



# AppleDirections

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**PowerPC Source From Motorola**  
 Enclosed with this month's Developer Mailing is the premiere issue of *PowerPC Source*, a new quarterly newsletter published by Motorola to keep you up-to-date about the PowerPC micro-processors under joint development by Apple, IBM, and Motorola. PowerPC processors will be the foundation of the next generation of Macintosh systems, to be shipped starting in the first half of 1994. You can subscribe to *PowerPC Source* (it's free!) by returning the business reply card you'll find in the newsletter.

## Apple News

### Fall Products Smash Price Barrier

*We have smashed the price barrier long associated with Apple products.*

—Ian Diery, executive vice president of Apple Computer, Inc., October 21, 1993

If you remember one thing about Apple's fall 1993 product introduction, remember those words. With the introduction of a variety of new products, Apple told the personal computing world that its computers no longer cost more than the competition.

Instead of offering value-added features at a higher price, Apple now provides those same features in computers that are priced like previously cheaper, name-brand DOS/Windows systems. To be specific, customers can purchase the new 68LC040-based, 25-MHz Macintosh Quadra 605 computer at prices starting below \$1,000. As one of Apple's in-house analysts expressed it, "It's like buying a car with air conditioning, a stereo, and leather seats thrown in for free."

But don't just take our word for it: third-party tests now indicate that the new Macintosh models are among the best price/performance deals in the computer industry (more on this later).

What this means to you is that Apple is committed to enlarging the base of customers for

## Strategy Mosaic

### Your 1994 New Year's Resolutions

*By Gregg Williams, Apple Directions Staff*

I keep thinking about the White Rabbit in *Alice in Wonderland*. "Oh my ears and my whiskers," he cried, "how late it's getting!" You may not realize it, but if you don't have an answer to the question "What are your company's plans for 1994?" you're probably late yourself. So even though it's still November (or early December) for most of you reading this, it's time to make or review your company's plans for 1994. In this column, I'll summarize the most important Macintosh technologies that Apple thinks you should be pursuing:

- PowerPC
- OpenDoc
- Application enhancements (Drag and Drop, WorldScript)
- PowerTalk (System 7 Pro)
- Apple Help
- QuickDraw GX
- AppleScript

#### Why These? Why Now?

With the technologies listed above, Apple hopes to further differentiate the Macintosh from other platforms and give you the tools you need to create products that customers feel compelled to buy.

# AppleDirections

Volume 1, Number 7

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## Editor's Note

# Real Solutions

Looking over the preliminary results of the survey we posted on AppleLink last month, it seems that we could turn *Apple Directions* into a newsletter on the Macintosh human interface and have great success with it. Some of you value our technical articles, others our business articles, but all of you—100 percent of those responding so far—said our human interface coverage was highly valuable.

Well, you're in for a treat, because substantial portions of this month's and next month's Technology sections are devoted to human interface issues. Apple Computer, Inc., recently created the User Experience Architects' Office to focus and intensify its efforts to deliver the best possible personal computing experience. Last month, Gregg Williams and I talked to several of our leading "user experience architects," Don Norman, Harry Saddler, and Joy Mountford. The results of those discussions constitute our two-part article, "The State of the Macintosh User Experience," which starts on page 15 of this issue.

You'll see from that article that, as a company, Apple is trying to develop usable solutions to real human problems; rather than creating technology just because it can be done, we're using our technology to help people perform familiar, often-repeated tasks in a better way.

Apple wants you to do the same. If there's a central theme to what our human interface experts have to say, it's "Find out what users really want to do." Don't *give* them solutions to problems they don't have, don't *help* them do tasks they aren't doing, and don't *assume* people want technology for its own sake; instead, find out what users are doing today, determine what tasks can be appropriately

completed using computers, and put your great ideas and innovative technology to work to help users with those tasks.

In my view, that's the secret to creating software and hardware that can penetrate unreached parts of the market and attract Brand X users to our platform. Amanda Hixson got at a similar point in last month's *IndustryWatch* when she said, "There is no home computer market." Most home customers don't want computers, per se; they want letter writers, or finance organizers, or note takers, or calendars. They probably have nothing against computing technology—they just want it in a product that does something they already do.

The same can be said of every other traditional market, whether it's business or education: You and I and maybe a few million other folks (all of whom probably need to "get a life," or at least find something to do with our their hands) might think of "computing" as a real day-to-day task, in and of itself. But the people who use computers to help them complete *really* real tasks—like generating a business plan, sending a letter, playing a game, or creating an illustration, to pick at random from a list that could fill this entire newsletter—outnumber us computer addicts by at least a factor of 100.

Our user experience architects are helping Apple listen to those hundreds of millions of people and find out what tasks they could be using our computers to do; *Apple Directions* will continue to share their viewpoints with you in articles like "The State of the Macintosh User Experience," the Human Interface column, and Ask Don Norman.

If there are particular user experience issues you're concerned about, send us an AppleLink message at A.DIRECTIONS.

*Paul Dreyfus, Editor*

## Apple Directions On Line—January

The January issue of *Apple Directions* will be available on AppleLink as follows:

December 1—Preliminary draft copy

December 15—Final copy

To view the January issue of *Apple Directions* on line, follow the AppleLink path Developer Support:Developer Services:Periodicals:Apple Directions:Apple Directions January. ♣

## Strategy Mosaic

## Resolutions

continued from page 1

"But why," you may ask, "do you keep pushing all this stuff on us? We can barely support our current commitments!" Yes, it's a difficult proposition to justify. It *would* be easier if we could stick with what we already know. But we—neither you nor Apple—can afford to do that.

Quite frankly, you *need* to use new technologies, or your company will be in danger of stagnation or, worse, decline. Times are hard. To stay financially healthy, you need to sell entirely new solutions; you need to sell to even more customers—and there are more new customers in a new market than there are in your existing ones. You need to offer customers something they can't get elsewhere, something that's so valuable to them that the money they save from using your product is *far* greater than its purchase price.

When used, these technologies are investments in the future well-being of your company. It's tempting to say, "This stuff can wait—next release, maybe." Suddenly, it's two years later. Your products don't have some of the features that the best-of-class competing products do, and you're behind the competition. Worse, Apple announces additional technology (and, believe us, we will) that builds on the technologies you've ignored, and you're *really* behind the competition. Sure, even the best investments cost, but they also pay you back and give you what you need to keep going.

Okay, enough generalities. Let's get to some specifics.

**PowerPC**

It's almost impossible to list these essential technologies in any

order of decreasing importance, but PowerPC technology is definitely at the top of every list. If you make only one 1994 New Year's resolution, it should be to convert your software to native PowerPC code as soon as possible in 1994. Why? Because the PowerPC *is* the future of the Macintosh. Sometime in the mid-1990s, Apple is going to stop making Macintosh computers using Motorola-family 680x0 chips. (For some market projections on Macintosh with PowerPC, see the *Apple Directions* article listed in the "1994 Resources" text box on page 6.)

Yes, existing software will run in an emulation mode, and it will run respectably fast. But emulation is a strategy to meet users' needs for software they've already bought, *not* a defensible strategy for your future product development. You will not be harnessing the increased speed and new features that the PowerPC processor makes possible until you rewrite your software in native PowerPC code.

Macintosh with PowerPC will be successful because it is an open system, and businesses like that. They will buy PowerPC processor-based Macintosh computers because doing so doesn't lock them into one operating system or one hardware vendor. And when they go looking for software, they will go for products that exploit the PowerPC processor to the fullest.

*What you can do:* PowerPC development systems aren't available yet. If you're an Apple Associate or a Technology Partner, Apple will notify you when systems become available, sometime after the beginning of 1994. Until then, there's still a lot to do. Read up on PowerPC (see the "1994 Resources" text box). Decide what you're going to do and how long you think it'll take. Look at your code and read the "10+

Commandments" Technical Note, which will tell you how your code must change. (Two key commandments are "Write in ANSI C or C++" and "Don't depend on the 680x0 run-time model.")

**Application Enhancements**

Many of the technologies listed in this article include features that users will eventually take for granted as being part of a Macintosh application. This means that, the next time you revise your existing applications, you should be sure to add these features to them. Two such features are Macintosh Drag and Drop and support for WorldScript. (In the sections that follow, PowerTalk mailers, Apple Help, and the new QuickDraw GX printing interface also fall into this category. These five features provide the most "bang for the buck," and you should implement them in existing applications as soon as possible.)

Macintosh Drag and Drop is a System 7 extension that provides the Finder's standard drag-and-drop interface and adds support for the dragging and dropping of data between applications. Macintosh Drag and Drop gives an alternative to the Clipboard and the Cut and Paste menu items. It has a more natural interface that users prefer: highlight the data to be moved, drag it to a new location with the mouse, and release the mouse button. Dragging and dropping data between applications will become more commonplace as time goes by, and customers will expect your applications to support it.

WorldScript is a feature of System 7.1 and System 7 Pro that makes it easier for people worldwide to use Macintosh applications in their native languages. (For more information, see the *Apple Directions* article listed in the text box.) In addition to *globalizing* your software (making it

*IndustryWatch will return next month.*

compatible with any of the language kits that Apple sells), you can also *localize* it (make it acceptable in both language and cultural values).

*Macintosh Drag and Drop—what you can do:* Read the *Apple Directions* article and the documentation on the November 1993 Developer CD. Buy the Macintosh Drag and Drop Developer's Kit from APDA and license the technology from Apple for inclusion with your product (see the "1994 Resources" text box for details).

*WorldScript—what you can do:* First, you should consider globalizing your software; this includes following the WorldScript API (application programming interface) and making sure that your software works correctly with both one-byte and two-byte writing systems. (*Inside Macintosh: Text* describes the WorldScript API.) For example, Chinese-speaking users with the English-based System 7.1 or System 7 Pro and the Apple Chinese Language Kit can run programs written for the both the Chinese and English markets. They don't have to choose between the Chinese and English versions of system software.

When you globalize your application, you should test it with both the fully localized versions of system software (for the previous example, the Chinese version), as well as System 7.1/System 7 Pro plus the appropriate Apple Language Kits (in the previous example, the Apple Chinese Language Kit). Apple Language Kits exist for Japanese and Chinese, and more are to come in the future.

A further step (which globalization makes easier) is to localize your application to a specific

language. This involves translating all the text in your application into the given language and making sure that it does not contain inappropriate or culturally offensive content for the people who speak that language. The book *Guide to Macintosh Software Localization* (see text box) contains a lot of valuable information on this subject.

Adopting WorldScript also prepares you for Unicode, a script-encoding standard that will become more important in a few years. Until then, WorldScript gives you a mechanism today for writing software that customers worldwide will want to use.

### OpenDoc

OpenDoc is the cross-platform, vendor-independent, compound-document architecture that Apple is promoting. OpenDoc is extremely important because it provides a new model for computing (document based, not application based). True, it's a big change, but it opens up a lot of opportunities and gives us all a lot of "elbow room" for future growth. (See the "1994" article listed in the "1994 Resources" text box for a good overview of OpenDoc and its significance.)

OpenDoc is your entry into the software component business, not just on the Macintosh but also on other platforms—Microsoft Windows by summer 1994, and other platforms later. By breaking large, monolithic applications into various OpenDoc parts, each of which handles one data type well, everybody wins. Customers get a better user interface, the ability to mix

and match parts to get the solution they want, and portable compound documents. You get the ability to concentrate on what you do best, to create new products faster and with fewer resources, and to compete on an equal footing with others in a totally new market.

*What you can do:* Read up on OpenDoc (see the "1994 Resources" text box) and get involved in the OpenDoc Talk bulletin board on AppleLink. Join the Component Integration Laboratories ([415] 750-8352) to get OpenDoc and other technologies as soon as they become available. Implement Apple events, the Open Scripting Architecture, and the relevant Apple event suites (all necessary preconditions to implementing OpenDoc). In the next minor revision of your application, change your documents to be stored in the Bento document format. In your next major revision, convert your documents into OpenDoc containers. Finally, convert your application into OpenDoc parts. (See the "1994" article for more details.)

### PowerTalk

If it's not convenient to use, people won't use it; if it is, they will. PowerTalk (Apple's first product to use the Apple Open Collaboration Environment—AOCE) is important because it makes communication between two people easy enough that people will do more of it. With features like encrypted messaging and digital signatures, PowerTalk will make a number of things possible for the first time. (Electronic "workflow" management—using electronic forms instead of paper ones—is now feasible because the above two features make it possible for all parties to trust the authenticity of an electronic form.)

PowerTalk provides many benefits and opportunities (see

the articles listed in the text box), but the one that you should implement immediately is the PowerTalk *mailer*; an addition to your document that allows users to send documents, files, and folders as easily as they currently print documents—without leaving your application or worrying about details. PowerTalk does most of the work for you, so adding the mailer is not a big job.

*What you should do:* Read up on PowerTalk and the development opportunities it makes possible. Use the beta version of System 7 Pro (which includes PowerTalk) and the AOCE technical documentation that comes with it. Implement the mailer in your documents (digital signatures come free with the mailer). See the text box at the end of this

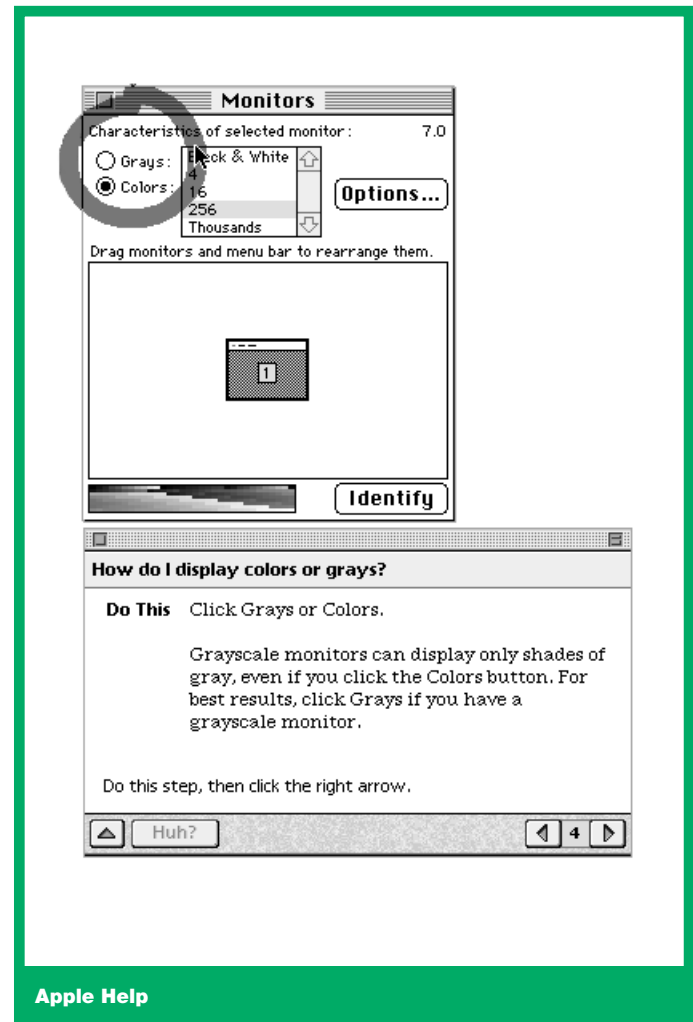
column for references to all these items.

### Apple Help

Unless you were at the Worldwide Developers Conference (WWDC) last May and went to the "Agents and Apple Help" session, you probably haven't heard of Apple Help. This is an unusual place to first mention a new technology, but I received permission to talk about this in advance because it is coming soon and your New Year's resolution list would be incomplete without it! Plus, I've seen the technology, and it is quite impressive.

Unfortunately, I don't have the space to tell you a lot about Apple Help. Suffice it to say that Apple Help is a whole new way for users to get help on how to use your application. It's interactive in that

*Strategy Mosaic is a monthly look at pieces of Apple's overall strategy. This column is based on information obtained from managers throughout Apple Computer, Inc.*



it leads users through a given task step by step, which helps them learn it better; it even places a seemingly hand-drawn red circle (see illustration on page 4) around the part of the screen where the next action takes place! You can create Apple Help help files for your application without changing the application itself, and the Apple Help authoring tool lets you use any major word processor to write the help screens in.

