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Apple Directions, Oct 94, news, Williams, page 1

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Introducing . . . Mac OS!

The Coca-Cola logo, the AT&T “sphere,” the torch-wielding woman of Columbia Pictures—these are corporate logos familiar to millions of people. Companies spend millions of dollars creating the right corporate logo, because they know it may be used for decades. They know that people may forget their name and slogan, but they’ll remember that logo and feel *a certain way* about the company because of it.

So it’s no small news that, more than ten years after its introduction, the technology that changed the face of personal computing—*finally*—has both a name and a logo. The name is *Mac OS*, and the logo looks like this:



On September 19, 1994, Apple Computer, Inc., introduced the term *Mac OS* and the Mac OS logo. Mac OS is the new, official name for the operating system, or system software, that we have always taken for granted. The Mac OS logo, which Apple and third-party hardware and software vendors will use, indicates compatibility with the Mac OS. In other words, software sporting the Mac OS logo will run on computers (from Apple or other companies) that also carry the Mac OS logo.

Apple has several reasons for creating the Mac OS logo:

- *To help third-party vendors and customers.* Software developers have asked Apple to give them a standard way to indicate that their products are compatible with the Mac OS. Today, each developer has a different method of indicating Macintosh compatibility. Apple wants to make it easier for customers to find Macintosh products and help developers sell those products.
- *To help hardware licensees.* When other hardware companies begin selling computers that run Mac OS software, the Mac OS logo will clarify exactly what kind of software the computer runs. It will also establish an identity for all the computers—from a variety of manufacturers—that run Mac OS software. Just as, today, computers from IBM, Dell, Compaq, and other vendors are said to be

Windows-compatible, computers (from Apple and other vendors) that run Mac OS software will be said to be Mac OS-compatible.

- *To increase awareness of the Mac OS.* The Mac OS logo focuses attention on one of Apple's strengths, the Macintosh operating system. This focus helps customers distinguish between Macintosh hardware and the system software. By making customers aware of Apple's unique operating system, Apple can increase both customers' appreciation of the value of Mac OS upgrades and their awareness of the Mac OS world as the counterpart to the Microsoft Windows world.

- *To expand the meaning of the Apple brand.* For most people, *Apple* means *Macintosh* and vice versa. But Apple plans to sell products for the Mac OS, Newton, Windows, and UNIX markets, and the creation of the Mac OS logo will allow the Apple name and logo to represent *all* the quality products that Apple sells. And, since Apple will sell both Mac OS and Windows products, this change in emphasis will set Mac OS and Windows on the same level and put the Apple name and logo above both of them.

The creation of the Mac OS name and logo indicates Apple's increased commitment to promoting the software side of the company. Also, on the eve of Mac OS-compatible computers from other vendors and the release of Microsoft Windows 4.0 (Chicago), Apple has created the Mac OS name and logo to help make Mac OS-compatible hardware and software more visible in stores and advertisements.

Apple Directions, Oct 94, news, Williams, page 4

Anyone who makes products compatible with the Mac OS can license the Mac OS logo for use on their products. Licensees can also use the logo on communications materials they produce to promote their products.

Apple is developing a “no-hassle” licensing program: Software and multimedia developers will simply submit a license request form and a letter certifying their products’ compatibility with the Mac OS—no delays, no red tape, no hassles. (In contrast, Microsoft has recently announced that it is changing the rules for granting a license to use the Windows logo. Developers will now have to incorporate a number of Microsoft application programming interfaces, pay testing fees, and wait for Microsoft to complete testing.)

The Mac OS logo has a long life ahead of it. It’s friendly, it’s sophisticated, and it contains an important historical link to the “happy Mac” icon that has greeted every Macintosh user since 1984. We think you’ll like it.

Apple Directions, Oct 94, Williams, page 1

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Strategy Mosaic

System 7.5 + Power Macintosh = Customer Satisfaction

By Gregg Williams

Apple Directions *staff*

At Macworld Boston in August, Apple Computer, Inc., showcased its technologies in a mammoth 21,000 square foot pavilion that had a constant line of people waiting to get in each day. And if real estate is any indication of importance, the message from the Apple Pavilion was clear: System 7.5 and Power Macintosh are the most important technologies around. Why do I say that? Because, together, they occupied almost two-thirds of the Apple Pavilion.

If you want further confirmation of this assertion, you need look no further than your local Apple dealer. By the time you read this (or soon thereafter), virtually every Macintosh computer rolling into the store's warehouse—680x0, PowerBook, and Power Macintosh models—will come with System 7.5. (Some caveats: Those Macintosh models destined to be discontinued will still be shipped with System 7.1. Also, models shipping with 4 MB of memory will come loaded with System 7.1 and have System 7.5 available on their hard disks.)

System 7.5 *is* Apple's operating system, and the PowerPC processor *is* the long-term future of Apple's hardware. Together, they offer a platform from which you can enhance existing products and offer new ones that weren't possible before. Both are enabling technologies that you need to maintain competitive products and a financially healthy company.

The thesis of this article is that Power Macintosh (which I'll use to mean the creation of programs that run on Power Macintosh computers in "native" mode) and System 7.5 are both important because each one increases customer satisfaction. What does this mean for you? Satisfied customers upgrade their current software, buy additional software in your product line, and recommend your software to others.

Apple Directions has been publishing articles about Power Macintosh and the various pieces of System 7.5 for well over a year, and there's no way I can summarize all the reasons you should adopt them and all the opportunities they present. (See the "Resources" text box at the end of this file for some pointers.)

Why Adopt?

Stated briefly, there are three reasons for adopting System 7.5:

- Users will want applications that make good use of System 7.5. It's a painless upgrade (in that it causes no backward compatibility problems) that makes the Macintosh easier and more fun to use and increases users' productivity.
- You can make money selling new products and upgrades to existing ones—and, because System 7.5 works on both 680x0 and Power Macintosh models, you will be selling into both installed bases with one product. (In fact, by using either a smart Install script or a “fat” application—containing both 680x0 and PowerPC processor code—you can sell to both market with the same SKU.)
- Many important System 7.5 technologies are easy to implement. In particular, the following System 7.5 features require modest development efforts: Macintosh Drag and Drop, Apple Guide, QuickDraw GX printer support, and PowerTalk mailers.

It's also important for you to create Power Macintosh native applications:

- In many cases, your users will require the speed of native applications, and they will buy only those applications that deliver it. This is particularly true for high-end graphics, page-layout, and scientific applications, where individual operations can take from minutes to hours. Power Macintosh applications are often two to four times faster than their 680x0 equivalents, and to many professionals, time is money—lots of it.

- The PowerPC processor gives you the horsepower you need to create new, cutting-edge solutions. Anyone who believes that extra processing power will only be used to make applications run faster deserves to be running WordStar (an ASCII-based, pre-Macintosh word processor) at blindingly fast speed.
- Even though the 680x0 family of Macintosh computers will be with us for three to five more years, the PowerPC processor represents the future of the Macintosh platform. The earlier you begin selling to the Power Macintosh market, the more time you'll have to build your reputation among long-term Macintosh users. (For details on Apple's 68040 desktop strategy and the selected markets where a 680x0-only strategy make sense, see last month's Strategy Mosaic, "Courting the Under-\$2000 Market.")

