, and release ALT when WordPerfect is in the bar. In about ten seconds you find yourself back in WordPerfect with the cursor at the same point in the text where it was when you "switched out" to Lotus.

We think this capability alone is worth the extra ten to fifteen seconds it's going to cost you to get start up and exit from an application; especially when, with this scenario, you'll only have to start a given application once a day. And remember, it can only get faster as you add memory or move up to more powerful computers.

File Manager

Windows' File Manager is one of the programs in the *Main* group. It provides the usual file maintenance capabilities: directory creation, tree display, file name/rename/move/copy/delete, diskette initialization. Within limits, you can change the appearance of the File Manager display. For example, you can sort directory entries by different criteria (name, date of creation, size in bytes, etc.), and you have some control over the amount of detail that will be presented.

When you enter File Manager, it displays all the available drives in disk-drive symbols across the top of your screen, including LAN drives. This shows you immediately all the places where files can be saved, or where one you're searching for might be found. LAN drives are labeled NET, for network.

We did some searching, moving, and copying, and we initialized a diskette and copied files to it. These routine operations were intuitive and easy to accomplish. Moving a file is a new experience, unless you're a Macintosh user. You simply display the "to" and "from" directories in separate windows. Then "select" the source file by clicking on its name, and that entry is highlighted. Then you "drag" the file symbol to the directory where you want to put it. Windows asks you if you're sure you want to move (filename) to (directory); if you respond *yes*, it's done. If you click on *cancel*, the move is aborted. Copying is accomplished by selecting "copy" from the "File" menu in File Manager after selecting the source file. A window is presented into which you type the new file name, then Windows creates the new file and the selected file is copied into it.

Networking Windows

Although previous versions of Windows were notoriously LAN-unfriendly, version 3.0 is very much LAN aware. During the development of the new release, Microsoft surveyed users and talked to LAN administrators to help determine how to overcome Windows' earlier shortcomings in the LAN environment. As a result, they now have a product that *PC Week* referred to as "designed with networks in mind." In reference to the advantages of 3.0 over previous Windows releases, *InfoWorld* quoted Rod Zimmerman, Gupta Corporation's SQL Windows product marketing manager manager: "Now there's no barrier to using Windows on a LAN."

At RTP, the National Data Processing Division's LAN Systems group and the Information Centers Branch are testing Windows in the LAN environment. We're also aware of several field sites where Windows is running on LANs. Some initial concerns voiced by LAN administrators have been addressed, and at RTP we're testing a third-party LAN administration package for Windows that appears to have a lot of promise. We will include more detailed reports on Windows networking in our followup report.

User Feedback

As we said at the outset, little user feedback has been received for this report. However, we do have some, and we want to include it here for your consideration. As you might expect, opinions differ. After all, each person looks at any software product from his or her own perspective, each with unique preferences and needs in mind. None of the feedback we received was strongly negative, but some reservations were expressed. Most of those who sent us information reported liking the Windows environment in general, but specific comments seem to fall into one of two categories: *likes* and *dislikes*. Here is a summary of each:

Likes:
- Neat screen backgrounds are available.
- Improved (over previous Windows versions) File Manager.
- Easy to move around and learn the product.
- Great paint program.
- Pretty good help system.
- Good memory management.
- Faster printing from applications packages than earlier versions.
- Setup program is convenient, easy to use.
- Aesthetically pleasant environment.
- Easy installation (except for configuring memory).
- Excellent documentation.

Dislikes:
- Installation, particularly configuring memory
- Windows refused to use built-in PS/2 mouse port in Standard Mode.
- Slower context switching than previous versions.
- Slow execution on a 286 machine.
- File Manager has to re-create the trees every time you come in, rather than saving them for the duration of the Windows session for re-use. This is slow and inefficient.
- Except for aesthetics, no real improvements over other platforms.
- Installation program would not recognize and overwrite older version of Windows; was necessary to delete old Windows directory before installing new release.
- Takes up too much disk space (reported "something like 4.5 MB").

We haven't attempted to confirm the validity of any of these comments. As you can see, most of them are quite subjective. As we noted earlier, it depends on what you're looking for and what you like. We would like to point out, however, that on our hard disk the Windows directory takes only 3.2 megabytes, not "something like 4.5."

Some comments were received from people running on 386 PCs. They reported very fast execution, so we went to make a few tests for comparison. On a Compaq 386, WordPerfect 5.1 started up in about 4 seconds from the time we clicked its icon in the non-Windows Applications window. We were in Lotus in 8 seconds, and dBASE started in 3 seconds. Switching among active applications and Program Manager could be accomplished as fast as you can hit the keys. It really is a dramatic speed improvement from the 286 to the 386 machine! We will be looking forward to exploring the 386 platform more fully, and to running some actual Windows software from it. More information about running Windows on a 386 PC will be included in our next report.

Summary

Our objective in this preliminary report has been to give you a general sense of what Microsoft Windows 3.0 is all about, and to establish its potential and its viability for use on EPA's current PC inventory. We have concluded that its potential is significant, and that Windows is a viable platform for those who want to migrate to a graphical user interface in the MS-DOS environment. On the basis of our testing to date, PC TAP has recommended that the Atlantic Coastal Industries contract be modified to offer MS Windows 3.0, in lieu of earlier releases of the product, as an available software option.

The National Data Processing Division's Windows evaluation effort will continue over the next several months. We will be gaining additional experience with Windows on a variety of platforms, and we'll be testing more software, including some applications written specifically for Windows 3.0. We will be adding an additional two megabytes of memory in our Epson Equity III+, to see what performance improvements can be achieved, and we'll be building an information base about Windows on the 386 microprocessor for which it is ultimately intended. We also hope to be able to run the product on the three workstations specified on the ACI contract.

As always, PC TAP is interested in user participation in our evaluation efforts. If you have relevant experience that you would be willing to share with others, please contact your PC TAP ERN representative; or send an EMAIL to PCTAP. We look forward to hearing from you, and to bringing you another report on Microsoft Windows in the near future.