It's critical that you provide first-rate support for Apple Help, because Apple Help combined with AppleScript will be the key to creating the whole next generation of Macintosh ease-of-use capabilities. If you aren't on board with Apple Help, you'll be behind the curve later and will have difficulty catching up. Additionally, in the near future, Apple Help will be shipped with all Macintosh systems, as well as being used for Macintosh tutorials (customers will be able to use Apple Help and the Finder together to learn basic Macintosh skills). Macintosh customers will quickly come to expect it as standard in all applications.

*What you can do:* If you want to see what Apple Help looks like, get the videotape of the WWDC "Agents and Apple Help" session. A beta version of Apple Help will probably be available in February 1994. Until then, you can start thinking about how you might provide tutorial help as answers to a series of questions that begin with "How do I . . . ?"

### QuickDraw GX

QuickDraw GX offers you the best of both worlds. Since it coexists with QuickDraw, it doesn't break any existing applications. But if your program knows that QuickDraw GX is present, it offers entirely new capabilities for graphics and typography, and it gives users a better human interface for

printing (desktop printer icons and print queue control, for example).

In the short term, you should become QuickDraw GX-aware, which includes implementing the new QuickDraw GX printing model and supporting the QuickDraw GX Clipboard. This is important, because the QuickDraw GX printing interface will quickly become the de facto standard for how printing works in all Macintosh applications, and users will expect it.

After that, you should become *QuickDraw GX-savvy*, which involves making extensive use of QuickDraw GX features. This is where true long-term growth will take place for your software. For example, supporting the QuickDraw GX text and type features can vastly improve the quality of your application's output, while putting very little extra effort onto your users. That's a tangible benefit that you can add to existing applications.

QuickDraw GX gives you many new capabilities *and* a simpler programming interface (device- and resolution-independent, too!) than what you're using now. You also get *portable digital documents* (which allow users to share documents without illegally sharing your application or fonts).

Also, *printing extensions* will enable you to change the behavior of QuickDraw GX printer drivers. This allows you to do neat things with printing without having to modify or create a printer driver (something that takes months if not years to do). For more on the benefits of QuickDraw GX, see the various articles listed in the text box at the end of this column.

*What you can do:* Read up on QuickDraw GX. The WWDC 1993 CD, the August 1993 Developer CD, and AppleLink contain documents that describe new QuickDraw GX-based product features

and opportunities. Start using the 1.0b2 version of QuickDraw GX that is on the November 1993 installment in the Developer CD series. Make your software adopt the QuickDraw GX printing model as soon as possible. Use QuickDraw GX as the basis for exciting new products.

### AppleScript

AppleScript will also be part of the Macintosh computer's future, primarily because customers will demand AppleScript-savvy and Apple event-savvy applications that they can use to create custom solutions to their problems. Not only will such applications help them automate and streamline many of their daily tasks, it will also make them more productive. Some early AppleScript users claim order-of-magnitude (that is, roughly 10x) productivity gains.

First, some background information: Your application can participate in user-created custom solutions in one or more of the following ways. If you implement the Open Scripting Architecture (OSA), support the relevant Apple event suites, and factor your application so that it can be used by other applications sending it Apple events, your application is said to be *scriptable*. With a little extra work, you can make your application *recordable*, which means that a scripting system can "watch" what a user does with the application and generate a script from that.

When you add the AppleScript extension, your application can manipulate and execute scripts, making it the hub of a user-created custom solution. To make system-wide scripting work, we encourage you to carry out all of the above steps that make sense for your application. If your application is not scriptable or recordable, customers will see it as less useful and up-to-date as ones that are.

Apple event-savvy applications will be increasingly important because Apple events are the mechanism that Apple is depending on to tie various technologies together. For example, today's speech recognition and tomorrow's OpenDoc and Apple Help will depend on Apple events. That's another reason for your application to be Apple event-savvy and AppleScript-savvy.

Apple will also be bringing out more products that will make AppleScript more useful. A scriptable/recordable Finder will soon be available. A new version of HyperCard® will include AppleScript, and this combination will be bundled, at some point, on all future Macintosh systems. (Details on this are not yet available.) In addition, Apple is planning on shipping a Microsoft Windows version of AppleScript sometime in 1994.

*What you can do:* Learn more about AppleScript and what you should be doing with it by reading the article listed in the "1994 Resources" text box. *Inside Macintosh: Interapplication Communication* has good overview and detailed technical information on all aspects of Apple events and scripting. Make sure your application is at least scriptable and, preferably, recordable. If it makes sense for your application to create and manipulate scripts, add that, too. Start using AppleScript (it's on the November Developer CD).

### Resolving 1994

It's unrealistic to expect that you will be able to follow all these technologies with equal fervor, but you should resolve to follow as many of them as you can to the degree that they are strategic to your goals. These technologies have too many implications to spell out here; I *strongly* urge you to read up on these technologies, especially the *Apple*

*Directions* articles listed below. (If you don't have your back issues handy, remember that *Apple Directions* is archived on

both the Developer CD Series and AppleLink.)

The possibilities ahead are exciting, even though they

carry some risk. But then, *every* decision—including the decision to change nothing—carries risk. Planning is the

only way to meet those risks intelligently. ♣

# 1994 Resources

## PowerPC

- "PowerPC Development Tools Announced," *Apple Directions*, October 1993, p. 5
- "MacApp 3.1 Goes PowerPC," *Apple Directions*, September 1993, p. 9
- "Making the Transition to PowerPC," *Apple Directions*, August 1993, p. 14
- "Market Research Monthly: PowerPC to Flood Market," *Apple Directions*, August 1993, p. 20
- "Macintosh on PowerPC: Top Developer Q&As" and "Preparing for PowerPC: Ten Commandments," *Apple Directions*, June 1993, p. 12
- Macintosh Technical Note TN OV (overview) 13, "10+ Commandments," on the September 1993 Developer CD (path—Dev.CD Sep 93:Reference Library:Technical Documentation:Mac Tech Notes)
- "PowerPC Developer White Paper," on the October 1993 Developer CD (path—Dev.CD Oct 93:What's New?:Technical Documentation:PowerPC Dev White Paper)
- "Making the Leap to PowerPC," Issue 16 of *develop*, December 1993

## Macintosh Drag and Drop

- Macintosh Drag and Drop documentation on the November 1993 Developer CD (path—Dev.CD Nov 93:New System Software Extensions:Macintosh Drag and Drop)
- "Drag and Drop—Anywhere, Anything," *Apple Directions*, November 1993, p. 9
- Macintosh Drag and Drop Developer's Kit—available through APDA (R0552LL/A, \$75 in U.S.)
- "Drag and Drop From the Finder," Issue 16 of *develop*, December 1993

## WorldScript

- "Japanese, Chinese, Korean, Arabic Language Kits: A Global Opportunity," *Apple Directions*, August 1993, p. 15
- "Macintosh Q & A," Issue 15 of *develop*, September 93, p. 123
- "Writing Localizable Applications," Issue 14 of *develop*, June 1993, p. 7

- *Guide to Macintosh Software Localization*, available at bookstores or through APDA (M1528LL/B, \$24.95 in U.S.)
- *Localization for Japan*, available at bookstores or through APDA (R0250LL/A, \$20 in U.S.)
- *Inside Macintosh: Text*, available at bookstores, through APDA (T0564LL/A, \$39.95 in U.S.), or on the September 1993 Developer CD (path—Dev.CD Sep 93:Reference Library:Technical Documentation:Inside Macintosh:IM—Text)

## OpenDoc

- "Component Integration Laboratories to Promote Open Document Standards," *Apple Directions*, November 1993, p. 11
- "OpenDoc AppleLink Address Correction," *Apple Directions*, September 1993, p. 13
- "OpenDoc To Be Developed For Windows and OS/2," *Apple Directions*, August 1993, p. 1
- "Why 1994 Will Be Like 1984," *Apple Directions*, August 1993, p. 1

## PowerTalk/PowerShare/ System 7 Pro

- "Apple Turns Pro," *Apple Directions*, November 1993, p. 1
- "A Talk With Gursharan Sidhu, AOCE Architect," *Apple Directions*, November 1993, p. 15
- "How to Get Started With PowerTalk," *Apple Directions*, November 1993, p. 18
- "AOCE: Apple's Architecture for Collaborative Computing," *Apple Direct*, March 1993, p. 1
- the beta version of System 7 Pro (which includes PowerTalk) on the October 1993 Developer CD (path—Dev.CD Oct 93:System Software:U.S. System Software:System 7 Pro Beta 11)

## Apple Help

- WWDC 1993 videotape, "Agents and Apple Help"; available from G.T. Recording, (206) 783-6911 or (800) 878-2737 (U.S. only)

## QuickDraw GX

- "Rethinking Your Applications for QuickDraw GX," *Apple Directions*, October 1993, p. 9
- "Getting Started With QuickDraw GX," Issue

15 of *develop*, September 1993, p. 6

- "Developing QuickDraw GX Printing Extensions," Issue 15 of *develop*, September 1993, p. 34
- "QuickDraw GX for PostScript Programmers," *develop*, September 1993, p. 51
- "What is QDGX savvy? PDD," "QDGX Whitepaper PDD," "QDGX Document Portability PDD," and other documents on the August 1993 Developer CD (path—Dev.CD Aug 93:What's New?:QuickDraw GX 1.0b1:Ideas, Opportunities, and Info)

## AppleScript

- "AppleScript, an Elemental Technology—Why Using It Is No Mystery," *Apple Directions*, July 1993, p. 17
- the AppleScript software on the November 1993 Developer CD (path—Dev.CD Nov 93:New System Software Extensions:AppleScript)
- Apple Events/AppleScript Programming Tutorial (R0224LL/A, \$150 in U.S.), from APDA
- AppleScript Software Development Toolkit version 1.0 (R0175LL/A, \$199 in U.S.), from APDA
- *Inside Macintosh: Interapplication Communication*, available at bookstores, through APDA (T0594LL/A, \$36.95 in U.S.), or on the September 1993 Developer CD, (path—Dev.CD Sep 93:Reference Library:Technical Documentation:Inside Macintosh:IM—Interapplication Comm)

## General Resources

- "AppleLink Avenues to Developer Resources," *Apple Directions*, August 1993, p. 17
- "Message From the Worldwide Developers Conference," *Apple Directions*, July 1993, p. 1
- the Developer CD series, available to Apple Associates and Technology Partners; also available from APDA as part of the Apple Developer Mailing (C01979LL/A, \$250/year in U.S.)
- courses from Developer University
- tools and documentation from APDA; to order from APDA, call (800) 282-2732 (U.S.), (800) 637-0029 (Canada), or (716) 871-6555 (other international)
- AppleLink ♣

## Apple News

## Fall Products

*continued from page 1*

your Macintosh products by aggressively expanding its share of the personal computing market and delivering competitive, even superior, price/performance.

Before elaborating on those points, here's a quick look at the computers Apple introduced October 21. (See the fact sheet on page 9 for more details about all the computers and the text box on this page for notes about the the Macintosh Quadra 605 and LC 475 computers.)

- For business users, Apple introduced the Macintosh Quadra 605 computer, a 25-MHz, 68LC040-based model priced starting at \$969; the Macintosh Quadra 610 computer, which features a 25-MHz 68040 chip, built-in Ethernet, and an optional built-in CD-ROM drive; and the Macintosh Quadra 650 computer, which improves on the Quadra 610 with a 33-MHz clock speed and three NuBus™ expansion slots. The Macintosh Quadra 610 and 650 replace the Macintosh Centris line of computers, simplifying Apple's Macintosh product line (see the illustration on page 8).

- For the educational market, there's the Macintosh LC 475 computer, the first LC to use a 68040 microprocessor (actually the 68LC040); it delivers more than twice the performance of the Macintosh LC III at a price (to qualified education institutions) starting at \$1082.

- Apple also introduced the lightest active-matrix notebook computers available: the PowerBook Duo 250, which uses an active-matrix grayscale display, and the PowerBook Duo 270c, the first 16-bit color notebook computer, which uses a backlit active-matrix color display capable of displaying thousands of colors.

Both models weigh less than 5 pounds and offer 50 percent increases in battery life over their predecessors.

- For home customers, Apple introduced a range of new Performa products, including the Macintosh Performa 460 series based on a 68030, 33-MHz microprocessor; the Macintosh Performa 470 series based on a 68040, 25-MHz microprocessor, and the Macintosh Performa 550, based on a 68030, 33-MHz microprocessor and featuring all-in-one design with a built-in CD-ROM drive, microphone, stereo sound, and color monitor. Prices for the Performa line start at \$999 and include keyboard, color monitor, bundled application software, and a fax/modem.

#### New SuperDrive: Same as it Ever Was

Although the new products employ very little new technology you'll need to know about (see the text box on this page for the single exception), one general feature Apple's new computers will share will be a new SuperDrive disk drive, which will replace the old Apple SuperDrive across the Macintosh product line as soon as existing stock of the old drive is depleted.

The new floppy disk drive will be functionally and electrically identical to the former Apple SuperDrive, except that it is a manual inject drive, like those used in the PowerBook computers, and features a protective dust cover. It has a slightly different shape than the existing Apple SuperDrive, so it requires different housing than the existing drive.

Just to be crystal clear about this, the new SuperDrive disk drives require no change in the way you deliver your software. Despite earlier reports, Apple will not be making the transition to manual-eject disk drives that read only MFM-format disks, largely because of feedback from

customers and developers. The new Apple SuperDrive will read disks formatted using either GCR or MFM (that is, the format used by DOS/Windows systems) standards and will continue to feature automatic ejection of floppy disks.

#### A Marketing and Business Strategy Story

Often Apple's new CPU introductions have required that you learn about new technologies. They resulted in opportunities for new kinds of products, but they also required your engineers to do additional programming to take advantage of the new technology.

That's not the case this fall, as we just indicated; what you need to know about is the part the new

products play in Apple's market-share and price/performance strategies.

A bit of history will help place the new products in perspective. Not so long ago, Macintosh computers were considered the high-priced option by personal computer buyers. Macintosh computers were a premium product at a premium price, offering a superior user experience with ease of use, plug-and-play simplicity, and a more sophisticated feature set out of the box, but they were expensive, substantially more than their Intel-based cousins.

Apple set out to change that starting two years ago by cutting the price of Macintosh computers

## Notes on Macintosh Quadra 605 and LC 475 Computer Technology

While the Macintosh Quadra 605 and Macintosh LC 475 computers are architecturally very similar to the former Macintosh Centris 610 and 650 computers (which have now become the Macintosh Quadra 610 and Quadra 650), there's one small difference you'll want to know about, especially if you're a card developer.

The expansion slot for the Quadra 605 and LC 475 is not a true processor-direct slot. Instead, it is compatible with expansion cards designed for computers that use the 68030 microprocessor (the Macintosh LC III and LC 520). Because the bus protocols of the 68LC040, which both computers employ, are not the same as those of the 68030, many of the signals on the expansion slot are not connected directly to the 68LC040. Instead, those signals are connected to the PrimeTime ASIC, which emulates the 68030 control and data buses. This design makes the Quadra 605 backward compatible with most existing LC II, LC III, and LC 520 expansion cards.

Some LC II, LC III, and LC 520 expansion cards, however, are incompatible with the Quadra 605. These include cards designed to work as coprocessors with a 68020 or 68030 processor (such as accelerators, 68882 FPU cards, and cache cards), cards with drivers that include incompatible code, and cards with drivers that include code to check the gestaltMachineType value and that refuse to run on a newer CPU.