These reasons, combined with the fact that System 7.5 is now shipping with a vast majority of Apple's new computers, make it important that you adopt both System 7.5 and Power Macintosh—and many developers are doing just that. The chart "System 7.5 and Power Macintosh Adoption" shows a selected list of vendors who are doing so; entries in boldface denote products that also exist in Power Macintosh native versions. (And, if you're an early adopter and do a good job, you may get an additional boost when Apple uses your product to showcase its new technologies. Just look at WordPerfect—not only was it shown in several places on the Macworld Boston show floor, but it was also being shown at a Power Macintosh station and at several System 7.5 stations in the Apple Pavilion.)

Adoption of System 7.5 and Power Macintosh.

Applications that have native Power Macintosh versions are listed in bold type.

		Drag & Drop	Appl e Guid e	Quick- Draw GX	Apple- Script	Power- Talk	Other
Premiere 4.0E	Adobe Systems	√					QuickTime 2.0
DateBook and TouchBase Pro *	Aldus Consumer Division	√			√		
Videoshop 3.0	Avid Technologie s, Inc.						QuickTime 2.0
PhotoFlash 2.0	Apple Computer, Inc	√			√		QuickTime 2.0
Cumulus PowerPro 2.0	Canto Software	√			√		
MacWrite Pro 1.5 v3	Claris Corporation				√	√	
ClarisWorks 2.1 v3	Claris Corporation				√	√	
PhonePro	Cypress Research Corporation	√			√	√	Telephone Manager, PowerShare, Communicati ons Toolbox
Retrospect	Dantz Developmen t Corporation		√			√	SCSI Manager 4.3

DeltaGraph Pro 3.5	DeltaPoint, Inc.	√	√	√	√	√	
Full Contact	FIT Software	√	√			√	
ReadySetGo GX Version 7 (available late 1994)	Manhattan Graphics	√		√ **			
Microsoft Excel 5.0	Microsoft Corporation			√	√	√	
Microsoft Word 6.0	Microsoft Corporation			√	√	√	
Nisus Writer 4.0 *	Nisus Software, Inc.					√	WorldScript, Thread Manager
Peirce Print Tools	Peirce Software, Inc.			√			
Typestry 2.1.1	Pixar			√ **			
Informed Designer *	Shana Corporation	√	√	√	√	√	
Informed Manager *	Shana Corporation	√	√	√	√	√	
ACT! 2.0 for Macintosh	Symantec Corporation				√	√	
WordPerfect 3.1	WordPerfect Corporation	√	√	√	√	√	Easy Open

Note: Applications marked with an asterisk (*) are planned to be Power Macintosh native by the end of 1994. Two asterisks (**) denote a product that makes extensive use of QuickDraw GX (GX graphics and/or typography).

But enough of *me* trying to convince you. Here are the thoughts of several developers who have already implemented various System 7.5 and Power Macintosh technologies.

ReadySetGo GX Version 7

When this product comes out in both 680x0 and Power Macintosh versions later this year, it should be one of the most exciting applications of 1994. It will be the first page-layout program to make significant use not only of QuickDraw GX printing, but also of QuickDraw GX graphics and typography.

According to Martin Rosenberg of Manhattan Graphics, the decision to move to QuickDraw GX was not taken lightly because it forced them to leave behind some of their users—those with insufficient RAM or with pre-System 7.1 machines. “We will continue to support ReadySetGo 6.0 [for those customers],” said Rosenberg, “but we decided that our product [ReadySetGo GX Version 7] deserved to take advantage of these new technologies coming out of Apple. The combination of the Line Layout Manager and QuickDraw GX fonts gives users a very powerful set of features. And we’re supporting PowerPC to pick up on the performance.” Macintosh Drag and Drop is a great convenience, he added, because “the user can save a number of steps when importing from other documents.” Also, Rosenberg said, people would rather drag text or graphics between documents rather than trying to find a file by name in a directory dialog box.

QuickDraw GX has also decreased the amount of code that Manhattan needs to maintain. “We’ve taken large amounts of code [from our application] and replaced it with [code from] GX—rotation, image flipping, even our PostScript print-driver code,” said Rosenberg. (QuickDraw GX has a unified printing model and automatically handles printing to PostScript, raster, and plotting devices.

You no longer have to worry about whether your application is printing to a PostScript printer.)

Finally, according to Rosenberg, “Users have long been calling for functionality beyond what QuickDraw could provide. With QuickDraw GX, we have eliminated custom code and have a single printing and imaging model—and it allows us to introduce new features. We didn’t agonize long over the decision to move to QuickDraw GX—we wanted to do it as soon as we heard about it.”

DeltaGraph Pro 3.5

According to DeltaPoint’s James White, product manager for DeltaGraph Pro 3.5, customers benefit tremendously from the System 7.5 technologies and Power Macintosh support added to his product. Having a native Power Macintosh version of DeltaGraph Pro 3.5, he says, “is buying us tons and tons of performance. DeltaGraph relies heavily on floating-point calculations. We’re seeing two to ten times improvement over equivalent 680x0 code for things like 3-D charts, pictographics, X-Y-Z charts, and chart scaling and rotation. Power Macintosh floating-point really screams—the performance is so much better that it makes DeltaGraph much easier to use for large data sets and more complex charts and graphics.”

The speed boost of Power Macintosh encouraged DeltaPoint to add a new feature to DeltaGraph Pro 3.5—the automatic updating of a chart when you change the underlying numbers. (Before, you had to click a button to update the chart.) Although the feature works fast enough for DeltaPoint to leave it in the

680x0 version of DeltaGraph Pro 3.5, White said that the feature really shines in the Power Macintosh version because the updates are almost instantaneous.

White said that both Macintosh Drag and Drop and the PowerTalk mailer are important because they contribute “ease of use and consistency in what the user sees. Drag and Drop is a great time saver for users. It’s the same with the [PowerTalk] mailer—with it, users can turn their documents into electronic mail instantly, without three or four extra steps.”

DeltaGraph Pro 3.5 makes extensive use of Apple Guide, giving users step-by-step instructions on more than 400 DeltaGraph tasks. “Apple Guide,” said White, “is such a dynamic help system. People are going to expect [you to have] it. Apple Guide makes it easier to learn DeltaGraph, especially for people who might not want to search for how-to instructions in the documentation.”

That’s not to say that Apple Guide replaces DeltaGraph’s printed documentation. “The two are complementary,” said White. “The manual gives more detail; in some cases, Apple Guide refers the user to the manual.” In addition, White said that the printed documentation is needed for conveying background information and context, neither of which fits into Apple Guide’s “How do I . . . ?” format.

