

==== Microsoft Secret ====

Hewlett-Packard NewWave  
White Paper  
4/20/90

Meeting Objective:

The purpose of this paper is to raise awareness of NewWave as it relates to our Systems (OS/2 & Windows) and Applications groups.

We also need to determine and reach agreement on a company wide product, marketing, and support strategy that we will apply to Hewlett-Packard.

Executive Summary:

There were several reasons that caused me to feel that a company-wide strategy for dealing with Hewlett-Packard was warranted. Over the last several months it has become clear that NewWave is impacting several divisions at MS.

- 1) HP is in the process of porting NewWave to run under Win 3.0. Because of this, there is a tremendous push from HP for support from Windows R&D. They are having problems resulting from changes we have made to WinOldApp and are demanding MS developer time to help resolve those issues. We have declined developer assistance as we need to stay focused on getting Win 3.0 ready for ship. HP believes we have intentionally done things in Win 3.0 to break NewWave. Currently, their Agents feature is broken as a result of changes we have made to the code.
- 2) HP has been invited to New York to show NewWave as an ISV. With HP's NewWave showing at our Windows announcement, there is a strong chance that the press will ask HP or MS about Windows applications and our commitment to NewWave. I believe we should be ready with a position.
- 3) OEMs (NCR especially) are applying pressure on MS OEM to be more supportive of NewWave. They want MS applications to run on top of NewWave. They believe, probably because HP has told them, that we have intentionally slowed/broken features in NewWave for Win 3.0.
- 4) Corporate customers (American Airlines, Peugeot, and HP's IOS group) continue to pressure our Corporate Account managers to get MS apps NewWave functional. American will be here on 4/30 and expects to hear an MS position and status of NewWave support on Excel and WinWord. They believe Excel/WinWord will ship in early summer with NewWave support.
- 5) HP is becoming more and more successful at convincing OEMs and ISVs to commit to NewWave. While the level of NewWave support from ISVs is unclear, the point is, they are publicly endorsing NewWave as a viable option. Lotus is the latest ISV to announce support for HP NewWave. It is also rumored that Word Perfect will also endorse.
- 6) HP plans to ship a NewWave SDK for OS/2 1.2 and UNDK in July 90. All licensed NewWave OEMs are pushing for this SDK. They want NewWave for OS/2 and UNDK.
- 7) It was clear from my interviews of MS Windows, OS/2, and Applications developers that we are moving very slowly with our objects definition for MS products. There is a lack of synergy between Windows and OS/2. We are at least 18 to 24 months away from Windows 4.0.

To better understand the impact NewWave was having on MS division, I interviewed 11 MS people from several different areas in the company. In addition, I talked to developers, product and program managers, Corporate account managers, and OEMs that have licensed NewWave. I will summarize these interviews by category.

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MS Perspective:

Windows

The earliest we will have a new Windows shell with any objects capability is 18-24 months

HP requires a high level of support to port NewWave to our platform.

Windows goal is to make the shell look object oriented without really adding a lot of the underlying object technology. This will not compete with NewWave.

Having to write to a different API will be confusing to ISVs.

All developers admit HP has done some good work in NewWave.

Marketing perceives NewWave as a growing risk. It is impacting the image we are trying to create for Windows.

OS/2:

Developers see no real value in taking HP code. They do some "neat" things but they don't scale to the future.

Developers indicate there is no real synergy between systems and apps for an objects strategy.

OS/2 marketing believe, OEMs are choosing NewWave because it's the only choice. We need to finalize our objects strategy and communicate it to our OEMs.

Applications

Apps still evaluating what we have to do in DDE to solve the NewWave problem. WinWord developers moving forward on NewWave work in L1.

Some people believe we should support a subset of NewWave for our apps through DDE in order to meet customer demands.

Corporate Accounts

Continued pressure from corporate accounts to get MS to do NewWave apps.

We should apply pressure back to HP through our corporate customers to get HP to cooperate with us on defining Linked and imbedded and a generic encapsulator.

Corporate customers and OEMs want a solution that will tie everything together and run on multiple platforms.

