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# Recommendation Regarding Windows 95 Application Support for OS/2 Warp

## IBM CONFIDENTIAL
## January 24, 1995

## *OS/2 Strategy for Application Support*

### *Problem Statement*

Although OS/2 *Warp* runs almost all the Windows-based applications that Windows 3.11 can run, the current release will not run applications that exploit new features unique to Windows 95 such as multi-threading and 32-bit Object Linking and Embedding (OLE).

In the past, the OS/2 strategy for dealing with Windows-based applications has been to implement advanced technology that allows these applications to run on OS/2 "out of the box". In other words, the customer simply installs their Windows-based applications on OS/2 (as they do on Windows) and they run. This strategy has helped to establish OS/2 as the integrating platform and an inviting platform for end-users while we garnered native OS/2 application support.

To date, this strategy has not delivered a competitive portfolio of native OS/2 applications. Most developers are still putting their resources into developing Windows applications rather than OS/2 applications. This decision is based on Window's volumes. Installed volumes are developers' nearly singular criteria for deciding which platform to support. Windows has an install base of over 60 million users with a proclaimed 2 million per month shipping via preloaded PCs. Therefore, Windows is where ISVs take their applications first, especially given that OS/2 runs Windows programs. OS/2-exploitative development tends to get the resources "left over" once the Windows development resources are allocated. OS/2 is recognized as a superior environment but as one ISV said, "I'd write in assembler if I had to in order to get Windows volumes".

Further exacerbating the resource problem is Microsoft's increased market share in almost all key application categories. This is putting an additional revenue/resource strain on the rest of the software industry.

The fact there is a large Window's application portfolio and an absence of a comparable OS/2 portfolio is putting pressure on IBM to continue to support Window's applications. Also, large customers who have 'standardized' on Microsoft applications, such as Microsoft Office which has a proclaimed 85% of the suite market, are already asking for IBM's commitment to support Windows 95 versions of Microsoft Office on OS/2 *Warp*.

### *Recommendation*

We recommend that OS/2 *Warp* development does <u>not</u> attempt to support Windows 95 applications "out of box". Instead we recommend developing extensions to OS/2 Presentation Manager (PM) APIs that support the "sweet spot" of the Windows API set that allow developers to easily port their Windows 95 applications to OS/2 *Warp* (technology formerly code-named DAX, tentatively renamed PM-Win). This technology, accompanied by supporting tools will eventually allow ISVs to get to a single code base that supports both Windows 95 and OS/2 *Warp* while exploiting the unique capabilities of each environment

### *Overall Strategy*

Our strategy is to create a viable, profitable long-term application market for native OS/2 *Warp* applications, while maintaining Windows compatibility as required by our customers. Microsoft, however continues to change

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their APIs from their early 16-bit form (Win16) to a hybrid 16/32-bit form (Win32s), to the complete 32-bit form in NT (Win32) and Windows 95 (Win32c). IBM cannot afford to clone the Windows APIs forever. Therefore we must execute a strategy to get native OS/2 applications.

### Summary of Current Strategy for Native OS/2 Applications:

Regardless of the longer-term option chosen, IBM is currently executing, and must continue to focus on, the following strategies throughout 1995:

1. Drive OS/2 *Warp* volumes significantly via retail and preload - volume is the number one criteria to ignite OS/2 *Warp* native application support: reaching 10 million copies shipped will be a significant milestone in 1995 and will cause a much broader base of ISVs to take notice and action.

2. Incent influential ISVs to write native OS/2 *Warp* applications with financial and marketing incentives that share the risk and reward between IBM and the ISVs (IBM Springboard plan);

3. Develop new technology and provide tools that allow ISVs to migrate any Windows applications to OS/2 *Warp* with minimal additional investment (OneUp Inc.'s SMART tool exploitation); and

4. Propagate an IBM marketing spin on the issue to dampen the preconceived success of Windows 95 exploitative applications.

### Summary of Future Options Considered for Windows 95 Support:

- Providing migration tools and extending the OS/2 PM APIs with technology that will support the most heavily used Windows APIs -- tentatively called PM-Win -- allowing developers to more easily move their Windows-based applications to OS/2 *Warp*.

- Supporting native Windows 95 applications (i.e., running "out of the box" applications) via IBM extensions to OS/2 *Warp*'s WINOS2 (the component of OS/2 that runs Windows applications today).

- Using a third-party, such as Insignia, which has licensed the WIN32 APIs from Microsoft, to support Windows 95 applications under OS/2 *Warp* (Intel or PPC).

The major pros and cons of these options are:

| Option | Pros | Cons |
|--------|------|------|

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## OS/2 Strategy for Application Support

| | | |
|---|---|---|
| PM-Win extensions to PM | ▪ Time to market with IBM message/solution (mid-1995)<br>▪ Break from MS control<br>▪ Opportunity to set industry-adopted 32-bit standard<br>▪ Published Win32C API technology well understood | ▪ MS applications *won't work* unless MS ports them<br>▪ Requires varying degrees of "mini-ports" and dual-code bases by ISVs<br>▪ May not be able to address operating systems extensions such as OLE, ODBC |
| Native Windows 95 in WINOS2, including Win32C, OLE 2.0, and WOSA | ▪ Win32C API technology understood<br>▪ MS applications *should* work[1] | ▪ Not clear it is technically possible. Customer view of success is to support Microsoft Office Suite (Win32C *and* OLE, WOSA)<br>▪ Time to market (mid-1996?)<br>▪ OS/2 *Warp* PM native development virtually stops when announced<br>▪ Begs strategy for Windows 96/97 |
| Insignia Windows 95 technology | ▪ "Microsoft-endorsed Windows 95 compatible"<br>▪ IBM does not have to recreate Windows 95 support | ▪ Royalties to Microsoft *through* Insignia<br>▪ OS/2 *Warp* PM native development virtually stops<br>▪ Uncertain Windows 96/97+ strategy |

[1] Microsoft could introduce compatibility problems with products running on OS/2 *Warp*

The recommendation is to implement PM-Win, but in any case, IBM must decide on and execute one the above strategies starting first-quarter 1995, and while all the options are still confidential, the latter two are very sensitive, as their exposure would significantly negatively impact current native OS/2 *Warp* application development.

The above is an overview of the problem and our overall strategy and options. The rest of this paper goes into further discussion on the 4 current strategies, with an emphasis on the Springboard project and the SMART tool strategy followed by the future options with a heavy emphasis on the PM-Win option, which is our recommended option. The paper then concludes with Marketing plan scenarios, a summary of the recommendation and list of open issues.