When asked about the advantages of supporting both System 7.5 and Power Macintosh, White answered, “The biggest benefits are the confidence users gain in their work and the amount of work they can accomplish with the product—because of better access to help with how to use the product and the ability to quickly drop the finished graph wherever they need it to go.”

Full Contact

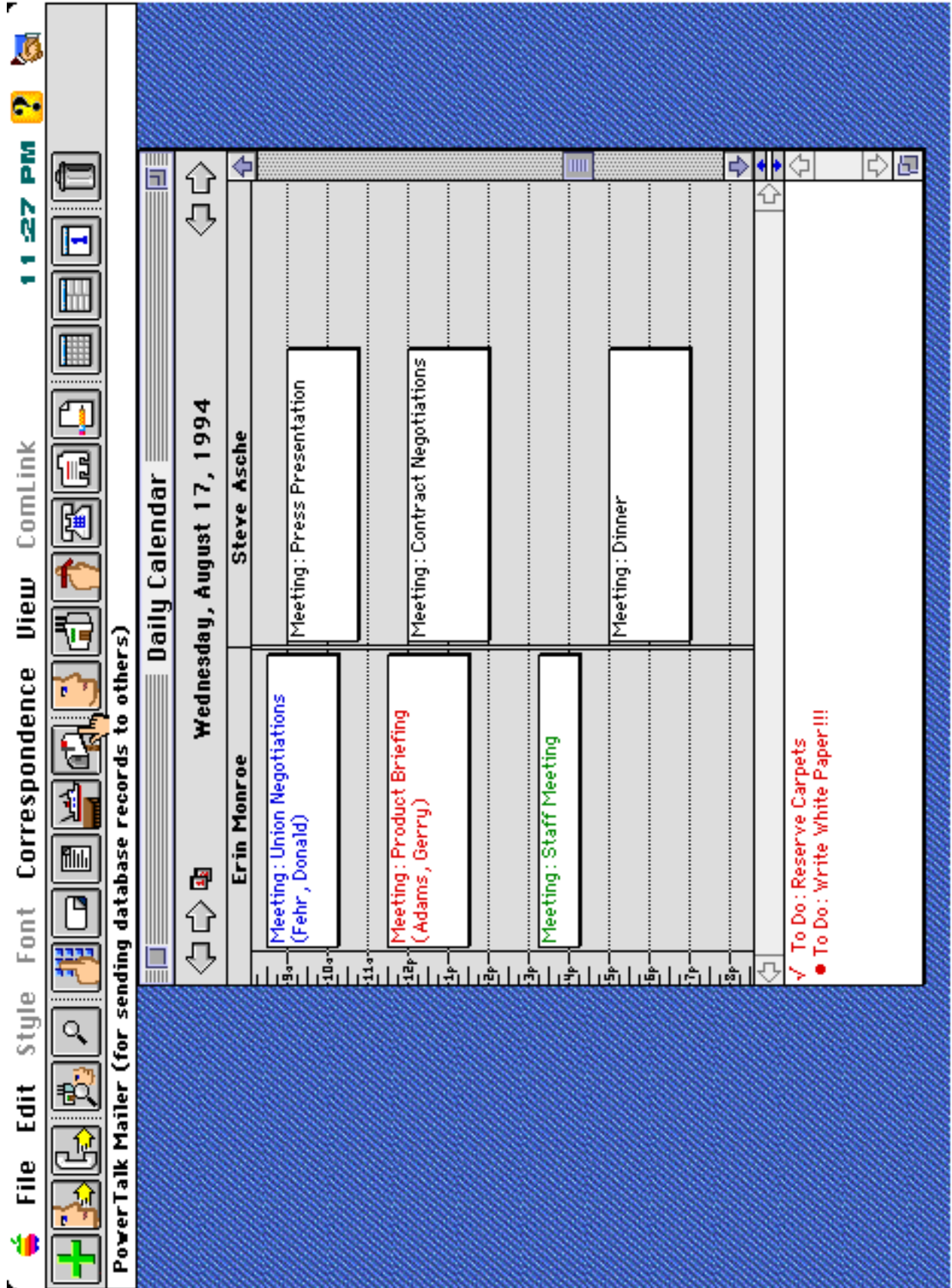
Full Contact, from FIT Software, uses PowerTalk as the “engine” for their group contact- and activities-management product. It also uses Macintosh Drag and Drop to simplify the mechanics of common operations and Apple Guide to assist new users in learning how to use Full Contact.

Steve Asche, vice president of marketing at FIT Software, said that the key concept behind Full Contact is simplifying the ability of a group of networked users to share their information. “We wanted to make it very easy for users to take contact and activity information from their [Full Contact] files and share it with other workers. PowerTalk made it very easy for users to share information because we could modify the PowerTalk mailer to embed our own information directly [so the user doesn’t have to manually]. This was much less effort for us than to do something similar from scratch. We see PowerTalk as a vital component of sharing information across a network—not just electronic mail, but a way of making workers more productive with each other.”

Macintosh Drag and Drop is also a key component in Full Contact’s ease of use, and FIT Software uses it in several ways to keep the user from having to reenter existing information manually. (Of course, it’s possible to program such functionality into your software yourself, but Macintosh Drag and Drop makes it much easier to do and results in more reliable software. As with many Apple technologies, Apple has developed an enabling technology so that you don’t have to.)

The figure "Setting up a meeting" shows one use that Full Contact makes of Macintosh Drag and Drop and PowerTalk. To invite someone to a meeting, you simply drag your entry for that meeting over the PowerTalk button. This opens a PowerTalk mailer and fills in the details of the meeting.

(figure) Setting up a meeting. Full Impact uses Macintosh Drag and Drop in several ways. Here, a user drags a meeting rectangle to the PowerTalk Mailer button (which looks like a mailbox) to start the process of inviting someone to the meeting.



Full Contact has been available in a native Power Macintosh version since the Power Macintosh computers were first announced last March, and Asche said that the extra speed that Power Macintosh delivers is important to Full Contact: “Speed of response is one of the key components people want in a contact-management program. The faster it runs, the more likely people are to make it integral to their daily work.

“And System 7.5 makes Full Contact a *lot* easier to work with—more intuitive. The average user has trouble differentiating between the desktop and the application. Macintosh Drag and Drop helps hide this difference from the user, making the user’s interaction with the computer more natural. PowerTalk adds features that would have taken us a lot longer to implement on our own. Apple Guide is a no-brainer—everybody should take advantage of it because it’s so easy to do. We see a lot of benefits from adopting both System 7.5 and Power Macintosh, and we think people will upgrade to System 7.5 to get all that additional functionality.”