OEM Perspective:

OEMs are choosing NewWave for two reasons. OMF and Task Agents

They want the same interface on all three platforms. Windows/DOS, OS/2 and UNDX

They want MS to endorse NewWave and do NewWave applications.

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**Product Description:**

HP NewWave was designed to provide users a task-focused environment that integrates multiple applications intelligently and cooperatively. These users will want their NewWave application to take full advantage of features such as task automation across applications, integrating data into other objects and accepting data and images from other objects, and manipulating files and applications without having to deal with the intricacies of the operating system structure.

HP is projecting NewWave unit sales for the MS Windows version to grow to 450 thousand units per year by 1992 and close to 1 million by 1993. HP believes the inter-related factors that can affect these projected unit sales are:

1. HP NewWave OEM Sales
2. ISV acceptance and success
3. Press and Industry consultants' Endorsements
4. Customer satisfaction, perception and acceptance
5. Ability to successfully market NewWave on other platforms (OS/2, UNIX, etc.)
6. Competition

HP's marketing strategy is to achieve industry-wide acceptance of HP NewWave as the standard for an object-oriented environment.

**OEM Support:**

HP recognized that in order for NewWave to become an industry standard, it needed to be supported and available on non-HP computers. With this in mind, HP instituted an aggressive OEM recruiting program. To date, HP has signed up four major OEMs who have endorsed NewWave as part of their strategic offering:

|                   |   |
|-------------------|---|
| OEM               | Product                                     |
| AT&T              | Rhapsody                                    |
| NCR               | Cooperation                                 |
| Data General (DG) | CEO Object Office                           |
| Cannon            | (NewWave for Japan & other Asian countries) |

These OEMs combined with HP, represent over \$30 Billion in computer system sales. Carl Pavarini, AT&T Computer Systems Director, Business Solution Organization, is quoted: "With our support (AT&T) and the support of other vendors, we believe that HP NewWave will become a standard desktop and object-management facility." The combined strength of these companies, along with HP's own workstation sales, represent 4% of total PC installed base (according to a 1988 IDC study).

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HP's goal with NewWave is to make information more accessible for the average user. They believe that an easier-to-use environment will ultimately increase hardware unit sales.

ISV support:

Graphics/Charting

|                     |                          |
|---------------------|--------------------------|
| AimTech Corporation | IconArtist<br>IconAnchor |
| Micrograph, Inc.    | Graph Plus               |
| Roykora, Inc.       | ABC Flowcharter          |

Development Tools

|                      |                 |
|----------------------|-----------------|
| Candlelight Software | WaveBUILDER     |
| Dexotek              | Utility Library |
| Glockenspiel Ltd.    | Common View     |

Database

|                         |                |
|-------------------------|----------------|
| Channel Computing       | Forest & Trees |
| Palantir                | Windows Filer  |
| Systems Interface, Inc. | TransActor     |

Spreadsheet

|                       |                 |
|-----------------------|-----------------|
| Microsoft Corporation | Microsoft Excel |
| M.P. Technology       | Calctool        |

Data Communications

|                              |                           |
|------------------------------|---------------------------|
| Hewlett-Packard              | Advanced Line for NewWave |
| FutureSoft Engineering, Inc. | DynaComm                  |
| MicroView, Inc.              | MicroView Fax             |
| Tymlabs Corporation          | Session for NewWave       |

Electronic Mail

|                  |                 |
|------------------|-----------------|
| Da Vinci Systems | Da Vinci eMAIL  |
| Hewlett-Packard  | HP NewWave Mail |

Word Processing

|                   |                         |
|-------------------|-------------------------|
| Sanna Corporation | Ami<br>Ami Professional |
|-------------------|-------------------------|

Multimedia

|                    |                     |
|--------------------|---------------------|
| New Media Graphics | VideoWindows NW     |
| VideoLogic, Inc.   | VideoLogic DVA-4000 |

Office Accessories

|         |                    |
|---------|--------------------|
| Dexotek | Office Accessories |
|---------|--------------------|