Additionally, the Quadra 605 and LC 475 support all Apple displays, including the 21-inch display, and they support 16-bit color on a 16-inch display with 1 MB of VRAM. For more information, see the developer notes on this month's Developer CD. ♣

and simultaneously moving to increasingly powerful silicon. During that time, Apple saw its gross margins (that is, the amount of money left over when you subtract the cost of manufacturing a computer from the amount you sell it for) dwindle from more than 50 percent to just over 25 percent, a dramatic turn that resulted in some of the cost-cutting measures you've no doubt read about.

**It's Working**

The new Apple hardware products signal a turning point in that strategy at a time when other signs suggest that the strategy is working. As Ian Diery says, "One of the last remaining obstacles to greater Macintosh acceptance—price competitiveness—has tumbled down. As proven by our year-end results, there is growing momentum behind the Macintosh platform."

Those fiscal year-end results showed record-breaking quarterly sales revenues and unit

shipments for Apple. Revenue for the fourth quarter of fiscal year 1993, which ended September 24, 1993, was \$2.14 billion, up 21 percent from the fourth quarter of fiscal 1992. Unit shipments of Macintosh computers grew 36 percent over the fourth quarter a year ago. In the mid-range and high end of the Macintosh line, unit shipments increased more than 50 percent over the fourth quarter of 1992.

In addition, Ingram Labs had good news for Apple when it found that Apple's new low-cost Macintosh systems outperformed comparable DOS/Windows systems. Combining the results of the performance tests run by Ingram with typical street pricing for both Macintosh computers and PCs shows that, except at the very high end, the Macintosh computer offers the leading price/performance.

Big winners in the study were the new Macintosh Quadra 605 and 610 computers, which rival

even the cheapest no-name PC clones running Windows for price/performance, and the recently introduced Macintosh Quadra (formerly Centris) 660AV.

In other words, Apple's strategy is already paying off even though the company is only part of the way through its transition to aggressive price/performance. The new products show just how willing Apple is to lower its prices and become truly cost-competitive. The next step comes in the first half of calendar year 1994, when Apple will ship the first PowerPC processor-based Macintosh computers. Macintosh with PowerPC computers are expected to outperform today's fastest Motorola 68040-based and Intel 80486-based systems by two to four times. (See the next news story for the latest about PowerPC.)

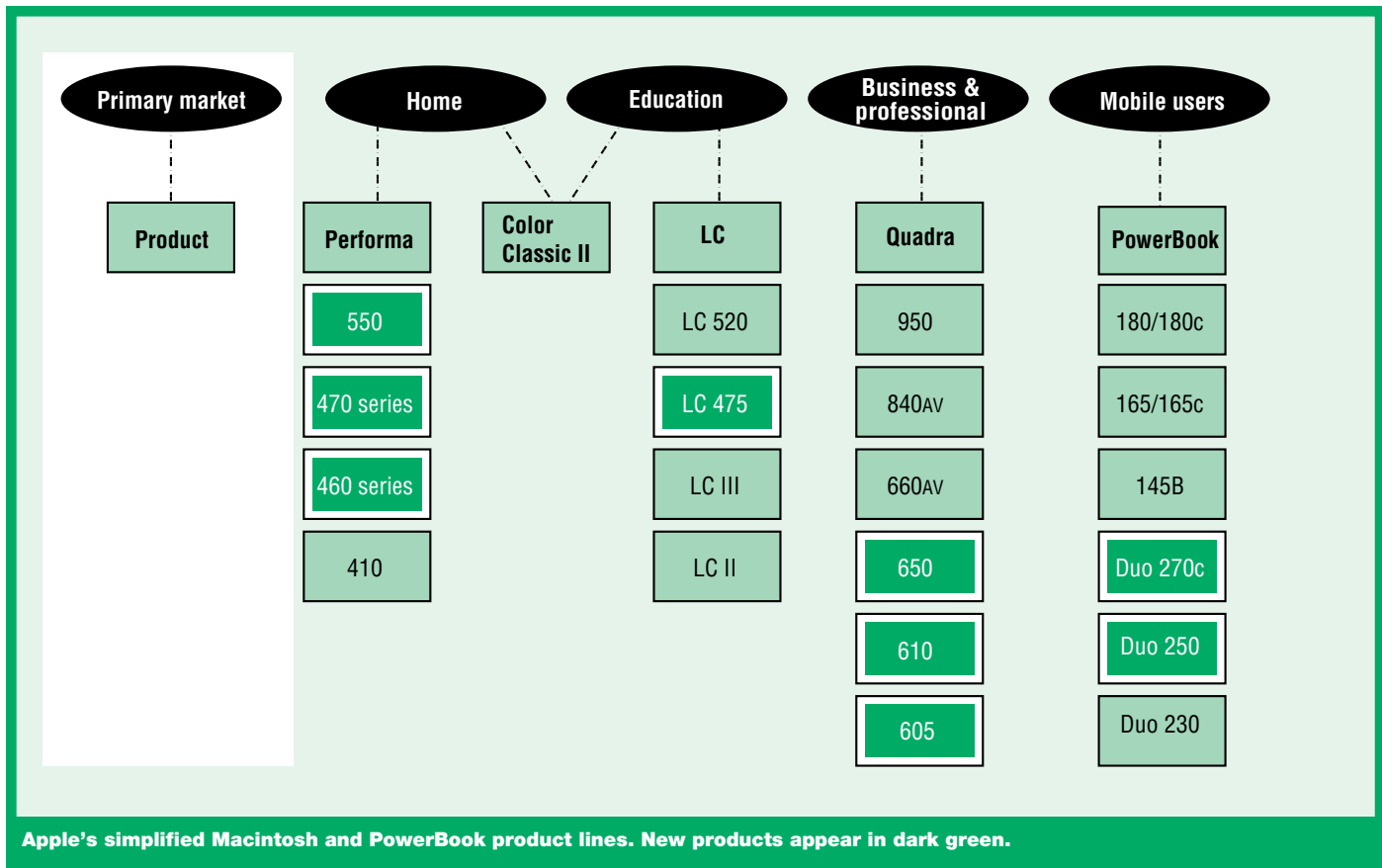
**What You Should Do**

As we already said, you don't have to add any engineering work to

your already large load to take advantage of Apple's aggressive marketshare and price/performance strategy. To take advantage of this situation, you need only follow the technical messages Apple has been giving you for the past year; Gregg Williams sums up these messages for you in this month's Strategy Mosaic (see page 1).

**PowerPC News:  
18 Developers to  
Go Native,  
Upgrades to Start  
Below \$1000**

The way Apple has been promoting PowerPC technology months before shipping the first PowerPC processor-based Macintosh computers in the first





## Fall Products Fact Sheet

### Macintosh LC 475

- 25-MHz 68LC040 microprocessor
- 4 MB of RAM on board, expandable to 36 MB
- support for all Apple and many third-party displays
- 256 colors, expandable to 32,768
- slot supports most Macintosh LC II, LC III, and LC 520 expansion cards
- seven built-in ports for peripherals

### Quadra 605

- 25-MHz 68LC040 microprocessor
- 4 MB of RAM on board, expandable to 36 MB
- works with all Apple and many third-party displays
- 256 colors, expandable to 32,768
- slot supports most Macintosh LC II, LC III, and LC 520 expansion cards
- seven built-in ports for peripherals

### Quadra 610

- 25-MHz 68040 processor with integral math coprocessor
- 8 MB of RAM, expandable to 68 MB
- 512K of VRAM, expandable to 1 MB
- works with all Apple monitors as well as third-party NTSC, PAL, VGA, and SuperVGA displays
- with 512K VRAM upgrade, supports 16-bit color, allowing for display of thousands of vibrant colors
- eight built-in ports to support a wide range of peripherals
- slot for processor-direct or NuBus expansion card (requires adapter)
- optional internal CD-ROM drive

- on-board Ethernet (AAUI)

### Quadra 650

- 33-MHz 68040 processor with integral math coprocessor
- 8 MB of RAM, expandable to 136 MB
- 512K of VRAM, expandable to 1 MB
- works with all Apple and many third-party displays
- with 512K VRAM upgrade, supports 16-bit color, allowing for display of thousands of vibrant colors
- eight built-in ports to support a wide range of peripherals
- three NuBus slots for expansion cards
- optional internal CD-ROM drive
- one inline 68040 processor-direct slot
- on-board Ethernet (AAUI)

### Macintosh Performa 410

- 16-MHz 68030 microprocessor
- 4 MB RAM on board, expandable to 10 MB; internal 8 MB hard drive
- 14-inch RGB color display
- includes Teleport/Bronze for Performa from Global Village Communication; no separate power adapter is required
- ADB Mouse keyboard with numeric keypad and two-level tilt adjustment
- ADB Mouse II

### Macintosh Performa 460/466/467

- 33-MHz 68030 microprocessor
- 4 MB RAM on board, expandable to 32 MB; internal 8 MB hard drive; the 466 and 467 models offer a 160 MB hard drive
- the 460 comes standard with a 14-inch RGB display

- the 466 and 467 models offer a 14-inch RGB Apple Performa Plus Display and differ only in their software bundle and where they are sold
- includes Teleport/Bronze for Performa from Global Village Communication; no separate power adapter is required
- includes GlobalFax software (send-only)
- ADB Mouse keyboard with numeric keypad and two-level tilt adjustment
- ADB Mouse II

### Macintosh Performa 475/476

- 25-MHz 68LC040 microprocessor
- 4 MB RAM, expandable to 36 MB; 160 MB hard drive in the 475; 230 MB in the 476
- 14-inch RGB Apple Performa Plus Display
- includes Teleport/Bronze for Performa from Global Village Communication; no separate power adapter is required
- Includes GlobalFax software (send-only)
- ADB Mouse keyboard with numeric keypad and two-level tilt adjustment
- ADB Mouse II

### Macintosh Performa 550

- 33-MHz 68030 microprocessor
- 5 MB RAM, expandable to 36 MB
- all-in-one design with built-in 14-inch RGB display, double-speed CD-ROM drive, and stereo speakers
- includes Teleport/Bronze for Performa from Global Village Communication; no separate power adapter is required
- includes GlobalFax software (send-only)
- ships with standard Apple

keyboard; compatible with all Apple keyboards

- ADB Mouse II

### PowerBook Duo 250

- 33-MHz 68030 microprocessor
- 4 MB of RAM, expandable to 24 MB
- bright, backlit, active-matrix display (640 by 400 pixels)
- full-page-width, 9-inch diagonal; 16-level grayscale
- adjustable brightness and contrast controls
- 2.5 to 6 hours on a single charge
- built-in high-speed serial port for peripheral devices, including LocalTalk network and printers
- slots for internal modem and RAM
- docking connector
- optional PowerBook Express Modem

### PowerBook 270c

- 33-MHz 68030 microprocessor
- 33-MHz 68882 math coprocessor
- 4 MB of RAM, expandable to 32 MB
- bright, backlit, active-matrix display
- 8.4-inch diagonal
- two display modes: 640 by 400 with thousands of colors; 640 by 480 with 256 colors
- 2 to 4 hours on a single charge
- built-in high-speed serial port for peripheral devices, including LocalTalk network and printers
- slots for internal modem and RAM
- docking connector
- optional PowerBook Express Modems

half of 1994, you'd think it was important.

Well, it is important, and you're going to hear regularly from us about developments on the PowerPC front. Why is it so important? Together, we (that is, Apple Computer, Inc., and all you loyal Macintosh developers) can accomplish two important goals:

- establishing Macintosh with PowerPC as the next generation PC platform, bringing a new level of performance and functionality to personal computing—at low prices
- increasing our share of the personal computer market by combining your native Macintosh with PowerPC applications with our new RISC-based, high-performance computers, to deliver powerful solutions to our mutual customers

Macintosh with PowerPC is intended to be the next achievement in Apple's price/performance strategy. (See the previous news story for our latest advances in that area.) Apple is modifying the Macintosh Toolbox routines that take the most computational power to take full advantage of the RISC performance of PowerPC processors. Over time, more and more of the Macintosh operating system will be converted to native PowerPC code. This means that RISC-based Macintosh systems will actually get faster as Apple releases new system software.

With the new computers, Apple expects to deliver more (and more useful) features, compatibility with existing 680x0 applications, and better performance than the competition, all at an aggressive price.

Keeping that in mind, here are the latest PowerPC developments:

- Seven new developers from around the world have joined the previous group of eleven in announcing plans to develop new versions of applications that run in native mode on PowerPC processor-based Macintosh computers.

- Products upgrading many existing 68000-based Macintosh systems to the new PowerPC processor will be available simultaneously with the first release of Macintosh with PowerPC systems.

- Apple expects to deliver higher clock speeds than earlier anticipated for RISC-based Macintosh systems.

- The second PowerPC chip, the 603, has reached first silicon.

In addition, Apple representatives exhibited Macintosh with PowerPC prototype systems and demonstrated several advance versions of applications running in native mode at the Seybold conference in San Francisco and EDUCOM in Cincinnati.

Following are details behind these most recent announcements.

#### **Developers Committed to Native PowerPC Development**

Applications that have been recompiled for the PowerPC chip will run two to four times faster than today's fastest systems based on Motorola 68040 and Intel 80486 chips.

In all, eighteen developers worldwide have announced plans to deliver native applications for Macintosh with PowerPC. The seven newest firms to join the fold are Artwork Systems, N.V., Canto Software, Inc., Fractal Design Corporation, Graphisoft, Great Plains Software, ITEDO Software GmbH., and Wolfram Research, Inc.

They join the following firms, who previously committed to developing native applications: Adobe Systems Inc., ACI Inc., Aldus Corporation, Claris Corporation, Deneba Software, Frame Technology, Insignia Solutions, Microsoft Corporation, Quark, Inc., Specular International, and WordPerfect Corporation.

In addition to running native applications, Macintosh with PowerPC will run thousands of

existing Macintosh applications in emulator mode. Depending on the application and other factors, emulation performance will range from that of a fast 68030-based Macintosh to a 68040-based Macintosh. Apple's chief goal in introducing PowerPC is to retain a high degree of compatibility with existing Macintosh applications. In the words of AppleSoft Senior Vice President David Nagel, "Because Apple controls both the hardware and software, our compatibility is rock solid."

#### **Affordable Upgrade Paths at Time of First PowerPC Release**

Apple's recently announced plans to ship upgrade products simultaneous with the initial introduction of Macintosh with PowerPC systems mean that customers can buy existing Macintosh systems without worrying that they will soon be obsolete. Upgrade prices will vary by model, with upgrades expected to start at below \$1,000.

Earlier this year, Apple announced that it would offer upgrades for six Macintosh desktop computer models: the Macintosh Centris 610 and 650, Macintosh IIfx and IIfx, Performa 600, and Macintosh Quadra 800. Most recently, Apple added the Centris 660AV and the Quadra 840AV as well as the Apple Workgroup Server 80 and 95 to the list. Specifics on various upgrade options are expected to be announced in conjunction with the introduction of PowerPC technology-based systems. Apple and third parties continue to work on upgrade paths for other Macintosh models.

According to Ian Diery, executive vice president of Apple's Personal Computer division, "We intend to be extremely aggressive with our upgrade offerings to ensure a smooth transition for current Macintosh customers to move to PowerPC."

#### **Increased Microprocessor Performance**

In cooperation with IBM and Motorola, who are jointly developing the PowerPC chips with Apple, Apple announced that the performance of the PowerPC 601 chip has exceeded original goals and plans to ship the chip at higher frequencies (speeds) than earlier announced. The minimum speed of RISC-based Macintosh systems has been increased from 50 MHz to 60 MHz.

Additionally, Apple announced that it plans to ship 80-MHz systems during 1994. Last May, Apple exhibited an 80-MHz prototype system as part of a technology demonstration at its Worldwide Developers Conference.

Also, with IBM and Motorola, Apple announced that the second PowerPC chip, the 603, has reached first silicon. Motorola and IBM unveiled the new chip at the Microprocessor Forum in San Francisco. The first silicon for the PowerPC 601 processor, which is at the heart of the first generation of Macintosh systems based on PowerPC, was announced last fall.

For late-breaking PowerPC developments and information, watch the Macintosh with PowerPC area on AppleLink (path—Developer Support:Developer Services:Macintosh with PowerPC).