## *OS/2 Strategy for Application Support*

### *Further Description of Current Native OS/2 Application Strategies:*

*1. Drive OS/2 Warp volumes significantly via retail and preload.*

The base marketing plan for OS/2 *Warp* is designed to increase volumes in the five segments used to determine market opportunity: SOHO/Home, Small Companies and the three segments within Medium/Large companies that are Autonomous Departments, Bottoms-Up and Tops-Down. The marketing plan identifies the key buyers in the segment as well as each of the key user types and channels that exist or are used in that segment. From this information, we have designed advertising, merchandising, public relations, OEM, ISV, and channel programs specific to each geography that executes against the strategies for each segment.

For example, in 1995 we plan these programs worldwide:

- Television, print and radio advertising of $50 million with consumer/value emphasis;

- SOHO/Home–channel programs that focus on Internet, OS/2 *Warp* application sales, promotional packaging for home users and gamers, and various items for in-store merchandising;

- Small company focus through VAR/VAD promotion, emphasis on OS/2 *Warp* for 1995 adding peer function in the network-enabled version of OS/2 *Warp* second-quarter 1995 and beyond;

- Direct Mail campaigns and "Try & Buy" CD-Showcase offerings to encourage customers to try OS/2 *Warp*;

- Migration campaign for medium and large customers designed to ease migration from Windows to OS/2 *Warp*; and

- Preloads driven by the OEM and PCCo teams through aggressive terms, market development funds, and custom development. This includes device driver support and custom front-ends under OS/2 *Warp*. We are focused on meeting any term or condition an OEM asks for to get significant levels of preloads for OS/2 *Warp*. An aggressive pricing grid is in place that takes the price to OEMs down significantly based on volume.

Execution of these strategies in Germany has resulted in OS/2 *Warp* preloads on more than 40% of the hardware shipped in Germany. We are working to duplicate this success worldwide in 1995. [you should add the recent Osborne win in Australia]

*2. Incent ISVs to write native OS/2 Warp applications with financial and  marketing incentives that share the risk and reward between IBM and the ISVs.*

Project Springboard

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## *OS/2 Strategy for Application Support*

IBM must continue to accelerate the development and investment in native, competitive, and exploitative OS/2 *Warp* applications so that as Windows 95 applications become available, equivalent competitive versions exploiting OS/2 *Warp* are or become available. In order to achieve this, IBM must demonstrate its confidence in the outcome of the actions described above. The success of OS/2 *Warp* as an industry leading 32-bit platform can be accomplished by investing in a strategic set of OS/2 *Warp* applications (see appendix 1), using "shared risk/shared return" as the basic model.

The strategy for Springboard ISV support is to create an environment that promotes ISV independence from IBM investment. If the ISVs realize the ROI independent from incentives, then they will continue to produce exploitative applications. So what is different in this approach from the past three years? In the last three years, OS/2 has attracted over 2000 native OS/2 applications. Customers and the key industry influencers have downplayed the numbers, saying that the key applications were not present. When the key applications were released, the products were built on downlevel versions of their Windows code and utilized emulation or "Mirrors" code to port their applications, which resulted in poor performance. Then, most of the key developers promoted their products using a generic platform approach, which did not highlight the power or advantages of OS/2 individually. Also, our investments in these products were almost completely development-based, and the developers were not incented to expend additional funds creating a market for their OS/2 products. The result has been applications that have languished in the marketplace.

The 16-bit applications developed for Windows ran "out of the box" on OS/2. The marketplace was content to run 16-bit apps on the OS/2 32-bit platform. Now, with the launch of NT and the planned Windows 95 launch, developers and end users are looking for the power and new features supplied by 32-bit applications. Customers will want to run comparable Windows 95 applications on OS/2 *Warp*. If they cannot run "out of the box", they will either expect an OS/2 *Warp* equivalent version or they will forego the OS/2 platform in favor of Windows 95.

IBM recognizes that the key issue for the Springboard ISVs is their ROI. Can they make money in the OS/2 marketplace? We have delivered the message that we are serious about our investment in OS/2, and want to create a unique partnership that shares the risk, and shares the gains from their successful launch of OS/2 *Warp* products. Second, we are not trying to reach all the developers. We are using a model similar to the one Microsoft used to gain dominance in the operating systems business by incenting a select number of key developers in each of the SOHO, Consumer, Productivity, and Vertical markets to develop and deliver world-class exploitative applications that steal market share from their competitors. By having these ISVs successfully take share away from their competitors, or by growing share faster than the segment is growing, other developers not on the OS/2 platform will have no choice but to compete in the same market space to prevent loss of share. We do not have to court all the world's developers, just the key developers. If they succeed, the others will follow. If we cannot get the key developers to succeed, we will always be in a position of paying for solutions on our platform. The expected long-term results of Springboard are to change the market perception such that: (1) there are compelling OS/2 applications; and (2) the OS/2 platform is a successful long-term investment.

Software Developer Operations (SDO) has established an overall model, set of guidelines, and process to close the partnership agreements. There are four basic parameters to the model:

1. Shared development costs paid by IBM, typically for prepaid internal or external licenses, and/or milestone achievement payments (e.g., alpha, beta, GA):

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2. Matching marketing dollars for demand generation and market creation;

3. Recovery to IBM through various combinations of: royalty on the resulting ISV product; prepaid internal licenses utilized for IBM internal use; and/or prepaid external licenses for use by IBM as bundles or other promotional offerings; and

4. Incentives to ISVs for industry-leading excellence through reduction in the royalty rate.

The SDO organization has requested $64M for 1995 application development funding.

Requirements that will be placed on the ISVs include technology exploitation and schedule. The primary technology exploitation requirement is to take advantage of, integrate with, or produce applications that use one or more of the following advanced OS/2 features: flat memory model; multiple threads; fast semaphores; SOM/DSOM; virtual device drivers; Workplace Shell; MMPM/2; and/or Symmetrical Multiprocessing. Client/server is an additional technology emphasis being exploited in Springboard. All of the products will be developed and marketed on both the Intel and the PowerPC platforms. All products are to utilize or produce an object part using OpenDoc. The products will have features and functions during the term (usually two years after GA) that are equal to or better than the non-OS/2 applications of the same product.

The positioning of the exploitative versions on Intel is to precede the Windows 95 versions of their products. The Windows 95 version enhancements and the OS/2 *Warp* version will be delivered within the same relative timeframes. The OS/2 for PowerPC versions will be delivered within 30 to 90 days of the Intel versions.