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Computer Aided Design

|                                   |         |
|-----------------------------------|---------|
| Modern Computer Aided Engineering | INERTIA |
|-----------------------------------|---------|

Search and Retrieval

|                     |                        |
|---------------------|------------------------|
| Access Softck       | DRAGNET                |
| McCallum-Varey Ltd. | McCallum-Varey Locator |

NewWave Milestones:

- Jan 26, 1989 American Airlines announces the purchase of \$18.5 million worth of HP computer hw/sw. HP NewWave will become the foundation for AA's \$100 million office-information system, and will be a productivity tool for its 72,000 employees.
- Mar 13, 1989 Four software developers -- FutureSoft Engineering, Da Vinci Systems, Micrografx and Microsoft announce that they will ship HP NewWave products.
- Apr 19, 1989 OMG is formed by HP and 10 other companies and adopts HP NewWave's object Management facility as the foundation for the group's work.
- May 3, 1989 Channel Computing announces plans to ship an HP NewWave product.
- May 23, 1989 HP NewWave receives Software Publishers Association award for "Best Graphical User Interface design in a business program"
- June 21, 1989 Samsa Corp announces Ami and Ami professional work processors for HP NewWave.
- Aug 28, 1989 Canon inc. will offer a Japanese-market version of the HP NewWave software application environment for the MS-DOS, OS/2 and UNIX operating system platforms during 1990.
- Aug 30, 1989 Data General corp signs an agreement to license the HP NewWave software environment.
- Sept 6, 1989 HP NewWave software begins shipping to cad users.
- Nov 28, 1989 HP NewWave Office is announced for HP MPE, UNIX system and OS/2 server environments, which extends key HP NewWave capabilities from the individual's desktop to the workgroup and the enterprise.
- Dec 1, 1989 HP NewWave developer Kit version 2.0 begins shipping, adding full agent and computer-based training-development tools. Also, HP implements HP NewWave developer assist and premier assist, two levels of support services to help developers create HP NewWave products.
- March 1, 1990 HP moves into the dealer channel with NewWave version 1.0

Product Components:

- HP Write
- Encapsulator Tools
- Bridge Disks
- Browser for Graphics Gallery and Lotus 123 2.2
- Image Browser

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**Minimum System Requirements:**

**Hardware:**  
80286 or 80386 based personal computer  
256Kb base system memory  
3 Mb of EMS4.0 expanded memory  
1.2 Mb floppy disk drive  
20Mb hard disk drive  
EGA or VGA monitor and video card  
HP or other MS Windows supported mouse

**Software:**  
MS-DOS 3.2 or 3.3  
MS Windows/286 2.11

**Distribution Channels:**  
Direct  
Dealer  
OEM

**Pricing:**  
SRP is \$195.00

**New Features for NewWave 3.0:**

**Agent Facility:**

The HP NewWave Agent provides task automation capabilities for the NewWave user. Any task which can be done manually can be recorded for later playback, even those tasks which span applications. Tasks can be scheduled to play back at any time and date, or repetitively for additional convenience.

**Object Storage:**

NewWave objects can now be shared among users through the Object Storage feature. Any user on the network can have access to objects placed in the Object Storage container. These objects can be opened, copied, filed, deleted, mailed, etc., just like any NewWave object.

**New Visual Appearance:**

NewWave is enhanced to take advantage of some of the new visual features available in Windows 3.0, such as color bitmap displays, color icons, 3-D dialog boxes with proportional font spacing, etc.

**Memory:**

NewWave will not run under both 286 and 386 versions of Windows 3.0 in all modes (286 standard, 386 enhanced, 286/386 real). This allows NewWave and any applications running under NewWave to take full advantage of the new memory management features of Windows 3.0.