*Apple Directions* will also keep you on top of Macintosh with PowerPC developments up to and through the product introduction, which is on schedule for the first half of calendar year 1994. Until then, we can only repeat what we've said before: Go native!

#### **Chinese Language Kit Ships**

You now have another reason to globalize your applications so that they take full advantage of the System 7.1 WorldScript extensions:

Apple Computer, Inc., recently shipped the Chinese Language Kit, which allows users to work with Chinese characters without a fully localized Chinese version of the Macintosh operating system.

Using the Chinese Language Kit, System 7.1, and any application that supports WorldScript, users can create documents mixing Chinese characters with other languages supported by their system. In addition, users can open applications localized for the Chinese market using any version of System 7.1, the "world-ready" release of the Macintosh operating system.

The Chinese Language Kit is intended for customers who need to create documents and presentations that use more than one language, including professionals in multinational businesses, government, and publishing, as well as students, teachers, and others.

In addition, it allows Chinese natives living outside China (specifically, in areas where the fully localized Macintosh OS is unavailable) to work with Chinese-language applications. This opens a significant market to your "WorldScript-savvy" applications—that is, applications that support WorldScript 1 one-byte character sets and WorldScript 2 two-byte character sets and have been prepared with "culturally neutral" interface elements. Apple Far East estimated in July 1993 that more than 5 million Chinese-speaking people live outside the greater China region.

The Chinese Language Kit supports both traditional and simplified characters. It includes bilingual documentation, TrueType fonts, and a wide variety of input methods, including the most popular—Pinyin and Zhuyin. The Chinese Language Kit requires a Macintosh computer with at least 5 MB of RAM,

System 7.1, and a hard disk drive with at least 10 MB of storage available (17 MB to install both traditional and simplified characters). Additional TrueType fonts are contained on a CD-ROM (included); in order to use them, users will need a CD-ROM drive and additional hard disk space.

The Chinese Language Kit is available in the United States through Apple authorized resellers for a suggested retail price of U.S. \$249. In the United States, the kit comes with support that users can obtain by calling (800) SOS-APPL. Outside the United States, the Chinese Language Kit is available through a variety of resellers; pricing and availability varies by country.

To read more about WorldScript and to find out how to globalize your applications, see "Japanese, Chinese, Korean, Arabic Language Kits" in the August 1993 *Apple Directions*, "Technology: System 7.1" in the October 1992 *Apple Direct*, and *Inside Macintosh: Text*.

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## Apple Recommits to Publishing Market

Apple Computer, Inc., has committed itself to opening and exploiting new opportunities in the \$13 billion desktop publishing market it helped form, at the same time giving you a unique opportunity to learn more about that market.

At the Seybold San Francisco '93 conference in October, Apple announced the formation of the Worldwide Publishing Consortium (WWPC), a unique organization including both vendors and users that will help Apple and other technical firms—including yours, if you'd like to join—meet the needs of

publishing professionals of all kinds.

Apple defines publishing broadly as the "packaging of information," or the business of turning information into different forms of communication. To support this philosophy, the consortium will include both traditional (paper-based) publishers and new media publishers.

If you have a stake in the publishing market, Apple wants you to join the consortium. In the group, you'll be joined by users from the following publishing professions: newspaper and magazine publishers, photographers, video editors, graphic designers, CD-ROM publishers, service bureaus, color trade shops (pre-press), commercial printers, packaging designers, book publishers, advertisers, illustrators, in-house marketing communications departments, and technical document producers.

One goal of the consortium is to create and maintain a publishing lab that will be available for workshops, compatibility testing, executive briefings, and showcasing state-of-the-art publishing solutions. The consortium also plans to publish a newsletter focusing on publishing technologies in real-world situations and highlighting ways businesses are using technologies to both save money and create new revenue streams. In addition, members will be able to learn about improvements and uses of technology in communicating information through meetings, workshops, and conferences.

Apple has already recruited leading individuals and companies from all segments of the publishing industry to serve on the board of directors and to drive the development of the consortium. WWPC membership currently includes Banta, the Dallas Morning News, Electronic Paint & Autographics, the Los

Angeles Times, and Money and Time magazines. Several publishing vendors have also joined, including Adobe, Aldus, Kodak, Linotype-Hell, Radius, and SuperMac.

The cost to join the consortium is minimal, and is based on a sliding scale, depending upon the size of the organization. If you'd like more information about joining the WWPC, call (800) 865-WWPC; if you're in the 408 area code or outside the United States, call (408) 438-3630.

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## Newton Development Conference

The PIE (Personal Interactive Electronics) division of Apple Computer, Inc., has announced the first international Newton Platform Development Conference. This conference will be held at the Santa Clara Convention Center in Santa Clara, California, on December 7–8, 1993. The cost will be \$495 (U.S.) for the first company representative, and \$395 for each additional company representative or registered owner of the Newton Toolkit.

The conference will feature three separate tracks for beginning and advanced Newton developers and business/marketing specialists. Over 20 sessions will cover such development topics as "Advanced NewtonScript Programming," "Vertical Market Solutions," "Building Communications Into Your Applications," "Software Distribution," and "Developing Electronic Books for Newton."

To register, send electronic mail to AppleLink address KIP11, or call (in the United States) (800) 800-6812, (800) 301-9009, or (914) 328-1399.

## New LaserWriter Printers Offer PostScript Fax, Other Advanced Features

Apple Computer, Inc., is carrying its price/performance strategy into the printer market with two new, high-performance, aggressively priced LaserWriter printers, the LaserWriter Select 360 and the LaserWriter Pro 810. Their advanced features are intended to make the printers market leaders in their classes—the LaserWriter Select 360 for networks of Macintosh and DOS/Windows computers, and the LaserWriter Pro 810 for large workgroups in which users run a variety of operating systems.

Both of the new printers can be turned into high-quality, plain-paper fax machines with the optional PostScript™ Fax capability. Developed in conjunction with Adobe Systems, PostScript Fax lets users send documents to be faxed by the LaserWriter Select 360 and the LaserWriter Pro 810 from within whatever application they are using, in the same way they would

send print jobs to the printers. The fax service is available to any users on the network, whether they are using a Macintosh or DOS/Windows system.

PostScript Fax provides users both higher quality and greater efficiency than many fax machines. When PostScript Fax printers both send and receive the fax, the output resolution is identical to printed output: 600 dots per inch (dpi) for the LaserWriter Select 360 and up to 800 dpi for the LaserWriter Pro 810. Even traditional Group 3 fax messages, typically 200 dpi, are rendered at higher quality when sent from one of Apple's new printers.

Faxing is also as much as 50 percent cheaper when it's done using the printers because they send PostScript files, which are significantly smaller than the rasterized pages sent by traditional fax machines.

What makes all this possible is the PostScript Fax Cartridge, available as an add-on to the new printers, and special software for users' computers. To access the fax services, Macintosh computers use a new version of the PostScript Level 2 driver (LaserWriter version 8.1.1) which, in combination with other software, lets users keep a phone book of fax numbers, add a cover sheet to fax

messages, keep a detailed log of fax messages that have been sent, and set a variety of fax options.

The new printers include a variety of other powerful features; both have price tags that should make them very attractive within their intended markets. The LaserWriter Select 360 provides 600-dpi print resolution at a print speed of 10 pages per minute (ppm); it includes parallel, LocalTalk, and serial ports and supports PostScript Level 2 for Macintosh computers and PCL5 for DOS computers.

The LaserWriter Select 360 employs Adobe's IntelliSelect software; as a result, users can send documents to print without stopping to select between PostScript and PCL languages or to configure the printer port for their particular computer. The printer automatically analyzes the incoming document and switches to the correct port and language.

The LaserWriter Select 360 ships with two paper trays standard, a 250-sheet letter-size cassette and a 50-sheet multipurpose tray; optional envelope and 250-sheet and 500-sheet paper trays are also available. It's compliant with Environmental Protection Agency Energy Star standards.

The LaserWriter Pro 810, which also supports the PostScript Level 2

printer driver, is the first Apple printer to ship with tabloid paper capability and the first to provide 750 sheets of paper input standard. It prints up to 20 ppm from three universal cassettes that can be configured for letter, legal, tabloid, A3, A4, A5, B4, and B5 paper sizes. It comes with a SCSI hard disk expansion slot, an expandable network architecture, and maximum memory capacity of 32 MB. The printer has a native 400-dpi resolution, or users can select 300, 600, or 800 dpi.

Four networking protocols are concurrently active in the LaserWriter Pro 810 to ensure compatibility in Novell, Macintosh, UNIX®, and DEC™ environments. The built-in Ethernet network card provides transparent, simultaneous printing for IPX, TCP/IP, EtherTalk, and Digital LAT protocols. The printer is compliant with the industry standard Simple Network Management Protocol (SNMP) and has a remote console facility that allows network managers to configure the printer and to obtain diagnostic information.

The LaserWriter Pro 810 also uses Virtual Printer Technology, which permits Macintosh, UNIX, DOS, DEC, or Windows systems on the same network to access the printer. Up to 64 different "virtual" printers can be configured by the network administrator, each with unique port, protocol, PDL, and imaging characteristics.

The LaserWriter Select 360 is available at the U.S. "ApplePrice" of \$1599, the LaserWriter Pro at \$4899, and the PostScript Fax Cartridge and software at \$299. *ApplePrice*, a new term Apple is using to replace suggested retail price, falls within the general range of street prices offered by Apple resellers. As usual, prices and availability outside the United States vary from country to country. ♣

**PowerPC™ Technology**  
**PowerPC™ Technology**  
**PowerPC™ Technology**  
**Coming Soon to Macintosh**  
**PowerPC™ Technology**  
**PowerPC™ Technology**

# Technology

## Inside This Section

<b>Human Interface: Comics, Icons, and Interface</b>	14
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## *develop* Issue 16: PowerPC, Power- Talk, and More

Issue 16 of *develop*, *The Apple Technical Journal*, is full of articles on new Apple technologies, including PowerPC, PowerTalk, Drag and Drop, and QuickDraw GX. It also tells you what's new in the latest versions of the Sound Manager and LaserWriter driver.

- “Making the Leap to PowerPC” gives an overview of the Macintosh with PowerPC platform, along with coding strategies for compatibility and speed.
- “Building PowerTalk-Savvy Applications” explains how to incorporate direct mailing and digital signatures into your application.
- “Drag and Drop From the Finder” describes how to take advantage of the new drag-and-drop services of the Drag Manager.
- “Color Matching Made Easy With QuickDraw GX” explains how QuickDraw GX integrates ColorSync to make color matching nearly effortless.
- “International Number Formatting” reveals some good methods for handling the different number formats around the world.
- “What's New With Sound Manager 3.0” describes changes (and bug fixes!) in the Sound Manager.
- “LaserWriter 8 for Fun and Profit” tells how applications can take advantage of the new LaserWriter driver.

In addition, the graphics column gives some remedies for common QuickDraw problems, Dave Johnson shares his pithy insights as the Veteran Neophyte, and KON and BAL

*Please turn to page 18*

## CD Highlights

# Reference Library Edition, December 1993: *Of Mouse And Men*

Hello and welcome to the December Reference Library Edition of the Developer CD, featuring 225 MB of new and revised technical documentation, system software, tools, and utilities. Featured this month is version 1.1 of Apple DocViewer.

The new Collections feature of Apple DocViewer version 1.1 allows the user to work with information across several documents at the same time. A collection is an assembly of documents and parts of docu-

you most commonly refer to. Then, using the Collections window, you can browse the content based on the structure of the documents. You can also search across the entire collection using the Query feature.

For your convenience, we have created six prebuilt collections, located in the Document Collections folder (path—Dev.CD Dec 93:Reference Library:Document Collections). Using these collections, you can browse all of the technical documents on the CD. If there are other collections you would like to see prebuilt, include your suggestions in this month's survey or drop us a line at AppleLink DEV.CD.

This month's CD also includes the following new and revised packages.

### APDA—Tools for Developers

This updated folder contains ordering and general information about APDA and APDA products.

### Developer Notes

Included here, along with our regular archive, are developer notes for several new products, including the LaserWriter Select 360 printer, and the Macintosh LC 475, Macintosh Quadra 605, 610, and 650, and PowerBook Duo 250 and 270c computers.

### Developer University Course Information

This package provides information on the types, cost, and location of training available

*Please turn to page 19*



### *Of Mouse and Men*

ments that you put together and assign a title. You can create a collection from any mixture of chapters, sections, and whole documents—any text elements that you normally can access by clicking a line in a table of contents. The result is a custom reference book.

You can create your own collection of documents, or parts of documents, which

## Human Interface

# Comics, Icons, and Interface

By Pete Bickford

As a Human Interface Professional™, I get the “opportunity” to read an immense assortment of literature on the subject of usability. This ranges from sleep-inducing conference proceedings to overly academic texts dedicated to proving the most insignificant points. My favorite recent example was a research paper (and exhibit—it seems they all have exhibits) that proved that users who understand the technical details of how a system works are much more successful in using it than users who don’t. To quote Buffy (from the movie *Buffy the Vampire Slayer*), “Does the word *Dub!* mean anything to you?”

Imagine my relief when I discovered a truly useful book on interface this past weekend. It’s not a rehash of the same old topics; it’s not even badly written. Strictly speaking, it’s not an interface book at all. It’s called *Understanding Comics* by Scott McCloud.

When you look at comic books, it’s important not to mistake the medium (comics) for the usual genre (“Blam! Pow! Hulk smash!”). Just like film, comics have developed a rich artistic vocabulary, letting them tell any kind of story, evoke any kind of mood. It’s a medium expressive enough to convey everything from the action-filled adventures of *Spiderman* to the tragic Holocaust remembrances of *Maus*. Comics are no more limited to super-heroes or the Sunday funnies than movies are limited to Westerns.

*Understanding Comics* explains how comic books “work”—how they use their own special visual and storytelling techniques to get their message across. In reading this book, I was continually struck by how much the master comic storytellers had to tell interface designers about visual communication. It’s probably safe to say that I gained more real insight on interface design from *Understanding Comics* than I have from the last foot or two of interface books I’ve pored over. For one, it’s given me a whole new appreciation for the power of icons, and has finally cleared up for me why photo-realistic icons don’t work as well as cartoonish ones.

## The Strange Power of Icons

As with human interfaces, perhaps the most powerful technique in comics is the use of icons. Icons are images we use to represent things, whether they’re people, places, ideas, or actions. We use them because they provide us with a visual shorthand for what otherwise might be a very complex idea. For instance, where nongraphical interfaces say “File directory level,” the Macintosh interface uses this visual shorthand:



Similarly, we *could* say, “temporary storage area indicating that the files contained therein are ready to be removed from the disk directory.” Instead, we (very wisely!) use this image:



Using icons to convey complex ideas is nothing new. Icons such as have been used to represent the most complex religious thought.



Other icons, such as



have been used to represent entire nations. Somehow, icons give us a way to fit big ideas into small, simple images.

## Icons Are a Canvas for Your Experience

One measure of the accessibility of icons is that people are often called simple-minded for “relying” on them—whether the icon in question is a flag, a religious symbol, or some namby-pamby GUI contrivance such as a folder or garbage can. The argument usually goes that icons give shallow meaning, and that only a simpleton would communicate using them.

Icons (and much other art) work by abstracting the essential qualities of a thing, and letting the viewer’s mind fill the details back in. What we fill in is a little part of us, our own beliefs and experiences. Thus one person may look at a flag and feel the sense of a nation’s entire history and culture, while another may see nothing more than surface images and slogans. Are icons simple-minded? It depends on the viewer.

As an art form, comics are interesting in that they are purposefully iconic. The artist may be capable of rendering a subject in explicit, photo-realistic detail, but instead uses only a few simple lines. Far from taking away from the impact of the image, this iconification tends to draw readers in, and they fill in the missing details with bits of their own experience. As a result, the reader winds up identifying with the characters more, and is drawn into the story.