WordPerfect 3.1

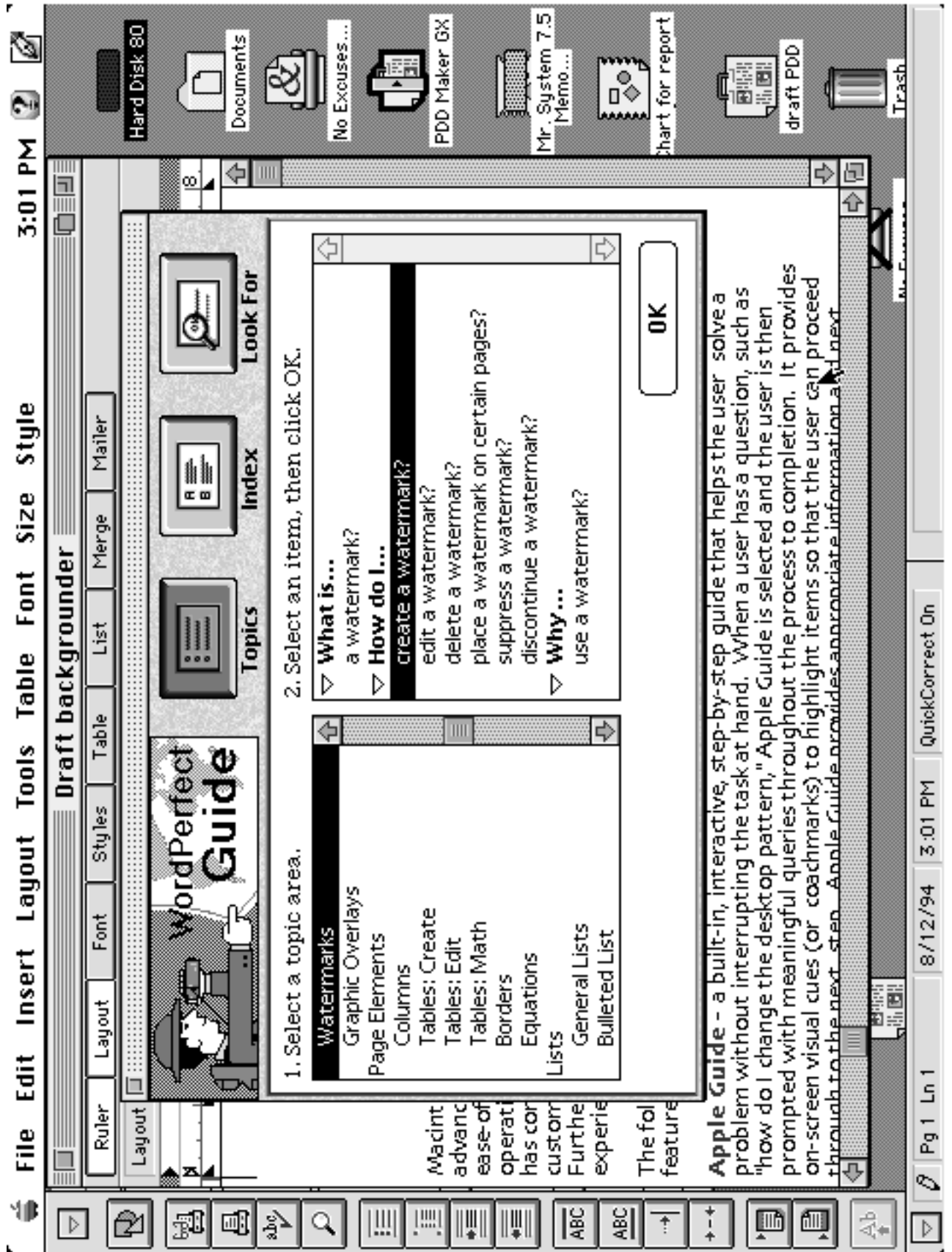
According to Dave Harding, product marketing manager, WordPerfect for Macintosh, the Novell Applications Group, WordPerfect’s enthusiastic adoption of differentiating Apple technologies has paid off tremendously. Since WordPerfect released WordPerfect 3.0 (the first version to make heavy use of

Apple Directions, Oct 94, Williams, page 14

Apple technologies) in October 1993, its market share has doubled in less than one year.

Tom Sanders, director of development for WordPerfect for Macintosh, feels that Apple Guide, Macintosh Drag and Drop, QuickDraw GX printing dialogs, and Power Macintosh support are all important features of WordPerfect 3.1. “The thing that I find most exciting about Apple Guide is that it introduces users to more features of the product. Most people use a few features and then don’t bother learning anything new. Apple Guide will lure and entice people into using more features than they have with past help systems.” (See “The WordPerfect Guide at work” for a look at WordPerfect’s implementation of Apple Guide.)

(figure) The WordPerfect Guide at work.



“Before Macintosh Drag and Drop, WordPerfect could drag and drop between its own documents but not to other applications or the desktop. Drag and drop is a natural paradigm that people understand. The ability to drag between applications will make the experience seamless and minimize the barriers that people perceive existing between applications,” said Sanders.

“Going native has been a competitive advantage to WordPerfect, not just here but also abroad. We have a [Power Macintosh native] WordPerfect 3.0a in Japanese that shipped in July, and our Japanese sales have jumped dramatically since its release. I feel that the Power Macintosh will be a popular platform because of the computational requirements that the Japanese language makes on a program. You may ask, ‘What do you need all this power for?’ One answer is support for languages.

“But the speed of Power Macintosh can also be used effectively to make new things possible—things like being able to drag a graphic, not just its outline. This is something that would not be possible with earlier technology.”

Avid Videoshop 3.0

When the price is right and the product is compelling, your software will sell. At least, that’s Avid New Media’s experience. It introduced Videoshop 3.0 (a video-editing program) at Macworld Boston and sold a stunning 1,347 copies in four

days. In fact, one buyer was so enthusiastic that he bought his copy and asked Avid which Macintosh model he should buy to run it on.