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**HP Perspective (Bob Frankenburg, GM ING/ISG):**

- HP believes that Microsoft and HP have complimentary strategies.
- HP believes they can reinforce our leadership position by:
  - 1) Adding value on top of Windows and OS/2 first! (e.g., HP NewWave and MS Windows is a generation ahead of MAC now!)
  - 2) Establishing interoperability with UNIX
  - 3) Setting Standards (OGM, OSF)
- Microsoft can enhance HP's position with NewWave by:
  - 1) Helping to speed up industry acceptance
  - 2) Assuring future compatibility and migration

**MS Perspective:**

**Windows**

*Phil Barrett, Windows development Manager:*

We are definitely moving toward an Object Oriented Interface for Windows. In many ways, an interface similar to what HP has for NewWave now. The Windows group is working with the Objects and PM people with the goal being to converge the GUI in Windows and OS/2 over the next 18 to 24 months. We have the foundation in place, at least in terms of program management, and as soon as Win 3.0 ships, we will be able to put the development team in place to start working on the "new" shell. For Windows, most of the work will happen in the shell. "We definitely want to provide hooks for the applications so that applications can play with the shell intimately." The object orientation direct manipulation metaphor has to be there. The final shape will be similar to NewWave in a lot of ways." Phil wants to do more than just a new shell for Windows. He wants to take advantage of extended attributes in DOS, particularly DOS 6. This will all tie together with Windows 4.0 and DOS 6.0. The current plan is to put support in DOS 5 for long file names and extended attributes. We can avoid the problems that HP has to overcome now to simulate those features naturally in DOS 6. A lot of HP's success in selling the NewWave vision is based on the fact that they have a good demo. In terms of HP's demand on Windows resources, Phil views HP as an ISV wanting a multisite development project. They want to be intimate with the code and understand all of the details. They want to take advantage of undocumented features as they did with Win 2.11. Phil thinks this hurt them when it came time to port NewWave to Win 3.0, but HP takes the position that we did this intentionally to slow them down. "It is poor design for HP to tie its product to the internal workings of our product." Ultimately, our customers are not going to want to "bolt" NewWave on as an after thought. The customer will not want to pay for this additional "value add". The customer will want to buy one product. A key question here is, "how much does a NewWave customer gain on top of Win 3.0 as opposed to running NewWave on top of Win 2.11?" Windows is clearly weak with regard to the File Manager and network performance. These areas will be evaluated for a 3.1 fix with Win 4.0 being a total rewrite of the shell.

*David Cole, Windows Program Manager:*

Our goal should be to move away from a program manager/file manager approach to managing system resources in a more "user conceptual model". A model in which the user doesn't have to worry about anything except the task he wants to work on. The shell that Bruno's group is working on as an example of the shell we will probably see on Windows with the exception that it is "probably more complex than the one in Windows". The Windows group will look at a way to "take" the shell in Windows so that it has the "Objects flavor" without all of the overhead that it takes to really do object

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management. The goal is to make the shell in Windows, OS/2, and NT OS/2 behave very similar so the user will be able to move from one to the other. Whether we can actually do the true object oriented shell under Windows is another question. We'll have to have an object oriented file system which we'll probably never have on DOS. We really don't know what the new Windows shell is going to look like. We do know it's going to look more like Bruno's shell than the current Windows shell. The things that are interesting in NewWave are in the area of application interoperability. NewWave had lots of problems with Windows 2.11. With Windows 3.0, NewWave has much more potential because they don't have the memory constraints. David and I discussed the possibility of risk associated with the scenario that puts an MS Windows objects shell and an HP shell in the direct/dealer channels 18 months from now. David indicated there are philosophies that would say, "why can't we have multiple shells out there? Why can't we have a Windows shell, an Office Vision shell, and an HP shell? In the true sense of a shell, it doesn't seem like that's a big deal. The real problem is that all of this is confusing to the ISV. These aren't just shells anymore. They are Operating environments in themselves. They have their own APIs. That's the real risk in all of this. Right now, an apps writer has to write for Windows, NewWave, OfficeVision, and then figure out whether he should port his app to PM. He has to do at least three different things to his app to support all these platforms. Not a lot unlike the UNIX situation today. This is all very confusing to the ISV. Now add the fact that HP wants to lay NewWave on top of OS/2 and UNIX. David suggested that it would be nice to define a "near" layer that apps wrote to so they would run under any shell. Then nobody would have a problem with two or three different shells. There is no reason IBM or HP shouldn't be able to have their Automated Office Environment. They have done a lot of neat stuff with email under NewWave. There should be some level an application can write to where it can be used in all of these environments and the shell does the rest. Then we won't care what shell you use. There is no reason that we all can't have a shell as long as an end user can go out and buy Excel and it works under all of them. What HP has done technically is pretty good stuff. The object management facility is a nice idea. We need to look at defining some level of functionality that everybody can live with. The problem we have is that NewWave is not value add. They are value on top. Users are probably not both Windows users and NewWave users. They are one or the other."