McCloud points out an interesting characteristic of many Japanese comics, in which the main characters are drawn in a simplified style, while the backgrounds are rendered in explicit detail. The theory behind this is that the reader will invest more of their own personality into the simply drawn characters, thus becoming more heavily involved with them. With the character becoming more “real” as a result of the reader’s involvement, the detailed background becomes strangely fantastic and unreal.

This contrast in styles between the main characters and backgrounds is also evident in many Japanese video games. Where I had once believed that the simple drawing style of the main character

was due to animation constraints, that doesn't seem likely to be the only answer, given the intricate backgrounds and furious, elaborate explosions that are the hallmark of so many of the current games. It's possible that the game designers are using the same techniques as the comic book artists in order to heighten user involvement.

### Clear Pictures = Clear Communication

In a previous article, I hailed advances in resolution, color, and other technologies that promised to bring more of the "real world" to the world of computers. This seems like a good time to remind folks that we shouldn't confuse information *clarity* with information *density*.

Why are animated features popular, despite the ability to portray the same story using today's dazzling film technologies and special effects? Partially because the iconic medium of animated films does away with a lot of the distracting details that get in the way of good storytelling.

Let's use a related example: Suppose you had to represent the idea "people" in an application of yours. You could use an icon such as the one on the left, or you might do it using a far simpler icon, such as the one on the right.



So which one is better? Probably the second one. The first one is more realistic, but in doing so it becomes less "iconic." It becomes more a representation of a specific man than it does of people in general. As a result, the user is left wondering if it's about "people," "men," or maybe even "ex-presidents." (Worse, given the state of American education, they may just wonder, "Who is that guy?"). The details distract from the message.

Many people think of comic-style art as primitive, simply because it works so iconically. The truth of the matter is that it is drawn that way as a practical choice. In many ways, the world of comics is freer to communicate because it doesn't look realistic.

### Learning From Comics

There's something miraculous about the way that comics seem to transcend age and language barriers, communicating the most elaborate stories using simple ink on paper. If we can do half as well using our high-powered technology, we'll have made great advances in human interface.

*Till next time,  
Doc  
AppleLink: THE.DOKTOR*

*Pete Bickford is a member of the Apple Business Systems human interface team.*

# The State of the Macintosh User Experience, Part One

Consistent, intuitive human interface design has always distinguished the Macintosh computer. In fact, good design in general has always been a hallmark of Macintosh products, both those from Apple Computer, Inc., and from others. Despite challenges from the "other" platform, there's still no question from Apple's customers that the Macintosh is the easiest personal computer to use.

To ensure future good design, Apple recently formed the User Experience Architects' Office, headed by Apple Fellow Don Norman. Don founded the University of California at San Diego's Department of Cognitive Science and has written many books and articles on the subject of user-

centered design, including *The Design of Everyday Things* and, most recently, *Things That Make Us Smart*. (He's also a semiregular contributor to *Apple Directions*.) Under him, the User Experience Architects' Office is officially assigned to catalyzing the development of a coherent user experience across Apple's entire product line.

Just as you need to stay current with our technology to deliver your own products that work well with ours, you need to know Apple's latest thinking about human interface and the user experience. To that end, each month *Apple Directions* publishes Pete Bickford's Human Interface column. This month, we went even further behind the

screen and interviewed Don Norman and another member of the User Experience Architects' office, Harry Saddler.

In addition, *Apple Directions* editors spoke with Joy Mountford, who currently heads the Design Center within Apple's Advanced Technology Group (ATG).

What our user experience and design gurus had to say proved not only fascinating and stimulating, but useful, as well. We hope you'll feel the same way.

The discussion with user experience architects Don Norman and Harry Saddler appears this month; our interview with Joy Mountford will appear in next month's *Apple Directions* as part two of this story.

•••

**Apple Directions (AD):** *What do you mean by the term user experience? Is it supposed to replace human interface?*

**Don Norman (DN):** We deliberately chose the phrase *user experience* to indicate that personal computer design is more than putting a pretty face on top of a product; it's more than icons and menus. *User experience* is a broader term than *human interface*, and it implies that the design process starts with making a basic decision about which tasks we want new products to support.

**Harry Saddler (HS):** *Human interface*, on the other hand, denotes the glue between the

machine and the user; there's a lot more to the user experience than that.

**DN:** User experience hasn't displaced human interface. Our human interface groups are still essential. But the first problem is to figure out what the user should be doing, what kinds of users you're going to be supporting with technology, and in what way. Those decisions about the product are the most important aspect of the user experience, and then it works down from there, to how users interact with each other and with the technology and then down to the details—everything from the menu structure and the icon structure to the nature of error messages or whether there should be such a thing as error messages. So that's why human interface is the glue that holds it together. But the first question is, what is the "it" that is to be held together?

**AD:** How can this approach help the product design process?

**DN:** By taking what we think is a more holistic approach to design, developers can have a context in which to make specific design decisions. For example, I once took part in a discussion in which people were worried about how to design a particular dialog box. It was a fairly complex dialog box and they worried about whether it was readable and understandable and where the thing should be placed and so on. After listening for a while, I stood up and said, "Well, wait a minute. Why do you even need the dialog box?" It turned out, if you redesigned the way the task was being supported, you could just get rid of it. If you look at what a product actually is supposed to do, you can often simplify the operations rather dramatically.

We represent Apple's design conscience. We raise awareness to

a variety of design issues across Apple, and we try hard to bring together groups and opinions.

### **Ease-of-Use Still Critically Important**

**AD:** Apple has always touted the Macintosh computer's ease of use as a solid advantage in the marketplace, but in the latest JD Powers Customer Satisfaction Survey, ease of use was a less important factor than it's been in previous surveys. This might

suggest to some that they don't need to pay as much attention to the user experience anymore, that customers don't care so much about good design. How do you respond to that?

**DN:** That's a problem, but I think that the survey is wrong. We think that ease of use is still critically important, and all you have to do is look at Microsoft's advertisements to see they certainly believe this, as well.

**HS:** Actually, I understand that it's not that ease of use was viewed as less important to customers, but that JD Powers thinks there's not as much differentiation between the Macintosh and Windows when it comes to ease of use, so they made that category less important in their survey.

**DN:** That's a very different analysis than simply saying ease of use is not important. Unfortunately, it also supports the perception that the two platforms are roughly matched in that regard and that, therefore, ease of use is not a differentiating factor.

We believe that's just wrong. When you do the comparison, we are superior. We think Microsoft recognizes that, which is why they're making such a big push for their future technologies.

### **Improving the User Experience: OpenDoc and Apple Help**

**AD:** What's Apple doing to enhance the Macintosh user experience?

## **We raise awareness to a variety of design issues across Apple, and we try hard to bring together groups and opinions.**

**DN:** Apple has several new developments that we think dramatically improve ease of use and the user's experience. Let me mention two that are going to be extremely important and cause major changes in the way we think of computers. The first is OpenDoc, which provides a very different look and feel for computing. Instead of using huge, complex, general-purpose applications, users will open documents that contain text, graphics, sound, and other elements that can be manipulated by very specific, task-oriented software modules. Users will buy specific tools to perform specific tasks, all of which will be linked by the OpenDoc compound document architecture.

**AD:** How might this look to the user?

**DN:** Say you open a spreadsheet document; you'll see tools and menu bars for putting together the spreadsheet. But when you click on the text, the spreadsheet tools go away and instead you see text tools. Then, if you have a drawing and you click on it,

drawing tools appear. The tools are there when you need them and they get out of your way when you don't need them.

The second item that will increase our advantage in ease of use is Apple Help, our powerful new intelligent on-line help system. It's actually more than a traditional help system, because Apple Help will not only show you how to do things, but it will also do them for you.

**AD:** So ease of use remains a top priority for Apple?

**HS:** Absolutely. There's a lot of talent in Apple, a lot of dedication, even fanaticism, about improving the user experience. We see this not just among the official human interface people, but also in the whole engineering community.

But there are some natural obstacles to improving ease of use. Both designers and users have to change the way they approach computing to make real changes in this area. Designers and engineers have to think new thoughts, to break away from the familiar model we've been working on for years, and it takes special people to that. As for users, sometimes the very people who want things to be easier have the hardest time with the new, easier features, just because they're used to the old way, even if it's the hard way.

As someone told me last week, God was able to create the world in seven days because he didn't have an installed base.

### **A Minus and Some Plusses**

**AD:** Can you mention any of those old, harder ways of using computers, elements of the experience that we take for granted but are ripe for changing?

**DN:** One area like this we spend a lot of time thinking about is the



input/output problem. This can be a problem for users of all computers, though, not just the Macintosh. But if we can come up with a better solution first, we'll be far ahead of the game.

Essentially, the problem is that each application, and each computing platform, has some different way of handling information. When I want to transfer information from one kind of file to another, I generally have to export it from the original file into some standard format and then import it into the target file. What a nuisance. Wouldn't it be nice if it were stored in some standard format in the first place?

**AD:** On the other side of the coin, what are some aspects of the Macintosh computing experience that work well, features that make the Macintosh easier to use than other computers?

**HS:** Although there are many, three come immediately to mind. These are parts of the interface I think about a lot, because I'm not sure users appreciate just how much easier they make the computing experience: First, aliases are very powerful, especially when a user has to reach across file systems and different computers on the network. Second, our file system is, in my mind, far easier than others, and, third, there's our ease of networking.

### What Developers Need to Prepare For

**AD:** What big changes in the user experience is Apple pushing? What should developers be getting ready for?

**DN:** Well, I already mentioned OpenDoc and Apple Help. There's also AppleScript. If developers and users take advantage of AppleScript, things that are now complex can suddenly become as easy as a push of the button, and you can integrate all sorts of features.

Take a look at what Newton does with its Assist icon—the abilities we call *Newton intelligence*. One of the nice things about Newton is that if I want to call Harry on the phone, I simply write, "Call Harry," and it automatically looks "Harry" up in its database, gives me a list of the several "Harrys" I have, and even sets up the telephone application. All I have to do is tap to call Harry. It automatically knows what to do with the information I

## To make computing truly ubiquitous, we need to think of ways computers can be used to help people perform everyday tasks.

write down. Or, if I want to know what time it is in Paris, I write, "Time Paris," and it automatically tells me the time in Paris.

Well, it turns out that we can do very similar things on the Macintosh with AppleScript, which, if it's correctly implemented, can make life much easier.

Here's another one: PowerTalk offers users a dramatic simplification of communication, especially if developers integrate the mailer into their applications. *[Editor's note: See "How to Get Started With PowerTalk" in the November Apple Directions.]*

Thanks to PowerTalk, I have a directory of people and their electronic business cards right on my desktop. Say I open Harry Saddler's business card—there's his picture and his address. If I want to send a file to him, I just drag the file over Harry's card, drop it there, and off it goes to Harry's desktop. When it shows up there, he double-clicks on it, which opens the application and shows him the file. That is dramatic ease of communication and people can build this into their products, right? For those users who have networks, I think PowerTalk is a very significant change.

**HS:** Developers also need to think about the Drag Manager. Even though Apple hasn't made as big a deal out of it, it can make a big difference to users. By employing its drag-and-drop capability, developers can eliminate entire steps (including the dialog boxes that go with them) in the process of moving material from one file to another. This could really smooth out the way a lot of applications work.

**DN:** Another area developers need to pay attention to is speech output. To me, and I'd expect a lot of other users, as well, it would be very nice if my Macintosh told me "You have new mail" when mail arrives or "Time to get ready" a few minutes before my next meeting. I'm not talking about overdoing it with something loud and unpleasant, but a gentle voice in the background. With our new speech technology, speech produced by the Macintosh is actually quite good.

### Task-Oriented Computing

**AD:** These are all great changes for people who already use computers, the Macintosh in particular. What can developers do, though, to attract new users?

**DN:** Most people who don't use computers find that they do all the things they need to quite well without using one of those complex devices. To make computing truly ubiquitous, we need to think of ways computers can be used to help people perform everyday tasks.

In this regard, I think developers can really win by thinking about supporting such tasks.

Instead of saying, "Ah, I'm going to invent the next-generation spreadsheet or word processor or a specialized application that no one else has thought of," how about thinking of helping to perform tasks that people already do? They might think about what a hotel manager or a sixth-grade student might need or whatever their target audience could use. So instead of providing a single application, think of what people need in order to accomplish the tasks they're doing.

Almost every task you really want to do requires three or four different applications today. And that's crazy.

**AD:** OpenDoc will support this kind of task-oriented computing.

**HS:** Yes, OpenDoc is going to make this much more appealing to users and easier for developers to support. Instead of being stuck trying to make their version of a particular kind of application stand out from the crowd, developers will be able to say, "I offer a superior solution to people who are trying to accomplish the following tasks."

Only so many applications are big sellers; all the other applications are really niches. If you're one of the big developers, fine; but if you're not one of the big ones, then the applications game is sort of a hopeless battle.

But if you start thinking about solutions to problems, or helping users perform tasks that you know they already do—there are probably thousands of specialized situations developers can help their users with, and the marketplace becomes much bigger. If we all start thinking about providing products that perform a particular common task, we can think of selling products to people who don't even use computers today.

## Human Interface Complaints

**AD:** Changing the subject a bit, and talking specifically about the Macintosh interface, what kinds of human interface design problems are you noticing these days?

**DN:** Well, one of the complaints I have is unnecessary dialog boxes, especially modal ones. For example, let's say you want to search for and replace something throughout a document. It's pretty common for an application to run the search once and then put up a dialog box that asks you something like "Continue search from beginning of document?" After it finishes its search, it might put up a dialog box that says "End of document reached" with a button for you to click that says "OK." Well, why does it do that? It just gets in my way, and if I want to do another search, I can't before I click "OK." Instead, it could just say "Finished" and go away. The application only has to indicate when it's busy and then when it's no longer busy.

To generalize, what I don't like are dialog boxes that tell me things when there's nothing I can do about it anyway. They stop users from doing their work; in their attempt to be extra friendly, interface designers can inadvertently make the interface get in a user's way.

The worst are dialog boxes that come up during startup—I get to work, turn my computer on, and go off and get some coffee. But, when I come back I discover a dialog box telling me something I didn't need to know in the first place. So I didn't get anywhere. The Macintosh provides a way to get around such situations; programmers can tell the Notification Manager to post the dialog box after the start-up process is finished.

**AD:** Isn't there some value to redundancy? Some users might

not be alert to the intricacies of how one application or another does a search.

**DN:** I don't think users mind being told that a search is finished and was either unsuccessful or successful. But why does a dialog box have to stop the flow of work, so that when someone wants to do a second search, they can't do it? The user is ready to type in the second search, but no; the user has to hit Return first or click a button.

**HS:** I think excess dialog boxes often result from narrow thinking during the design process. An engineer might think, "I have an awkward situation here and I have to notify the user. I'll have the application put up a dialog box." Instead, the engineer could back up, look at the whole situation, and consider a multitude of solutions. Then, maybe he or she would figure out a more seamless way of notifying the user, or a way to avoid the awkward situation in the first place.

## Getting Through the Mistakes

**AD:** OK, and I think a lot of people would agree. But say you're a small developer with limited resources—and even the big guys are in that boat these days. How do you stay on guard against that kind of narrow-mindedness?

**DN:** Well, there's testing, right?

**HS:** And if you don't have any money, that's all right. You can test a product on your family, friends, and acquaintances. You just have to be prepared for honest responses from them, and you have to not be defensive. If someone says, "Well, what about this?", you don't just explain it away. You take everything they say seriously.

When it comes to usability testing, if a you understand what

you're trying to do, some of the basic pitfalls, and how to interpret the results, then you can scale it down pretty well. If you don't have any money, you don't have to think, "Well, forget usability testing, because usability testing is an expensive proposition. You have to have quantitative measurement and you have to have one-way mirrors and you've got to have people who know what they're doing."

With usability testing, you're learning to be sensitive to the class of people you're designing for. Don't start off thinking you know them. Go out to where you expect your system to be used and watch what users are doing.