The acceptance criteria for the Springboard products is based on product beta testers analysis confirming that the product is equivalent or superior in each of performance, features and function to the non-OS/2 versions of the same product. This will inhibit the release of products that do not have equivalent characteristics or market draw.

The Springboard engagement process has already begun, and as of January 15, 1995, four companies have closed (Corel, Frame, Macromedia, and Computer Associates). Eight more are in final contract stage, generating a total of 59 applications that will ship by year-end 1995. SDO has planned announcements starting in January, and continuing each month throughout 1995 with significant commitments by ISVs to OS/2 *Warp* and PowerPC, as well as recognition of their exploitative product launches (see table on page 12 for more engagement & application shipments by quarter - see appendix 2 for highlights of international language application presence).

*3. Develop new technology and provide tools that allow ISVs to migrate Windows applications to OS/2 Warp with minimal additional investment (OneUp Inc.'s SMART tool exploitation).*

Through discussions with many leading ISVs (such as Lotus, Borland, Corel, etc.), analysis of ISV source code, and requirements Microsoft is placing on ISVs to earn a "Windows 95" logo, we believe most ISVs are actively investing in moving their applications to Windows 95. Based on the review with ISVs from Springboard, developers are currently working on Windows 95 development. Fortunately, many of the larger and important ISVs (including, we believe, Microsoft) are hedging against a delayed acceptance of Windows 95 and are also investing in improvements to their existing 16-bit applications. As a result, to minimize the development expense, many of the Windows 95 applications ISVs are building will not exploit the newer features included in Windows 95. The one exception to this is OLE 2.0 since it is also available on the existing Windows platform (see Appendix 1 for ISV OLE plans by application).

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To encourage ISVs to move their applications to OS/2 *Warp* while they are moving to Windows 95, IBM must significantly reduce the additional development expense currently required to develop for both platforms.

IBM is providing tools to ISVs today that allow migration of 70% or more of existing Windows application source to OS/2. Through a recent agreement with the OneUp Corporation, IBM has broad distribution rights for these tools called the Software Migration Analysis Reporting Toolset (SMART). SMART is a key element of the project Springboard strategy and currently ships on the Developer Connection for OS/2 to approximately 10,000 subscribers. A special edition of The Developer Connection, including SMART, will also be distributed broadly (75,000) in the February 1995 issue of Dr. Dobb's Journal -- an application development-focused trade monthly. In addition, an agreement has been signed with Borland to ship over 100,000 units of SMART to their OS/2 and Windows C/C++ user base starting in first-quarter 1995. SMART analyzes an ISV's Windows source code to predict the effort in migrating to OS/2 *Warp*. It then automatically converts 50 to 70% or more of the source to OS/2 *Warp* 32-bit. Where it cannot convert, it provides alternatives from which the programmer can choose increasing the total migration of source code to nearly 90%. In some cases, SMART cannot provide conversion or alternatives. For the "alternative" or the "no solution" cases, the programmer can customize SMART to automatically handle these exceptions on future migrations. Once customized, the migration can be integrated into an application's normal development process and repeated - thus resulting in a single code-base. Since migration of source is not the only concern of developers, SMART also handles most of the non-API aspects of applications such as messages, resources, on-line helps, etc.

Once the source code is migrated, the developer can add unique modules to the application to exploit OS/2 *Warp* features and is a simple compile away from producing an OS/2 for PowerPC application. With cross-compilers already provided by MetaWare and to be provided by IBM, the developer can recompile his OS/2 application and have it run natively on OS/2 for PowerPC.

Additional enhancements are planned for the SMART tool during the first half of 1995. These include expansion of the Windows 95 API coverage, OLE 2.0 conversion assistance to OpenDoc, and Microsfot Foundation Class conversion to IBM's C Set ++ class libraries.

### *4. Propagate an IBM marketing spin on the issue to dampen the preconceived success perception of Windows 95 exploitative applications.*

We need to continue to dampen the Microsoft preconceived success message by communicating the following spin relative to running Windows 95 applications under OS/2 *Warp*:

This marketing spin is only valid until Windows 95 beta versions of applications start shipping by the majority of major ISVs.

**IBM's public view:**

"Microsoft is propagating a message that Windows 95 applications are imminent 30-90 days after Windows 95 ships. The announcements follow the precedent set by NT. All the leading vendors pledged support for NT well in advance of its delayed delivery but very few applications were actually shipped. Early versions of OS/2 had

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experienced a similar phenomenon. Our intelligence says many ISVs are showing caution.  Even Lotus has announced they will release another round of their Windows 3.1 applications that have most, if not all, of the function planned for the Windows 95 releases to hedge their bet on the acceptance rate of Windows 95.

OS/2 is the leading 32-bit platform with over 7 million copies shipped and over 2000 OS/2- exploitative applications shipping. Our strategy is OS/2. If, in the future, it becomes a market requirement to also support Microsoft 32-bit APIs under OS/2, IBM has the option and ability to do so but has made no commitment at this time. Microsoft said we could not do seamless Windows 16-bit applications under OS/2 and we did. Microsoft said we could not do Win32s (subset of Win32 that runs on Windows 3.1 and Windows NT -- for which we did not have Microsoft source code) and we did in OS/2 _Warp_. Microsoft still has not proven they can be successful at creating strong customer demand for a high volume 32-bit API. Windows 95 is Microsoft's fourth attempt to do so:

- First with OS/2 when we were partners, but Microsoft abandoned their OS/2 customers and developers prior to us making OS/2 successful;

- Then with Windows NT which has not achieved critical mass volume;

- Then with Win32s, mentioned previously, which has not been widely accepted; and

- Now with Windows 95, which has not shipped, has been delayed many times, is not proven, and has _zero_ exploitative applications shipping.

IBM supports market-leading standards. OS/2 is the leading 32-bit operating system standard and with OS/2 _Warp_ we will extend that lead dramatically."

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## _Further Description of Future Strategies for Windows 95 Support:_

### Current environment

The strategy of continually updating the OS/2 technology necessary to run applications based on new Windows APIs perpetuates a "follow-me" posture for OS/2. It also encourages ISVs to build their applications only for Windows since they have been assured by IBM that they would run well on OS/2. As a result, limited numbers of OS/2-native applications have been developed. Even many of the current OS/2-native applications are actually direct ports of Windows applications that do not exploit some of the most demonstrable features of OS/2 such as multithreading or Workplace Shell integration.