*Rich Abel, Windows Marketing*

NewWave is somewhat of a risk. When we first talked 6 to 9 months ago, it was a pretty isolated thing. At that time, he felt comfortable because the hardware requirements were pretty onerous. Now that some major OEMs are licensing, it does present more of a concern but he still feels they don't represent a threat in the dealer channel. He doesn't really see a normal end user going out to a dealer and buying NewWave to run on top of Windows. This is more of a direct channel product sold to corporate customers as a total solution. Major concerns are the "splintering" of the image we create for Windows. Now there's not one face for Windows but two. The presence is getting larger at least in the press. The other serious concern is the ISV community. NewWave represents a variation on a standard and yet another release and milestone that a developer will have to achieve. Rich indicated that he is "not sure we can continue to be neutral." "To the extent that HP goes off and promotes their product, we need to agree on turf, whether we will converge in the future, or if we are just going to compete with each other. If we are going to sell millions of units of Windows, the business case for the ISV will be in the "vanilla" Windows product. In the short term, we will have a tremendous jump on them in terms of installed base, units, and hardware requirements. The average end user is happy to run more than one app at a time and be able to copy and paste. If HP is out spending big bucks on advertising this stuff, it could really hurt us in terms of confusion. Rich confirms that Win 4.0 is at least two years away. The applications will be most sensitive to NewWave as they are the ones that will have to do most of the work.

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OS/2:

*Bruno Alabiso, Systems development:*

Bruno has recently attended the OGM (Object Management Group) meeting in Berlin. As far as he can see, OGM has done nothing with a definition for a reference model for objects. Everything they do goes to committee and takes a very long time to resolve. Bruno and Martini told OGM of our plans to do an Object shell and objects programming layer. They also demonstrated the prototype of our NT shell. Bruno indicated that OGM seemed very interested but that HP was very displeased with our presence. Bruno is pretty clear on the fact that he sees no value in HP's code. They do some neat things but again, they don't really scale to the future. He believes they have a pretty good understanding of the objects paradigm but believes we would get more out of hiring Bill Crow (HP Chief Architect) than actually taking HP's code. The most important point that I got from Bruno was that he agrees that there is no synergy between Applications and systems (OS/2 & Windows) with regard to our objects strategy. He has not been successful working with the Windows people to date. The important thing to note is that our people are not working together on a cohesive plan to move objects technology into our products.

*Bill Miller, OS/2 Program Manager:*

NewWave is impacting my group. OEMs are choosing it because it's the only choice (Not due to a technical advantage). NCR would definitely be on a Win or PM interface for Cooperation if we had an object model today. We need to finalize our objects strategy, commit to a time frame, and communicate the strategy to our OEMs ASAP to short circuit the NewWave bandwagon. If that means we should take advantage of the work HP has done, that's fine.