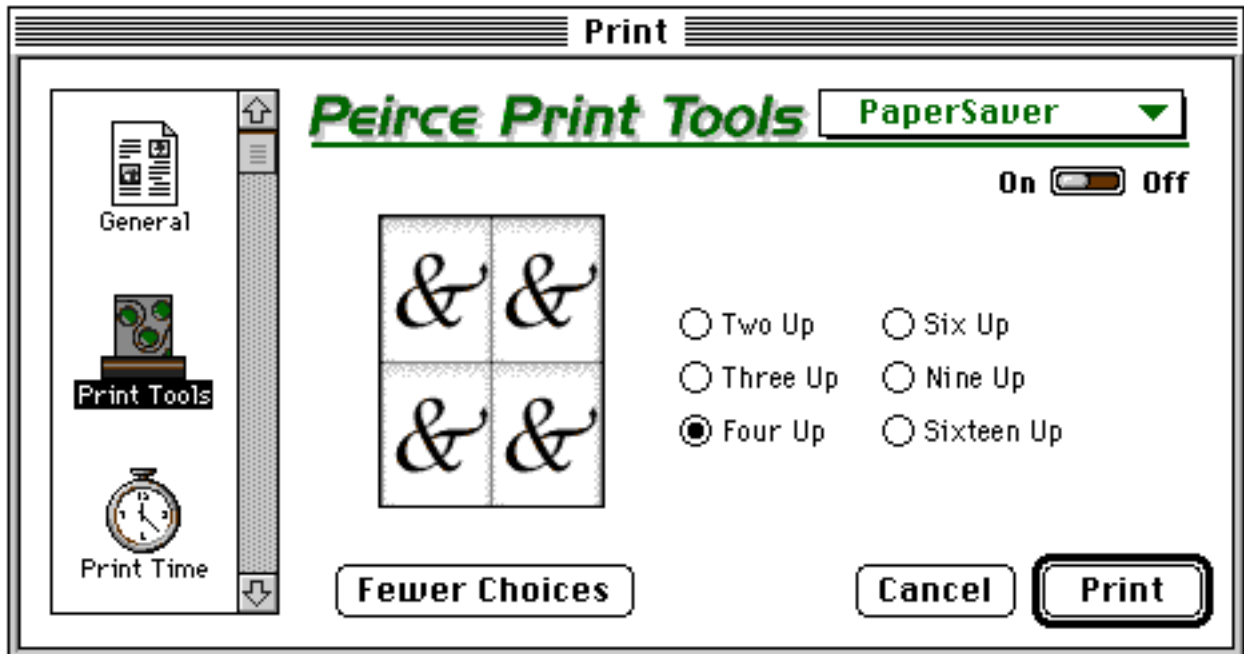
Videoshop 3.0 runs native on Power Macintosh computers, and Kevin Foreman, marketing manager for Avid New Media, said that makes an important difference to an application that manipulates graphics. “From our point of view, rendering takes a long time. Effects commonly take between 2 and 20 minutes to render. On Power Macintosh computers, we’ve seen about a two-times speed increase for our software.”

Videoshop 3.0 also uses QuickTime 2.0. Foreman praised QuickTime 2.0’s ability to store tracks of MIDI (Musical Instrument Digital Interface) music. Since MIDI stores music as pitch and duration values instead of actual sample waveforms, QuickTime movies that use MIDI music are much smaller—a tenth of the size or less—than they would have been using digitized music. This, Foreman said, makes Videoshop 3.0 a much more valued product because it enables customers to create larger movies while using less of their valuable disk space.

Peirce Print Tools

I’ve talked frequently about how various Apple technologies can offer even the smallest companies a chance to capture a market niche. Peirce Software, Inc., which has four employees, validates my assertion with distinction. (The figure “Peirce Print Tools save paper” shows one of the many tools included in the package. Other tools do things like creating watermarks, printing booklets, and assisting in printing double-sided documents.)

(figure) Peirce Print Tools save paper. This product implements various printing-related tools as QuickDraw GX printing extensions.



Michael Peirce, president of the company, talked about the evolution of Peirce Print Tools. "I was looking for my next project, and the [QuickDraw GX] printing extensions caught my eye. The best I could figure, no one was doing anything with them, and it seemed like a project that was doable by a small company in a

reasonable amount of time. So I started talking to people, finding out what they would like to see in a product like this.

“I decided this was a good opportunity if I could come out with it when [QuickDraw] GX was first introduced,” continued Peirce. “Whenever there is a transition, there’s an opportunity. GX is a technology that gives opportunities for new categories. If you’re first with something good, you’ve got a shot at success. Another advantage for us [of being first] was that, because we had a product that makes GX shine, Apple uses Peirce Print Tools to show GX off.”

Peirce pointed out two important advantages of QuickDraw GX. First, QuickDraw GX makes it possible for his company to hook into the printing architecture using virtually no patches. “This means the product is stabler, and some people are more willing to use it because of this. It also makes the code easier to write.” Also, the fact that QuickDraw GX handles the conversion from the desired image to the data needed by the individual printer meant that his programming job was greatly simplified. “We don’t have to do direct PostScript, and our product works with all GX printers. With QuickDraw GX, it’s no longer a PostScript versus non-PostScript world.”

Satisfaction (Yours and the Customer’s)

System 7.5 and Power Macintosh contribute to customer satisfaction. The various System 7.5 technologies—Macintosh Drag and Drop, Apple Guide, QuickDraw GX, PowerTalk, and others—can make your software easier, more powerful, and more fun to use, and their presence (especially Apple Guide and Macintosh Drag and Drop) can reassure users that your software is working

Apple Directions, Oct 94, Williams, page 20

with them and will not leave them stranded. Power Macintosh software is more responsive than 680x0 software, and you can do things with it that can't be done on 680x0 Macintosh models. Software like that will build your reputation, give you the satisfaction of creating a good product, and bring you the financial success that you deserve.

text box

Resources

“Drag and Drop—Anywhere, Anything,” *Apple Directions*, November 1993.

“Drag and Drop From the Finder,” Issue 16 of *develop*, December 1993

“How Do I Use Apple Guide?” *Apple Directions*, August 1994.

“Giving Users Help With Apple Guide,” *develop*, issue 18, June 1994.

“Rethinking Your Applications for QuickDraw GX,” *Apple Directions*, October 1993.

“Getting Started With QuickDraw GX,” “Developing QuickDraw GX Printing Extensions,” and “QuickDraw GX for PostScript Programmers,” Issue 15 of *develop*, September 1993.

“AppleScript, an Elemental Technology,” *Apple Directions*, July 1993.

“How to Get Started With PowerTalk,” *Apple Directions*, November 1993.

Apple Directions, Oct 94, Williams, page 21

“Programming for Flexibility: The Open Scripting Architecture,” *develop*, issue 18 (June 1994).

“QuickTime 2.0 Supports Full-Screen Video, MPEG, Music,” *Apple Directions*, April 1994.

“What’s New With the Sound Manager 3.0,” *develop*, issue 16, December 1993.

“Concurrent Programming With the Thread Manager,” *develop*, issue 17, March 1994.

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Apple Directions, Oct 94, Williams, page 1

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Editor's Note

Seeding the Future

It was good to hear the recent news that Apple Computer, Inc., has sold over 1,100 Power Macintosh computers to a single organization. What makes this into *great* news is knowing that these computers, going to a university known for the quality of its computer resources, will influence the future buying habits of every student who studies there and perhaps, eventually, the companies they work for. Now that's leverage!

It's a pretty interesting situation: Drake University, in Des Moines, Iowa, recently leased more than 1,100 Apple Power Macintosh 7100/66 computers (valued at over \$3 million) and has installed them in faculty offices and every residence-

hall room. Not only that, but Drake is also spending about \$100,000 to buy Power Macintosh “native” productivity applications for these computers. All the computers will be connected through Drake’s telecommunications network to the Internet. Drake University offers over 60 college majors and is best known for its majors in pharmacy, health sciences, and journalism.

Drake University has strongly supported the widespread use of computers since 1987, when it purchased personal computers for the faculty, networked the campus, and established computer labs in the residence halls and other campus buildings.

