



AppleDirections

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Apple News

1 Million Power Macs, 500 Native Apps

Apple Computer, Inc., announced that it sold more than 1 million Power Macintosh systems and upgrade cards between their introduction in March 1994 and January 1995, putting the company well ahead of its original goal of shipping 1 million systems within the PowerPC processor-based computer's first year on the market.

Buoyed by those sales, Apple enjoyed record revenues for the first fiscal quarter of 1995, which ended December 30, 1994. For the quarter, Apple's revenues were \$2.83 billion, the highest quarterly revenue figure in the company's history. For those of you keeping score, that marks the sixth quarter in a row Apple has taken in \$2 billion or more; in four of those six quarters, Apple's revenues improved on previous records.

In the words of *Business Week* magazine, which selected the Power Macintosh computer to be one of the best new products of 1994 in its January 9 issue, "Look out Pentium, the PowerPC chip is going gangbusters, driving the Power Macintosh into the sales stratosphere."

More than a few of you can share the credit for that success; we hope you're enjoying the financial rewards. More than 500 of your products have been ported to PowerPC "native"

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Strategy Mosaic

Blueprint for the Future: Commu- nications and Collaboration

By Gregg Williams, Apple Directions staff

Apple Wants Mac OS, Newton to Be Best Platforms for Developers

At a recent meeting with industry analysts, one piece of advice that several analysts gave Apple executives was that Apple Computer, Inc., should focus on a few areas of competence and commit to supporting them in the long term. While that's advice that always bears repeating, I think it's important to note that Apple has been thinking the same thoughts and, more important, has been acting on them.

Last month, I covered the Publishing Program Office and Apple's strategy for maintaining its leadership in the publishing field. This month, I want to tell you about the Communications and Collaboration Program Office and Apple's plans for communications and collaboration (which I'll abbreviate as C&C).

What Is "Communications and Collaboration"?

Unlike the other usage areas, C&C is an enabling, "horizontal" technology that will be

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AppleDirections

Volume 3, Number 3

Apple Directions, the monthly developer newsletter of Apple Computer, Inc., communicates Apple's strategic, business, and technical directions to decision makers at development companies to help maximize their development dollar. It is published by the Apple Developer Periodicals group within Apple's Developer Press.

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Editor's Note

Delays, Delays

We've probably all read with some satisfaction that Microsoft delayed shipment of Windows 95 until this August. Isn't it wonderful poetic irony that supposedly the shrewdest marketing firm of our age names a product after the year it's scheduled to ship, and then risks delivering it in the following year? Perhaps some of you saw the phony press release announcing that Microsoft decided that 1996 will henceforth be called 1995, just in case.

As in last month's column on the Pentium floating point fiasco, I think it's in our interest to look beyond the irony and try to learn from Microsoft's situation. Let's face it, few of us have the resources Microsoft does to weather monumental delays. And who of us can admit without crossing our fingers that we've never had to delay shipping a product? (Sure wish we could say that here at Apple.)

I think it's a given of our business, especially the software side of it, that it's almost impossible to ship a product without going through what the folks up in Redmond are experiencing. The reason: writing software isn't a business so much as it is a creative enterprise. We're not designing widgets, we're creating tools that let people be productive and creative. To make it even more difficult, the media we use to create those tools—that is, our engineers' code—can almost never be good enough. There's always a way to make it faster, more logical, smaller, or what have you. And then there's always that last bug that we can't even find, let alone fix.

Then of course there are all the other things that can go wrong. The most common problem we face is the lofty promises of our marketers and engineers (and an occasional executive) to deliver the latest and greatest by, oh, say the week after next. We announce the product for next month, just to be on the safe side. Then, upon a little more investigation it turns out that the latest and greatest can't quite be done, and we'll have to settle for something that's just pretty ok. Unfortunately even that won't be ready until the middle

of the year, *if* we're able to do beta testing in about two weeks.

What can we do about these problems? Here at Apple, one thing that's been done is to hire these energetic geniuses called project leaders. The best of these folks understand that they're leading a creative team; they instinctively know when some aspect of a project is going to take more time than ambitious product marketing folks have allowed. Project leaders also know the tricks of realistic software scheduling, gathering all the facts they need to determine a schedule, one hopes before announcing a ship date.

Sometimes even the best project leaders can't prevent delays, largely because of the inherently tricky nature of writing code that works the way it's supposed to. In gracefully, but forcefully, deciding to delay a ship date, project leaders really earn their keep. In doing so, they're coming to grips with what I've heard called the "dead elephant syndrome:" this occurs when it seems as if everyone on the project is angling around a dead elephant (that is, a show-stopping problem) in the middle of the room while trying to deny its presence. Project leaders are there to get us out of denial, admit the presence of the dead elephant, and remove it before its stench consumes us. Sometimes it can be removed without causing a delay, but more often the best that can be done is a face-saving, humble product-slip announcement.

We spend a lot of time thinking about how much money we're going to make when we get a great product out the door on time (and under budget). As the Windows 95 slip makes abundantly clear, we have to spend an equal amount of time thinking about what we're going to do when we can't meet our own goals, and finding success even when, along the way, we've had to admit failure.

Paul Dreyfus
Editor

IndustryWatch: News & Perspective

Apple's Expanding Markets

Prepared by the Apple Directions staff

IndustryWatch is our regular compilation of news about events happening outside the Apple Computer, Inc., R&D complex and the ways we think they affect your development efforts. Each month, we gather the most notable items, which we hope will point you toward new opportunities, help you avoid mistakes, and alert you to key developments in the industry. We're not trying to cover everything in the computer industry; other publications already do that. Instead, we're digging through the news to present you with the most interesting tidbits, ones that translate into ideas you can use. If you have comments about IndustryWatch, or if you want to alert us to issues you think the Apple development community needs to know about, send us an AppleLink message at A.DIRECTIONS.

Windows of Opportunity for Games Products in 1995 (and 1996)

Microsoft recently announced that it has delayed shipment of Windows 95 until August. Also, to begin to reverse the problems with the current version of Windows as a CD title platform, Microsoft has announced that 15 CD-ROM titles are currently shipping that use WinG, a collection of programming techniques and APIs—many of which have been available to Macintosh developers for a long time—for faster game performance on Windows. Titles include *SimCity 2000*, *The Farm*, and *WinDOOM*. In addition, many other WinG games are now under development for Windows 95. Microsoft's press release (like its other recent multimedia-related press releases) also mentions other technologies for multimedia that will be included in Windows 95: AutoPlay (automatic start for games), DCI (faster video), WinToon (interactive cartoons), Truespeech (compressed voice data), and MPEG (compressed digital video).

Implications/Opinions: Even the late shipment of Windows 95 won't delay the inevitable: the new version is going to sell, and sell big, whenever it's shipped. (Remember, you read it here!)

But (and this is a big *but*)—the size of the DOS/Windows market being what it is, and given the usual reluctance of computer users to upgrade, customers of Intel-driven PCs will be a camp divided between DOS, Windows 3.1, and Windows 95 for at least the next year or so. The WinG games may encourage developers to port their products from DOS to Windows, but titles that push the performance edge—such as

The 11th Hour, the sequel to *The 7th Guest*—are sticking with DOS. (For example, id Software will still ship a DOS version of *DOOM*.) The big Windows title push is waiting for Windows 95 and Plug and Play hardware, which now just isn't going to happen for awhile.

What this means is that the Macintosh computer will retain its ease-of-use edge—an important factor for entertainment software users—over PCs as a whole for a long time. This edge, and a few other factors, makes it a great time to develop new games for the Macintosh computer.

One of those other factors is Apple's newly announced Pippin entertainment/education/multimedia platform. Pippin is a small, low-cost CD-ROM playback device derived from Power Macintosh architecture that Apple will license to other companies; current Macintosh CD-ROM titles run on Pippin, which is driven by the PowerPC 603 RISC chip, with only minor modification. (For more about Pippin, see page 1 of the January 1995 issue of *Apple Directions*; you can find it on this month's Reference Library CD [path—Periodicals:Apple Directions:Apple Directions 1995:Apple Directions 01/95].)

Another factor is the recent extension of Apple's Power Macintosh success into the home market with the PowerPC 601 processor-based Macintosh Performa 6100 series computers.

Apple is hitting the consumer market hard with the Performa 6100 series; its licensees will do the same with Pippin. No matter which way a consumer turns—in favor of full-blown computing with a Power Macintosh Performa system, or in favor of the Pippin CD-playback product—you win if you have a Macintosh game on the market, because it will run on either device.

The bottom line: If you've been thinking about developing a Macintosh game, do it now. If you already have a game for DOS or Windows, redoing it for the Macintosh will give you a product in time to sell to an expanding customer base. As we said in the January Editor's Note, demand for Macintosh games—especially those that take advantage of "native" Power Macintosh performance—is already running ahead of supply; we think this is a situation that any games developer will want to take advantage of.

Video Game Sales Slowdown: An Opportunity for Edutainment Developers?

Purchase of video game systems by U.S. households declined for the first time, from 39 percent in June 1994 to 36 percent in September, according to Fairfield Research. In addition, Nintendo and Sega are projecting that their results for the year ending March 31 will fall far short of what they had predicted. For example, Sega U.S. expects its

Apple Directions Online—April

The April issue of Apple Directions will be available on AppleLink, the Internet, and eWorld by March 15, at the following locations:

AppleLink: path—Developer Support:Developer Services:Periodicals:Apple Directions.

Internet: select Developer Services and Products at the location www.apple.com.

eWorld: in the Apple area of the Computer Center.

Correction

Last month, IndustryWatch passed on a report from *Electronic Engineering Times* that the return rate for the Windows version of *Myst* is 40 percent and 5 percent for the Macintosh version.

According to Broderbund, the publisher of *Myst*, The return rate for the MPC/Windows version of *Myst* is 3 percent, while the return rate for the Macintosh version is 2 percent.

sales revenue to be 27 percent below last year's. Also, according to a report in the January 11 *Wall Street Journal*, both Sega and Nintendo sales are expected to continue their decline in 1995.

Implications/Opinions: Sega's and Nintendo's woes show just how difficult a time it is for video game companies. The current generation of systems (Sega Genesis, Sega 32X, Nintendo Super NES, Philips CD-I, and 3DO) are not selling as well as expected. And the coming generation of systems (Sega Saturn, Sony PlayStation, and Nintendo Ultra 64) are not compatible with the current generation and could stall the market as consumers try to figure out which new system will be the best purchasing bet.

This uncertainty translates into an opportunity for Pippin and your Macintosh/Pippin products. The first Pippin device, to be manufactured and sold by Japan's Bandai Co., is expected to hit the market in time for holiday buying this year. We expect Pippin will be looked at seriously by video game customers looking to step up to an enduring, quality entertainment environment, one that can be used for more than playing games.

You can look at people who purchase Pippin as first-time Macintosh buyers, since they'll be buying a subset of the Mac OS, albeit in a very different package. These new customers will continue to widen the market for your Macintosh entertainment, education, and multimedia CD-ROM titles. As we just said, the time is now to get going with these products.

Latest SPA Data: Macintosh Sales Grow Fastest in Most Categories

According to the most recent Software Publishers Association (SPA) data, sales of Macintosh software in the United States are much healthier than some would have you believe. Looking at U.S. software sales by application type during the third quarter of 1994, SPA research indicates that the Macintosh platform grew faster than the PC platform (that is, all PCs running DOS and/or Windows) in a majority of categories. Macintosh application sales grew faster in entertainment, home education, word processing, spreadsheet, integrated software, and presentation graphics. PC application sales grew faster in finance, database, drawing and painting, desktop publishing, and project management. Overall, PC platform sales grew 17 percent over sales from the same quarter the year before, while Macintosh software sales increased 11 percent.

Implications/Opinions: Don't be cowed by the Microsoft marketing juggernaut! While Microsoft gathers all the press attention for soaring

Windows sales, there remain solid business opportunities for Macintosh developers in a variety of categories, opportunities that *Apple Directions* will continue to point out. True, Windows software sales alone increased 50 percent over the third quarter of 1993, but the much smaller overall PC platform growth rate of 17 percent indicates that most of the Windows growth came from customers replacing DOS software with Windows upgrades. That's bad news if you're a DOS-only developer, but it doesn't mean much at all if your bread and butter still comes from Macintosh software. What's more, as Windows completes its cannibalization of DOS in 1995, the growth rate for Windows software can be expected to decline dramatically.

Newton Gaining Market Advantage

Microsoft is sending its WinPAD mobile-computing operating system back to the drawing board for a major overhaul. As a result, hand-held devices based on WinPAD are unlikely to reach the market before mid-1996. Microsoft attributed the delay to the difficulty in scaling down the Windows environment to meet the memory footprint, pricing, and performance characteristics of the hardware design.

In a related development, Motorola began selling its Marco Wireless Communicator, a personal digital assistant based on Apple Newton technology. Marco gives its purchasers access to Newton applications; additionally, it provides its users with wireless communications. (See the news item on page 12.)

Implications/Opinions: Both developments spell good news for Newton and Newton developers. Many customers and vendors were holding off their PDA investments in anticipation of WinPAD products. The delay, and the uncertainty surrounding the future of WinPAD, gives any of you developing Newton software more time to refine your products while Apple and its Newton licensees consolidate their market position. Currently, Newton devices account for approximately 60 percent of the PDA installed base, according to Apple data. For more about the market for Newton, see this month's Special Marketing Report, which starts on page 22.

Marco is expected to help Newton technology tighten its hold on the PDA market, especially among specialized users in sales automation, transportation, health care, financial services, and plant services. What this means for you is that you'll be able to sell your Newton products to an increasingly larger customer base. ♣

Strategy Mosaic

Communications and Collaboration

continued from page 1

present in products that belong to the other usage areas. To see what Apple means by "communications and collaboration," let's look at the words individually.

The goal of *communications* is to allow two people to interact wherever they are, by whatever

means. Examples include contact by telephone, pager, modem, or wireless link to a computer or PDA (personal digital assistant).

Collaboration, however, represents the "why" of the communication. That is, it reminds us that the communication has a purpose—to allow people working together to coordinate their efforts. That is the particular type of communication that C&C is involved with.

Why Is C&C Important Now?

The usage area of C&C is important because computers add value to electronic communication. They can make existing communications devices more usable, and they make it possible for new communications applications and services to be created. And by doing both of these things, computers will bring new users and new markets to both the computer and communications industries.

Another reason C&C is important is that computers and communications devices (the most commonplace of which is the telephone) will inevitably converge. Both computer and telecommunications companies are vying for the leadership in this convergence. As the telephone evolves dramatically thanks to the power and ease of use brought by the computer, telecommunications companies see their PBX businesses likely to be affected profoundly.

(Some background: *PBX* stands for *private branch exchange*, a privately owned or leased telephone switch to which a large group of users connect their telephones. The growth rate of the PBX industry is just a few percentage points per year; there's not much money to be made in selling garden-variety telephone connections to end-users, and hundreds of manufacturers are doing it. However, telephone companies see much more profit in selling their customers desktop units that combine a telephone with a computer. They can also create computer-based services that will generate new income.)