Applications:

*Tony Williams, Applications development*

There are two areas where things get hard. Compound documents which we do differently from NewWave and some differences in the user interface. The thing that causes us to have to do work is differences in how object management works with NewWave. The real pain in the neck is that this is so different from the other platforms. We don't want to have a separate product for NewWave. You can't tie yourself to HP's API because then you tie yourself to HP's ability to get new revisions out when the system platform changes. What we would like to do is to use an encapsulation technique and have the same encapsulation mechanism work for both Excel and Winword. That would be our preferred way to do this. It would be based on an extension of the protocol that we presented to HP. When we talked to the HP engineers doing the Excel work, they indicated that while this idea may look like less work, it really isn't since they are so far along with their current Excel work. Our position was that we would do the encapsulation from our end. Bill Crow wanted the extension to go into the standard protocol and everybody would be implementing. Therefore, anyone writing to Windows would implicitly be writing to NewWave. Theoretically, this is realistic but we really haven't thought through all of the implications of doing that. Basically, we would be moving the work that we would do internally in the app, move it into DDE, and tell everyone to write to it. Some of the stuff would be pointless. A developer that didn't care about NewWave would ask why I need to do this? The developer would have to do some work to put it into his app. He wouldn't see any value. Making this a general specification that anyone could write to, would be very complex. We have to get HP to agree to change what they are doing on the Excel encapsulation and to do the generic encapsulation that applies to both. That may take some negotiation because Crow's position was that he wanted us to be part of the standard spec and I don't know if we want to do that. There is one thing that would make all of this work. Microsoft could do a NewWave. Do a competitor to NewWave. While the stuff that Bruno is working on, will have a lot of the NewWave look and feel, there is a lot of underlying stuff that isn't there. It will probably be there sometime but where is the strategy for Windows? We should

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have a strategy for adding Objects technology to Windows. Not just an Objects look and feel but really add the underlying technology. If we don't do this, we will never be able to provide what people are getting in NewWave. There are some neat things about the way NewWave does object management but don't see a lot of long term value. They haven't solved the harder problems. "It doesn't scale to the future." We do have to be honest and admit there are things NewWave does that we don't do. The question then is are they important? If I had to make the decision on how to deal with HP, I would say, "work with us on our terms or forget the whole thing. The problem is HP is trying to make money on NewWave and what they are trying to do should be done by the systems vendor which is us. We should propose to HP what we are doing and suggest that they work with us to make this happen. Then we should go and apply pressure through American to get HP to work with us on our terms.

*Greg Styrgetad, Applications development Manager*

The plan we are slowly proceeding on is the right thing to do. That plan is to opportunistically support a subset of NewWave functionality through our DDE linked and imbedded. There are enough customers out there that think it's important. We have already committed to two customers, American and Peapack, that we would do some level of support. When we talked about doing a generic encapsulator for our apps, Greg indicated that would also be an easy sell to other ISVs like Word Perfect and Lotus. These ISVs are currently supporting DDE and will probably support an extended DDE. The main concern about the encapsulator is that we would be relying on HP to do a significant amount of work. The plan that we are proceeding under still makes the most sense. "We are talking about a lot of negative response from our ISVs and some customers unless we do what we agreed to do. If all it takes to make that happen is for us to put some additional DDE extensions in our Linking and imbedding, it seems that we should do that and get HP serious about doing the generic encapsulator." We should do what we have to do in our own products to meet demands from corporate customers in the long term. He also agrees that the work is at least 18-24 months out. We should do the work to support NewWave in the short term to satisfy the current customer demand. He acknowledges there is risk associated with that decision but he feels we should take the risk.

*John Parkey, Product Manager, Windows Word*

My understanding is that New Wave is so small, and will be so small, that with or without it, things will be pretty much the same. With New Wave here, we may lose American Airlines and HP, but the chances are actually pretty small unless they come out with a super, super product under Win 3.0 in the near future. Otherwise, their Win 2.11 solution will not be satisfactory to these two accounts and they will be forced to use just Win 2.11 or Win 3.0 with win apps. John was under the impression that drag and drop and some objects work was going to happen in Windows 3.1.

Corporate Accounts:

*Darcy Ruzgina, Corporate Account Manager, Hewlett-Packard*

Darcy's objective is to sell retail product into HP. Darcy has been involved with HP's IOS group. This group determines software standards that will be used internally at HP. Darcy's input here is that she is continually pressured by this IOS group to make MS Apps NewWave compatible. They continue to threaten to choose other software options as HP standards if MS does not do NewWave work in our apps.