**DN:** The other night I heard a talk about testing. A group was studying the use of new bar-code scanners in a supermarket. The manager of the store explained and demonstrated to his clerks how the scanner was used. The people performing the study asked if they could go around and interview the clerks who used the scanners.

The manager didn't see why they had to; after all, it seemed pretty simple and he had just explained it, right? But they persisted and guess what? When they actually watched, they discovered the clerks didn't use the scanners at all, because they often didn't work and they were slow and awkward to hold. Instead, they just punched in the numbers for all the products, because that was faster.

But the manager would never have known that on his own, because he wasn't prepared to go out and watch the people who were supposed to use the scanners.

**HS:** Watching users is essential. If you ask people to describe the work they do, they'll give you a very nice story, which they even believe. But if you actually watch

them, it's often very different.

Also, usability testing is best done not just once, but over and over again. The cycle is design, test, evaluate, and refine, and you want to do that as many times as possible before you issue a product.

The reason you do usability testing is to discover all the mistakes you've made as quickly as possible. One of our colleagues says that creativity is making all possible mistakes in the shortest amount of time, because those mistakes are all out there to be made. You've just got to get through them.

*[Editor's note: Harry J. Saddler is a senior instructional designer in Apple Computer's User Experience Architect's Office. Harry has been a software designer since the 1970s, primarily in interactive multimedia and computer-aided instruction, and was most recently lead designer and project manager for Making It Macintosh, a CD-ROM-based guide to human interface design for the Macintosh computer.] ♣*

## develop

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take on a summer intern's challenge in the Puzzle Page.

And that's still not all! See this information-packed issue of *develop* for yourself on this month's edition of the Developer CD Series or on paper if you subscribe to *develop* in print. (If you don't subscribe, we encourage you to do so through APDA to get the full benefit of this valuable resource.) Read the articles, check out the accompanying code on the CD, and, to help ensure that we meet your needs in the future, send us your feedback at AppleLink DEVELOP. ♣

*Caroline Rose  
Editor, develop*

## CD Highlights

*continued from page 13*

to Apple's developers through Apple's Developer University. It enables customers to determine which training will be appropriate to their needs and how to obtain it. It includes course descriptions, gives class dates and locations, and tells where to get self-paced materials for the first six months of fiscal year 1994.

### **Inside Macintosh: More Macintosh Toolbox**

Continuing the description of the basic Toolbox managers contained in *Toolbox Essentials*, this volume covers the Resource, Scrap, Help, List, Component, Translation, and Desktop managers. Other chapters include information on icon utilities and control panels.

### **LaserWriter 8 Version 8.1.1**

LaserWriter 8 is Apple's first PostScript Level 2 printer driver. As well as providing the user with new printing features (including access to device specific-capabilities and two-up and four-up printing), this driver allows developers to take advantage of new functionality that includes a PICT-to-EPS converter, access to PPD files, and information about the currently selected printer.

LaserWriter 8 version 8.1.1 is the latest version of the LaserWriter driver. It provides significant new functionality compared with LaserWriter 7.x, and it has been improved and made more compatible than version 8.0.

### **MemHell**

MemHell is an extension you can use during debugging to stress memory management. See the Read Me file for details.

### **Network Software Installer Version 1.4.1**

The network installer for AppleTalk version 58.1.1 provides support for the new Apple Ethernet NB Twisted Pair card. It also includes the following bug fixes:

- AppleTalk version 58.1.1—changes were made to the workstation's Best Router Table maintenance during communications with routers that use a zero hop count.
- EtherTalk for EtherTalk NB—a slowdown that occurred with EtherTalk NB cards during DECnet™ use was fixed.
- EtherTalk and TokenTalk version 2.5.5—a change was made to the AMT table maintenance for supporting Router 3.0 (which uses zero hop counts).

### **Pascal Sample 3.0b10**

This sample consists of source code for a very simple Macintosh application that supports multiple documents, Apple events, preferences, and proper human interface. Fully commented, it can be run in MPW Pascal and THINK Pascal.

### **SCSI Manager 4.3a2**

SCSI Manager 4.3 supports asynchronous SCSI operations, provides a parameter-block programming interface, supports the SCSI-2 mandatory message, and supports multiple SCSI buses (on NuBus cards, for example), LUNs, and more.

The package contains documentation, sample code, and a test INIT and support files for

asynchronous SCSI Manager development. Header files, sample code, supporting system software, and debugging aids are also included. This package supercedes the a1 release on AppleLink and a previous Developer CD.

### **System Picker 1.0.1**

The System Picker utility allows you to choose the folder that will be the active System Folder when the system is restarted. It creates a pop-up menu listing System Folders found on the volumes connected to the Macintosh. When you select a System Folder from the pop-up menu and then click the Restart button, the Macintosh restarts using the selected System Folder.

### **System Update 2.0.1**

System Update 2.0.1 delivers considerable new functionality while incorporating appropriate enhancements from previous hardware system updates. Here are the primary additional enhancements provided by System Update 2.0.1:

- It includes Apple HD SC Setup version 7.2.2, which provides increased reliability and flexibility in formatting large Apple hard disks (those with 1–2 gigabytes of storage capacity).
- It improves font memory management. Prior to this update, a system could load all of a user's fonts into RAM during startup. Now the system loads only those fonts needed, freeing up considerable amounts of RAM on affected models.
- It includes AutoRemounter 1.2, which significantly reduces network traffic compared with version 1.0.

- It includes Apple Disk First Aid version 7.2, which includes an easier-to-use interface and many other improvements.

- It updates the Macintosh PowerBook control panel to version 7.1.3 and Express Modem software to version 1.1.2, which includes support for communications software that does not use the Apple Communications Toolbox.

- It updates System Enabler 131 (version 1.0.3) for the PowerBook 160, 165, 165c, and 180 computers to support 12-inch monitors and improve reliability.

### **U.S. System Software— Performa 7.1P5**

This disk set contains all of the Apple software included with the Macintosh Performa computers. To get the software onto your hard disk, you start up your computer with the Utilities disk. You can follow the instructions in the Apple Restore program included on that disk to restore all of your disk images. It is recommended that you do not install this system over other system software.

You can use this software to test for compatibility between your application and Performa system software. If you do not have a Performa computer, you can run this software on a Macintosh Classic® II, LC II, LC III, IIfx, IIfx, or LC 520 computer.

### **Coming Next Month**

If it survives user testing, a new version of the Contents Catalog will accompany the usual plethora of updated system software, enablers, and extensions. See you there!

*Alex Dosber  
Acting Developer CD Leader*

# Business & Marketing

## Market Research Monthly

### To CD or Not to CD

New technology can be a mixed blessing. Yes, its proliferation can open new markets and allow you to make your products more useful, but it also forces you to make sometimes complex decisions about technology adoption.

One technology that's new to the mainstream—CD-ROM—is becoming increasingly popular among personal computer users. Because of that, you'll soon face the decision—if you haven't already—of whether to distribute your software products on CD, either on your own or as part of an encrypted CD containing multiple products, like Apple's Software Dispatch CDs (see *Apple Directions*' page 1 story last month). This month, we provide data from Apple Computer, Inc., and other sources to help you make that decision.

It's true that not every computer user currently owns a CD-ROM drive, which means, at least for the foreseeable future, that you'll have to continue to offer a floppy version of your product in addition to a CD version. But the situation is changing quickly. Over the next five years, Macintosh computer and Windows/DOS customers combined will buy over 45 million CD drives, according to Freeman Reports (see "CD Drive Shipments Worldwide, 1992–1998.")

#### Macintosh CD Users

Over the past year, Apple has been pushing CD-ROM technology into the installed base of Macintosh users. Speaking at the 1993 Macromedia Conference in October, Ian Diery, the executive vice president of Apple's Personal Computer Division, predicted that Apple will sell more than 1 million CD drives during 1993. To encourage CD sales, Diery said that Apple sold CD drives at cost this year, sacrificing \$100 million in gross margin. In addition, all current modular desktop Macintosh computer systems (except the LC III and just-

announced LC 475) offer a built-in CD drive as a standard option, and the Macintosh LC 520 ships with a built-in CD drive.

According to Apple worldwide customer research prepared in October 1993, 8 percent of Macintosh customers use a CD drive; CD-drive usage is highest in Japan (16 percent of Macintosh users in Japan own CD drives) and Germany (13 percent). Eight percent of U.S. Macintosh customers use a CD drive.

Apple's research suggests that those most likely to buy your product on CD are business customers, especially those in the communications and publishing industries who use their Macintosh computers for graphics (desktop publishing and drawing), presentations, multimedia, and communications (both on-line services and electronic mail).

## Inside This Section

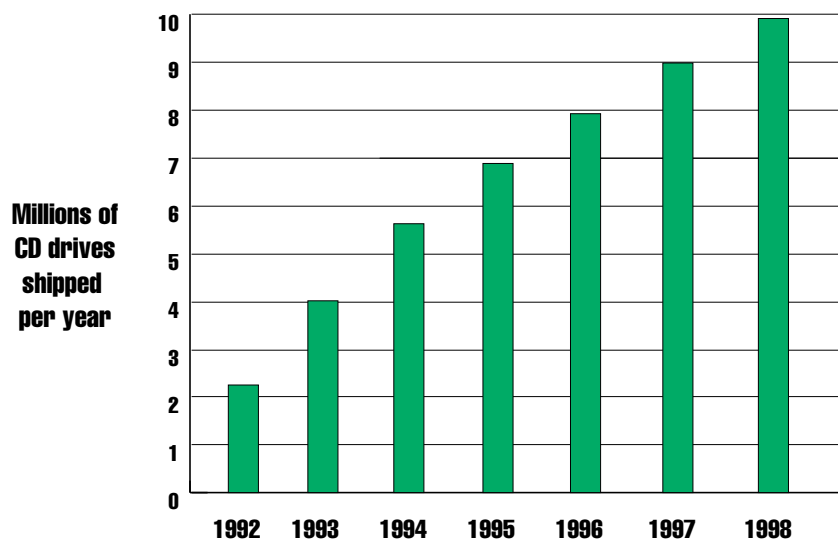
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Here's the data that backs up those conclusions: In a comparison of Macintosh customers who own CD drives with those who don't, 31 percent of CD-drive customers work in communications and publishing, while only 21 percent of non-CD-drive customers are in those industries.

Similarly, Macintosh computer users who own CD drives were far more likely than those without CD drives to use their computers for each of the application categories listed earlier. For example, 68 percent of CD-drive

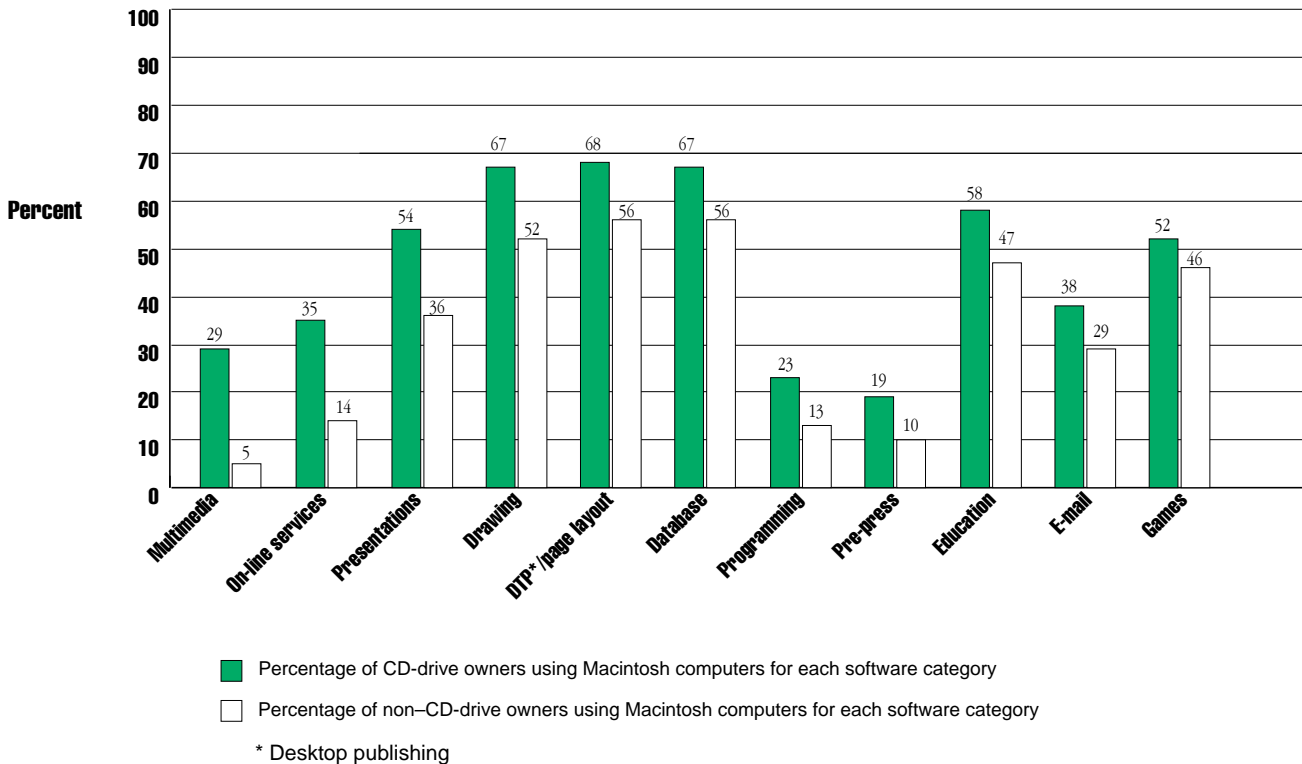
CD Drive Shipments Worldwide, 1992–1998\*



\* Includes sales to both Macintosh and DOS/Windows customers.

Source: Freeman Reports, 1993

### How Macintosh Computers Are Used: CD-Drive Owners (U.S.) vs. Non-CD Drive Owners (U.S.)



Source: Apple Computer, Inc., October 1993

Macintosh customers use their computers for desktop publishing and page layout applications, compared with only 56 percent of non-CD-drive customers, a 12-percentage-point differential; 67 percent of CD-drive customers use their computers for drawing compared with 52 percent of non-CD-drive customers, a difference of 15 percentage points.

For the rest of the data on application usage, see the graphic "How Macintosh Computers Are Used: CD-Drive Owners vs. Non-CD-Drive Owners."

Apple's data about CD-drive users also suggests that while your CD-based software may sell to a smaller group of customers than do floppy disks, that smaller group is 50 percent more likely to buy and use your product. In the last six months, 79 percent of Macintosh CD-drive users purchased software, as opposed to 55 percent of those without CD drives. The average CD-drive user works with nine applications, the average non-CD-drive user only five.

Finally, CD-drive users are more sophisticated than non-CD-drive users, as the following data indicates:

- Seventy-eight percent of Macintosh users with a CD drive use System 7, compared with 65 percent of those without CD drives.
- Average CD-drive users' computers are installed with 8 MB of RAM (and have 110 MB of hard-disk storage), and 69 percent of those users employ more than 5 MB of RAM (40 MB of hard-disk storage), while those who don't own CD drives average 4 MB and 58 percent use 4 MB of RAM or less.
- Users with CD drives are far more likely than those without them to use a network (53 percent compared with 31 percent), a modem (46 percent compared with 20 percent), and a scanner (39 percent compared with 12 percent).

**The Apple Multimedia Program**  
Given Apple's new Software Dispatch

business unit and its push to make the Macintosh computer the multimedia platform of choice, you're likely to be hearing a lot more about CD-ROM in the near future. To help you keep up with these initiatives, the Apple Multimedia Program (AMP) sponsors quarterly mailings including market research reports analyzing important CD-ROM trends and emerging multimedia market opportunities.

Examples of AMP-sponsored research include the *Optical Storage Media Market Research Report* published in April 1993 (to be updated in April 1994), and an upcoming report entitled *CD-ROM Market Segmentation and Analysis* to be published in January, 1994. For more information on the Apple Multimedia Program, please call (408) 974-4897.