Obviously, with a large market like this one down the road, Apple intends to be a key player in order to ensure that its products, as well as the products of its developers, are successfully addressing this new opportunity. Both the Macintosh and Newton platforms deliver the ease of use that C&C solutions will need for their success, and Apple will leverage off its strengths by integrating the best technologies into the best products for its customers and developers. By working to shape the emerging C&C markets (and this usage area is big enough to generate many different markets), Apple can ensure that both its traditional strengths and its differentiating technologies can be put to good use.

Apple's Contributions to C&C

The goal of the Communications and Collaboration Program Office, headed by Allan White, is simple: to ensure that Apple is a major player in all the markets encompassed by C&C. White sees five areas in which Apple will offer strong solutions:

- the universal mailbox
- computer-telephony integration
- universal connectivity

- document, data, and video collaboration
- information access

Other companies can supply solutions in some of these areas, but Apple's unique strength is its ability to deliver in all of them. According to White, "What Apple brings to communications and collaboration is the graceful integration of all of these, to give customers the best integration of communications tools available anywhere. These five areas provide a seamless foundation for the full range of features and capabilities that most users need to perform their daily tasks of communicating and collaborating—in real time and store-and-forward modes, spanning from across the other side of a colleague's desk to across the world."

The concept of a universal mailbox—that is, a central place in your computer for you to check and respond to all your e-mail, voice mail, phone calls, and fax messages—is important because it provides a necessary focus for *all* your communication. "As everything that goes into and out of your computer becomes digital, the computer becomes a clearinghouse," says White. But (and this is already happening) people are becoming flooded with "too many pipes, too many messages." The universal mailbox is one way of centralizing the various "pipes" of information, and the computer itself will eventually help people manage and prioritize their communications with others.

Apple has already implemented the universal mailbox in system software through its PowerTalk technology. According to White, "PowerTalk gives the user a single point of integration for all forms of store-and-forward communications, from electronic mail to voice mail, paging messages, and video notes—all with

seamless consistency and ease of use. PowerTalk's interface and services are tightly integrated with the Mac OS, which gives developers a powerful and consistent foundation that they can leverage and integrate into their applications."

Computer-telephony integration (abbreviated as *CTI*) is important if only because the telephone is the most universal communications tool in use today. As described later in this article, the integration of the computer and the telephone is definitely on its way, and Apple plans to provide the best integration possible.

White points out that Apple's Macintosh Telephony Architecture (MTA), which is shipping with every copy of System 7.5, "gives developers and users the architecture to integrate a wide range of telephony systems and services with the Macintosh computer and applications. MTA provides the application developer with the ability to gain access to the customer's telephony system features and integrate them into a wide range of everyday productivity applications."

Universal connectivity is a simple but important goal: connectivity to any network, anywhere. This goal embraces mobile devices—including portable computers and PDAs—and wireless connectivity to networks.

GeoPort is a large part of Apple's connectivity strategy. "Apple's GeoPort architecture," White says, "provides a universal approach to connecting the Macintosh platform to any network, anytime, anywhere. Apple's GeoPort makes network connection simple and nonthreatening for users, allowing them to connect to digital ISDN networks, PBX network systems, business telephones, and plain old telephone service analog networks with ease and consistency. Through GeoPort, developers can add

communications services and features to their applications without having to invest development time in figuring out the highly specialized and often proprietary 'plumbing' details that are characteristic of the communications industry."

This month, Apple began shipping the GeoPort Telecom Adapter Kit, which is the latest hardware/software implementation of the GeoPort architecture. Apple is working on a similar product that will make it much easier for users to connect to ISDN lines.

The remaining two areas of Apple's involvement in communications and collaboration—document, data, and video collaboration, and information access—are important enough to warrant their own sections.

Face to Face, Apart

One of the most significant new capabilities that Macintosh computers will soon offer is that of document and video collaboration, which Apple will support through a new technology called QuickTime Conferencing. (For details, see the news item on page 10 of this issue.) With it, people will be able to meet face-to-face, while remaining geographically apart.

QuickTime Conferencing will make it possible for users to do "media-rich collaboration," which includes audio and video conferencing and document sharing across networks. Although Apple's solution will initially work only within the Macintosh base, its architecture is designed to take advantage of the emerging industry standards that will enable it to work with similar products on other platforms.

Also, the QuickTime Conferencing architecture is scalable: Customers can begin using it with minimal extra expense, and then increase the performance of their systems after

QuickTime Conferencing proves its worth.

Access and Services From the Desktop

Before you can communicate with someone, you have to know how to reach them. This is true whether you want to call them on the phone, send them e-mail or fax messages, or set up a video-conference with them. Apple's PowerTalk technology makes this considerably easier through its catalog services feature.

The catalog services feature of PowerTalk allows users to create, browse through, and modify structured collections of information called *catalogs*. Through the Finder, PowerTalk provides a standardized human interface for catalog records. Also, users can create their own personal catalogs, which can contain records from different kinds of catalogs.

PowerTalk catalogs make it possible for users to store the addresses of *all* the people they interact with in one easy-to-use format. In other words, no matter where a directory of addresses is stored or what format its records have, users can access it by opening a PowerTalk catalog, and they can store records from such a directory in their own personal catalogs. Once users have a catalog record for an intended recipient, they can phone, fax, e-mail, or otherwise contact that person simply by dragging the record's icon to the right place on the screen. In other words, PowerTalk puts the same human interface on vastly different methods for communicating.

In the early days of PowerTalk's development, catalogs were called *directories* because they held the information needed for contacting people. But the designers of PowerTalk realized that this technology provided an excellent human interface for accessing many kinds of structured information, not just

directories—and this led to the broader name *catalogs*.

So PowerTalk catalogs can provide more than just access to other people. You can use catalogs as the delivery mechanism for many types of data: databases of information, voice and fax mailboxes, even home banking and shopping services—in short, whatever you can envision.

One final aspect of how Apple views access to information and services is the ease of access. The Communications and Collaboration Program Office believes that users should be able to access information and services wherever they are—at work, at home, or on the road. Many Apple technologies (for example, PowerBook computers and Apple Remote Access) support that goal, as will future Apple technologies.

Working With the World

The C&C Program Office sees several things that Apple must do to be a “major player” in the C&C markets. First, Apple must be active and visible in the industry-wide decision making that will determine the shape of the C&C markets.

Second, Apple must work with infrastructure companies (such as AT&T, MCI, and others), communications companies, and other computer companies to ensure the adoption of industry-wide standards that promote interoperability and ensure that future Apple technologies are consistent with such standards.

Third, Apple must work with customers to understand their needs, develop technologies that will provide the foundations for meeting those needs, and communicate its vision to developers and customers.

Fourth, Apple must work to make Apple technologies (that is, Macintosh and Newton) the preferred platforms for all forms of collaboration and communication.

The Need for Cooperation

Apple can't accomplish all these goals by itself. For one thing, the problems involved in the convergence of communications and computers are big, and Apple must partner with other major players in order to effectively drive the industry forward.

Another reason for Apple to encourage cooperation comes from a necessary precondition of electronic communication. According to Phac Le Tuan, a senior manager in the C&C Program Office, “Communications means interoperability, so incompatibility [of equipment, platforms, and protocols] has to go away.” That means cooperation among a good number of major players in every area involved—and that means Versit.

What Is Versit?

As reported in last month's *Apple Directions* (February 1995, page 10), Versit is a joint development organization created to encourage the convergence of computers and communications by “fostering new tools, devices, and services more adapted to group communications and interactions.” Apple joined with AT&T, IBM, and Siemens Rolm Communications, Inc., to found Versit, and all the companies involved announced their commitment to deliver products that adhere to Versit specifications.

A technical background document from Versit states that

personal computers, initially created with the goal of improving personal productivity, are now evolving toward the goal of improving group and corporate productivity. . . . One key barrier to the development and acceptance of communications and computing devices and services is the lack of interoperability between products from different vendors. Versit's charter is to remove such barriers to

interoperability.

Versit Initiatives

Versit sees four areas on which it will focus its energies:

- *Device connectivity.* People are making increasingly heavy use of various computer and communications devices, but these devices usually can't “talk” to each other (which is a simpler way of saying that they don't “interoperate”).

With greater device connectivity, you'll be able, for instance, to place no-hands phone calls from your computer (routing the telephone connection through the computer's speakers and microphone). You might also use your PDA to dial a public or office phone through an infrared link.

Versit is promoting standards for both wired and wireless connections between devices. It has endorsed Apple's GeoPort architecture for wired connections and the IrDA (Infrared Data Association) standard for wireless connections. It is also proposing various extensions to the IrDA standard, including extensions to support the exchange of structured information in the form of “virtual business cards.”

- *Computer-telephony integration.* The possibilities that arise from having computers, PDAs, and telephone equipment interacting with each other are perhaps the most exciting in the C&C usage area. Versit is working on developing a cross-platform definition of features, configuration, protocols, and APIs that will allow manufacturers as well as application developers to ensure interoperability among their products independent from the computer platforms they are using.

Apple's Telephone Manager on the Macintosh already provides hardware-independent computer control of telephony equipment, and it will evolve to be consistent with Versit cross-platform specifi-

cations, while ensuring compatibility for existing applications on the Macintosh. (For more information, see “GeoPort Telecom Adapter Kit Offers New Opportunities,” on page 9 of the February 1995 issue of *Apple Directions*.)

- *Personal data interchange (PDI)*. Of course, a phone connection between France and Japan doesn't do much good if the two people on the phone can't understand each other. Similarly, hardware interoperability is only part of the solution—the software on both ends of the hardware connection must “speak a common language.”

With such a common “language” in the form of a Versit virtual business card (VBC), the following scenario might be possible. During a phone call from your hotel room to a client, you press a button on your hotel phone to send a virtual business card (which you have transmitted to the phone via an infrared link from your portable computer or PDA). The recipient, examining the VBC, extracts your business card as well as a map showing the hotel's location (automatically added to your VBC by the hotel's telephony equipment).

Versit is proposing the adoption of an open-ended “universal digital container” called a *Bentogram*. If the name sounds vaguely familiar, it's no surprise: Bentograms are based on Bento, the Apple-designed, platform-independent storage mechanism that is part of the OpenDoc component-software architecture.

Bentograms are designed to be easily implemented on all types of platforms. They can contain any kind of data that can be represented in digital form, including voice, video, personal calendar information, and text. Because each chunk of data is tagged with its data type and the same data can be stored in multiple formats, vastly different kinds of software can read a Bentogram

and extract only the information it understands.

Certain devices, such as pagers or very low-cost organizers, may not have enough CPU power to handle Bentograms. To communicate with them, Versit has created a subset of Bentograms called *Simplegrams*. In addition, Versit has defined a virtual business card data type that any two devices should be able to send and receive within a Bentogram.

- *Conferencing and messaging (C&M)*. The term *conferencing* refers to real-time interactions between people separated by distance; it can include such things as document sharing and communication by voice and video. *Messaging* includes e-mail, pagers, and other non-real-time communication. Today, conferencing is far less common than messaging. Given the ever-increasing capacities of both computers and communications services, conferencing is sure to grow tremendously in the next few years.

The goal for C&M is simple: interoperability. Just as you don't have to worry about the brand of telephone owned by the person you want to call, you should be able (in the future) to send messages to or have a videoconference with anyone, regardless of the brand of equipment they use. This goal extends to other realms: You should also be able to mark up a shared document without having to have the same annotation software or similar computers.

This is a tall order. The technologies involved are complex and are undergoing continuing evolution. Versit's approach to solving the problems of C&M interoperability is to work to ensure that members' devices and services are interoperable. Its hope is that implemented solutions will form the basis for further progress in this area.

It's significant that Versit has

already endorsed several technologies that Apple has originated. Apple will continue to work with other Versit members to ensure that the Versit standards will work well with relevant Apple technologies.

Messages to Developers

The communications and collaboration “landscape” will change slowly. (Williams's First Law of Technology Adoption: When contemplating the adoption rate of new technologies, think in terms of *half-decades*.) The long-term message is that Apple has recognized C&C as a strategic differentiating technology and that Apple is working to maintain and strengthen its leadership there.

There's also a medium-term message: Apple is championing C&C technologies to ensure that Apple-based technologies will provide you with the richest development possibilities. By promoting compatibility among products, services, and hardware, Apple is also helping to generate a larger market for your work, which translates to a higher return on your development investment.

For example, Open Transport will allow you to create communications applications that work without knowing the details of the underlying network (for example, AppleTalk, TCP/IP). You'll hear more about Open Transport later this year, so stay tuned.

Apple C&C-Related Technologies

But what would any Strategy Mosaic be without short-term messages, things that you can act upon now? We have those, too, and they boil down to this: Apple already has a number of technologies in place that, if used today, will put you in a position superior to that of your competition as various C&C technologies emerge:

- *PowerTalk*. This technology, part of Macintosh system software since System 7 Pro, gives Macintosh users a single interface for all incoming communications and makes it possible for any application that has documents to send them as e-mail from within the application itself.

- *GeoPort Telecom Adapter Kit*. This new product provides an improved architecture for dealing with multiple forms of input from a telephone line (fax, voice, data). One of its most compelling features is that it can sense the type of signal on an incoming phone call and route it to the correct application automatically. It implements the Macintosh Telephony Architecture and the Telephone Manager 2.0, which allow applications to interact with telephones without knowing the specifics of the hardware being used. Again, see the news item on the GeoPort Telecom Adapter Kit in last month's *Apple Directions* for details.

- *Newton*. Though you haven't heard much about the Newton lately, it's doing well, primarily in vertical-market and in-house uses. (See also the Newton marketing report on page 22 of this issue.) The first third-party Newton device, Marco, showed at Macworld San Francisco, as did a number of wireless applications and services. Apple has also announced the United States availability of the MessagePad 120 (see the news item on page 11).

As the cost of wireless messaging goes down, Newton technology will grow in importance in C&C applications—and it's a technology that has one to two years' advantage over competing technologies. The market for Newton will continue to grow, slowly but steadily (remember Williams's First Law of Technology Adoption). Developers who create solutions that use Newton devices as the way to keep in touch (either wired or wire-

less) will be ahead of the competition when PDAs become more commonly used. (In-house developers and value-added resellers are already using Newton devices for solutions that couldn't be developed otherwise—Apple reports over 300 vertical solutions that use Newton devices.)

Out of the Dark Ages

Computers are still in the Dark Ages when it comes to communication. Incompatibilities far outnumber compatibilities in software, hardware, and services. Some vendors are beginning to realize that this patchwork landscape is limiting the growth of their markets (can you imagine incompatible networks of radios,

telephones, and televisions?) and are thinking about buying into compatibility.

Apple is among the strongest advocates of transparent communications among electronic devices of all kinds. Apple is also working to shape the emerging usage area of communications and collaboration to be compatible with its vision—a vision of the

Mac OS and Newton platforms as the best ones for people who want to communicate and collaborate electronically, anywhere, anytime. ♣

Apple News

1 Million Power Macs

continued from page 1

mode. Our mutual customers now have a great many ways of taking advantage of the RISC-based systems' two- to five-times performance enhancement over today's fastest 68040- and 486-based computers.