Dr. Michael R. Ferrari, the university’s president, is strongly committed to the widespread availability of computers in education. “Our experience with a computer-intensive curriculum,” he said, “affirms that the use of computers and electronic communication contributes to active learning, rather than passive learning. It is critical that Drake graduates be well prepared to enter an increasingly global information-based economy, and they must have advanced learning tools to be successful in the coming years.” He added, “We chose the Power Macintosh because it provides state-of-the-art technology with the power to run sophisticated software.”

According to Lisa Lachler of Drake University, summer students at Drake heard about the summer influx of Power Macintosh computers before the purchase became public and were very excited about the prospect. (A free Power Macintosh computer in my dorm room? I’d have been *ballistic*.) Lachler said that both students and teachers make extensive use of e-mail and that Dr. Ferrari invites students to contact him through e-mail as well. Teachers use the

campus network to conduct electronic discussions that supplement classroom discussions.

Naturally, I'm excited by the prospect of computers becoming more commonplace in college dorms than hotplates. It's probable that each Power Macintosh 7100/66 installed at Drake is more powerful than the mainframe I first used at college, but it's *certain* that just about every task you can perform with a Power Macintosh couldn't be done at all on any computer back when I was in college. (I'd be dating myself if I mentioned that my first computer experiences involved punched cards and several hours of waiting while the high priests of the computing center ran the program and returned the printout—so I won't.)

But there's a bigger picture here—the Drake University decision is one more data point in what I believe is the upward sweep of Apple's fortunes. Such a sale indicates that organizations are beginning to acknowledge Apple's long-term viability (which has always been there, self-appointed pundits notwithstanding) and the inherent value of the Power Macintosh platform. I don't think, for example, that the students at Drake would have been as excited had the university bought Pentium/Windows computers. Certainly, such computers would not get as much use, because few students would take the time to do all of the tinkering that Windows systems demand, such as learning how to use both system and application software, configuring software and hardware, and the inevitable troubleshooting needed by such systems.

Apple is showing other signs of momentum. In early August (at Macworld Boston), Apple reported that it had sold over 350,000 Power Macintosh systems (both new computers and upgrade boards) and that over 200 software products

Apple Directions, Oct 94, Williams, page 4

are Power Macintosh native. (The number, as of August 18, is 239 native applications.) Also, the Macintosh 630 series computers are being well received. In fact, *MacUser* magazine concluded in its September 1994 issue that “the 630 Macs succeed as speedy, versatile entry-level desktop systems. Their numerous expansion options make them readily adaptable for use in small business, introductory-level multimedia development and presentation, and multimedia-based instruction (including educational TV).”

So it appears to me that all the hard decisions Apple has made in the past few years are beginning to pay off. And by equipping Drake University, and every other organization that chooses Macintosh, Apple is, indeed, “seeding the future.”

Gregg Williams

Technical Editor

Apple Directions, Oct 94, Williams, page 1

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IndustryWatch: News & Perspective

Who's Got the Edge Now?

Prepared by the Apple Directions staff

Gift or Comic Chaos? (Hint: It's an Anagram)

Microsoft has announced that Chicago, the next version of Windows, will not ship until early 1995. During the company's recent earnings announcement, Microsoft said not to expect significant Chicago revenue until April of 1995.

Implications/Opinions: In one sense, we'll be disappointed if Chicago doesn't

ship until 1995; if the product is forced out in 1994, it'll be full of bugs or lack key features.

The increasing delay is more than just a public-relations black eye for Microsoft. Three months ago, Bill Gates was still publicly saying that Chicago would ship in 1994—in fact, he hinted that Microsoft might even ship it early. These discrepancies would not have occurred in the past. Microsoft is now diversifying to such an extent that Gates can no longer keep his traditional close watch over everything. As a result, Microsoft is becoming more and more like any other large company, complete with all the infighting and bureaucratic snafus that follow.

Still No Pentium-Optimized Applications

As far as we know, neither Microsoft nor any other developer has announced applications optimized for Intel's Pentium chip. Although optimizing for Pentium is not as critical as optimizing for the PowerPC processor, it does have an important impact. Without optimization, 80x86 applications don't run as fast as you would expect. This is one of the reasons a 66-MHz Power Macintosh 7100/66 computer beat a 100-MHz Pentium system in the latest Ingram benchmarks.

Implications/Opinions: It now seems that the 80x86 instruction set will, in essence, remain frozen at the 486SX level. Although Intel added new instructions on both the 486DX and Pentium, software developers continue to develop their applications for the least-common-denominator PC, which uses only the 486SX instruction set. Since Advanced Micro Devices (AMD), Cyrix,

and others have announced plans to produce Pentium-performance chips without the Pentium instructions, most developers apparently see no need to write Pentium-optimized versions. And Microsoft, having seen PC sales take off once AMD broke Intel's 386 processor monopoly, doesn't want to see Intel maintain hardware control of the high end of its market.

Intel, which is now offering developers money to optimize for Pentium, will have to try to convince developers to recompile again for the P6, and still again for the P7 or the HIP (Hewlett-Packard-Intel) processor, should they appear. Most developers are likely to support only the common instructions used by all 80x86 processors—AMD's, Cyrix's, NexGen's, and so forth—rather than the instructions found only on Intel's processors. This would mean that PowerPC will be competing more with the aging 486SX instruction set, rather than that of Pentium or P6.

Intel to Drop Price of 60-MHz Pentium Below 100-MHz DX4 Chip

On August 1, Intel reduced the price of the 60-MHz Pentium processor to about \$400, well below the \$500 price of the 100-MHz DX4 chip. Dell has already dropped the price of its least expensive Pentium model to \$1,995.

Implications/Opinions: Intel is determined to move the market from 486 to Pentium. Its willingness to sell a Pentium chip for less than a 486, even though the Pentium chip costs more to manufacture, is further evidence of that intent. In the first quarter of 1995, we expect AMD, Cyrix, or IBM to ship 100-MHz 486 chips, which will compete with Intel's hard-to-get DX4. Until then, other PC manufacturers probably have no choice but to offer low-end Pentium chips

rather than high-end 486 chips.

Microsoft's Plans for Chicago Logo

Microsoft is making a number of changes to its logo programs. The separate logos for Windows and Windows NT, for hardware and software, and for 32-bit applications are being merged into a single logo. To get the logo, software products must use the Chicago "look," support long filenames, follow setup guidelines, have OLE 2.0 (Object Linking and Embedding) support, be mail-enabled, and run on Windows NT 3.5. Hardware systems must have at least a 386-class processor with 4 MB of RAM (486 with 8 MB recommended), Plug and Play support, and icon labels on ports.

Implications/Opinions: Microsoft is using the Chicago-compatible logo to force software developers to move quickly to Chicago, OLE 2.0, and Windows NT. Hardware vendors are being pushed to stop selling 1 MB and 2 MB systems and to quickly adopt Plug and Play (which delivers, at best, a subset of what the Macintosh platform has had for a decade). Since software developers will have to show beta versions of their applications to Microsoft to get the Chicago logo, Microsoft could benefit from advance knowledge of competing products' features. Microsoft could also benefit when deciding how quickly to grant approval to applications from direct competitors. On the hardware side, Microsoft could get increasing control of the PC standard.