To receive the Apple Multimedia Information Mailing (program materials only), contact APDA at (800) 282-2732 in the United States, (800) 637-0029 in Canada, or (716) 871-6555 in other countries. ♣

Marketing Feature

# Preparing Your Business for the Unexpected

By Andy Smart, National Association of Manufacturers

*We learn geology the morning after an earthquake.*

—Emerson, 1860

In the Midwest, nearly two weeks of flooding caused millions of dollars of damage and left thousands homeless. In the San Francisco Bay Area, the 1989 Loma Prieta earthquake closed down businesses for weeks. And on the Gulf Coast, Hurricane Andrew destroyed thousands of homes and businesses. According to the Apple developers who lived through these disasters, there's nothing like a crisis to put things in perspective. All of a sudden it made good business sense to prepare a corporate crisis plan.

Whether you're a big or small developer, a few hours of advance crisis planning can mean the difference between an inconvenience and a total loss for your company. If you develop software, your company's "crown

jewels"—your source code and financial records—are probably stored on just a few computers, leaving you vulnerable to power surges, theft, and computer viruses, to name just a few possibilities. If you're a hardware developer, product recalls or hazardous chemical spills have the potential to put you out of business. And it's hard to ignore the fact that a large number of computer-related businesses are based in the San Francisco Bay Area, a high-risk area for devastating earthquakes.

So what can you do today to prepare for the unexpected? In this article, we'll talk about what other companies have learned about crisis management, and we'll suggest a few simple precautions you can take today to keep your business and reputation intact after a crisis.

**Preparation Is Key**

In the business world, the definition of *crisis* extends beyond events that threaten lives—it's anything that endangers a company's reputation and bottom line.

It could be a product recall, a liability suit, layoffs, a sexual harassment charge, a disturbed employee, or an outsider taking hostages.

Common obstacles to crisis planning include thinking that it probably won't happen to you, and that if it does, it'll be something conventional like a flood, fire, or hurricane. But the truth is that even a minor crisis can escalate beyond your ability to manage it if you're not ready with a plan.

"The better you prepare, the higher your odds of surviving a crisis with reputation intact," says Dr. Robert Bringer, former staff vice president of Environmental Engineering and Pollution Control at 3M Company. In *Crisis Prevention/Management/Communication: A Manager's Survival Manual*, distributed by the National Association of Manufacturers, Dr. Bringer warns, "Bankruptcy files are littered with companies who believed they were different, that they would never become victims. Crises don't play

favorites. You never know when one will strike or where."

**Selecting a Crisis Manager**

The first step to good crisis planning is to assume that some sort of crisis will eventually affect your business. Act on this assumption by assigning the role of corporate crisis manager to someone in your company *before* a crisis hits. Then make this person responsible for formulating a crisis plan, communicating it to the rest of the company, and organizing annual company-wide drills.

"The best crisis managers are willing to think the unthinkable and deal with tough questions as if that situation were really happening at their company," says Jim Sinclair, first vice president of Environmental Issues with New Jersey Business and Industry Association. "These managers try to cover all the bases before a disaster happens."

Choose a crisis manager with credibility in the community. An employee who has lived in the area for ten years will almost always be more believable than an expert who flies in after the crisis hits. Also, make sure your spokesperson can explain things in simple language, even if issues are highly technical.

Then show your commitment to crisis preparedness by sending your crisis manager to training classes on this topic—don't risk your business on someone "winging it."

**Formalize a Crisis Chain-of-Command**

When crisis hits, there's rarely time to huddle. What separates the companies that survive with reputations intact from those that

Crisis manager			
Preparation, communication, and leadership before and during a crisis			
Employee communications	External communications	Emergency operations	Recovery operations
Checks on employee safety  Internally communicates the situation and action plan	Informs important customers and suppliers of the situation  Crafts messages to press and editors	Manages makeshift business operations	Restores your office to business-as-usual  Interfaces with insurance and disaster relief organizations
The Crisis Chain-of-Command. Your crisis manager should assign crisis team responsibilities before a crisis hits so that no time is wasted in getting your company up and running again.			

don't is how quickly they respond, regardless of the crisis. For survival and recovery plans to work, all team members must know their roles, then execute them without panicking.

Start by developing a crisis chain-of-command, clearly defining team leaders and backup roles. Here are the primary responsibilities that should be covered in times of crisis.

- *Employee communications.* Establish a procedure for checking on the safety of employees, communicating the situation to them, and presenting a plan of action. For particular emergencies, this person may want to set up employee counseling to help people cope with the crisis.

- *External communications.* Inform your customers and suppliers of the state of your business by issuing a press release and phoning important editors and individuals. A designated communications team leader should be able to craft messages and expedite the timely flow of appropriate and accurate information to external audiences. (For advice on delivering messages, see the section "Crisis Communication Dos and Don'ts" on page 24 of this article.)

- *Emergency operations.* Assign a "whatever-it-takes" problem-solver to the task of getting your business going after an emergency.

- *Recovery operations.* Implement a plan for restoring your office back to business-as-usual. This person will have to interface with insurance companies and possibly federal and state disaster relief organizations.

Once you've assigned crisis team roles (if you're a small business, one or two people may have to take on multiple responsibilities), get the team together to brainstorm on possible crisis scenarios, then formulate plans to react to each. In implementing a corporate crisis plan, start with

the preventive measures listed in the next section, but don't hesitate to add other steps that you feel are necessary.

### The Crisis Manager's Checklist

This section lists preventive steps that you can take today to minimize the impact of a crisis. For computer-intensive businesses, one of the most important measures is to implement a formal, foolproof data-backup system.

- *Appoint crisis team leaders.* Before a crisis hits, assign responsibilities for employee welfare, external communications, emergency operations, and recovery operations, so no time is wasted in getting your business up and running again.

- *Establish foolproof backup systems for important information.* Set up formal procedures for backing up source code, order entry, inventory, and production information. Outside data security companies can help discipline your company to perform regular backups and set up out-of-area information depositories. (See the text box "Expert Software and Hurricane Andrew" on page 24

for ideas on backing up your important information.)

- *Set up emergency-proof finance procedures.* Backup your important financial data to an out-of-area system at least once a day. (Apple backs up its financial data to two out-of-state sites twice a day.) Set up a backup cash disbursement system so you'll be able to pay employees and suppliers even if your local computers or phone lines are down. And make sure you have the home phone numbers of your bankers and key financial people accessible if you can't get into your office.

- *Put an emergency communication system in place.* Organize a communication system to get early crisis warnings out to all parts of your company at a moment's notice. Depending on your company's size and communication system, this plan could include a backup cellular phone system, intercom or voice-mail announcements, organized word-of-mouth communication, or all three. If your company has a telephone response group, consider signing up for a telephone company service that reroutes your call-in customers to an out-

of-state response group in emergency situations.

- *Review your insurance.* Annually review your company policies to make sure you have adequate insurance coverage. (This is especially important if your company is rapidly growing.) Make sure you're covered for the most likely occurrences in your area, and consider buying business interruption insurance. (It took some businesses hit by Hurricane Andrew a year to get up and running again.)

- *Negotiate intra-industry alliances.* Develop an alliance with a similar company to "trade" facilities, computers, and so on, if one of your sites has to shut down.

- *Designate an emergency operations center.* Select a "command post" location with backup electricity, phones, and other supplies where you can run your business during a crisis.

- *Inventory emergency resources.* Set up periodic assessments of emergency resources like first-aid kits, fire extinguishers, and so on.

- *Assess your building's structural readiness.* Depending

## CE Software and the Midwest Flood of '93

When the Raccoon River in Des Moines, Iowa, started rising in the Midwest floods of '93, CE Software (creators of QuickMail) had about a day's warning to react. "I got a call at 3:30 A.M. from a coworker telling me to fill my tubs because the river's rising, and they're going to shut off our water in an hour," said Sue Nail, PR manager. "Later that morning, we heard that a flash flood in a nearby creek was probably going to fill our company with over three feet of water. Several of us went down there and started hauling computers to the upper floor, then sat on the roof and watched the waters rise. Luckily the levee broke and diverted water from our headquarters, but our warehouse flooded, and we lost all our trade show supplies and some inventoried equipment."

CE Software, using Iowa-speak, turned "a sow's

ear into a silk purse" by using this crisis to get much-needed supplies to homeless residents and garner positive publicity for the company. Sue Nail wrote a two-page article about the company's ordeal and posted it on America Online. She talked about how CE Software allowed company employees to take time out to sandbag the river and help businesses in downtown Des Moines, and how the company set up "dollar" meals and showers to accommodate employees without water. Sue's article was picked up on America Online by the *San Jose Mercury News* and other publications across the country, and the support that flooded into the company amazed her. "People from all over the country sent us everything from cases of bottled water to extra shoes to carpet cleaner," said Sue. ♣

on the natural disasters common to your geographical region, you may want to hire engineers to analyze your buildings and geological site to see if there are modifications you can make to decrease damage during an earthquake, flood, or tornado.

❑ **Conduct company-wide emergency drills.** Test emergency procedures for shutting down your business, evacuating employees, and accounting for all employees. For crises that occur during nonwork hours, set up a word-of-mouth communication network that allows employees to check in with a designated person who makes sure everyone's accounted for.

❑ **Have round-the-clock access to an emergency phone list.** This phone list should include current numbers of key employees (work and home numbers), bankers, crisis relief organizations, local and state emergency groups.

❑ **Get advice from local disaster-related organizations.**

Meet with local fire and emergency response officials to get feedback on your crisis plan. In addition, most state governments have an emergency response contact who can respond to questions. And budget allowing, you could hire an outside crisis expert. In every major city there are dozens of law firms and public relations firms that specialize in crisis management.

Gail Hutchens, the manager of Pacific Bell's Business Contingency group and co-author of this list adds, "No emergency plan is perfect, but different situations require different responses.

Good crisis management means always challenging, constantly reviewing your response checklist and adjusting it. It also means thinking in the abstract. What if one of your key suppliers was taken out by a disaster, or what if your computer system was destroyed? Few companies want to consider it, but it happens."

### Crisis Communication Dos and Don'ts

John F. Kennedy once said, "When written in Chinese, the word *crisis* is composed of two characters—one represents danger and the other represents opportunity."

Skillful communication during a crisis can turn an unfavorable situation into one that actually enhances your company's image. (For an example of good crisis PR, see the text box "CE Software and the Midwest Flood of '93" on page 23 of this article.)

Good employee communication is crucial in mitigating, preparing for, responding to, and recovering from troubles. Companies that communicate well internally create an important base of support for their external communication efforts.

Whether you're communicating inside or outside the company, here are some guidelines from expert crisis managers on communicating during crisis situations.

- **Reduce tension.** Avoid creating panic or agitating the public needlessly. Fear of the unknown is a big source of tension. Tell people what the risks are in a calm way.

- **Don't answer hypothetical questions.** It's very difficult for people who have been trained to think about the "what if" questions every day to avoid them in public, but don't be tempted to address them. Answering hypothetical questions can create gross speculation and fuel fears. Bring the subject back to reality, back to what is really happening.

- **Demonstrate corporate commitment.** The company should express its willingness to find solutions to problems, fix troubles, and address public concerns.

- **Take control of the flow of information.** The company should tell people what they can do to help. This can range from accurate and comprehensible evacuation information in an accident to hotline advice about health concerns in a controversy. It's essential to provide positive outlets for people's energies.

- **Listen, listen, listen.** You'll be under intense pressure to "do something" to fix the crisis. Resist the pressure to act prematurely. Thoroughly assess the situation, and once you're certain of the facts, communicate inside the company, then out.

- **Above all else, tell the truth.** No matter how difficult the situation, it'll be made much worse if the public thinks you're lying or trying to deceive them in any way. Your credibility is at stake. Once lost, it's almost impossible to regain. Stick with the whole truth and nothing but.

- **Don't release inaccurate numbers.** Don't guess or give low-side figures that you may have to raise later. Avoid complicated breakdowns of categories that will confuse most people. When numbers are preliminary,

## Expert Software and Hurricane Andrew

"Hurricane Andrew shut our business down for a week and probably cost the telemarketing group that had just mailed 2.5 million catalogs featuring our products millions of dollars," said Ken Currier, CEO of Expert Software in Coral Gables, Florida. "But I feel fortunate, because we could've lost everything if the hurricane's course had been ten miles different."

Hurricane Andrew taught Expert Software the importance of crisis preparedness. Before the hurricane, they had no formal crisis plan or software backup procedures. "The biggest problem that we had the morning after the hurricane was getting in touch with all our employees to make sure everyone was safe. We had no way to communicate a plan for getting our business up and running again."

Since Expert's headquarters were inaccessible for a week because of downed trees, a power outage, and a water shutdown, Ken and his crew ended up running their business from a nearby hotel suite that had electricity, one phone, and one fax machine. "You can imagine what a problem it was

having three sales people sharing one phone for a week—it was a lot like three toddlers trying to share a new toy," said Ken.

So how does Expert run its business differently as a result of the hurricane?

- Every day individuals who work with financial information or source code back up their information on tape, and it's placed in a fire-proof safe.

- Once a week an outside data security company picks up financial information and software backup tapes and ships it to a storage facility in California.

- They've established an emergency communication network, which in the case of a company-wide emergency, allows employees to call a contact person within a defined period of time. This way they can make sure everyone's safe and disseminate information on getting the business on its feet again.

- They hold periodic company-wide emergency drills (mostly during hurricane warnings) in which they back up data, unplug computers, and so on to protect the company from the worst possible outcome. ♣



say so. Where possible, coordinate the release of numbers to the press with the release of information to government agencies.

- *Don't use jargon and technical terminology.* Avoid words that promise too much. Beware of superlatives ("we'll clean up every drop we spilled"). Avoid flippant comments regardless of how hostile the press or public may be.

- *Keep your lawyers at bay.* Many public perception battles are lost because companies and organizations overreact to legal concerns. Lawyers by nature are cautious and rarely anxious to go public. Don't let your lawyers build a stone wall around you. Use their counsel to identify your danger points and understand your exposure to litigation. Don't ignore legal advice—but don't let it prevent you from taking charge when you need to stop the hemorrhaging.

- *Don't tout third-party endorsements.* Bragging looks too self-serving and can hurt you if the other party backs off the complimentary comment. Encourage reporters to contact friendly third parties and let them speak for themselves.

- *Distribute supporting documentation when possible.* Don't refuse to turn over government documents to the press, or it will appear you have something to

hide. Don't try to withhold public documents that have negative information about the company.

#### **A Casebook Example of Preparedness: The Pepsi "Challenge"**

The recent allegation that a hypodermic needle was found in a Pepsi can vividly illustrates why advance crisis prevention, management, and communication is critical. "Either you control the situation, or it will control you," says Pacific Bell's Hutchens.

In the Pepsi fiasco, there were no deaths or injuries. Pepsi's manufacturing process made tampering virtually impossible. But Pepsi faced the situation head-on. Tampering allegations were unproved, but reports came in from twenty states. Poorly managed, the Pepsi scare could have been a multimillion-dollar disaster, but Pepsi's crisis team took control immediately and never let go.

Pepsi spokesman Andre Ganola said, "During our manufacturing process, our cans are open for only nine-tenths of a second, so it would be highly unlikely for one needle to find its way into a can. And it would be astronomically improbable to have numerous needles in different cans in different states." Pepsi president Craig Weatherup was

## Sources of Crisis Planning Information

- National Association of Manufacturers: (202) 637-3086; *Crisis Prevention/Management/Communication: A Manager's Survival Manual*
- FEMA (Federal Emergency Management Agency): (202) 646-3484; their catalog lists crisis-related publications such as *Emergency Management for Business and Industry*
- The American Red Cross: (202) 639-3146; brochures on preparing for earthquakes, tornadoes, floods, and so on. ♣

on every available television channel explaining, and he used footage of the canning process to show why tampering was highly improbable.

Before a surveillance camera at a Colorado supermarket revealed a woman inserting a syringe into a Diet Pepsi can, Weatherup and Pepsi's crisis team seized every media opportunity to tell and show their story, not just in the United States, but worldwide.