Customers will, of course, be looking for more native software, both PowerPC versions of current products and brand-new applications that take special advantage of the power and features of the Power Macintosh computer. If you haven't gone native yet, you now have more than 1 million reasons to optimize your code to take advantage of the computers' RISC performance. Apple will continue to give you even more reasons to go native. The rest of this article tells you about the latest of them, including Apple's new Power Macintosh systems, the latest results of Power Macintosh performance tests, the most compatible Power Macintosh system yet, and several programs Apple has initiated to help you promote your Power Macintosh products.

New Power Macintosh Models: More Power, Same Price

In January, Apple released three new Power Macintosh systems;

they join the recently introduced 110-MHz Power Macintosh 8100/110 computer in making the already popular Power Macintosh line even more appealing to customers across the globe.

The new computers extend the Power Macintosh line's price/performance superiority, offering significant performance boosts over the original models at the same prices. The chart on page 9 "New Power Macintosh Computers—Higher Performance, Same Price," shows the prices (in U.S. dollars) of the new systems compared with the old.

The new systems, which replace the original Power Macintosh systems, are the 66-MHz Power Macintosh 6100/66 computer, the 80-MHz Power Macintosh 7100/80 computer, and the 100-MHz Power Macintosh 8100/100 computer. They were immediately made available worldwide.

Apple expects the overall performance increase of the new models to be up to 30 percent for the Power Macintosh 6100/66 compared with the original Power Macintosh 6100/60 system, 40 percent for the Power Macintosh 7100/80 over the older Power Macintosh 7100/66 system, and 20 percent for the Power Macintosh 8100/100 when compared with the earlier Power Macintosh 8100/80 model. Each of the systems employs a faster PowerPC 601 chip than the original; in addition, 265K of Level 2 cache has been added to the Power

Macintosh 6100/66 and 7100/80 systems, boosting their performance by an additional 15 percent.

Further, the Power Macintosh 6100/66 and 8100/100 ship with larger hard drives than the original models—350 MB for Power Macintosh 6100/66 computers and 700 MB for Power Macintosh 8100/100 systems—again at the same price as the original systems.

Ingram Labs Study: Power Macintosh Beats Pentium

How do the new systems compare with Pentium processor-based PCs running Windows? According to an application benchmark study just completed by Ingram Labs, the latest Power Macintosh computers are at least 30 percent faster than PCs using Pentium processors with equivalent clock speed. The study showed that the new Power Macintosh systems are significantly more powerful in some areas, especially graphics, publishing, and technical applications.

Specifically, Ingram Labs determined the following:

- the Power Macintosh 8100/100 computer was 39 percent faster overall than a 100-MHz Pentium processor-based PC.
- the Power Macintosh 7100/80 computer was 31 percent faster overall than a 90-MHz Pentium processor-based PC and 19 percent faster than a 100-MHz Pentium processor-based system.
- the Power Macintosh 6100/66 computer outperformed

a 66-MHz Pentium processor-based PC by 38 percent.

In addition, the Power Macintosh 8100/110 with a 110-MHz PowerPC processor was found to be 45 percent faster overall than a PC running Windows and based on a 100-MHz Pentium processor, the fastest available Pentium processor.

The application-level benchmarks included ten different applications measured on 58 different tasks. The applications included spreadsheets, word processors, a database, document layout, business graphics, and other applications. The tasks measured included opening files, scrolling, spell checking, spreadsheet recalculations, graphing, and a variety of other tasks.

The Power Macintosh performance advantage was greatest in the graphics and publishing areas; when running graphics and publishing applications, the Apple Power Macintosh 8100/110 was 92 percent faster than the 100-MHz Pentium-based PC running Windows. Even a 66-MHz Power Macintosh computer beat a 100-MHz Pentium-based PC by 43 percent. On scientific and engineering applications, the Power Macintosh systems outperformed the Pentium-based Windows PCs by as much as 49 percent overall.

DOS, Windows Compatibility

Performance is the most obvious Power Macintosh advantage as far

as customers are concerned; another important advantage of the RISC-based computers is their compatibility.

Since their introduction last March, Power Macintosh systems have given customers the ability to run virtually every existing 680x0 Macintosh application as well as the vast majority of DOS and Windows applications, through Insignia Solutions' SoftWindows™ software emulator.

Now Apple is offering customers hardware solutions for running DOS and Windows side by side with the Mac OS: the Power Macintosh 6100 DOS Compatible computer and DOS Compatibility Card for the Power Macintosh 6100 and Macintosh Performa 6100 series.

The Power Macintosh 6100 DOS Compatible computer and the DOS Compatibility Card, which employs a 486 DX2/66 chip to give Power Macintosh 6100 and Performa 6100 series systems the ability to run DOS and Windows, are currently shipping worldwide.

Powered by a PowerPC 601 microprocessor and a 486 DX2/66

microprocessor, the Power Macintosh 6100 DOS Compatible computer is expected to attract new customers to the Macintosh platform from the ranks of DOS and Windows users. It runs the widest range of mainstream personal computer software of any currently available computer, including applications compatible with DOS, Windows, and 680x0-based Macintosh computers, in addition to the native applications that have been optimized for Power Macintosh systems.

The Power Macintosh 6100 DOS Compatible computer improves on the technology of the popular 68040-based Macintosh Quadra 610 DOS Compatible computer, which was awarded "Best System" by *Byte* magazine at Fall Comdex '93. Featuring a faster processor than its predecessor, the Power Macintosh 6100 DOS Compatible computer also offers enhanced multimedia capabilities, such as built-in support of Creative Labs' Sound Blaster chipset for 16-bit audio playback, as well as improved networking compatibility with support for

NetWare IPX and TCP/IP network protocols via an ODI-compliant driver.

Its dual monitor support allows customers to add a second display—without an additional video card—for viewing the Macintosh and DOS environments simultaneously. The Power Macintosh 6100 DOS Compatible supports most VGA, SVGA, and multi-sync monitors as well as all current Apple displays.

"Accelerated for Power Macintosh" Package Artwork Available

Apple expects that the performance and compatibility of its latest Power Macintosh products will continue to significantly broaden the customer base for native Power Macintosh software. To help you reach those customers, Apple has created "Accelerated for Power Macintosh" artwork you can use to identify your native applications in the marketplace. The artwork can be used directly on product packaging or as stickers on shrink-wrapped products. It can

also be used in advertisements, distributor catalogs, direct-mail brochures, product literature, booth displays, and promotional items for your native products.

Only products that have been optimized for the PowerPC microprocessor can qualify for using "Accelerated for Power Macintosh" artwork. You may obtain the artwork from Apple, free of charge, by following these steps:

1. Request an information packet by writing to the following address:

Meeting Support Unlimited
Carole Holcomb
5755 Cohasset Way
San Jose, CA 95123
Attn: Accelerated for Power Macintosh Program
408-226-6762
AppleLink: MSU

2. Send a copy of your native code and a signed legal agreement to Meeting Support Unlimited.

3. Send in a mock-up of your product artwork.

4. If your code is verified as native, you have signed the legal agreement, and your use of the artwork is approved, Meeting Support Unlimited will send you a copy of the artwork.

5. Finally, send in two final copies of your product with the artwork to Meeting Support Unlimited. Your product boxes may be used in product displays of native applications that are shipping.

Please allow two to four weeks for the process. You may send in beta copies of your native software for verification.

POWERPC.DEVS AppleLink Address

Another Apple service you'll want to take advantage of once you have a native Power Macintosh product is the POWERPC.DEVS AppleLink address. Apple Evangelism maintains this AppleLink address so that developers can notify them of shipping native

New Power Macintosh Computers—Higher Performance, Same Price

New products/Apple price		Old products/Apple price	
Power Macintosh 6100/66		Power Macintosh 6100/60	
8 MB RAM/350 MB hard disk	\$1,819	8/250	\$1,819
8/350 with CD-ROM	\$2,029	8/250 with CD-ROM	\$2,029
Power Macintosh 7100/80		Power Macintosh 7100/66	
8/500	\$2,899	8/500	\$2,899
8/700 with CD-ROM	\$3,239	8/500 with CD-ROM	\$3,109
16/700 with CD-ROM, AV features	\$3,829	16/500 with CD-ROM, AV features	\$3,699
Power Macintosh 8100/100		Power Macintosh 8100/80	
8/700	\$3,699	8/500	\$4,249
16/1 GB with CD-ROM	\$4,559	16/500 with CD-ROM	\$4,850
16/1 GB with CD-ROM, AV features	\$4,779	16/500 with CD-ROM, AV features	\$5,062

products. This information is then entered into a database, from which a list of native products is created each week. The list is distributed to people at Apple who include it in the reseller brochure, the Hot List of shipping products, and other marketing materials in addition to posting it on several online services, including AppleLink, eWorld, and the Apple WorldWideWeb server.

When you start selling your product, contact POWERPC.DEVS and let Apple know that your application is shipping. Shipping means that the product is available to customers, either directly or through resellers. Please include the following information:

- the name of the application and version number
- the company address
- the expected date of availability to customers (not the golden master date, but the date of the first customer shipment or the date on which you can fill phone orders)
- the customer call-in number for purchasing the application
- names of the product manager, marketing contact, and any engineering contacts; AppleLink and e-mail addresses; and telephone and fax numbers so that Apple can contact these key people about possible comarketing activities
- a short (five words or fewer) description of the product and product category you would prefer your product to be listed under (there are a limited number of categories, and Apple Evangelism will match your description to the categories as accurately as possible)
- whether the application supports System 7.5 features, including AppleScript, PowerTalk, Apple Guide, Drag and Drop, the Thread Manager, and QuickDraw GX print dialog boxes and type engine
- whether the application is freeware or shareware, if applicable

Your application will then be included on the Native Shipped Products list.

Apple expects to announce other Power Macintosh comarketing activities throughout the year. *Apple Directions* will provide you with details as they are made available.

For now, we think the Power Macintosh transition has been successful enough to erase any doubt about whether the new computers can carry Apple, and the Apple developer community, into the future. All we can say is what we've been saying for years: "Go native!"

Power Computing and Radius to Sell First Macintosh Clones

Power Computing Corporation and Radius, Inc., will produce the first Power Macintosh clones, according to announcements made in early January. Their computers, prototypes of which were demonstrated to selected groups at the Macworld exhibition in San Francisco, will be the first results of Apple's efforts to license the Mac OS. The PowerPC processor-based Macintosh clones are expected to expand Mac OS market share at both the low end and high end of the market, in turn expanding the market for your products.

Power Computing, the first to announce a Mac OS licensing agreement, will focus on inexpensive systems for customers in the low end of the market. Stephen Kahng, president and CEO of Power Computing, said, "We will maintain a very aggressive entry-level price point for our systems through innovative design,

manufacturing, and distribution strategies. In addition, we will reach out to specific market segments with configured Mac OS-compatible systems, and penetrate burgeoning regions worldwide."

Power Computing, owned in part by the Italian business equipment firm Ing. C. Olivetti & Co., expects to begin selling its first Mac OS-based systems in spring 1995. In addition, the company will operate as an original equipment manufacturer (OEM) of logic boards and complete systems for other potential licensees to sell; it has several OEM agreements pending with other companies, who may begin shipping their own Macintosh clones by the middle of this year.

Radius plans to develop high-end graphics workstations, based on Mac OS and the PowerPC processor, for digital video and color publishing professionals. They expect to ship their first Macintosh clone in the first half of this year at a price of under \$30,000.

You can expect Macintosh clone makers' marketing and product plans to have an impact on the market for your products; we'll be sure to keep you up to date on their activities in *Apple Directions*.

Apple Unveils QuickTime Conferencing

Apple recently announced QuickTime Conferencing, a videoconferencing and collaboration solution designed as the foundation for a broad range of Apple and third-party conferencing solutions.

QuickTime Conferencing is implemented as a system software extension. QuickTime Conferencing includes an application

that allow users of Macintosh computers—and soon users of Windows and other platforms—to work with colleagues down the hall or around the world without leaving the office.

QuickTime Conferencing allows users to share video, audio, text, images, and sound during their conferencing sessions, using local-area networks (LANs) such as Ethernet and Token Ring, and wide area networks (WANs) such as TCP/IP or ISDN.

Although Apple's solution is Macintosh-based, QuickTime Conferencing has been designed to fit open standards for interoperability. It is transport-, compression-, and media-device-independent. It also provides a consistent cross-platform standard for developers, which will encourage the development of consistent user interfaces across platforms, services, and products.

QuickTime Conferencing takes advantage of built-in Macintosh audio/video (AV) capabilities and the processing power of Power Macintosh. Users can connect a camera and microphone directly to their Macintosh computers, with no special cards to add on.

QuickTime Conferencing is extensible and scalable. It supports a range of solutions, from an inexpensive software-only configuration to a high-performance dedicated system.

Cross-Platform Support

QuickTime Conferencing was designed to work with existing networks and standards:

- It supports videoconferencing using H.320 (an international teleconferencing standard), ISDN, and a hardware compressor/decompressor card.
- It works with existing local and wide area networks and network protocols including ISDN, Ethernet, Token Ring, AppleTalk, and TCP/IP.
- Its software architecture supports emerging industry standards

including isoEthernet and ATM (Asynchronous Transfer Mode).

- It supports a variety of connection models including point-to-point videotelephony, multi-party videoconferencing, broadcast audio and video onto an existing local area network, as well as audio-only or video-only for special applications.

- It is compatible with a full range of video formats including NTSC, PAL, and SECAM, as well as composite video and S-video.

- It's also compatible with software- and hardware-based video compression standards including H.261 and JPEG, as well as Apple Video, and Indeo.

Hardware and Software Requirements

QuickTime Conferencing requires any 68040-based Macintosh, Power Macintosh, or PowerBook 520, 520c, 540, or 540c computer with at least 8 megabytes (MB) of memory (16 MB recommended), running system software version 7.1 or later. With Macintosh AV or Power Macintosh AV computers, users can digitize live video and audio (with the appropriate digitizing hardware). In addition, the computer must be connected to a network via Ethernet, isoEthernet, Token Ring, ISDN, FDDI, or ATM.

Apple Ships AppleShare and AppleSearch Clients for Windows

Apple Computer, Inc., announced it would begin shipping Windows versions of its AppleShare and AppleSearch client software in February. The AppleShare Client for Windows, which allows Windows users to access AppleTalk-based file and print services, is to

ship at no additional cost with its Workgroup Server line of personal computer-based servers. The AppleSearch Client for Windows will be included in the latest version of Apple's text search and retrieval software, AppleSearch version 1.5.

Both the AppleShare and AppleSearch Client for Windows software products allow Windows to connect to AppleTalk-based local area network (LANs) with the look and feel of standard Windows-based network application programs. The products provide customers in mixed workgroups—those using Apple Macintosh personal computers and Windows-based PCs—the ability to access network services with the traditional Macintosh ease of use. Apple expects the addition of the AppleShare Client for Windows to its Workgroup Servers to make the servers more appealing to companies with mixed workgroups.