We're not sure that Microsoft's logo push will succeed. Some hardware and software vendors may resist the requirements and may even create their own logos. By making the requirements high and not doing anything to defuse

competitive issues for applications, Microsoft is putting the credibility of its logo at risk. This effort demonstrates how aggressive Microsoft is in pushing its own agenda on the rest of the industry.

OpenDoc Goes Alpha for Windows and OS/2

WordPerfect Corporation and IBM have distributed alpha versions of the OpenDoc software development kits (SDKs) for Windows and OS/2. The WordPerfect Windows SDK is expected to go to 5,000 developers and will feature compatibility with OLE objects and applications. The IBM OS/2 SDK is shipping on IBM's Developer Connection CD and will go to over 8,000 developers. Apple Computer, Inc., shipped the OpenDoc Alpha SDK for Macintosh in May at the Worldwide Developers Conference (WWDC) and will ship a beta version before the end of 1994.

Implications/Opinions: The OpenDoc Alpha SDKs are an important milestone because they demonstrate one of the key advantages of OpenDoc over OLE: cross-platform support. In addition, they provide code that developers can work with, striking a blow against Microsoft's portrayal of OpenDoc as "vaporware." OpenDoc is picking up momentum just as developers are experiencing problems in trying to implement OLE. In fact, someone reported on the Internet that one company's cross-development engineering team, using OLE 2.0, needed two weeks to reimplement an OpenDoc part that was created in three days.

Doubts About Processor-Independent NetWare

Hewlett-Packard's recent announcement that it is backing away from its support of Novell's Processor Independent NetWare (PIN) has caused some industry analysts to question the future of PIN. Analysts are also doubting the ability of the other PIN partners—Sun Microsystems (with its SPARC processor), DEC (Alpha processor), and Apple (PowerPC processor)—to generate sufficient volume to make PIN viable.

Implications/Opinions: HP's decision to focus on its Intel-based servers at the expense of PIN was driven by its recently announced strategic agreement with Intel to co-develop the next generation of processors, and by the current market success of HP's Intel-based NetServer products. HP's decision to back away from PIN becomes a problem for Apple only if it adversely affects Novell's internal commitment to PIN. On the positive side, Apple has now emerged as Novell's preferred (volume) PIN partner. Apple may be able to exploit this opportunity to gain a competitive advantage for its server products.

Dell Drops Retail

Dell has quietly withdrawn its computers from retail distribution, saying that it wants to focus on its core mail-order business.

Implications/Opinions: This is a significant reversal for Dell. The company had tremendous momentum when it first entered the retail channel, but its main differentiation from competitors has always been the service it provides through direct sales. In the retail channel, Dell was just a well-known name with aggressive prices. When Compaq, a better-known name, matched or beat Dell's prices, the game was over. Dell should be able to defend itself better in

direct sales, but it will be hard-pressed to return to rapid growth using a single channel.

Microsoft Selects “Truespeech” for Chicago

Microsoft announced that it will use the DSP Group’s Truespeech speech-compression technology in Chicago. Truespeech is claimed to be 5 to 15 times more efficient for speech compression than competing algorithms.

Implications/Opinions: This announcement establishes a de facto standard in the PC arena for speech compression, which is important in telephony applications. However, the announcement does not directly affect other speech-related issues such as speech recognition or speech synthesis, because they don’t use compression.

Microsoft’s “Visine” Strategy

Microsoft has formulated a marketing program called *Visine* to get the red out. The red in this case refers to Novell NetWare (which comes in a red box). The program includes both engineering and marketing efforts to replace NetWare 3.x installations with NT Advanced Servers before Novell’s customers upgrade to NetWare 4.1. On the engineering front, the next release of Windows NT, code-named *Daytona*, will include conversion tools to move data from NetWare 3.x servers to Windows NT. Microsoft has also begun sending NetWare customers letters suggesting that its NT Advanced Server is a better product than NetWare, and it has significantly discounted the price of Windows NT for these customers.

Implications/Opinions: Microsoft faces a very tough challenge in trying to unseat NetWare, which has a 66 percent market share of the local-area network market. However, aggressive programs like Visine have been effective for Microsoft and Intel in the past. Microsoft's share situation against Novell is similar to Apple's against DOS/Windows.

IBM Hosts Downsize via Objects

IBM has announced a new strategy to bring object-oriented computing to the mainframe environment. IBM is adapting C++/Set, System Object Model (SOM), Distributed SOM (DSOM), and OpenDoc to work with applications developed under the MVS and AS/400 operating systems. This strategy promises to help users make their existing mainframe applications work better in client-server environments, and to enable them to leverage the latest object-oriented development tools found in the PC environment.

Implications/Opinions: IBM's key motivation is to prevent (or at least reduce) "downsizing" from mainframes to PC-based client-server computing. IBM's use of OpenDoc strengthens its reputation as a cross-platform technology and gives both companies an argument they can use with IBM shops to use OpenDoc instead of OLE 2.0.

Apple Directions, Oct 94, news—MacApp, page 1

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News

The Future of MacApp: A Clarification

A recent Strategy Mosaic column covering Apple's strategy for development tools caused some concern about the future of MacApp. Here is a clarification, also posted on the Internet, from Ricardo Gonzalez, product marketing manager for application frameworks at Apple Computer, Inc.:

In the August 1994 *Apple Directions* issue, Gregg Williams from the *Apple Directions* staff wrote an article covering Apple's development tools strategy (“The Future of Development”). After a discussion of the features of future versions of MacApp, Williams says

I can't state this too clearly: MacApp is an interim solution that will not be supported in the long term. Apple's enhancements to MacApp are meant to give current MacApp users some "breathing space" in which to make the transition to a fully component-based implementation of the OpenDoc model.

It is important to clarify that MacApp is alive and has a future. As a matter of fact, it plays a strategic role in helping developers to bring OpenDoc functionality to their applications. The main objective of the MacApp strategy is to continue providing MacApp developers with a viable application framework to support the Power Macintosh platform, as well as to start the transition process to the OpenDoc component software architecture model in their applications.

As stated in Williams's article, the MacApp roadmap is as follows:

- MacApp 3.1 is for developing and compiling MacApp-based applications to either the 680x0 Macintosh or Power Macintosh platforms. Availability: today (E.T.O & Macintosh on RISC SDK).
- MacApp 3.5 includes support for OpenDoc containers, PowerTalk mailers, and scripting, as well as performance and memory usage optimization, bug fixes, and new documentation. Availability: Q2 Calendar 95 (E.T.O. 15, shipping in August 1994, includes a developer version of MacApp 3.5 that incorporates support for scripting).

Although MacApp 3.5 still creates monolithic applications, developers will be able to develop part editors using the OpenDoc Parts Framework or other OpenDoc-related tools and embed them into MacApp 3.5 applications to add

more functionality. With this functionality, MacApp 3.5 is key to extending the life of today's C++ MacApp source code until developers adopt the OpenDoc model completely.