Even if IBM was to continue this strategy for Windows 95, the earliest we could make the updated technology available to our customers would be nine to twelve months after Windows 95 ships. Furthermore, this will not address Windows 96, 97, etc., the API extensions to Win32C (e.g., OLE), nor the possible artificial technical hurdles Microsoft can introduce to make implementation of the technology more difficult for IBM.

For the customer it is critical that they have applications that will run "out of the box" on OS/2 _Warp_. Therefore, since we believe IBM should not support native Windows 95 applications, we must further fund programs to significantly increase the number of native OS/2 applications.

### PM-Win Strategy

The "Windows support" approach IBM wants to take with Windows 95 is different from the past. The Windows 95 delays have given IBM a prime opportunity to end our current "follow Microsoft" cycle. For the ISV, IBM will provide an enticing collection of technologies, tools, financial assistance, and marketing to _intercept_ the movement of ISV applications to Windows 95. The Personal Software Products division (PSP) and Software Developer Operations (SDO) plans provide for most of the tools to allow ISVs to offer both Windows 95 and OS/2 _Warp_-exploitative applications with nominal, incremental resources.

This strategy includes having key ISVs (with the more than likely exception of Microsoft) write to an extended PM API we propose to call PM-Win. This API will encompass the current PM API as well as Windows-centric extensions that significantly decrease the effort for a Windows 95 developer to move to an OS/2 base. PM-Win will also complement the OpenDoc component software technologies from Component Integration Laboratories (CI Labs), offering the ISV a complete solution for application development competitive with Windows 95.

During the early stages of working with OneUp Corporation on SMART, PSP identified possible extensions to the OS/2 PM API. Using new analysis tools, PSP analyzed over seven million lines of ISV-developed Windows source code. As a result, we have determined the sweet spot of Windows APIs (both 16-bit and 32-bit). By extending the OS/2 PM API to support these Windows APIs, an ISV with a Windows application, in many cases, will simply have to re-compile his source code to produce a native OS/2 application (though not exploitative). This Windows-extended PM, or PM-Win, is targeted for an alpha-level development kit at the end of first-quarter and beta-level development kit in the second-quarter 1995. To reduce the development schedule risk, the PSP development team is exploring using similar technology from Lotus (AWE - Alternate Windows Emulator) to expand PM-Win's coverage or provide a jump start on the implementation. Lotus has already confidentially demonstrated a Windows 95 version of Freelance running on OS/2 _Warp_. The performance of the portion running

on OS/2 *Warp* is currently faster than the same code running on Windows 95 - therefore, this technology looks very promising.

Coupled with PM-Win, PSP is adding OpenDoc to OS/2 *Warp*. OpenDoc will provide a superior Compound Document Model with upward compatibility and interoperability with OLE 2.0. Apple and Novell/WordPerfect will be providing OpenDoc support for the Macintosh and Windows platforms, respectively. For ISVs that are using little or no OLE function, this is a very attractive solution. With the industry support, ISVs are more comfortable in moving to the technically superior and easier OpenDoc model. They have been assured the technology will be on all meaningful PC platforms. (IBM is also taking OpenDoc to AIX). IBM's support of CI Labs and its assistance to Novell/Wordperfect and Apple for both delivery schedule and marketing aspects is critical to ensure OpenDoc's broad acceptance.

Most ISVs would utilize this PM-Win interface, but the PM-Win interface does not exploit the power of OS/2 *Warp*. And the developers are building 32-bit Windows 95 applications from existing Windows 3.11 source code today. They are adding exploitative features such as threads. When they release the Windows 95 version, they can either use the PM-Win code to create a new common code base across both Windows 95 and OS/2 *Warp* or add the Windows 95 features to the 32-bit OS/2 *Warp* application already delivered to get to a single code base. The developer can then retain/add unique modules in the application to exploit OS/2 *Warp* and is a simple compile away from producing an OS/2 for PowerPC application.

PSP and SDO can publicly announce and deliver the PM-Win development kit in June 1995. This plan includes a high level overview to the Springboard ISVs (completed 12/14/94) and further testing of the approach with key industry vendors such as Lotus, Novell/WordPerfect, Borland, Symantec, Broderbund, etc.

Enhancements planned for SMART in early 1995 include adding awareness of PM-Win and exploiting this technology to optimize functional exploitation and performance.

Efforts such as PM-Win and OpenDoc cannot succeed without the support of key industry partners such as Lotus, Borland, Novell/WordPerfect, Symantec, Broderbund and others. Therefore, we are considering that PM-Win be coupled with our OpenDoc initiative and leveraged through the CI Labs industry consortium. CI Labs already has most of the partners needed for success, and the coupling of PM-Win technology with OpenDoc is crucial to success. This strategy also increases the likelihood of its adoption by other industry players. One player we would approach for PM-Win support as they move to a microkernel-based, multithreaded operating system is Apple. The powerful combination of a procedural technology that allows for exploitation of OS/2 *Warp*, Windows, and Macintosh will increase applications available for OS/2 *Warp* while also positioning IBM and Apple to encourage the move the industry to the Taligent object-based platform.

<u>Issues with PM-Win Strategy</u>

For ISVs that have extensively used OLE today (or will in the next 6 months), IBM does not have a direct solution. PSP is analyzing what solution can be provided to deal with this in a PM-Win fashion. This analysis should be completed in February and will likely result in required extensions to PM-Win and OpenDoc (i.e., plan changes and funding requirements). For ISVs not too far down the OLE path some may take a second look at OpenDoc. A senior product manager for OLE marketing in Microsoft's developerrelations group acknowledged to

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InfoWorld (1/16/95 issue) that OpenDoc could be used to get the OLE compatibility required for an application to qualify for the Windows 95 compatible logo.

For ISVs that have made the move to object-oriented programming with a programming language such as C++, they generally are dependent on a platform-specific set of class libraries (sets of object-oriented function such as tool bars, menus, etc. that speed application development). The most popular class library for Windows developers is Microsoft's Foundation Classes — although not generally used by industry leaders who fear being "locked-in" to Microsoft layers. IBM's solution is to provide a multi-platform set of replacement libraries. These libraries will provide the programming interfaces, but to make the move more direct, a set of migration tools should be provided. IBM does not currently have a plan for these tools. Software Solutions is currently investigating alternatives to ease this migration and will be adding the migration tools to their C Set ++ plans. In addition to IBM's solution, there is one industry solution to this today with Borland's class library (Object Windows Library) OWL which is available on both Windows and OS/2 platforms.