In the future, Apple also plans to develop Windows client support for its Apple Remote Access and PowerShare Collaboration Server software products, in addition to supporting future versions of Windows, including Windows 95.

Both software products are fully compatible with 80386, 80486 and Pentium processor-based computers with at least 4 MB of memory and an Ethernet network adapter card using an Open Datalink Interface (ODI) or Network Device Interface Specification (NDIS) 3.0 driver. The AppleShare Client for Windows can connect to all existing versions of AppleShare, including AppleShare 3, AppleShare 4, and AppleShare Pro. It also connects to Mac OS file-sharing and third-party AFP (AppleTalk Filing Protocol) servers.

Included in the AppleShare Client for Windows product is the Windows AppleTalk Protocol Stack, codeveloped by Apple and

Miramar Systems, Inc., of Santa Barbara, California. The new stack, based on a 32-bit Windows Virtual Device Driver (VxD) architecture, is designed for fast throughput and low memory consumption. The Windows AppleTalk Protocol Stack enables you to develop cross-platform versions of database, e-mail, scheduling, and other network services applications.

You can purchase software developer's kits (SDK) for both the Windows AppleTalk Protocol Stack and the AppleSearch Client for Windows, including application programming interfaces (APIs). If you're interested in the SDK, contact the Apple Network Information Line by telephone at 408-862-3385 or by AppleLink at ABS.NETINFO.

MessagePad 120 Offers Enhanced Features

On January 30, Apple Computer, Inc., announced the MessagePad 120, featuring 1 and 2 megabyte (MB) models, improved industrial design, and a clearer screen, as well as a variety of new applications from third-party developers and StarCore, Apple's Newton software publishing and distribution arm.

MessagePad 120 Features

Based on extensive customer feedback, the Apple MessagePad 120 device will be available in 1 MB and 2 MB configurations; the 2 MB model provides users with nearly three times the user storage space of the MessagePad 110. This additional memory can be used to store more custom and third-party software in the product's internal memory, thus freeing up the PCMCIA slot for

add-on communications products and peripherals. Industrial design improvements include a removable lid, improved screen visibility, and a PCMCIA lock located on the side, allowing for fast and easy removal of PCMCIA cards when the lid is folded back.

Responding to demands for mobile communications solutions, Apple has designed the PCMCIA slot on the MessagePad 120 so that it now has more than two times the power rating—from 115 milliamperes (mA) in the MessagePad 110 to 325 mA in the MessagePad 120—enabling MessagePad owners to use add-on communications products that require additional power. Examples of such applications include high-power modems for radio-frequency and wireless local-area networking solutions.

Bundled Software

Adding to the catalog of more than 100 commercial applications worldwide for Newton products from StarCore and third parties, Apple has created productivity-enhancing solutions for MessagePad users. Both models of the MessagePad 120 come bundled with Notion: The Newton List Manager. In addition, the 2 MB configuration comes with Pocket Quicken (a PDA version of Intuit's finance software that can interface with the Quicken software running on the Macintosh or Windows operating system), software for connecting with Apple's eWorld online service (plus a complimentary month of service), an external 2400/9600 baud fax modem, and a one-month complimentary subscription to the PowerNeWS news service.

MessagePad Solutions

Recognizing that software solutions are critical to enhancing the productivity of MessagePad customers, Apple continues to offer a range of compelling titles, from

both StarCore and third-party developers. Examples of such titles include Berlitz Interpreter (which translates 20,000 words and 15,000 phrases in five languages) and PowerForms by Sestra, Inc. (which offers business and personal forms for mobile professionals).

StarCore is also offering the Newton Enhancement Pack, a 2 MB PCMCIA flash card preloaded with three top-selling titles: Newton Utilities, four applications that help Newton users maximize memory and manage software; Graffiti, the popular data entry software by Palm Computing; and Action Names by iambic software, which extends the capabilities of the built-in address book and calendar on the MessagePad. The three titles on a 2 MB card are available in computer stores worldwide, priced in the United States at \$149.

Availability and Pricing

The MessagePad 120 is available across the United States in more than 1,000 computer retailers, Apple resellers, and consumer electronics stores. The product is currently available in Germany and is expected to be available in France, the United Kingdom, Canada, Australia, and various other countries. Pricing and bundled software will vary among countries.

In the United States, the 1 MB MessagePad 120 is priced at \$599, and the 2 MB configuration is \$699. Pricing will vary outside the United States.

System 1.3 Update Features

In addition, Apple is making available software that gives existing MessagePad 100 and 110 units the same improvements that were added to the MessagePad 120. Two versions of the system software update are available: version 1.3 for MessagePad 100 users, and version 1.3 for MessagePad 110 users.

The upgrade increases the reliability of erasing flash PCMCIA memory cards and improves the device's ability to remember user preferences. Notification windows, such as alarms, now remain open when the MessagePad goes to sleep, allowing users to receive notification even when the device is unattended for a period of time. Also, users can now use the * and # characters when dialing phone numbers from the call slip; for example, users may set the dialing prefix to *70 to turn off call waiting, if their phone systems allow it.

The system update is available through eWorld, AppleLink, America Online, CompuServe, Genie, and the Internet (address info.hed.apple.com). In addition, Newton customers with modems can dial into the Newton Enhancement Server for automatic download at 800-NEWTON9 or 408-639-8669. Customers without access to the above can call 800-SOS-APPL.

Motorola Introduces First Wireless Newton Device

At Macworld San Francisco in January, Motorola's Wireless Data Group achieved two firsts with its new Marco Wireless Communicator: the first third-party PDA (portable digital assistant) based on Apple's Newton technology, and the first PDA with built-in, two-way wireless connectivity. Depending on the configuration, Marco devices will sell for between \$900 and \$1400 in the United States.

The Marco currently communicates on the ARDIS network (though future models may use

other technologies). ARDIS provides on-street and in-building coverage of more than 90 percent of U.S. business areas and 80 percent of the U.S. population. It covers over 400 metropolitan areas in all 50 states, Puerto Rico, and the Virgin Islands.

Marco users can subscribe to either or both of two wireless communications services: RadioMail and ARDIS PersonalMessaging. With RadioMail (a service of RadioMail Corporation, San Mateo, California), the Marco is assigned an Internet address and can exchange e-mail with other Marco owners, users of the Internet, and any online service with a gateway to the Internet. RadioMail users can also send text fax messages anywhere in the world. The service costs between \$39 and \$139 per month, based on usage.

ARDIS PersonalMessaging (from ARDIS Company, Lincolnshire, Illinois) allows subscribers to do two-way messaging, receive paging messages sent from any telephone, and send fax messages anywhere in the United States. In addition, ARDISchat allows two PersonalMessaging users to "converse" in real time. Messages are received, on average, within six seconds, and message costs are constant within the entire ARDIS coverage area. The service costs between \$39 and \$299 per month, based on usage.

Specifications

The Marco Wireless Communicator weighs 1.8 pounds and measures 7.5 by 5.8 by 1.4 inches. The device contains 1 MB of internal memory and a PCMCIA Type II slot, as well as a Newton-compatible infrared port and an AppleTalk-compatible serial port. The device uses a NiCad battery that provides users with up to eight hours of run time.

Application Solutions and Tools

In addition to running all Newton software, several companies are selling products that allow the Marco device to be used in various business situations.

KPMG Peat Marwick is selling an application solution called SalesMate. This product makes it possible for Marco users to enter orders, query inventory databases, and receive new product information while on the road.

SkyNotes sells SkyDispatch, which allows service workers in the field to report time logs, job completion reports, and troubleshooting information to a Lotus Notes database.

bonds@hand, from the company info@hand, delivers up-to-date treasury certificate quotes, foreign exchange rates, and news.

MobilVision, from CE Software, will provide an intelligent wireless remote client for its QuickMail mail system.

Mobile App Builder, from the Memphis Group, and Intelligent Mobile Server, from Real World Solutions, are both products that help developers create custom solutions for remote corporate database access and data entry.

Keeping in Touch

When Apple introduced the Newton platform 18 months ago, it stated that one of the goals driving the Newton's design was people's desire to "keep in touch." Motorola's Marco Wireless Communicator is an all-in-one solution that delivers wireless, two-way communication elegantly. Developers will also use it as the foundation for vertical solutions that require wireless two-way communication. ♣

Technology

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develop Issue 21: OpenDoc, Dylan, and More

You won't want to miss the latest issue of *develop*, Apple's award-winning technical journal. It not only has articles about such exciting new topics as OpenDoc and Dylan, but also covers scripting, PowerPC assembly language, QuickDraw GX drivers, and much more. Here's a preview of the articles in this issue:

- "Getting Started With OpenDoc Graphics"—OpenDoc provides very powerful document layout and imaging capabilities, but the basic graphics tasks that everyone needs to accomplish aren't much more complex. This article provides recipes to get you started.
- "A First Look at Dylan: Classes, Functions, and Modules"—Dylan has fundamentally different notions about classes and methods than does C++, notions that make specifying and using methods simpler and more expressive. Here you'll get an overview of the Dylan way of doing things.
- "Designing a Scripting Implementation"—The design of your application's scripting vocabulary is as important as the design of your user interface. These guidelines will help you create a clean and consistent scripting vocabulary.
- "An Object-Oriented Approach to Hierarchical Lists"—This article shows how to

please turn to page 20

CD Highlights

Reference Library Edition, March 1995

Featured on this month's disc is the Macintosh Programmer's Toolbox Assistant, which gives you rapid access to up-to-date information about the Macintosh API. It provides a complete reference to the managers documented in *Inside Macintosh*, including their data structures, routines, constants, and resources. With Toolbox Assistant's QuickView feature, you can use extensive hyper-

compiled a DocViewer collection with aliases for specific chapters in the developer notes that are cataloged as software documents, and we've included these chapters in the appropriate DocViewer collections in the Master Subject Collections folder.

Macintosh Technical Notes in Apple DocViewer return to their one-document-per-subject form on this quarterly installment of the Reference Library CD for ease of access. However, because of problems with the DocViewer build process, some new and revised notes have been built as separate documents; these are included before the merged-by-subject documents in the Subject Collections. So, if your electronic search locates the same title twice, use the first set of titles. This should be the last Developer CD that features Tech Notes in DocViewer format; next quarter we hope to introduce a new and much improved format for technical documentation. Stay tuned. . . .

Unfortunately *not* featured this month is the QuickDraw 3D File Format, which is advertised on the back of the disc package. We hope to bring this to you on next month's CD.

Finally, because of the large amount of new material on this disc, we've had to remove several items temporarily, including the QuickDraw GX volumes of *Inside Macintosh*. These volumes can be found on the December 1994 Reference Library and New Inside Macintosh CDs, and will reappear on the June 1995 Developer CD. If your subscription begins in March and you need the QuickDraw GX volumes in electronic form—and you don't have access to the New Inside Macintosh CD—send a message to AppleLink

please turn to page 20



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text links for rapid, easy navigation, as well as useful features such as copy text, fast full-text search, user annotations, and resizable windows. See the file Read Me First! for installation and other information.

We'd also like to call your attention this month to the Macintosh Developer Notes. What you may not know is that they contain over 700 pages of system software information not presently covered in *Inside Macintosh*. Software developers seldom look for this type of information in the Macintosh Developer Notes because they assume that the notes are hardware-specific. To give you easier access to this information, we've

Human Interface

The Joys of Disambiguating

By Peter Bickford

Despite our best efforts to the contrary, there comes a time in every interface designer's life when he or she must get down off the bully pulpit and . . . well . . . design something. This month, I wanted to share my adventures designing the “disambiguating text field,” an interface element for letting users quickly choose from very large lists. I should perhaps also warn you that we are about to go where no Officially Sanctioned Apple Interface Element has gone before—or since, for that matter. Whatever its strengths and weaknesses are, please don't expect to see a “CreateDisambiguator” Toolbox routine anytime soon.

The Challenge

Several years ago, I was working for Apple's Information Systems department as a human interface designer. The job basically consisted of trying to put nice, graphical interfaces on mainframe systems built during the Nixon administration. The work may not have been as sexy as assembling QuickTime VR packages, but it was easy to see how putting a good interface on a bad system could really change users' lives.

Using graphical elements like checkboxes and radio buttons could really cut down on error, since users could be prohibited from entering “invalid codes” or other such nonsense. Sometimes, however, the graphical elements got in the way of experienced data-entry personnel—probably the majority of users on many of these systems.

As an example, consider the problem of part numbers. According to the time-honored principle of “see-and-point instead of remember-and-type,” a data-entry person should be asked to choose from a list of part numbers, instead of having to type the number from memory and possibly make a mistake. The problem with this is twofold. First, using radio buttons, pop-up menus, or scrolling lists typically requires hand movement from keyboard to mouse. Although whether or not users actually lose time from doing this is debatable, data-entry people feel as if it takes forever. Second, there can be thousands of part numbers, with each one distinguished only by the last few digits. Pop-up menus and radio buttons can't handle this number of items, and displaying a scrolling list—even with a type-select feature—is clumsy.

What was needed was a way to prevent errors by making the user choose from a list, while at the same time not slowing up the professional typist. The answer was the “disambiguating text field.”

Standing on the Shoulders of Giants

The key to solving this dilemma came from an obscure firmware upgrade manual for the Apple IIe computer. Back in the early 1980s, a program called AppleWorks® was setting new interface standards with its “file card” metaphor for showing menus. The trick was that

the file cards were drawn using text characters, and you needed special characters to form the “corners” of the file cards—characters that were only available on the Apple IIc computer. AppleWorks was so successful that Apple decided to offer an upgrade kit for about \$35.00, allowing Apple IIe users to pull out their old ROM chips and replace them with ROM chips containing the new characters.

The most amazing part of this upgrade was the manual that came with it. Along with the standard firmware disassembly listings, it contained an unexpected bonus—a section on doing human interface design, penned by Bruce “Tog” Tognazzini, Apple's first human interface evangelist. Along with other novel ideas such as designing from the user's point of view and carrying out user studies, it contained mention of a “disambiguator” for interpreting command-line input.

Back then, computers typically made users play a guessing game to remember command names, which went something like this. If I wanted to change my password, I would type

```
] CHPW
```

and the computer would reply:

```
? SYNTAX ERROR
```

Then I would try other things: `CHANGEPW`, `CHANGEPASS`, `PASSWORD`, and so on, with the computer snottily bleeping, “? SYNTAX ERROR” after every failed attempt. Finally, I would either get lucky and realize the magic word was actually `CHANGPASSW`—or I would hurl my machine out the window in frustration.

Tog's idea of “disambiguating the input” borrowed from earlier work by Jef Raskin in order to solve this problem elegantly. The idea was that the computer already knew all the commands it was prepared to accept. Then, all it had to do was watch users as they typed, and as soon as their input was no longer ambiguous (hence the name *disambiguator*), the computer would offer the full, proper command name.

So, for instance, when I changed my password, I might begin by typing this command:

```
]C_
```

At that point, the computer would do nothing since the proper command might be `CALL`, `CONFIGURE`, or `CHANGPASSW`. The moment I typed the second letter, however, the input would no longer be ambiguous. If I typed `H`, for instance, the computer would know that `CHANGPASSW` was the only corresponding command.