*Joe Parley, Corporate Account Manager, American Airlines*

We have told HP in the past that the NewWave platform is not mainstream and that it is not realistic to ask us to do development to a specific platform that has very low market share. What we need to get across is the message that what we are proposing is changes that would make it easier for us and all Windows application developers to support NewWave. We should use American to apply pressure back to HP to get them onto our strategy. Of the four OEMs that are licensing NewWave, three out of

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four did it so they could sell into American Airlines. When asked what American wants out of NewWave, Joe indicated that "the big push was 'point and click', take a word document icon and drag it over to your 'out basket' and send it in email. They really like a lot of the high level object oriented stuff." They plan to put intelligent workstations in front of people that have never had them before and it's been a real challenge to implement the first two thousand of them. Understanding NewWave and understanding Windows. Using a mouse, etc.. The more they can make things look like a desk with icons that look like files and folders that look like file folders helps their end users. The initial attraction with NewWave was the user interface. With Windows 3.0 taking on a lot of that, NewWave should lose a lot of it's sizzle at least in the retail channel. One of the reasons American likes NewWave so much right is because they can take an object, drag it over to 'AdvancedLink' for Windows, American has a special version from HP, and it will mail the binary file (compound document). They can click and drag right now and send and receive mail.

*Bob McDowell, Vice President, Microsoft Consulting*

Bob and I briefly discussed his role in American Airlines and American's decision to commit to NewWave for their InterAAct project. Bob had contracted with HP and American as an independent consultant and worked with Joyce Wrenn, VP over the InterAAct project. Bob indicated that American chose HP solely because of NewWave. They liked the HP style. Bob and HP built a business case for NewWave which implied a 7% to 9% impact on productivity if American were to use NewWave on it's workstations. The results of all this were that HP won the 3000 mini and NewWave business and AT&T and Tandy won the workstation (PC) component. The key message I got from Bob was that we are very good at making tools, applications, systems, etc, but we are not selling a solution that combines all of this to our corporate customers. Bob's view really reinforces what I am hearing from NCR, Wang, and AT&T. They all said if we had a solution today that would tie all of our products together across multiple platforms, that would increase productivity, they would be very interested in talking to us now. We're just not presenting the package we have in the right way to corporate customers.

OEM Perspectives

Data General

DG indicated there were two primary reasons they choose to license NewWave. 1) OMF and the ability to do linked and imbedded documents. 2) The Agent facility. They see Agents as a very hot technology. However, there is no loyalty here. If we had the technology they were after, they would use it. They are not interested in creating a new standard. They also told me that a transparent user interface across heterogeneous platforms was key to their product offering. They want the same interface on OS/2, DOS/Windows, and UNIX. They would love to see the Win/PM shell on top of SCO UNIX.

NCR

One of the key things NCR was looking for when they choose NewWave was the ability to have a common interface across multiple platforms. They want the same interface on DOS/Windows, OS/2, and UNIX. They believe HP's OMF is a solid development platform in addition to having a lot of demand from customers for objects user interface. They view NewWave as easier to use. It's interesting to note that these guys throw the term "objects" out all over the place but don't really connect it with anything productive. On the system side, NCR decided they would not compete with the rest of the computer world in mainframe centric systems. NCR made the decision to jump on a new distributed processing paradigm that allowed you to share and move data to places in the computing enterprise other than the mainframe. They believe the object paradigm is the best way to approach programming in an entire system perspective and not just the desktop perspective. They quickly moved to the use of an object paradigm in a distributed processing environment to be able to