Microsoft will be sure to avoid support for PM-Win. However, the same customers of ours that are asking us to support Windows 95 applications are also, therefore, partners of Microsoft and are constantly pressuring Microsoft to support native OS/2. With the dramatic reduction in porting cost due to PM-Win we expect customer pressure on Microsoft to increase and that combined with OS/2 volumes exceeding that of the Macintosh (for which Microsoft is the number one application supplier), Microsoft may give in to PM-Win. It is still a long shot given the threat OS/2 presents to Microsoft's long-term strategy.

IBM has all necessary rights to bring PM-Win to market, however, there may be legal issues (e.g., royalties, derivative works, etc.) with offering PM-Win to the industry. The legal issues will be assessed before the first alpha of PM-Win.

### Summary of the PM-Win Scenario vs. Microsoft in 1995/96 by Quarter:

| | Microsoft | IBM | Springboard ISV Contracts | Selected Springboard Native OS/2 Apps |
|---|---|---|---|---|
| 4Q'94 | Win95 Beta II (November) | *Warp* Launch (October) | - 3 ISV agreements closed<br>- 2 ISV commits announced | • all # of app figures below are net adds from previous qtr |
| 1Q '95 | •$30 Win95 Beta to 400K Users (March) | •*Warp* w/ WinOS2 (February)<br>• OpenDoc Beta (March) | - 22 ISV additional agreements closed | - 9 apps shipping on Intel<br>- 70 apps committed to ship by 4Q95 |
| 2Q '95 | •GA of 32-bit Visual C++ and Visual Basic (June?) | •GA *Warp* LAN Client (Apr)<br>•GA *Warp* LAN Client w/ WinOS2 (May)<br>•*Warp* for PPC w/ OpenDoc GA<br>• PM-Win Toolkit Alpha (June) | - 25 additional ISV agreements closed<br>- Announce ISV commits & OS/2 & PPC apps | - 10 apps shipping on Intel<br>- 110 apps committed to ship by 1Q96 |
| 3Q '95 | •GA of Win95 (August) | •PM-Win Toolkit Beta | - 25 additional ISV agreements closed<br>(funding/expense exposure) | - 38 apps shipping on Intel<br>- 30 apps shipping on PPC<br>- 20 apps committed to ship by 2Q96 |
| 4Q '95 | •Win 95 MS Office and MS Home (Oct)<br>•Lotus Smart Suite for Win95 (Dec) | •*Warp* Refresh w/ PM-Win & OpenDoc (Nov) | - 25 additional ISV agreements closed<br>(funding/expense exposure) | - 13 apps shipping on Intel<br>- 20 apps shipping on PPC<br>- 30 apps committed to ship by 3Q96 |
| 1Q'96 | | | | - 90 apps shipping on Intel<br>- 30 apps shipping on PPC<br>- 20 apps committed to ship by 4Q96 |

## Marketing Plans for OS/2 *Warp* related to PM-Win Option:

The option of extending PM into PM-Win focuses on the developer and ISV market and is designed to incent them to create native OS/2 *Warp* applications. Our initial plan is to convince them to implement the PM-Win extensions in their applications. Additional plans include the publicity of these commitments and the joint marketing/merchandising of the resulting OS/2 native applications. Springboard is the vehicle and the model for these marketing plans.

### Marketing rollout - proposed scenario for PM-Win:

- Further establish OS/2 *Warp's* success with the announcement of the network-enabled version of OS/2 *Warp* in early March at *CeBit* in Germany. Consumer messages remain *Warp* Value, BonusPak, and Internet. We add messages to position the networked OS/2 *Warp* as "Windows 95" early for Small/Med/Large companies. "Who would want to wait for a 1.0 version operating system that needs a 1.0

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version application to support it?". For ISVs we continue Springboard activities and advertising our increasing OS/2 *Warp* volumes. "SCORE: X Million 32-bit OS/2's shipped compared to 0 32-bit Windows 95".

- In June at PC Expo, have CI Labs drive the announcement of PM-Win with on-stage support from IBM, Lotus, Novell/WordPerfect, Borland, Symantec, and others. This industry backing is a critical success factor in this announcement as is the fact that the announcement will not be led by IBM. OSF may also participate through the current ECMA Windows API standardization effort.

- For customers who have standardized on Microsoft Office, and therefore can not migrate to the Windows 95 versions of Microsoft Office under OS/2 *Warp*, we could offer an attractive competitive upgrade to Lotus SmartSuite which could include migration services. This offering could be for both Windows 3.X and existing OS/2 customers.

- PM-Win support ships on Developer Connection Volume 7 Special Edition for OS/2 *Warp* in June 1995 with significant fanfare and publicity. Also, CI Labs will announce that it will offer the PM-Win API certification suite for Windows 32-bit applications with Lotus leading by announcing that their new SmartSuite conforms. In addition, we would like Novell to announce similar support for PM-Win on UnixWare. Longer shot is to get Apple to announce they will support PM-Win/OpenDoc on System 8.X.

- *PC Expo* keynote will be delivered by IBM and include a visionary presentation on the applications PM-Win and OpenDoc will enable along with a demonstration of Pluggable Places interface technology. A "Home Place" (home-customized implementation of Pluggable Places) could be shown demonstrating speech, TV, infrared and other technologies accessed through an OpenDoc-enabled shell with PM-Win applications and part handlers.

- Concurrent with the shipment of Windows 95 in August, CI Labs and partners will host a major developers conference introducing the PM-Win and OpenDoc technologies on both Intel and PowerPC platforms. This conference, targeted at thousands of developers, will also kickoff a branding/certification logo program whereby CI Labs or OSF will certify a PM-Win/OpenDoc application for portability across software platforms as well as hardware platforms. This will be an effort to deflate "Windows 95 Compatible" logo program and to encourage ISVs to meet the CI Labs and/or OSF standard.

- Key Windows developer targets for publicity throughout second and third quarter 1995 will be the Microsoft System Journal, Dr. Dobbs, major trade magazines such as Byte, PC Magazine and others as well as OS/2 Developer.

- Evangelism will also be driven through the establishment of PM-Win & OpenDoc developer conferences as well as news forums on major online services and Internet allowing the development community to download white papers, sample code, new news and more.

- Pluggable Places will be surfaced throughout as the next generation of Workplace Shell that can be exploited through PM-Win and OpenDoc. This interface will be the focus of intense work and heavy investment in outside contributions from game and Hollywood-style designers to create multimedia,

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speech-enabled, telephony-enabled, Internet-exploitative, highly 3D objects and places that are a compelling example of where IBM wants to lead the industry with OS/2 *Warp*.