Therefore, it would offer to fill in the rest of the line:

```
]CHANGPASSW
```

I could then simply type the new password and press the Return key.

If I began typing a command that was not known to the system (for example, `CR_`), the computer would refuse the new letter and beep once. This way, I'd receive immediate feedback about the problem, something next to unknown in those dark days of the human-computer interface. At the same time, experienced users of the system found they could actually work faster than before, since they only needed to type a few characters in order to conjure up the appropriate commands.

Enter the Disambiguator

Many years after the publication of the *Apple IIe Firmware Upgrade Manual*, I was wrestling with how to make forms entry easier on the Macintosh. I knew I needed a new interface element, but I didn't know what it should look like. Whatever solution I chose, I knew it must do several things:

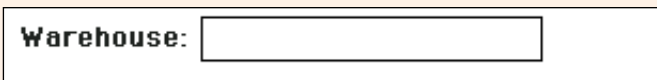
- handle lists with potentially thousands of items
 - constrain the user's input only to valid choices
 - take up relatively little screen space (we needed to leave space for the hundreds of other fields on the typical form)
 - be *at least* as easy as simply typing in the contents of the field
- And, preferably, it would let users keep their hands on the keyboard.

Moreover, I figured there were three crucial test cases:

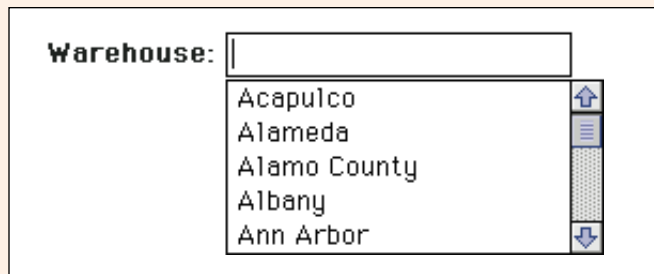
- *State abbreviations*. In this case, the number of items was too high for a pop-up menu, but most users would type both characters, and error would be relatively rare (but not unknown—for example, mixing up the abbreviations *MS*, *MO*, and *MI*).
- *Part numbers*. In this case, there were a huge number of items, each of which was quite long but might be differentiated by only the last few characters. For instance, *001-10210-0001* vs. *001-10210-0001A*.
- *Cities*. This was probably the easiest case: a large, but finite number of items, whose differences came after the first few letters—for example, *Death Valley* vs. *Dear Park*.

The result was the “disambiguating text field,” a complicated-sounding widget whose core idea was really rather simple.

When not active, the disambiguator would look much like a normal text field.



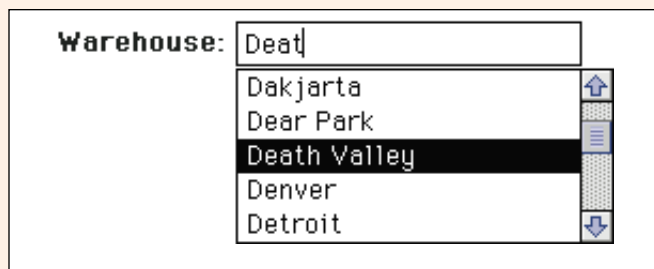
When users tabbed or clicked into it, however, it would show them a list of the possible choices:



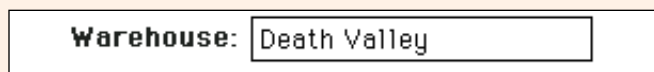
Let's say users wanted to select “Death Valley” from the list. They could do so either by scrolling down and double-clicking the item, or they could simply begin typing:



... and the list would automatically scroll to select the first item that began with the letters they typed. Thus, after only four keystrokes, the list would scroll down to “Death Valley”:



Then, as soon as users had gotten to the desired item, they would click or tab out of the field. The field would display the full name of the selected item, and the scrolling list would disappear:



But That's Not All . . .

The initial idea seemed promising, but there was a lot of work left to do. What should a “disambiguating text field” look like? Would it shock novice users? Would it actually help hard-core data-entry personnel? And couldn't we come up with a better name for the bloody thing than “disambiguating text field”? The answers to all these questions, and more, will be revealed in next month's column. . . .

*Till then,
Doc*

Got an interface gripe? Send AppleLink messages to THE.DOKTOR.

3D for Free—Apple Announces QuickDraw 3D

Let's face it—Apple Computer, Inc., is *your* research and development partner, and it usually gives its work away for free. Using the most talented engineers in the industry, Apple develops new architectures and puts them into system software, where they are essentially yours to use. These architectures present new opportunities for innovative products, and they “level the playing field” by giving all developers—small and large alike—access to foundation technologies that no single developer would have the resources to create on its own.

Well, it's that time again. In 1995, Apple will release QuickDraw 3D, a cross-platform, interactive 3D graphics technology that includes six major areas of innovation:

- Its open architecture makes it useful in more situations and offers significant developer opportunities for extending and improving it.
- Human interface guidelines will result in 3D applications that customers will be more likely to use, platform-wide.
- A platform-independent 3D file format will promote widespread use of 3D graphics by establishing a standard 3D data type that all applications can read and write.
- A powerful set of geometry libraries provide the needed “horsepower” for creating innovative 3D graphics products.
- A plug-and-play 3D acceleration architecture allows developers access to third-party 3D acceleration boards.
- A plug-and-play input device architecture, which will allow 3D manipulation devices to work seamlessly with QuickDraw 3D-savvy applications.

Apple's goal for QuickDraw 3D is the same as it has been for previous technologies: to “push” technology originally intended for high-end machines down to a larger number of middle-tier users. In the case of QuickDraw 3D, the goal is to make 3D graphics as commonplace and usable as PICT graphics and QuickTime movies.

QuickDraw 3D will certainly make its way into CAD, modeling, and scientific realization packages. But it will also find a home in the rapidly expanding market for games and entertainment titles, as well as various graphics and illustration products.

Imagine, for example, creating a magazine cover using a 3D illustration application instead of a 2D drawing application. The illustration shows a building at midday. The art director thinks the scene would look better at sunset? No problem—just change the color and angle of the light source. Not satisfied with the way it looks? Try rotating the scene to find a better angle.

Some Surprises

There are some surprises. First, QuickDraw 3D is Apple's first PowerPC-only technology. According to Apple people involved with QuickDraw 3D, this isn't a problem for the developers interested in the technology—many already, or soon will, require Power Macintosh computers for their products anyway. QuickDraw 3D is implemented as a Code Fragment Manager shared library.

Another surprise (and maybe someday it won't be a surprise) is Apple's announcement that it will port the QuickDraw 3D technology to the Microsoft Windows platform. Apple believes that making QuickDraw 3D available on both platforms

will speed its acceptance as an industry standard.

When Does It Ship?

Before we discuss QuickDraw 3D's features, here are the current details on its availability; *Apple Directions* will announce more details as they become available. Apple currently plans to release QuickDraw 3D version 1.0 this summer. After that, QuickDraw 3D will ship on all new Power Macintosh computers and as part of system software products; it will also be available for licensing with QuickDraw 3D applications.

More immediately, Apple plans to release the beta version of QuickDraw 3D to Apple Partners and Associates in a few months. The file format (the adoption of which will be many developers' first step) has been frozen and will be available to developers shortly.

Open Architecture

In many 3D APIs (application programming interfaces), developers can't change the way a 3D-graphics API draws a scene or adds a texture to an object because the application's 3D architecture is both monolithic and proprietary.

In contrast, QuickDraw 3D is modular and open, allowing you to change or enhance the way QuickDraw 3D renders scenes and shades individual objects. By building *shaders* to add to QuickDraw 3D, you can implement custom texturing effects, lighting models, and other special effects. You can also implement rendering and shading in either software or hardware.

QuickDraw 3D has an open input device architecture that lets any program written to the QuickDraw 3D API (application

programming interface) take advantage of input devices with more than two degrees of freedom, such as pressure-sensitive tablets and 3D trackballs. These types of input devices will allow the user to manipulate 3D objects more naturally.

In QuickDraw 3D, a *widget* is an interface element that appears onscreen to allow the user to change the “scene” of a 3D environment—for example, “handles” that allow you to move an object, the camera perspective, or a light source. The widget architecture is also open, allowing you to augment the basic set of widgets that Apple supplies with QuickDraw 3D. In this way, you can (if needed) adapt Apple's basic widgets to fit your application's requirements.

On the hardware side, QuickDraw 3D will be compatible with 3D-graphics accelerator cards, including those available today for IBM PC-compatible computers, that use the PCI bus (which future Power Macintosh computers will also use). This means that users will be able to plug in a variety of accelerator cards, and any program that uses QuickDraw 3D will transparently see dramatic performance increases.

User Interface

Apple will establish human-interface guidelines for 3D based on the extensive usability research Apple has done in recent years. By following them, you will save yourself research and development time.

Your customers will also benefit. They will get a human interface that will be easier to learn than methods used today because it is an extension of the Macintosh interface, which they already know. Users of today's 2D graphics applications will be more likely to move into 3D graphics because

the QuickDraw 3D human interface will not be that different from what they already know.

Also, once customers discover that all QuickDraw 3D applications use the same interface, they will use more 3D graphics. The market for 3D graphics will grow, and customers will demand applications that use QuickDraw 3D.

File Format

QuickDraw 3D stores scenes in what is called a *3D metafile format (3DMF)*, which is an object-oriented, cross-platform specification of 3D objects, their properties, and the properties of the scene that contains them. The metafile format is extensible so that you can attach whatever data you wish to a 3D object.

Few projects today are completed by one person, so one person's work is usually viewed by several people before it reaches its final form. Therefore, the ability to share data and documents is critical to widespread use of a data type.

The QuickDraw 3D metafile format will provide a single format that any two applications can use to exchange 3D graphics

information. The 3D metafile format will promote the growth of the 3D graphics market because people will use 3D graphics more when they know they can use them everywhere.

Geometry Libraries

Geometries are the basic building blocks with which a QuickDraw 3D application builds 3D objects. The more—and more useful—these geometries are, the more you can do with them.

QuickDraw 3D 1.0 will include the following geometries: line, polyline, triangle, point, polygon, complex polygon, trigrid, mesh, box, marker, and NURBS (non-uniform rational B-spline) curve and patch. Other geometries will be added in a later version of QuickDraw 3D.

NURBS are particularly useful; they are a superset of B-splines and are often used to create complex, curved objects. They are also very expensive to implement (by either writing a NURBS package from scratch or licensing a commercial one). Placing one—for free—inside QuickDraw 3D is a tremendous boost to small developers, because it allows

them to develop sophisticated 3D-graphics applications that they would otherwise not have the resources to develop.

Benefits to Users and Developers

Because the 3D-graphics market today is so small, developers are forced to create all-in-one products that are often too complex and too expensive for most users. In addition, users shy away from 3D technology today because it's too hard to use—the interfaces are complicated, they change from application to application, and it's tedious or impossible to move work created in one application to another.

QuickDraw 3D will change all that. Its very presence will greatly reduce the cost of investing in 3D graphics and encourage the development of smaller, less-expensive, more focused 3D applications. Its modular, extensible, open structure makes it useful in a variety of situations and will provide you with opportunities to develop software that can replace or enhance various functions within QuickDraw 3D.

What You Should Do

If your application uses 3D graphics, you should seriously consider adding the QuickDraw 3D metafile format to the 3D data formats you support. (Two ways of doing this are through the Clipboard and through Import and Export menu items.) That way, your application will immediately be useful in the QuickDraw 3D world.

QuickDraw 3D's modularity makes it possible for you to use parts of it in existing products simply by rewriting new code to interface to QuickDraw 3D. You can start investigating that possibility when the beta version of QuickDraw 3D becomes available in a few months. And, of course, the best way to harness the full power of QuickDraw 3D will be to use it when writing new programs from scratch.

One hallmark of Apple's approach to personal computing is that it is constantly seeding the industry with new technologies that open new markets to developers. QuickDraw 3D is one such technology; start thinking about what you can do with it. ♣

OpenDoc Human Interface: Frequently Asked Questions

By Dave Curbow and Elizabeth Dykstra-Erickson, OpenDoc Human Interface Team

At the recent Macworld Expo in San Francisco, where OpenDoc was on display, we heard several people ask, "So, what's the difference between a document and a part?" We thought our readers might be asking the same question, and we thought it would be helpful if we defined these and

other commonly used OpenDoc terms. So, if you've wondered what the difference is between a document and a part or an application, editor, or viewer, read on.

The figure "OpenDoc in use" (page 18) shows a typical Macintosh desktop. It has some document icons, a Stationery folder, the SimpleText application icon, and the Disk First Aid application icon. Notice that the "Text Document" icon has been opened into

a window. Because this is an OpenDoc-enabled document, it is a compound document—that is, a document that contains more than one type of content. (You can use the OpenDoc component architecture to create other things, as well. For details, see "OpenDoc Your Mind," on page 13 of the December 1994 issue of *Apple Directions*.)

Let's first take a look at the document icons. Even though

some of them represent OpenDoc documents, they look the same as today's document icons because users don't need to distinguish OpenDoc documents from traditional documents. When users look at icons, they are typically trying to recognize a particular document, and are unlikely to remember whether the document was created using OpenDoc. The kind of document, such as drawing, text, or

spreadsheet, is more important for recognition.

We did investigate ways to distinguish OpenDoc documents from documents created by traditional applications. The best solution we found was “badging” (putting a small identifying

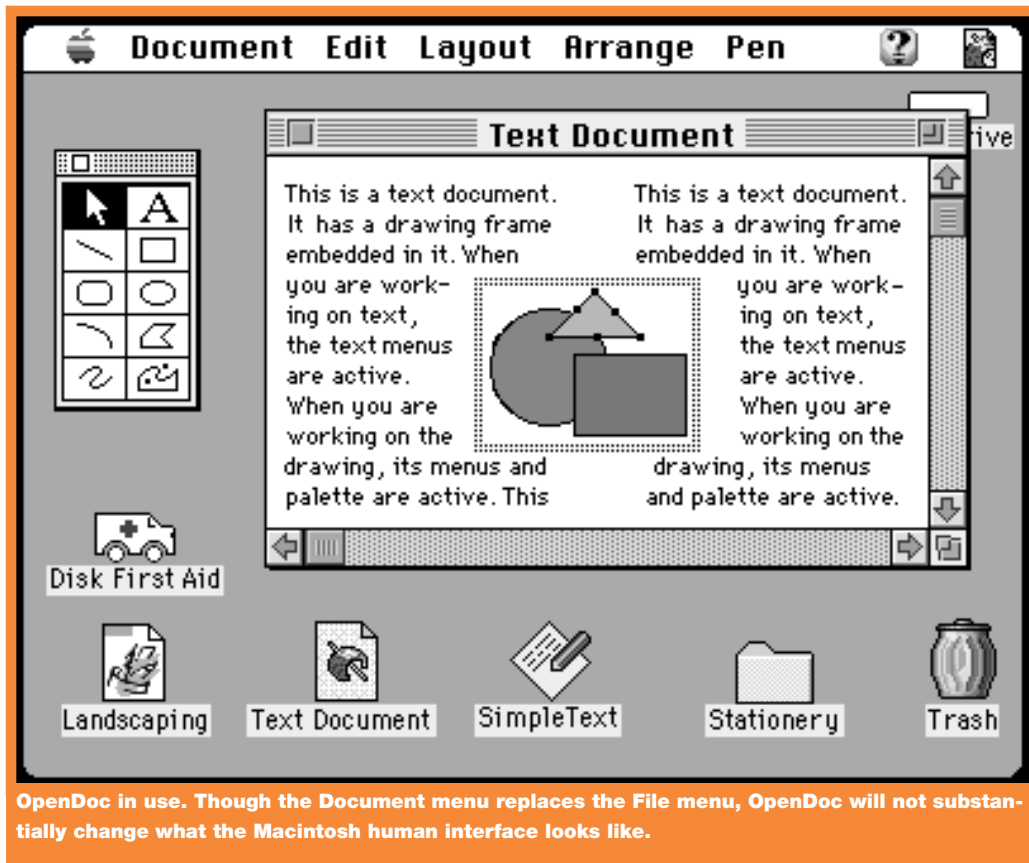
type of document it is. For example, a badge might serve as a standard visual element to indicate that a document is fundamentally a spreadsheet, but can have other kinds of content embedded in it. However, using generic badges for each kind of

Pen. There are two differences, however.