The Pepsi case demonstrates the value of being ready and willing to meet a crisis head on without flinching. Pepsi's product and trademark were preserved and a devastating recall costing millions was avoided. It's a lesson for managers in any crisis situation—don't deny, deal with it.

#### **An Investment in Survival**

Crisis planning is an investment in

the survival of your people, company, and products. When a crisis hits, there's no substitute for being prepared. Your best resource in an emergency is your team, so delegate these tasks to good people and train them to act quickly when and if something happens. And remember, good communication is critical both inside your company and out. Will you be ready if you're next? ♣

*Andy Smart is the director of Communications Services at the National Association of Manufacturers in Washington, DC. He frequently helps association members handle crisis situations, and he was the project manager for the creation of Crisis Prevention/Management/Communication: A Manager's Survival Manual.*

### Developer Outlook

## Developers' Perspectives on the PowerPC Market

In the first half of 1994, Apple Computer, Inc., will introduce the first Apple Macintosh computers with PowerPC reduced instruction-set computing (RISC) microprocessors.

PowerPC technology will create the foundation for a new generation of faster, more powerful Macintosh software. It will

allow you to add more value to your existing applications, strengthen your position with current customers, and create breakthrough programs that open new personal computing markets.

But don't take our word for it—listen to the perspectives of developers who've seen prototype "Macintosh with PowerPC"

computers in action. In this article, we talked to three companies that will be among the first to ship applications that take advantage of the PowerPC architecture. Here's what they had to say about the overall PowerPC market and how they're going to market their native PowerPC applications.

#### **Specular's Perspective: It Satisfies a Need for Speed**

The speed of the Macintosh with PowerPC platform is what excites Specular International's Adam Lavine, president and CEO, and David Trescot, director of sales and marketing. As developers of processor-intensive three-

dimensional (3-D) software, the PowerPC processor's superior floating-point unit promises to provide their customers with an impressive performance boost. And with PowerPC performance available in more affordable Macintosh computers, they'll be able to sell their graphic arts and multimedia software applications to a wider audience. Specular is best known for their award-winning 3-D modeling, rendering, and animation application, Infini-D. They've just announced two new products—Collage, an ultra-fast page-layout program for high-resolution Adobe Photoshop artwork, and LogoMotion, a 3-D flying logo generator.

**Apple Directions (AD):** *How important are PowerPC processor-based systems to the Macintosh market?*

**Adam Lavine (AL):** Incredibly important. The PowerPC processor is going to reinvent the Macintosh and be a big boost to Apple's competitiveness. The ease of use that used to be the Macintosh's hallmark (and the justification for a higher price point) isn't as unique as it used to be. Superior price/performance is absolutely critical to keeping the Macintosh ahead in the PC business.

**AD:** *Why have you moved to the PowerPC platform now rather than taking a wait-and-see attitude?*

**David Trescot (DT):** The PowerPC processor has an astonishingly powerful floating-point unit inside it—more powerful than is available on any other microprocessor. Three-dimensional graphics applications like ours will get a phenomenal performance boost running on these systems. And by making this type of application more easily accessible from a performance standpoint, people are much more likely to adopt it.

It moves our “niche products” into a more mainstream market.

**AD:** *What other business opportunities do you see in the PowerPC market?*

**AL:** A leap in performance gives us the flexibility to offer new ways to interface with humans and technologies. This will create totally new ways of interacting with computers, which in turn will create new markets and business opportunities for nimble, innovative, and savvy software developers.

**AD:** *What have your customers been saying about Macintosh with PowerPC?*

**DT:** “When will it ship?!” Three-dimensional graphics is an area where there's never enough speed. Just look at the demand for Silicon Graphics products—this billion-dollar company sells a lot of \$500,000 machines dedicated to 3-D graphics.

**AL:** Our customers are excited. Any boost in speed is extremely valuable for our customers.

**AD:** *How quickly do you think Macintosh customers will make the move to the PowerPC architecture?*

**DT:** I think it will be a very fast ramp because the upgrade path is so clean. On the first day Macintosh with PowerPC systems ship, users will be able to run virtually all existing Macintosh applications out of the box. Plus there'll be key native applications available in each category—word processing, graphics, image editing, 3-D graphics—so they'll be able to benefit immediately from a performance boost.

**AD:** *How will you know if your move to this platform is a success?*

**DT:** At a bare minimum we expect to see the same percentage of sales going to PowerPC users as we currently sell to high-end 68K system users. But since our products benefit so heavily from this new technology, my guess is that we'll see a significantly higher penetration.

**AD:** *How would you compare the PowerPC microprocessor to Intel's Pentium?*

**DT:** In floating-point operations, the PowerPC microprocessor dramatically outperforms the Pentium. The PowerPC is the first step in a new technology, and it's only going to get better. The Pentium is fifth-generation 8086 technology, it's really pushing the limits. Since the Pentium's based on older technology, it has about twice the number of transistors as the PowerPC. This means you get about half the number of chips per silicon wafer. And the more transistors you have in a processor, the more expensive it is to make.

**AL:** Intel is a very sharp company, but I think PowerPC microprocessors will ultimately offer price and performance superior to the Pentiums.

**AD:** *What do you need from Apple to be successful in this market?*

**AL:** We need Apple to sell lots of units, and to communicate better to the market on why Macintosh with PowerPC is the platform of choice. Apple should look to low-margin/high-volume companies like Compaq and Dell for direction on how to do this right.

**DT:** Bottom line, Apple needs to reassure its installed base that this new product is a Macintosh. It may have a new engine, and this engine may be phenomenal, but from the user's standpoint, it's a

Macintosh. Once people understand that, they won't be afraid to move to these systems.

**AD:** *How are you going to publicize the availability of your native PowerPC software?*

**AL:** I'm hoping Apple will come up with a “PowerPC Native” approach like the “Intel Inside” campaign. We may leverage our position as an early adopter of this technology, and we'll definitely communicate that we run on Macintosh with PowerPC systems in our advertising.

**AD:** *What PowerPC-related features will you capitalize on?*

**DT:** Speed, speed, and speed. We create artists' tools, and art is an iterative process. If you can speed up the iterations, the quality of the art goes up.

**AD:** *How will you package your PowerPC product?*

**AL:** We'll probably package it separately from the 68000 processor-based Macintosh, because speed is a valuable and distinguishable commodity for our customers—but I wouldn't recommend that to all Macintosh developers.

**AD:** *In general terms, how will you approach pricing?*

**AL:** We'll look at how much it costs us to develop the software, what a fair profit margin is, consider what the market will bear, think about how we would feel if we were asked to pay that upgrade fee, then make a call. (This is more or less what we normally do.)

**AD:** *Do you see the transition to this platform making cross-platform development easier in the future?*

**AL:** Yes, but that's really an issue of how intelligently code is structured in the first place.

**AD:** *Do you have any other marketing advice for developers moving to the PowerPC platform?*

**DT:** It's better to move your software over earlier than later, because there's a very large customer demand for performance. If there's one thing that motivates users to abandon a program, it's slow productivity. Most users don't want to have to learn a new program, but if that other program offers three to five times better performance, it's hard for them to stay with your product.

• • •

**Insignia's Perspective:  
It'll Be the Cross-Platform  
Workstation of Choice**

Frank Cohen, director of marketing at Insignia Solutions, Inc., thinks the Macintosh with PowerPC platform will be the perfect general-purpose workstation for running Microsoft Windows applications on top of System 7. What's more, his upcoming "native" PC emulation product, SoftWindows, will give Macintosh with PowerPC users performance equivalent to a 486 PC running at 25 MHz. Insignia is a leading developer of high-quality PC emulation solutions for Macintosh computers and UNIX workstations. They develop, market, and sell products that enable users to run Microsoft Windows and MS-DOS applications on systems from Apple Computer, Hewlett-Packard, DEC, IBM, Silicon Graphics, NeXT, and Sun Microsystems.

**Apple Directions (AD):** *How important are PowerPC processor-based systems to the Macintosh market?*

**Frank Cohen (FC):** Macintosh is an impressively easy-to-

use computer that offers the best integration of today's personal computer technologies. And it's the best personal productivity tool available for writing letters, documents, and proposals; analyzing and working on financial reports; and communicating effectively by creating newsletters, books, and presentations.

Yet, with all the new technology that's integrated into the Finder, it's apparent that the Macintosh needs to dramatically boost its ability to power these new technologies. The 68000 series of microprocessors is at the upper end of what it can support. The RISC-based Macintosh with PowerPC is the answer.

**AD:** *Why have you moved to the PowerPC platform now rather than taking a wait-and-see attitude?*

**FC:** Insignia products provide PC compatibility through emulation of a PC on the Macintosh and UNIX platforms. Emulation works best on RISC. As a matter of fact, when we ship SoftWindows for the Macintosh with PowerPC, we'll achieve performance equivalent to a 486 PC running at 25 MHz. That's fast! We're very excited about turning the Macintosh with PowerPC into a general-purpose workstation that can run MS-DOS and Microsoft Windows applications on top of System 7.

**AD:** *What are the business opportunities that you see in the PowerPC market?*

**FC:** The opportunities are enormous. During the first year of PowerPC product availability, we expect to sell more units than ever. Our SoftWindows product is opening doors to events and markets previously closed to us. For example, we were just invited to attend Demo94!, a very important and prestigious PC-industry conference, to show how Soft-

Windows enables DOS and Windows applications to run at 486 speeds on Macintosh with PowerPC computers.

**AD:** *What have your customers been saying about the demand for native PowerPC-compatible applications?*

**FC:** Apple has been timid about showing their Macintosh with PowerPC computers to customers, so there's a lot of confusion over what this platform really is, and why users need to run native PowerPC applications to take advantage of its speed. While the Macintosh emulator seems very robust to us, the whole issue of native versus emulated applications is a difficult one for customers to understand.

The answer seems to be one of individual experience. When the Macintosh with PowerPC ships and customers can take the mouse in hand, they'll immediately understand that this new product is still a Macintosh. Native applications that offer mind-boggling speed will be the icing on the cake.

**AD:** *What are your estimates of customer adoption rates for the Macintosh with PowerPC?*

**FC:** The creation of native applications will be swift once developers get actual Macintosh with PowerPC systems into their labs. We're confident that Apple will have a successful introduction and sell a critical mass of systems within 12 months.

**AD:** *How will you know if your move to this platform is a success?*

**FC:** We work from market research that estimates the size and nature of the target markets. We build products to satisfy customers in those markets. Our research leads us to believe that sales of Macintosh with PowerPC

computers will surpass the sales of the current crop of 68040-based Macintosh computers within the first year of availability. That immediate installed base should be sufficient to make every software publisher consider porting to the Macintosh with PowerPC platform.

Think about it this way: If you were deciding between a 68040-based Macintosh and a PowerPC 601-based Macintosh, and the price differential was only a few hundred dollars, which one would you buy? If anything, Macintosh software publishers should consider working on their PowerPC products over their 680x0 products today.

**AD:** *How would you compare the PowerPC microprocessor to Intel's Pentium?*

**FC:** There's a lot of hyperbole surrounding comparisons between the PowerPC and Pentium processors. For today's word processor, spreadsheet, and database applications, this is all a war of rhetorical advertising slogans. Low-end users won't notice much of a difference. The hidden talent of the PowerPC architecture is its fast math processing ability. The PowerPC will open whole new markets when the math processing unit is applied to desktop publishing, 3-D and 2-D modeling, video and audio desktop communication, and CAD.

**AD:** *How are you going to publicize the availability of your native PowerPC applications?*

**FC:** The core of our 1994 Macintosh advertising will be to highlight the 486-level performance of our Macintosh with PowerPC version of SoftWindows. The advertising will take a two-tiered approach: For PC compatibility on 680x0 Macintosh systems, choose our SoftPC product, and for PC

productivity at 486 speeds, choose SoftWindows for Macintosh with PowerPC systems.

**AD:** *How will you package your PowerPC product versions—in-box with your 68K version or as a separate unit?*

**FC:** That hasn't been determined yet. Like many of the early adopter developers, we're conducting research on how the channel (resellers, distributors, VARs, and so on) would most effectively stock and sell the products.

**AD:** *In general terms, how will you approach pricing?*

**FC:** Our pricing will be in line with the pricing on our 680x0 line. Think about pricing this way: When System 7 shipped, some products took advantage of the extra features supported by the new operating system and users were charged a premium for these. Norton Utilities for the Macintosh, for example, could use the new desktop database commands of System 7 to scan for certain files. With the less expensive System 6 version, that extra feature was not available. The same could hold true for native PowerPC applications.

**AD:** *Do you have any other marketing advice for developers of PowerPC software?*

**FC:** Apple's marketing and evangelism team for the PowerPC is excellent. If you need help, sup-

port, or just a friend to run an idea by, call Apple.  
•••

**Adobe's Perspective:  
It's a Macintosh at Heart—  
Only Better and Faster**

Steve Guttman, senior product marketing manager at Adobe Systems, says Adobe is enthusiastically behind Apple's PowerPC efforts. With processor- and memory-intensive products like Adobe™ Illustrator and Photoshop, the Macintosh with PowerPC platform will enable them to offer their customers impressive performance improvements—without having to give up the Macintosh interface that they know and love. Adobe is also a leader in digital type and the creator of PostScript.

**Apple Directions (AD):** *How important are PowerPC processor-based systems to the Macintosh market?*

**Steve Guttman (SG):** PowerPC is the future of the Macintosh. Anyone who is as committed to the Macintosh as Adobe is, would pursue Apple's RISC-based Macintosh platform with vigor.

**AD:** *Why have you moved to the PowerPC platform now rather than taking a wait-and-see attitude?*

**SG:** Since Adobe's applications tend to "push the envelope" of memory use and CPU cycles, it's important that we move to this more powerful platform. Our

customers will benefit from huge performance improvements on Macintosh with PowerPC systems.

**AD:** *Which applications are you going to move over?*

**SG:** We're going to move them all over. "When" is just a question of timing. I hope Adobe becomes *the* PowerPC software company. Ever since John Warnock, our president and CEO, came back raving about a Macintosh with PowerPC demonstration, we've been very excited and committed to this platform.

**AD:** *What have your customers been saying about the demand for native PowerPC applications?*

**SG:** Our customers haven't been saying very much about demand for PowerPC applications per se. What our customers say is that they want more, better, and faster. The native PowerPC software is just our way of helping to make that happen. There's been a lot of marketing and noise about the PowerPC platform being a big next step for Apple, but I think what people have to understand is that *it's a Macintosh*. The only way Macintosh users will be able to tell if they're running with a 68000-based processor or a PowerPC chip is the speed—the PowerPC platform will be much faster. I think this is a really important difference from the Windows-to-Windows NT upgrade path, because the user experience on Windows is completely different

from the NT experience. There's a perceptual wall between those two products, and this makes the transparent transition between Macintosh platforms a real competitive advantage.

**AD:** *What do you need from Apple to be successful in this market?*

**SG:** On the marketing side, we need Apple to really push Macintosh with PowerPC systems and give them reasonable price points. On the development side, we need native development tools and a more streamlined development environment.

**AD:** *In general terms, how will you approach pricing?*

**SG:** To the extent that we can, we'd like to minimize having to charge customers just for a version that runs on Macintosh with PowerPC systems. Ideally, we'd like to charge them for new features and new functionality, but that probably won't be determined for a few months.

**AD:** *Do you have any other marketing advice for developers in the process of porting applications?*

**SG:** Do it. Bite the bullet. Be proactive. You might as well get it out before customers start screaming at you for not having a PowerPC version. You and your customers will be happy. ♣

**APDA Ordering Information**

To place an APDA order from within the United States, contact APDA at (800) 282-2732; in Canada, call (800) 637-0029. For those who need to call the United States APDA office from abroad, the number is (716) 871-6555. You can also reach us by AppleLink; the address is APDA. If you're outside the United States, you may prefer to work with your local APDA contact. For a list of non-U.S. APDA contacts, see the "International APDA Programs" page in the *APDA Tools Catalog*.