- **Key Messages/Marketing Events Related to Springboard by Quarter**

| | PSP Key Events & Messages | Springboard Events & Msgs | ISV Messages | Press/Customer Messages |
|---|---|---|---|---|
| 4Q94 | *Warp* Launch<br>- Consumer Focus<br>- BonusPak/Internet | ISV Briefing<br>- 63 ISV's<br>- 42 companies | Write now for *Warp*<br>- Exploit OS/2<br>- Use SMART tool | Hype Warp Volumes /<br>ISV Commitments |
| 1Q95 | Continue Consumer Focus - ship *Warp* Fullpak (Feb) as upgrade to install base.<br>Ann LAN Client at CeBit (Mar) | - ISV Briefing for next wave of ISVs<br>- Shows - SDC, Intermedia, Seybold, NetWorld with Springboard partners | - same | - same<br>- Press Rel of ISV commits (Jan) |
| 2Q95 | - Hype *Warp* LAN Client (Apr)<br>- PPC Launch w/ OpenDoc (May)<br>- CI Labs announce PM-Win with major ISV presence | - Ann Home BonusPak<br>- PPC apps GA<br>- Shows - Condex, PC Expo, IBM Tech Interchange | - PM-Win/OpenDoc will be industry standard 32-bit API<br>-Use OpenDoc to get OLE function on Win95 plus cross platform support<br>- *Warp* is now a proven ISV market alternative and/or extension to Windows 95<br>- Unnecessary to support Win95 binary applications at this time | - same as previous qtr and as ISV msgs<br>- Press Rel of ISV commits |
| 3Q95 | - Major ISV push for *Warp* II Beta with PM-Win and OpenDoc | Announce latest ISV commits and apps<br>Shows - NetWorld, IBM Tech Interchanges (3) | - same | - Claim victory on native app problem - 57 *key* apps shipping and 180 commits |
| 4Q95 | Hype *Warp* refresh with PM-Win, OpenDoc, & Plugable Places | Announce new ISV Commits / Ships | - same | - same<br>- ships up to 70<br>- commits to 210 |
| 1Q96 | - same | Announce new ISV Commits / Ships | - same | - same<br>- ships up to 160<br>- commits to 230 |

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### Alternative Options - Considerations for Marketing Actions

Two other options are available to us to address the Windows 95 market from a user's point of view. Those options are to include Windows 95 support in WINOS2 or use Insignia Windows 95 technology to support Windows 95 applications under OS/2 *Warp*. Marketing plans for these two options would be broadly targeted to customers wanting to use Windows 95 applications and will be dependent on the segments those applications address. However, given Windows 95 has many of the key differentiating features of OS/2, an, 'OS/2 with Windows 95 support' product would be extremely hard to differentiate with users and would make it even harder to keep developers writing to OS/2's unique APIs. An additional challenge would be convincing the market that IBM can "keep up" with changes in Windows 95, 96, 97, etc. The following sections are relevant only if we decided to implement either of the above two options.

### Native Windows 95 in WinOS2

As the technology for this option will not be available in 1995, marketing plans for this option would be dependent on the number of Windows 95 applications available and the market segments those applications address.

Plans to highlight this would be similar to the plans we have executed to highlight the current Windows 3.1 compatibility including focus on added value such as crash protection, preemptive multitasking of Windows sessions, performance in environments where three or more applications are multitasking, etc. Added value for Windows 95 would include the stability and reliability of the proven OS/2 *Warp* code base, superior user interface, superior object model with OpenDoc cross-platform support, etc.

### Insignia Windows 95 Technology

The marketing execution for this option would be essentially identical to the option of IBM creating Windows 95 compatibility in WINOS2. The expected additional issues to address here may be performance-oriented depending on the quality of this implementation versus the IBM implementation. Again, this technology would probably not be available until 1996 and marketing plans would be impacted by the environment at that time. An increased royalty may also force undesired price actions.

### Summary of Recommendations

To deal with OS/2 *Warp* not supporting applications that exploit new features unique to Windows 95, IBM will deliver the following:

- Marketing programs to bolster the current retail and OEM sales volumes;

- Project Springboard, a set of financial and marketing incentives to encourage more rapid development of OS/2-native applications now;

- PM-Win, a technology to allow ISVs to develop OS/2-native applications with little additional investment to their current Microsoft development costs;

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- OpenDoc, a technology that allows ISVs to develop significantly more powerful and portable document-centric applications;

- Industry support through CI Labs endorsing PM-Win and OpenDoc; and

- Marketing messages through key industry events and press that cohesively ties all these key messages and programs together to demonstrate a viable, profitable alternative to Win95 development that is backed by the industry.

## Open Issues

- The Solution Developer Operations (SDO) organization has requested $64M for 1995 application development funding. Issues still exist relative to the release of the funds, forinstance, no capital funds have been released.

- Backup plan to address a successful Windows 95 application rollout by Microsoft and a failure of PM-Win. This would involve a special effort to add Windows 95 application binary support to OS/2. This has been sized at $5M+ but not currently in the PSP booked plan.

- Preloaded PCs with OS/2 *Warp* during the Windows 95 timeframe probably cannot afford to have three operating systems on their hard disks: Windows 95, Windows 3.11, and OS/2 *Warp*. Therefore, the current efforts to ensure OS/2 *Warp* is preloaded on OEM PCs prior to Windows 95 availability is critical such that we are the incumbant. Also, the backup plan to PM-Win may require funding to guarantee no momentum is lost on preload.

- The current PM-Win and OpenDoc solutions do not adequately address ISVs that have extensively used OLE already. Providing an easy migration path for these ISVs will be critical and will likely require additional funding.

- Migrating ISVs that depend heavily on a platform-specific set of class libraries (such as Microsoft Foundation Classes) must be addressed with tools and assistance from SWS.