First, the File menu is named *Document*. Today the File menu is used by documents, control panels, networking applications, and many other types of applications, so its meaning is vague.

centered world of OpenDoc, the user is less concerned with what editor is running than with what document is active.

Now look at the document window itself. It represents an OpenDoc document; what distinguishes it visually from



graphic element on top of an icon), but we found that even this didn't satisfactorily solve the identification/recognition issue. All of the badges we designed were either too small to be recognized, or so large that they overpowered other graphic elements on the icons, thus making it even harder to identify the kind of document. We finally realized that since OpenDoc documents will become the norm, rather than the exception, a badge to identify an OpenDoc document would soon become superfluous and we would want to remove it anyway.

We also investigated using badges to identify the primary

part registered by CILabs (the organization responsible for promoting the OpenDoc technology) would mean that someone would have to create and control them, a difficult job in an area that is evolving so quickly. Ultimately, we determined that we should issue only one guideline—that document icons should look the same as they do today. We also wanted to give developers maximum space to use for designs of their own that might incorporate both kind and vendor, as is done today.

Now take a look at the menu bar in the figure. The menus are those you'd expect when editing a drawing—Layout, Arrange, and

OpenDoc avoids confusion by consistently naming the first menu *Document* whenever an OpenDoc document is being worked on. We're considering a few other names for situations in which they make sense; for example, we may use *Control* for control panels. However, don't take this as license to invent lots of new menu names, which could cause as much confusion as using *File* in all situations.

Second, the Application menu icon (on the far right) displays a document icon rather than an application icon; in this figure it's a small SurfWriter document icon. That's because in the document-

non-OpenDoc documents is the frame border around the active part—in this case, the drawing.

On the desktop you'll also see the SimpleText and Disk First Aid application icons. OpenDoc documents interoperate with documents from traditional (non-OpenDoc) applications—for example, you can copy content from a SimpleText document to an OpenDoc document. However, not all content in an OpenDoc document can be copied back to a document from a traditional application. Also, some tasks are still best handled by traditional applications—for example, a task that doesn't produce a record or

document. On the other hand, if a traditional application were an OpenDoc part, it could be embedded into a document with instructions on how to use it, or placed in another useful context.

Finally, look at the Stationery folder. In the OpenDoc world, a user creates new documents by double-clicking stationery pads rather than by launching applications. In fact, the user rarely sees editor or viewer icons, since they are stored in a special folder. (A user deals with part editors only when installing them or substituting one part editor for another.) A user may move stationery to other places, but during installation of OpenDoc editors, all stationery pads are put into the Stationery folder to make it easy for the user to find them initially.

OpenDoc Terminology

Several terms commonly used in OpenDoc may be new to you; other OpenDoc terms are traditional terms used in new ways.

- A *document* is a collection of OpenDoc parts assembled by a user or developer. A part becomes a document if it's dragged from its document to the desktop. A document becomes a part if it's dragged from the desktop into a different, open document.

- A *part* is the fundamental building block of an OpenDoc document; it's the content that users see in their documents. An associated part editor is designed to allow the user to manipulate the part.

- A *part editor* displays a part's content and provides a user interface for modifying that content. This user interface may include menus, controls, tool palettes, rulers, and so on.

- A *part viewer* offers a subset of a part editor's functionality; it allows users to display and print a part's content but not to edit it. Viewers can be useful in document-sharing situations when the user who receives a document

doesn't hold a license to the appropriate part editor.

- An *Application* refers to one of today's applications that has not been modified to support OpenDoc; these are also sometimes referred to as *monolithic* or *traditional applications*. We recommend that applications support the Drag Manager, because drag-and-drop capability is a feature that users really want. Supporting this capability also makes applications work better with OpenDoc.

- A *container application* is a monolithic application that has been modified to support embedded OpenDoc parts.

- A part may be *active* or *inactive*. Being active means that the part contains the selection (or insertion point). For a part to be active, its contents must be visible—that is, displayed in a window or frame. Normally the active part receives commands and keyboard events, and its frame border, menu, palettes, and other user interface elements are displayed.

At most, one part is active at a time. A user activates a part by clicking it or by dragging something into the part's content. When a part is activated, the previously active part, if any, becomes inactive. An inactive part does not receive keyboard events or display its own interface elements, such as a menu bar, frame border, or palette. However, being inactive does not mean that a part isn't running; parts may execute asynchronously whether they are active or inactive, even if they are displayed as icons.

- A *frame* is one of the two representations for a part (the other is an icon). A frame shows a representation of the part's contents. When you see a part inside a document, you see the part represented as a frame.

- A *frame border* is a visible representation for a frame's shape and state. The border of a

frame is displayed when the frame is active or selected; the border is invisible when the frame is inactive.

- An *icon* is a representation for a part as a small generic picture along with a name. It is the normal representation when a part is shown in the Finder. The other possible representation is a frame.

- *Intrinsic contents* refers to data that is intrinsic to a particular type of part. For example, text parts contain characters; graphics parts may contain lines and circles; video parts contain digitized video. The part developer determines what intrinsic contents a part may contain.

- *Embedding* refers to the insertion of a part into the intrinsic contents of another part. The embedded part maintains its own part identity. The containing part controls layout issues, such as whether the embedded part overlaps existing parts in its contents.

- A *link* is a relationship between two pieces of content. A link operation is a special kind of copy/paste operation, in which the pasted copy is updated every time the original changes. Links allow part contents to appear in more than one place; for example, a document might link in a picture from another document. Linked copies can even be displayed in different formats; for example, several linked copies of a spreadsheet might display the same data as a bar chart, a spreadsheet, and a pie chart.

- In addition to contents, a part has *properties*—data items that describe the part. The user may modify some properties, such as name, comments, and the editor to use with the part. Other properties are set by the system, such as storage size, last modification date, and who modified the part.

• • •

We hope this article has clarified the differences between documents and parts, given you clues about distinguishing OpenDoc documents from documents created by traditional applications, and guided you through the OpenDoc terminology. Stay tuned for more topical information next time. ♣

Got a burning question? Need some clarification? Subscribe to OpenDoc-HI@CILabs.org and send us your questions and comments. To subscribe, send a message to ListProc@CILabs.org and include "subscribe OpenDoc-HI <your name, not e-mail address>" in the body of the message. We also check for questions on the AppleLink Human Interface Bulletin Board.

CD Highlights

continued from page 13

address DEV.CD or Internet address dev.cd@applelink.apple.com, and we'll send you a copy of the December 1994 CD.

So, in addition to new golden master versions of Arabic and Kanji System 7.5, here are the rest of this month's new and revised packages.

ASLM SDK v2.0b5

Release 2.0 of the Apple Shared Library Manager allows you to create and use dynamically linkable and loadable shared libraries.

ASLM 2.0 supports system software version 6.0.5 and later, and is compatible with the "single" Finder. It also supports "native" PowerPC shared libraries and clients.

ASLM 2.0 contains a continuation of ASLM 1.1.2 for 680x0-based computers. It contains bug fixes and some minor feature enhancements, and is binary-compatible with ASLM 1.1 clients and shared libraries. For a list of changes and bug fixes, see the Change History document.

Dylan Update 03/95

This folder contains updates to the Dylan Related folder on the February 1995 Tool Chest CD, including new versions of MacMarlais (0.5d23) and Mindy (1.2), and an errata list for the *Dylan Interim Reference Manual*.

OpenDoc Documentation

This folder contains the principal developer documentation for OpenDoc on the Macintosh platform. In addition to a Read Me file and a Recipes folder, the titles include

- *OpenDoc Class Reference*
- *OpenDoc Programmer's Guide*
- *OpenDoc Cookbook*
- *OpenDoc Human Interface Guidelines*

All books are in Apple DocViewer format. Please note that all are preliminary; the information in them is in some cases incomplete and is not guaranteed to correspond to the version of OpenDoc that is currently being seeded. In particular, please note the errata sheet that accompanies the *Class Reference*.

Besides the *OpenDoc Human Interface Guidelines*, the Human Interface folder contains Drag and Drop guidelines and a checklist that you can use to ensure that your part editors conform to the OpenDoc human interface guidelines.

The Recipes folder contains discussions and code provided by the OpenDoc development team to help you get started programming. Much of the information in the recipes has been incorporated into the *Programmer's Guide* or the *Cookbook*, although the recipes in the Recipes folder may be more up-to-date and may contain code examples not shown elsewhere.

Coming Next Month

Next month's CD will feature even more Worldwide System 7.5, more Dylan updates, and—hopefully for real this time—QuickDraw 3D information.

Alex Dosber
Developer CD Leader

develop Issue 21

continued from page 13

implement the hierarchical lists described in *develop* Issue 18 (and other custom list types) in PowerPlant, CodeWarrior's object-oriented framework.

PowerPC assembly language is the subject of our popular Balance of Power column this time. We've also got columns on QuickDraw GX (drivers), QuickTime (codecs), and—new with this issue—MPW tips and tricks. Dave Johnson expounds on the downside of programming, Josh Horwich takes a turn at the Puzzle Page, and developer Tobias Engler introduces finger-coded binary, ideal for twiddling bits around the campfire. Curious? Then take a look at *develop* and its accompanying code on this month's Developer CD, or enjoy the printed copy if you're a subscriber. And please, let us know what you think; send your barb or valentine to us at AppleLink DEVELOP. ♣

Caroline Rose
Editor, *develop*





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Business & Marketing

Market Research Monthly

Worldwide Market for Server Software to Expand

Just a few years ago, no one would have guessed that computer networking would become a fad, but that's exactly what's happened, with all the uproar about the information superhighway and the Internet. Every time you turn around (even in *Apple Directions*), somebody's raving about the prospective gold mine in wide area networking products and services.

This month, we focus on the Internet's less sexy sibling, the local area network (LAN)—in particular, the opportunity for providing services for LAN users. LANs are typically made up of a small group of computers in a work setting that are connected to each other so their users can communicate, share files, access data residing on each others' systems, and, usually, take advantage of the services and data on servers. While only a small percentage of today's personal computer users have ever surfed the Internet—less than 10 percent, according to research conducted by Apple Computer, Inc.—the majority of personal computer users routinely use LAN-based services.

Up until now, the market for personal computer-based servers—personal computers designed to be used as servers—has been a small subset of the overall personal computer market. Servers have been bought primarily by medium-to-large businesses, and also by the few schools that have enough computer users to take advantage of servers, and resources to pay for them. According to International Data Corporation (IDC), yearly worldwide shipments of personal computer-based servers didn't reach 1 million until 1993.

That can be expected to change in the near future. At the low end of the market, servers are becoming less expensive (and more

powerful) and can be expected to sell into smaller office and school settings. The entry of more server vendors should hasten the decrease in prices: Currently, server manufacturers anticipate gross margins of 40 percent; as competition heats up, that number that can be expected to decrease to nearer the 20 percent gross margins most desktop computer manufacturers have grown accustomed to.

At the high end, personal computer-based servers are growing ever more powerful through the use of RISC processors, as is the case with Apple's Workgroup Server line, and by employing multiple processors. It's soon expected that high-end personal computer-based servers will begin to compete in the domains historically reserved for servers based on workstations, minicomputers, and mainframes.

Personal computer-based server sales have grown 75 percent worldwide in the past two years, from just over 800,000 units sold in 1992 to nearly 1.4 million in 1994, according to IDC. (See the graph "Worldwide Server Sales: Dramatic Growth, 1992–1995.") That number will continue to grow. Dataquest, Inc., expects the entire server market, including personal computers, workstations, and mainframes, to grow more than 75 percent per year until 1998.

Apple Building Server Market Share

Apple is currently expanding its share of the server market in a number of ways: The newly announced AppleShare Client for Windows (see the news story on page 11) will enable Windows customers to take advantage of AppleShare print and file services. The Windows client will ship at no additional cost with

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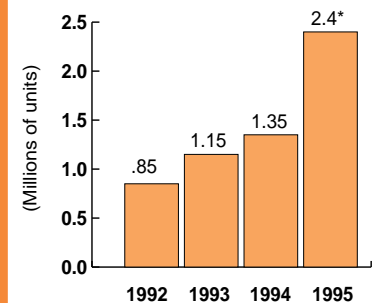
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Apple's PowerPC processor-based Workgroup Servers. The Workgroup Servers, among the few personal computer-based servers to employ RISC technology, are already near the top of the server market in terms of price/performance. The addition of the Windows client will make them very attractive servers for workgroups that employ both Macintosh and Windows operating systems.

Additionally, the latest version of Novell's NetWare server software, version 4.1, is being ported to run in "native" mode on Apple's PowerPC processor-based Workgroup Servers. NetWare is currently the most popular

Worldwide Server Sales: Dramatic Growth, 1992–1995



* projection

Source: International Data Corporation and Dataquest

This graph shows the dramatic growth in worldwide personal computer-based servers between 1992 and 1995.

operating system for Intel-based PC servers, currently providing network services for Macintosh, DOS, Windows, Windows NT, UNIX®, and OS/2 operating systems. Again, the availability of native NetWare will make Workgroup Servers more attractive to the wide market of mixed-environment LANs. (For more information about NetWare 4.1, see “Getting Started With NetWare 4.1 NLM Development” in the August 1994 issue of *Apple Directions*, which you’ll find on this month’s Reference Library CD [path—Periodicals:Apple Directions:Apple Directions 1994].)

Your Opportunity

You can take advantage of the growth in the server market, and of Apple’s increasing share of the market, by developing software that provides server-based computing services, either for AppleShare or NetWare 4.1 servers. Apple is especially encouraging you to write so-called Network Loadable Modules (NLMs), software threads that work with NetWare to provide premium network services, such as mainframe connectivity and digital video services.