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locate files, to be able to message to, etc. NewWave presented the object front end and it was a good extension to the object management that they are currently adding in a distributed fashion throughout the system. As far as the user interface, they feel if you can save one key stroke for a novice user, you have done a lot. NCR believes with NewWave, they will take the "HARD" out of computing. They also mentioned agents as a feature they believe will increase productivity and reduce training costs. They were clear that their decision to license NewWave for Windows was based on the belief that NewWave would be ported to OS/2 and UNIX. When we discussed the risk associated with NewWave's dependency on Windows, Jim Walker responded with, "the presence of some reasonably prominent people in this industry will help develop and umbilical (between MS and HP R&D). We truly hope that happens. We are users of both your product and HP's product and we haven't come to call on you yet but it's our intention as a user group to call on you and persuade you to develop that conduit." I told NCR that we were currently working on an object based shell and object based programming layer. Their response was that their decision to go with NewWave was based on timing to some degree. They didn't feel they could just leave OfficeVision out there alone. They couldn't let IBM get that much of a head start. At the last time they spoke with us about an object paradigm, it appeared it would be somewhere in the 91 time frame so they really didn't feel they could take the market risk and have IBM have that much time. The decision was clearly made based upon market need and the necessity to compete. If MS had products available that met these needs, NCR would have probably gone solely with MS as the vendor of choice. NCR suggests that an SDK for OS/2 and UNIX is very close. They will work to move up HP's schedule for OS/2. NCR implied that NewWave was replaceable and they did that intentionally because they believed we were working on an environment that would be competitive. NCR would like to do two things. First, they would like to work with us now to understand what we will be doing in the area of objects with OS/2 and Windows so that perhaps they will be able to unplug NewWave and plug in Windows when the time is right. They have developed their system with that kind of modularity in mind. Second, they would like to get a strong recognition from Microsoft now for NewWave. They want to see more support from Microsoft for NewWave. They indicated that most of the ISVs they have talked to that are doing NewWave work are doing level 3 encapsulations. That level will provide hot link capability. Throughout the entire conversation, the key buzz words were "distributed systems" and "objects interface". With regard to NewWave and Win 3.0, NCR implied that the information they are getting from HP tells them that we have intentionally left out functionality in Win 3.0 to inhibit or break NewWave. The only other issue that came up was a request for beta code for WinWord that was NewWave compatible. When we told him there was none available, they told me that they would have to show Samma Ami at their product presentation in June.

AT&T

AT&T chose NewWave for the same reasons as NCR. Object oriented user interface, transparent to end users across multiple platforms, which is designed to reduce training cost and increase productivity. OMF and Agents were mentioned as the interesting features that NewWave has that Windows does not.

Canon

Canon is doing translation work of NewWave into Japanese. They are expected to ship a Japanese version of the Software Development Kit Ver. 2.0 to developers this spring. In a previous meeting, they indicated it would ship in April 1990. Though the schedule is not yet clear, they are planning to ship Japanese NewWave to endusers. In the next stage, they are planning to develop Japanese NewWave for both Presentation Manager and ModL. Canon is trying to sell Japanese NewWave to other OEMs, and will be contacting the following companies; NEC, Hitachi, Mitsubishi, Fujitsu, Sanyo, Sharp Oki, NTT, Kyocera, Matsushita, Toshiba, Epson, and Sony. They have contacted us to ask for ideas on how to market NewWave in Japan, reasoning that their NewWave requires Windows. A supplementary article of NewWave written by Canon technical personnel (his name is Mr. Yamaguchi) who is in

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charge of NewWave has just appeared in Japanese PC magazine (Nikkei Byoi) April 1990 issue.

**Wang (Currently evaluating NewWave)**

Wang is getting pressure from industry consultants (e.g. Scribner, IDC, Forrester) about an object management strategy and are getting questions like "How does Wang plan on handling things like compound document structure ect." Wang has been through the HP NewWave sales pitch and is asking MS what to do? The industry consultants are calling Wang "the same old Wang" because Wang has not jumped on the NewWave bandwagon along with AT&T, NCR, and DEC. (This is not good since Wang is a leader in the market for these products). Microsoft is asking Wang to get some advice from management to start letting key OEMs so that they understand we are working on it and to key industry consultants who now seem to be preaching NewWave. Wang is skeptical at the moment but pressure from the industry and lack of future knowledge could mean Wang goes NewWave. Also, Wang is looking for a product that gives them the same look and feel across all platforms and was wondering what we were doing with SCO to address this since OS/2 and Windows had the same. They feel NewWave would give them this when selling into a mixed environment.

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