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# Appendix 1

## SPRINGBOARD TABLE OF APPLICATIONS
### (By Market/Company/Application)

| Market Segment | Company | Application | Win95 | OLE 2.0 |
|---|---|---|---|---|
| Accounting | Computer Assoc | ACCPAC Accounting | 4Q95 | TBD |
| Accounting | Oracle | Oracle C/S Accounting | TBD | TBD |
| Accounting | Peachtree | Peachtree Accounting | TBD | TBD |
| Canada Specific | Eicon Technology | WAN Services for OS/2 | | |
| Canada Specific | Mortis Kern Systems | MKS LEX & YACC | | |
| Canada Specific | Mortis Kern Systems | MKS RCS | | |
| Canada Specific | Mortis Kern Systems | MKS Toolkit | | |
| Canada Specific | On-Line Data | On Command xBase for OS/2 | | |
| Canada Specific | Pro Engineering | EZRAID | | |
| Canada Specific | Pro Engineering | EZRAID Lite | | |
| Canada Specific | Prominaire | Analyst Designer | - | |
| Canada Specific | Prominaire | Development System | | |
| Canada Specific | TCS | Impact | | |
| Canada Specific | TCS | Posh/2 | | |
| Communications | Attachmate | Extra for OS/2 | 4Q95 | TBD |
| Communications | DCA | IRMA | TBD | No |
| Communications | Delrina | WinCom | 4Q95 | Y |
| Communications | Hilgraeve | Hyperaccess | 4Q95 | No |
| Communications | Hilgraeve | KopyKat | | |
| Communications | Wall Data | Rumba | TBD | TBD |
| Commun/Media Industry | Appintech | . | | |
| Cross Industry | Dunn & Bradstreet | . | | |
| Cross Industry | Lotus | . | | |
| Cross Industry | Peoplesoft | . | | |
| Cross Industry | Software 2000 | . | | |
| Cross Industry | SSA | . | | |
| Desktop Data | Borland | dBase | 4Q95 | 4Q95 |
| Desktop Data | Btrieve Techs | Btrieve | TBD | TBD |
| Desktop Data | Computer Assoc | CA Ingres | 4Q95 | TBD |
| Desktop Data | Lotus | Approach | 3Q95 | TBD |
| Desktop Publishing | Adobe | Premier | 4Q95 | 4Q96 |
| Desktop Publishing | Broderbund | Print Shop | No | No |
| Desktop Publishing | Corel | CorelDraw | 3Q95 | 4Q95 |
| Desktop Publishing | Corel | Ventura | | |
| Desktop Publishing | Frame | Frame Dev Kit | | |
| Desktop Publishing | Frame | FrameMaker | 4Q95 | TBD |
| Desktop Publising | Corel | Photo CD | | |
| Development Tool | Oracle | Power Objects (Proj X) | | |
| Development Tools | Borland | C++ | 4Q95 | 4Q95 |

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|---|---|---|---|---|
| Development Tools | Computer Assoc | CA Realizer | 4Q95 | Y |
| Development Tools | Digitalk | Smalltalk | TBD | TBD |
| Development Tools | Gupta | SQL Windows 5 | YE95 | TBD |
| Development Tools | Intelligent Env | Apps. Manager | TBD | TBD |
| Development Tools | Metaware | C/C++Compiler | TBD | TBD |
| Development Tools | MicroFocus | Cobol Compiler | TBD | TBD |
| Development Tools | MicroWay | Fortran Compiler | No | No |
| Development Tools | ParcPlace | Visual Works | TBD | TBD |
| Development Tools | Powersoft | PowerBuilder | YE95 | TBD |
| Development Tools | Progress Software | Progress | TBD | TBD |
| Development Tools | Uniface | Uniface for OS2 | YE95 | TBD |
| Development Tools | Watcom | C/C++ Compiler | 4Q95 | TBD |
| Development Tools | Watcom | VX Rexx | 4Q95 | TBD |
| Distributed Systems Mgmt. | Computer Assoc | CA-Unicenter | 4Q95 | No |
| Distribution Industry | BIS Systems | " | | |
| Distribution Industry | Comshare | " | | |
| Distribution Industry | Microbilt | " | | |
| Distribution Industry | Retail Store Sys | " | | |
| Distribution Industry | SAP AG (3) | " | | |
| Education Industry | Asymetrix | " | | |
| Education Industry | Corel | " | | |
| Education Industry | Cornell Legal | " | | |
| Education Industry | Robinson Group | " | | |
| EMail | Davinci | E Mail | TBD | TBD |
| EMail | Lotus | cc:Mail | 3Q95 | TBD |
| EMEA specific | Accent | | | |
| EMEA specific | Baan (2) | | | |
| EMEA specific | Baan (2) | Triton | | |
| EMEA Specific | Damgaard | Concorde | | |
| EMEA Specific | Effix Reuters | Kobra | | |
| EMEA Specific | HS | | | |
| EMEA Specific | ICL | Teamwork | | |
| EMEA Specific | Navision | Navigator | | |
| EMEA Specific | Star Division | Star Office | | |
| EMEA Specific | Uti Maco | | | |
| Entertainment | Access | Under a Killing Moon | No | No |
| Entertainment | Compton | Encyclopedia | TBD | TBD |
| Entertainment | Corel | Games (25) | | |
| Entertainment | Dux SW | Simcity Classic | No | No |
| Entertainment | Id Software | Doom | 1H95 | 1H95 |
| Entertainment | Lucas Arts | Rebel Assault | TBD | No |

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|---|---|---|---|---|
| Entertainment | Maxis | Print Artist | TBD | TBD |
| Entertainment | Maxis | Simcity 2000 | TBD | TBD |
| Entertainment | Maxis | Simtown | TBD | TBD |
| Entertainment | Maxis | Widget Workshop | TBD | TBD |
| Entertainment | Mindscape (SW Toolworks) | Alien Logic | TBD | TBD |
| Entertainment | Mindscape (SW Toolworks) | Panzer General | TBD | TBD |
| Entertainment | Origin | Wing Commander III | TBD | TBD |
| Entertainment | Psygnosis | Lemmings for OS/2 | TBD | TBD |
| Entertainment | Rocket Science Games | Cadillacs & Dinosaurs | TBD | TBD |
| Entertainment | Rocket Science Games | Loadstar | TBD | TBD |
| Entertainment | Sierra | Kings Quest VII | | |
| Entertainment | StarDock Systems | Galactic Civilization | No | No |
| Fax | Delrina | Winfax Pro | 4Q95 | Y |
| Fax | Global Village | Faxworks | YE95 | TBD |
| Finance Industry | Argo | * | | |
| Finance Industry | Footprint | * | | |
| Finance Industry | Logica PLC | * | | |
| Finance Industry | NW Bank Tech | * | | |
| Government Industry | AMS | * | | |
| Government Industry | Arc/Info | * - | | |
| Government Industry | Selfin | * | | |
| Government Industry | Sistemi Info | * | | |
| Healthcare Industry | HBO & Co | * | | |
| Healthcare Industry | Shared Med Sys | * | | |
| Information Highway | Compuserve | CIM for OS/2 | No | No |
| Information Highway | Prodigy | P2 Prodigy Servs | No | TBD |
| Information Highway | Univ/Illinois/NCSA | Mosaic | TBD | TBD |
| Information Management | SAS | SAS Base System | 3Q95 | 4Q95 |
| Insurance Industry | Calif Inter | * | | |
| Insurance Industry | Huon | * | | |
| Insurance Industry | PMSC | * | | |
| Insurance Industry | Sterling Wentworth | * | | |
| Integrated | Footprint | Footprint Works | TBD | TBD |
| Japan | Just Systems | ATOK8/9 | | |
| Japan | Just Systems | Hanako | | |
| Japan | Just Systems | Ichitaro V6 | | |
| Japan | Just Systems | Sanshiro | | |
| Japan | Kanrikougki Kenkyujo | Kiri | | |
| Japan | Kanrikougki Kenkyujo | Matsu | | |
| LAN | Artisoft | Lantastic | TBD | TBD |