NLMs that work with NetWare 4.1 running on an Apple Workgroup Server can be ported to work with NetWare 4.1 running on other

platforms. Similarly, if you’re already working on a NetWare 4.1 NLM for another platform, it can easily be recompiled and linked to work with NetWare 4.1 for PowerPC processor-based Workgroup Servers. To help your NetWare 4.1 development efforts, Apple has prepared an NLM software development kit.

For more information about AppleShare and NetWare development opportunities, or to obtain the NLM software development kit, contact Apple’s Servers and Services Evangelist Robert Patrick (AppleLink: PATRICK.R). ♣

Special Marketing Report

Newton Hits the Vertical Markets

New Strategy Catalyzes SI/VAR Opportunities

By Kris Newby

As sales in the nascent PDA (personal digital assistant) market shift from early adopters to mainstream buyers, Apple’s Newton team is implementing a new strategy to help Newton-based solutions gain a strong foothold in five key vertical markets. While the team’s initial marketing campaign attracted mostly white-collar workers, the new strategy aims to place Newton-based products in the pockets of more health care, sales automation, plant services, transportation, and financial services workers. The Newton team, referred to within Apple Computer, Inc., as the Personal Interactive Electronics (PIE) group, will do this by increasing its presence in vertical trade shows and publications, and with programs that help systems integrators (SIs) and value-added resellers (VARs) generate more Newton-based business.

In this article, we share details of this vertical market strategy, SI/VAR success stories, and market growth projections. Whether you’re a Newton SI, VAR, or commercial developer, it may be well

worth your time to become familiar with this new strategy—leveraging this effort could help you make your own inroads into these markets.

[Editor’s note: Look for an article on the market for commercial Newton products in an upcoming issue.]

The Strategy Blueprint

During the first annual Newton SI/VAR Symposium held in January, Apple’s PIE group outlined its new strategy for catalyzing the use of Newton-based products in five vertical markets: health care, sales automation, plant services, transportation, and financial services.

“Based on an extensive study of vertical markets, we chose these five segments because of their sales potential and their receptiveness to PDA technologies,” says Rebecca Patton, Apple USA Marketing Manager. “By focusing our resources in these areas, we will increase demand for Newton-based solutions, creating new opportunities for SIs, VARs, and commercial Newton applications developers.”

The PIE group’s new strategy is backed by an aggressive

program aimed at helping SIs and VARs increase the number of Newton solution customers. The program, available to SI/VAR program members only, includes the following components aimed at providing these developers with timely information from Apple, customer leads, and technical support materials:

- *SI/VAR Symposium.* This annual event provides SIs and VARs with an opportunity to preview new Newton and third-party technologies and network with other Newton solution providers and vendors.

- *Leads program.* This program helps bring SIs and VARs more business by providing a cash incentive to Apple salespeople who send project leads their way.

- *Program 222.* This cooperative prototype-funding program is designed to help Apple and integrators close large MessagePad-based development deals. Once a Program 222 deal is initiated, Apple, an SI, and a prospective customer each contribute funds or labor worth two weeks of programming time toward a Newton-based solution prototype. The customer benefits from a six-week development project that only

costs him two weeks of expenses. The solution provider benefits from a low-cost “seeing is believing” prototype that helps a prospective customer get mentally and financially “hooked” on the Newton platform.

- *SI demo CD.* The PIE group is currently putting together a CD-ROM collection of SI vertical solution demos. This disc will be used by SIs, VARs, vendors, and the Apple sales force to help customers visualize the potential of Newton-based solutions.

- *Apple corporate briefings.* Apple runs year-round technology briefings with high-level executives from large businesses across the United States. Third-party Newton solutions are often featured during these briefings, providing participants with the potential for new project leads.

- *Quarterly pouch.* This mailing includes a wealth of items to keep SIs and VARs informed of Newton market and technology opportunities. It includes SI/VAR program updates, vendor data sheets, occasional vendor software offerings, videotapes (such as a tape of the SI/VAR symposium), market research, and more.

[Editor's note: The best way to stay informed of these and other opportunities is by receiving the TAPPED.IN e-mail newsletter. To get on the mailing list or to get questions answered, send e-mail to TAPPED.IN@applelink.apple.com.]

The Newton Vertical Advantage

From a technical perspective, the most compelling reason for adoption of Newton technology in vertical market solutions is its powerful operating system. The Newton operating system is CPU-independent, so programs don't have to be recompiled for new processor architectures. The operating system is object-oriented around tasks instead of applications, so it's easier to combine several applications within a solution. And with Newton's easy-to-use interface, a solution's underlying complexity can be hidden from users.

If you're a vertical solutions provider and Newton devices don't meet your needs today, stay tuned. Apple's PIE group has its radar dish focused in on customer feedback, and they're busy incorporating it into future products. The first step is the new Message-Pad 120, which includes enhancements such as more memory (2 MB of RAM), a PCMCIA (Personal Computer Memory Card Industry Association) slot, and flash memory. (For details on this new product, check out the news article on page 11.) Other future Newton developments that promise to help you build better solutions faster include the following:

- *Enhanced communications.* A new modem enabler will allow customers to use a pull-down menu to select different modems. And the development of a C-based device driver kit, which will be available mid-1995, will make it easier for Newton devices to communicate with peripherals and utilize industry-standard communications protocols.

- *Wireless communications options.* Apple has been working with third-party communications providers for more than 18 months to bring to market wireless communications solutions based on Radio Frequency (RF) packet, analog and digital cellular, and one-way and two-way paging and Infrared (IR) communications formsts. Apple is also working with third-party PCMCIA data/fax modem vendors to provide a modem setup package for cellular communications. Recent announcements include the Apple Mobile Message System, a wireless communications system that lets users of notebook computers and PDAs receive one-way wireless page messages; a "native" mode communication driver for Newton-based products from ARDIS; a PCMCIA Type II wireless local area network solution from Dayna Communications; and in Germany, the GSM Connection Kit for wirelessly transmitting e-mail and facsimile messages.

- *Cross-platform development tools.* The Newton Toolkit for Windows will be shipped later this year, enabling Newton applications to be developed in the Windows environment.

- *Better desktop connectivity.* To address this high-priority area, Apple will release a set of desktop integration libraries (these are in early seeding now and will be shipped mid-1995) and evangelize the development of numerous third-party connectivity products.

Cooperation between Apple, technology vendors, and systems integrators is essential in advancing the Newton platform and driving a stake in the ground within these five target vertical markets. The next section of this article summarizes Apple's perspective on development opportunities and highlights successful projects under way in each target market.

A Cure for High Health Care Costs

With the health care industry under pressure to reduce costs and improve services, many hospitals and doctors are using Newton-based solutions as a cure. The portability and power of Newton technology makes it ideal for quick access to clinical and

patient data. And by combining it with back-end systems, it can be used to reduce costly paperwork and create new revenue-generating systems.

One example of a successful technology collaboration in this market is the clinical reporting system developed by Greenleaf Medical Systems, the nonprofit

Apple's Vertical Market Hit List

Apple's PIE group is currently implementing a strategy to help Newton-based solutions gain a strong foothold in five key vertical markets. The following chart of potential vertical-market Newton users may help you evaluate the sales potential of each market segment.

Market	Total number of potential Newton users in the U.S.
Sales automation	
Door to door	1,200,000
Manufacturing sales automation	1,000,000
Real estate	700,000
Retail detailing	200,000
Route delivery	200,000
Insurance agencies	200,000
Pharmaceutical	40,000
Health care	
Hospital automation	2,100,000
Individual practitioners	1,700,000
Home health	500,000
Private practice	400,000
Plant services	
Manufacturing	1,500,000
Field service	1,000,000
Utilities	200,000
Telephone companies	80,000
Cable TV	33,000
Transportation	
Truck load	2,800,000
Ultra frequency travelers	250,000
Express parcel	150,000
Airline mechanics	131,000
Flight attendants	93,000
Financial services	
Banking	500,000
Serious investors	250,000
Institutions	120,000
Consumer loans	100,000

Source: Apple Computer 1995

American Society of Hand Therapy (ASHT), and a private therapy clinic. In this joint project, Newton devices are used with Greenleaf Medical Systems' ORCA (Outcomes Related Clinical Assessment) software and Photonics' wireless Cooperative adapter to provide hand surgeons with a quick way of documenting patient conditions and evaluating patient information. This system helps these professionals improve efficiency and lower costs. And it provides them with access to the UE Net, ASHT's national "upper extremity" database that provides physicians and therapists with treatment data for ailments such as carpal tunnel syndrome.

Walter Greenleaf, president of Greenleaf Medical, discusses his organization's decision to use Newton devices: "On the whole, the medical industry doesn't embrace change as rapidly as other industries. So we wanted to use a data collection device that was compatible with the way doctors work, which is most commonly walking from room to room with a clipboard in hand. The Newton PDA was our first choice. And unlike a laptop computer, it's inexpensive enough that we could put it in the hands of every clinician."

Another Newton software developer, Mark Spector, director of product development at HealthCare Communications, adds, "We chose Newton technology to implement our CliniPad and Hippocrates applications because of the ease in which it interfaces with our Macintosh-based back-end medical application, MediMac, and because of the future money-making potential of this product's wireless capability."

Enhancing Sales Automation

Sales automation systems—in other words, systems that improve the flow of information from a salesperson to a distributor or

manufacturer—are in high demand across a large number of industries. Salespeople need to streamline administrative sales tasks so that they can spend more time selling. Companies also need solutions that improve communication with their mobile sales force, enabling home offices to better manage inventory and more quickly react to changes in customer buying patterns.

There are a number of interesting Newton-based projects under way in the area of sales automation. One, the East Bay Real Estate Board's wireless multiple listing service developed by Integration Systems in San Mateo, California, enables realtors to get up-to-the-minute property information on Newton devices. Another, a demonstration system shown at the SI/VAR Symposium, uses Wayfarer client-server "middleware" software to allow beverage-route salespeople to place real-time product orders on Newton devices. For urgent orders, these salespeople can even use their Newton devices to send messages to an order clerk's pager.

The Disneyland theme park in Anaheim, California, is currently piloting the use of Apple MessagePads as portable devices for collecting market research data. With the help of OmniForm software, data-entry errors decreased, the time required to lay out questionnaires went down significantly, and the cost of printing 100,000 or so paper questionnaires a year was eliminated.

Serving Utilitarian Needs

Plant services is Apple's term for describing field service and manufacturing functions that require workers to spend a large part of their day outside an office. These types of companies need solutions that help them improve operations and cut service costs. Because of the clear price/performance advantage that Newton

technology provides over established industrial "bit-bucket" systems, this market segment is one of the most promising for Newton devices.

There are two main challenges in this market: Designing interfaces that can be learned with minimal training and guaranteeing wireless connectivity under remote and adverse conditions. The need for a more rugged Newton housing—one that can stand up to rain, dust, and even explosions—has kept these products out of many government and industrial applications. As a result, Apple's Newton development team and third-party Newton manufacturers are working on more robust housings.

Harris Corporation Dracon Division, a leading supplier of telecommunications products and systems, teamed up with Digital Ocean, Inc., to create a heavy-duty Newton-based device that will ship during the second quarter of this year. Harris's model, the Craft Digital Assistant, is dust- and rain-proof; it also has a backlit screen, more memory, and built-in wireless communication.

Harris is building this PDA into a larger solution that will help regional telephone companies maintain telephone test equipment. With layoffs occurring across most telephone companies, the Dracon system will help telephone companies transfer the expertise lost by "old timers" onto servers that are accessible by all. According to Norm Schillaci, Dracon test systems product manager, his firm chose Newton technology because of its low cost, its small size, and the ease in which Harris-Dracon could create an intuitive interface on top of telephone companies' legacy systems.

Paving the Way for Transportation Solutions

Transportation is an industry that has already embraced wireless

communication, paving the way for solution providers who can expertly integrate hardware and software for airline, travel, package delivery, and trucking businesses. This industry needs solutions that optimize delivery routes, track freight, and increase the productivity of workers. The advantage that Newton technology provides this segment is a more powerful information-delivery device that costs about five times less than competitive devices.

DAT Services is working with PDA Dimensions, a systems integrator, to create a Newton-based solution to help truckers avoid their biggest problem—idle time between loads. DAT is currently in the business of helping drivers find loads through truck-stop video monitors. Their upcoming Newton-based solution will enable truckers to access the DAT Services' Driver Services Network without hitting the brakes. The DAT solution will also help them log their mileage and fuel and avoid bad road conditions. DAT Services chose to standardize on Newton technology because of its low cost and easy-to-use interface.

Bullish on Financial Services

Stockbrokers and serious investors place a high value on timely market information, and Newton provides them with a means of accessing this information while they're in their cars, in meetings, or on the golf course. On average, these users are also early technology adopters and are knowledgeable about the benefits of computers, making them more receptive to PDA-based solutions than many other industries.

The investment experts at Standard and Poor's (S&P) teamed up with Dynamic Network Solutions to bring its MarketScope real-time market intelligence information service to these investors on the move.

MarketScope provides stock brokers and serious individual investors with stock alerts and market intelligence reports. Users receive this information over the MobileComm® one-way data network from a pager or Newton device. Walter Arvin, Market Scope's general manager, says S&P decided to use Newton devices in its solution because of their reasonable cost and filtering capabilities.

Many industry analysts give the PIE group's vertical market strategy favorable reviews. "I think Apple's vertical market strategy makes a lot of sense. That's exactly where the PDA action will be for the next few years," says Susan Cohen, senior analyst of computer strategy research at Forrester Research. "The biggest challenge in serving vertical markets is providing large companies with a complete solution—these users don't want to have to cobble together software and hardware themselves. So far, Apple has been working well with systems integrators like Peat Marwick to make this happen."

Randy Giusto, associate director of mobile computing at BIS Strategic Decisions, adds,

"There's a ground swell of PDA business in the vertical markets today, and I think Apple's plan to address these markets is solid."

What's more, market research shows that Newton-based product sales are gaining in momentum. Apple's MessagePad is the current market leader, holding a respectable 57.7 percent of the PDA market in 1994. (For a more detailed breakdown of this market, based on BIS Strategic Decision research, see the pie chart on this page.) And although over time Apple's slice of the pie will shrink as new competitors enter the market, the total dollar amount of Apple's share should continue to grow at a healthy rate: Forrester Research predicts that Apple's PDA sales will grow to about \$198 million in 1997 and \$322 million in 1999.

The competitive position of Newton-based products has been strengthened with the stepping down of rivals such as GO, Eo, Momenta, and Slate. And the entrance of many third-party Newton licensees into the market, such as Motorola, Panasonic, Siemens AG, Sharp, and Toshiba, will also help this platform reach critical mass.