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|---|---|---|---|---|
| LAN | Banyan | Vines/Reques | TBD | TBD |
| LAN | Novell | Netware/Requester | TBD | TBD |
| Manufacturing Industry | Dessault | . | | |
| Manufacturing Industry | SAP AG (3) | . | | |
| Multimedia Tools | Adobe | PageMaker | 4Q95 | 4Q95 |
| Multimedia Tools | Aimtech | Icon Author | 4Q95 | 4Q95 |
| Multimedia Tools | MacroMedia | Director/Player | YE95 | Y |
| PC Paintbrush | Softkey | PC Paintbrush | 4Q95 | TBD |
| Personal | Computer Assoc | Simply Money | 4Q95 | TBD |
| Personal | Computer Assoc | Simply Tax | 4Q95 | Y |
| Personal | Computer Associates | Simply House | . | |
| Personal | Computer Associates | Simply Kids | | |
| Personal | Computer Associates | Simply Vacation | | |
| Petroleum Industry | ADV Geophysical | . | | |
| Petroleum Industry | JD Edwards | . | | |
| Petroleum Industry | SAP AG (3) | . | | |
| PIM | Lotus | Organizer | 3Q95 | TBD |
| PIM | Symantec | ACT! | 4Q95 | TBD |
| Presentation | Frame | FrameViewer | | |
| Presentation | Lotus | Freelance | 3Q95 | TBD |
| Presentation | Macromedia | Action | 3Q95 | Y |
| Presentation | SPC | Harvard Graphics | 4Q95 | TBD |
| Process Industry | Marcam | . | 4Q95 | |
| Process Industry | Marcam (2) | . | 4Q95 | |
| Project Management | Computer Assoc | CA SuperProject | 4Q95 | Y |
| Small Office, Home Office | Prodigy | EMail Conection | Yes | TBD |
| Small Office/Home Office | Computer Associates | Simply Village | 4Q95 | TBD |
| Small Office/Home Office | Scratchpad Graphics | Colorworks | No | No |
| SoHo/Spreadsheet | Athena Design | Mesa 2 | No | No |
| SoHo/Utilities | Stac Electronics | Stacker for OS/2 | 4Q95 | No |
| Spreadsheet | Lotus | 1 2 3 | 3Q95 | TBD |
| Spreadsheet | Novell | Quattro Pro | TBD | TBD |
| SQL Database | Informix | Informix SQL 10 | TBD | TBD |
| SQL Database | Oracle | Enterprise Server | | |
| SQL Database | Oracle | Oracle 7.1 Server | TBD | TBD |
| SQL Database | Oracle | Personal Oracle | | |
| SQL Database | Oracle | Workgroup Server | | |
| SQL Database | Sybase | SQL Server 10 | No | TBD |
| Transportation Industry | ASA | . | | |
| Transportation Industry | FDS | . | | |
| Transportation Industry | Innovative Corp | . | | |

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| Market Segment | Company | Application | Win95 | OLE 2.0 |
|---|---|---|---|---|
| Travel Industry | Hotel Info Sys | . | TBD | TBD |
| Utilities | Cheyenne | Cheyenne Util | TBD | TBD |
| Utilities | Mergent Int. | PC/DACS | | |
| Utilities | Sybase | Backup Server | | |
| Utilities | Sybase | Cougar | | |
| Utilities | Sybase | Open Client | | |
| Utilities | Sybase | Open Server | | |
| Utilities | Sybase | Replication Server | | |
| Utilities | Sybase | SQL Server | | |
| Utilities | Sybase | SQL Server Monitor | | |
| Utilities | Sybase | Fastback Plus for OS/2 | 4Q95 | TBD |
| Utilities | Symantec | . | | |
| Utilities Industry | ERSI | . | | |
| Utilities Industry | JD Edwards (2) | . | | |
| Utilities Specific | Enghouse Sys | AmiPro | 3Q95 | TBD |
| Word Processing | Lotus | WordPerfect | 4Q95 | Y |
| Word Processing | WordPerfect | Corel CD Office | | |
| Workgroup Computing | Corel | Notes | 3Q95 | TBD |
| Workgroup Computing | Lotus | Office | YE95 | Y |
| Workgroup Computing | Wordperfect | | | |
| | | * Application Suites | | |

## Appendix 2

**Project Springboard International Language Version Rollouts**

One of the key objectives of the Springboard project is to get both US and international coverage for OS/2 *Warp* exploitve applications. The following chart list the projected ship dates for US versions of the applications along with a count of the number of other language versions that ship by quarter. For example, if Sybase were to ship a US product followed by versions in 7 European languages followed by a Japaneese version, it would count as 1 application for the US and would get seven counts for Europe and one for Asia/Pacific with each count in the quarter that particular language version ships. Therefore the US count is the number of unique applications shipping for OS/2 *Warp* and the other counts are an indicator of our foreign language penetration of those applications.

### International Language Version Rollouts

|          | Qtr   | US | Europe | Asia/Pacific | Total |
|----------|-------|----|--------|--------------|-------|
| Intel    | 1Q95  | 9  | 38     | 9            | 56    |
|          | 2Q95  | 10 | 7      | 3            | 20    |
|          | 3Q95  | 38 | 7      | 3            | 48    |
|          | 4Q95  | 2  | 14     | 1            | 17    |
|          | Total | 59 | 66     | 16           | 141   |
| PowerPC  | 2Q95  | 6  | 9      | 5            | 20    |
|          | 3Q95  | 18 | 35     | 7            | 60    |
|          | 4Q95  | 1  | 15     | 2            | 18    |
|          | 1Q96  | 1  | 0      | 0            | 1     |
|          | Total | 26 | 59     | 14           | 99    |
| Total    |       | 85 | 125    | 30           | 240   |