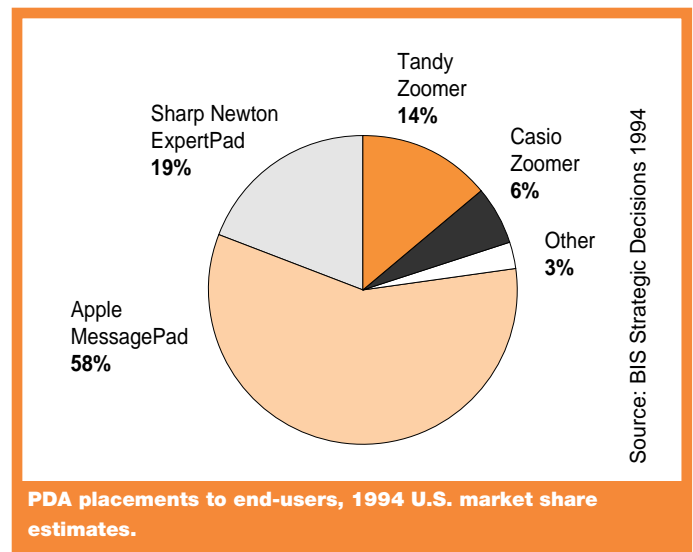
Growing Opportunity

Apple's PIE group estimates that there are more than 100 commercial, 300 vertical, and 600 shareware Newton applications on the market today. The commercial segment of the PDA market is taking off on a slow but steady path. Apple's vertical market strategy is designed to get more Newton devices into the pockets of mobile workers, creating a stronger demand for Newton software and offering developers a robust emerging and growing business.

Many analysts and developers believe that PDAs will someday be as ubiquitous as VCRs. With little

competition and a big upside potential, now is the time for developers to gain experience and market share. Paul Smith, president and CEO of Holosoft, expresses the attitude of many Newton developers in the market today: "With an installed base that is approaching 200,000 users and ramping up quickly, if you have a quality application, it will sell well." ♣

Kris Newby is a technical communications consultant and free-lance writer based in Palo Alto, California.



Marketing Feature

Marketing Your Product Through User Groups

Tips on Garnering the Best Publicity Money Can't Buy

By Sam Decker,
User Group Connection

If you're the person in charge of marketing your company's Macintosh-based products, you probably understand the importance of word-of-mouth product recommendations. And you probably know how hard it is to generate word-of-mouth sales using

traditional marketing vehicles such as advertisements, press releases, and direct mail. Macintosh user groups provide one of the most effective vehicles for fostering "grass-roots" enthusiasm for your products. These organizations are full of early technology adopters, purchasing influencers, and corporate computer gurus who can provide you with the

type of sales-enhancing publicity that money can't buy. And though building relationships within these organizations takes time, it's generally less expensive than traditional marketing tactics.

As marketing manager of User Group Connection (UGC), an independent organization that provides companies with user group marketing services, I've helped hundreds of companies implement successful user group marketing programs. (To learn

more about the services UGC provides, see the text box on page 28.) In this article, I share advice on efficient ways to team up with user groups to enhance your product sales.

On the Importance of User Groups

User groups have been around since the birth of the personal computer. In the 1970s, Apple Computer, Inc., cofounder Steve Wozniak was a member of one of

the first user groups, the Homebrew Computer Club of Menlo Park, California. Apple user groups were the first to learn and love Macintosh computers when they first hit the market in 1984; the members then spread the word to others.

Surprisingly, there are more Macintosh user groups than Windows groups, in spite of the larger Windows installed base. It's estimated that there are 2,200 Macintosh user groups (MUGs) in the United States and Canada (versus 1,800 Windows/DOS user groups), representing over 600,000 Macintosh enthusiasts. There are also about 100 Newton user groups or special interest groups (SIGs). (See the text box "What Services Do User Groups Provide?" on this page, for a list of typical user group services.)

Research shows that user group members constitute a valuable marketing segment. Their rosters are dominated by two types of users who buy a lot of software—beginners and "power users." A high percentage of these users are consultants, journalists, MIS directors, and corporate purchasers—all professions that heavily influence product sales. For example, one member of a small 40-member group in Connecticut is the

vice president of information systems for a Fortune 500 company.

According to Research Spectrum—a market research firm in San Francisco, California—36 percent of user group members hold executive or managerial positions and 32 percent hold technical positions. Eighty percent of members have college degrees and the average household income of a member is \$55,600 per year. And an impressive 94 percent of members influence their organizations' computer purchase decisions, with these recommendations leading to an average of \$30,000 of annual product purchases.

Only a little over half of all user groups are actually community-based organizations. Vendors who need to target specific market segments can find many groups that are focused around corporate, higher education, K-12 education, professional associations, state/local government, federal government, or international market needs. The largest market segment, at 23 percent, represents groups focused on education; the second largest segment, at 12 percent, is composed of groups formed within corporations.

Designing a User Group Program

The success of user group marketing hinges on relationships. Rather than marketing *to* user group members and leaders, you should be marketing *with* them. The best strategy for building strong relationships with groups is to have one person in your company become the point of contact for user group leaders. This person should be responsible for all the aspects of your company's relationship with user groups. And his or her goal should be to keep in close communication with them, so they know your company and your products inside and out. This way they'll be more likely to wholeheartedly recommend your product to others.

Put together a year-round user group plan where you send groups useful materials every one or two months. These mailings may include materials like product demos, technical support information, or press release copies. (See the text box "Ideas for User Group Mailings" on page 27 for tips on what to send.)

Also, schedule high-impact mailings and presentations close to new product releases. The best time to promote a product to user groups is at the beginning and end of its life cycle. As early adopters, user group members try to buy the latest products. And as savvy, price-conscious buyers, members will help you clear your shelves of end-of-life products if you offer them low prices. By regularly helping these groups, your products have a good chance of staying on the screens and in the minds of these influential computer enthusiasts.

Communicating With User Groups

User group marketing requires frequent communication to build relationships and inform groups about your products. The optimal

way to do this is by demonstrating your product at user group meetings, but since this isn't a practical way to reach a large number of groups, you have to rely on more efficient means.

As early adopters, most user group leaders and members use online services, e-mail, bulletin board services, and the Internet. Using these vehicles to communicate and exchange information is an inexpensive way to reach many groups.

Unfortunately, there's no single online service where all members congregate, though your best bet is eWorld. More than 450 user group leaders subscribe to eWorld, and a couple hundred can be reached through Apple-Link, although more are migrating to eWorld because of its cost savings and more extensive user group information. (You can get to the user group area on eWorld by entering *UGC* into the Shortcut text box.) There are also Macintosh user group areas on America Online (keyword: *UGF*) and CompuServe (in an area called *Macintosh Apple User Groups* or *MAUG*). Within these areas you can post software demos and other product information. (For directions on how to post product literature on the UGC board, send e-mail to UGCSysop@e-world.com) The best way to find e-mail addresses of user group leaders and members on all these services is by searching through online users' member profiles using keywords such as *user group* and *MUG*.

One of the biggest hurdles in trying to mail printed information and electronic media to user groups is finding their current addresses. As a start, consider maintaining a small internal database of "VIP" user groups. Then send general information, such as product announcements or end-of-life sales notices, through User Group Connection's monthly co-op mailing. Each month UGC

What Services Do User Groups Provide?

User groups provide members with a range of services, which vary with the size and sophistication of the group. You can use many of these services to generate sales for new products and reduce your third-party support costs. Here's a list of the most common user group services.

- creating and distributing a monthly newsletter
- hosting monthly group meetings
- distributing and selling shareware
- offering training classes
- maintaining a software library or resource center
- running an electronic bulletin board system (BBS)
- hosting computer events and expos
- providing technical support materials

mails out a package to the “ambassador” of each U.S. and Canadian user group. (For information on international user groups, contact local Apple offices.) Since the expense of mailing labor and logistics are shared, the cost of including materials in the package is nominal—it usually costs you no more than the price of postage if you mailed the package by yourself. And best of all, it saves you the time it takes to maintain a large user group database.

A user group ambassador is the gatekeeper of user group information, and is typically a group’s president, newsletter editor, vendor relations person, or meeting director. Ambassadors bring information to meetings, announce your special offer, pass on information to newsletter editors, and so on. They’re the first step to marketing *with* groups, and your relationship with the group is based primarily on your relationship with the ambassador.

Giving Good Demo

User groups love to have vendors demonstrate products at their monthly meetings, so if you have a new product release in the works, you should do everything you can to get on the calendars of key user group meetings. Imagine presenting your product to an audience, 92 percent of whom use your competitor’s product. Let’s say that at the end of your presentation, you offer a special deal on your product and 50 percent of this influential audience switches to your product. It can and did happen—just ask WordPerfect.

There’s a lot to keep in mind when planning and presenting product demonstrations to user groups. Here are some tips I’ve collected from user group leaders and vendors who have many demos under their belts:

- *Schedule ahead.* If you’d like to present to large user groups, make sure to contact them three to six months in advance.
- *Be prepared for your demo.* Double-check your equipment, be on time, know your product and its competition, keep promises made during the meeting, and don’t forget to bring raffle products.
- *Get straight to the demo.* Don’t present a long corporate slide show or your mission statement. Instead, show your product in action, and talk about specific applications and benefits.
- *Be natural.* Remember that your audience of computer enthusiasts is spending their *free time* attending a computer club meeting, and the entertainment value of your presentation should be high. Wear casual clothes, be yourself, ask them what they want to see, and minimize marketing hype.
- *Respond positively to negative feedback.* If you receive negative product feedback during a demo, turn it into a positive:

Thank the member for his or her candor and tell that person that you’ll bring the problem to the attention of the right people at your company. Above all, don’t lie, and if you make a commitment to call someone back on the issue, do it. (You can avoid some criticism altogether by having user group members beta-test your product before it ships.)

Another opportunity to show off your product is UGTV—an annual satellite TV broadcast to all Apple user groups, sponsored by User Group Connection and Apple Computer. Last year, over 8,000 members watched this show live and more than 400,000 members watched it on videotape. On a garage-like set (reminiscent of the garage where Jobs and Wozniak invented the first Apple computer), Apple and

third-party product managers use this forum to talk about new technologies and products. At the end of the show, third-party products are raffled to viewers. To inquire about participation in this year’s show, contact User Group Connection at 408-461-5700, extension 202.

In addition, more than 300 user group leaders congregate at the Boston and San Francisco Macworld Expositions for different events, providing you with sponsorship and presentation opportunities. Beyond that, many groups also host local computer expos and events. For example, LAMG (Los Angeles Mac Group) hosts a Mac exposition that draws over 10,000 people in two days. Boston Computer Society, BMUG, MacGroup Detroit, NYMUG, Macs of Marin, and many other user groups host similar mini-trade shows targeting local Macintosh enthusiasts. You can get information about these events by sending an e-mail message to UGCellen@eworld.com.

Leveraging Your Resources

Many large companies, such as Lotus Development, Apple, WordPerfect, Intuit, Microsoft, Borland International, and Symantec, have dedicated user group marketing and public relations programs. Though they have the luxury of dedicating full-time people and substantial budgets to this audience, even a small- to medium-sized company with limited resources can cost-effectively maintain a user group program. (Prime examples of products successfully promoted through user groups are Underware by Bit Jugglers and Stuffit by Aladdin Systems.)

The secret to running a small-company user group program is to limit your market and leverage your resources. I recommend that you start working with local user groups, then slowly build up relationships with 100 to 300 groups across the nation. But don’t just concentrate on the largest groups. While large groups are great venues for newsletter

Ideas for User Group Mailings

To ensure that the materials you send user groups get distributed to members, submit them in an electronic or a photocopyable format with reproduction rights clearly visible. These groups get a lot of mail every month, so the more creative, fun, or useful you can make your materials, the more they will stand out in the pile. Here are some ideas for items to include in these mailings:

- diskette- or video-based product demonstrations
- flyer announcing a special product discount
- evaluation copy of software
- technical support materials (such as software bug lists, error code directories, and frequently asked questions)
- press releases accompanied by a personal letter
- magazine review of your product
- diskette of product and company information
- free products for user group meeting raffles
- requests for beta testers
- customer newsletter
- camera-ready ad art and an offer to advertise in their newsletter
- sponsorship offers for events or expositions

The Five Largest Community MUGs

Berkeley Macintosh User Group (BMUG)

Berkeley, California
13,000 members
Contact: Bruce Linde
Phone: 510-549-2684 ext. 207
E-mail: bruce_linde@bmug.org

Boston Computer Society (BCS)

Boston, Massachusetts
10,000 Macintosh members
Contact: John Robards
Phone: 617-864-1700
E-mail: bcsoffice@eworld.com

New York Mac Users' Group (NYMUG)

New York City, New York
5,400 members
Contact: Peter M. Fine
Phone: 212-473-1600
E-mail: finepeter.ew@eworld.com

Los Angeles Macintosh Group (LAMG)

Los Angeles, California
5,000 members
Contact: Suzy Prieto
Phone: 310-278-5264
E-mail: lamg@eworld.com

Club Macintosh de Québec

Québec, Canada
2,200 members
Contact: Christian Gingras
Phone: 418-527-0250
E-mail: cgingras@eworld.com

What's User Group Connection?

User Group Connection (UGC) has provided user group marketing services to hundreds of companies, such as Claris, Adobe Systems, Apple, WordPerfect, Hewlett-Packard, Global Village, Intuit, and Now Software. (UGC was operated for over nine years as an Apple department prior to becoming an independent organization in July 1993.) Services offered include monthly mailings, custom mailings, Macworld Expo event sponsorships, UGTV participation, presentation tour planning, database sales of beta testers, and more.

advertising and presenting demos, it's often easier to get attention and active product evangelism from smaller groups. (See the text box on page this page for a list of the five biggest community user groups.)

A quick way to get started is to use UGC's database of over 2,200 Apple user groups (and 1,800 PC user groups) to mail to user groups. This approach saves you the time and money needed to build and maintain your own database.

You can also cost-effectively increase your number of "meaningful" user group relationships by following these tips.

- Use communications technology to its fullest by implementing automatic fax-back product information systems, where a

computerized system sends product information back to a caller by fax. You should also schedule regular e-mail correspondence to groups.

- Plan user group presentations around existing business trips to save on travel expenses.
- Spread your reach by encouraging your sales representatives, engineers, and technical support people to join local user groups. Not only will your employees gain valuable insights and help promote your product, but user group members will feel more "connected" to your company.

For example, at the MacNexus user group in Sacramento, California, a Claris representative regularly speaks to the group about the latest and greatest from Claris.

Bill Davies, president of MacNexus, said, "The audience loves it. It makes our members feel special to be seeing something that *Macworld* magazine hasn't already talked about."

Advice From the Wise Guy

There is no more powerful selling force than a word-of-mouth product recommendation from a friend. Though this kind of publicity can't be bought, building strong relationships with user groups can help you garner word-of-mouth product sales. It just takes time and a thorough relationship-building plan. I think ex-Apple "wise guy" Guy Kawasaki summed it up best when he said, "You can't buy user group advertising—you have to earn it." (He ought to know—he was one of the first to use the enthusiasm and expertise of user groups to "evangelize" his product, the Macintosh platform.) ♣

Sam Decker is Marketing Manager at User Group Connection. He is currently writing a book called How to Market With Computer User Groups. To find out more about User Group Connection, or to get a copy of his FREE newsletter on User Group marketing, send e-mail to AppleLink address DECKER.S or to eWorld address UGCSam; or call 408-461-5700,

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