At some point in the future, Apple expects to see most developers writing their code using the OpenDoc architecture instead of the current Macintosh application architecture. At that point, since few developers will need MacApp, it will probably make sense for Apple to stop supporting it. However, it could take several years before we reach that point. Until then, we will continue to support MacApp, enhancing it when necessary and providing bug fixes. Future plans for MacApp will be defined depending on how fast the OpenDoc model is adopted by developers in the marketplace and the impact/requirements of MacApp-based applications vis-à-vis new system software releases from Apple.

To provide developers with a robust application framework to develop commercial-quality OpenDoc parts for both Macintosh and Windows, Apple is developing the OpenDoc Parts Framework.

- The OpenDoc Parts Framework is an object-oriented framework for C++ that makes the development of OpenDoc part editors (Macintosh and Windows) faster and easier. It provides full OpenDoc support, it's modular (classes for new technologies can be added the base framework functionality)—and last but not least, it's cross-platform, providing developers with an application framework that can be used as the primary environment to develop OpenDoc part editors for both the Macintosh and Windows platforms. Availability: 1995.

Apple Directions, Oct 94, news—MacApp, page 4

In summary, if you have existing MacApp-based code and need support for major system software enhancements like AppleScript, AOCE (PowerTalk), and OpenDoc container support, Apple's recommendation is to continue using MacApp now and the OpenDoc Parts Framework for future development.

Ricardo Gonzalez

Product Marketing Manager

Application Frameworks

Apple Computer

Apple Directions, Oct 94, news—Pascal, Williams, page 1

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News

Pascal Options for Power Macintosh

By Jordan Mattson, Business Development Manager, Apple Tools Partners

At this year’s Worldwide Developers Conference, Apple Computer, Inc. outlined its developer tools strategy. The primary goal of this strategy is to create “a world of choice” in which developers would have a breadth and depth of developer tools choices.

To create this world of choice, Apple is working closely with a number of developer tools partners to assist them in creating, distributing, and marketing their products. The first fruit of this strategy on the Power Macintosh was Metrowerks’ CodeWarrior. Recently this strategy has borne additional fruit with

Apple Directions, Oct 94, news—Pascal, Williams, page 2

the introduction of Metrowerks' Pascal compiler for the Power Macintosh and Language Systems' Object Pascal compiler for the Power Macintosh.

Need for Pascal

When the Macintosh was first introduced in 1984, the lingua franca of Macintosh development was Pascal. By the time Apple began work on the Power Macintosh, the world of development had undergone a sea change and had become dominated by C and C++. While this change diminished the need for Pascal development tools for new Macintosh—and Power Macintosh—development, there remained a substantial base of existing Pascal code for the Macintosh. To facilitate the transition of this Pascal code to the Power Macintosh, Apple worked with a number of tools partners (third-party developers) to formulate several migration options.

Pascal Developer Options

Developers with Pascal source code have two options in making the transition to the Power Macintosh. They can either translate their Pascal or Object Pascal code to C or C++, or they can recompile their code, using either Metrowerks' Pascal compiler for Power Macintosh (included as part of Metrowerks' CodeWarrior Gold product) or Language Systems' LS Object Pascal compiler for Power Macintosh.

p2c From Sierra Software Innovations

Apple Directions, Oct 94, news—Pascal, Williams, page 3

The p2c program, a translator from Sierra Software Innovations, is essentially a compiler that takes either Pascal or Object Pascal source code as input and emits C or C++ code as output.

While p2c does have some limitations on the structures it can translate (contact Sierra Software Innovations for details) it has been used successfully by a number of developers to move Pascal and Object Pascal source bases to C or C++ and then to the Power Macintosh. If you have decided to move your Pascal or Object Pascal source base to C or C++, then it is to your advantage to check out p2c.

Metrowerks Pascal for Power Macintosh

As part of its CW4 CodeWarrior CD—shipped in August—Metrowerks delivered a development release of their Pascal compiler for the Power Macintosh.

Metrowerks Pascal uses Apple's Universal Pascal Headers. An alpha release of these headers is included on the CW4 CodeWarrior CD. Metrowerks plans to ship a "net-borne" patch to Metrowerks Pascal in mid-September, which will update the compiler with bug fixes that have been implemented since the pressing of the CW4 CodeWarrior CD. If you have procedural Pascal source code to port to the Power Macintosh, it is worth checking out Metrowerks Pascal.

LS Object Pascal for Power Macintosh

In August, Language Systems Corporation shipped a beta release of LS Object Pascal. LS Object Pascal is a full implementation of the Object Pascal language for the Power Macintosh.

LS Object Pascal ships on a CD-ROM that includes 680x0 and PowerPC versions of LS Object Pascal, Apple's Universal Pascal Headers, and source-level debuggers and MPW tools for creating "native" applications. In addition, a custom version of AppMaker (from Bowers Development) is included. The beta version of LS Object Pascal includes free monthly updates until the final release ships (later this year).

If you have procedural Pascal or Object Pascal source code that you need to port to the Power Macintosh, you should take a look at LS Object Pascal.

Contact Information

For information on LS Object Pascal, contact Language Systems Corporation, 100 Carpenter Drive, Sterling, VA 20164; phone: 703-478-0181; AppleLink: LANGSYS.

For information on Metrowerks Pascal, contact Metrowerks, 8920 Business Park Drive, Suite 315, Austin, TX 78759; phone: 512-346-1935, extension 3170; AppleLink: SALEWERKS ; Internet: sales@metrowerks.com.

For information on p2c, contact Sierra Software Innovations, 923 Tahoe Blvd., Suite 102, Incline Village, NV 89451; phone: 702-832-7753; AppleLink: D2086.

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Apple Announces System 7.5

Apple Computer, Inc. recently announced the introduction of Mac OS, version 7.5. System 7.5, as it is commonly known, includes new capabilities that streamline how people work on a computer (both individually and with others), simplify working with MS-DOS and Windows disks and files, and improve printing and graphics.

System 7.5 boasts over 60 new technologies, features, and enhancements. Among the most important are QuickDraw GX, Apple Guide, Macintosh Drag and Drop, PowerTalk, QuickTime 2.0, Scriptable Finder, Telephone Manager, Sound Manager 3.0, and the PowerBook Control Strip. Apple has announced that over 200 applications already take advantage of one or more System 7.5 features, with more on the way. (For details on System 7.5 developer adoption,

see “System 7.5 + Power Macintosh = Customer Satisfaction,” this month’s Strategy Mosaic, in another file in the same folder as this file.) Strong support for System 7.5 features follows the largest distribution of beta software in Apple’s history; approximately 20,000 developers received early versions of Macintosh System 7.5 so they could start updating applications to take advantage of the new operating system’s capabilities.

Extras on CD Version

Customers who purchase the CD-ROM version of Macintosh System 7.5 will receive additional third-party software that takes advantage of specific Macintosh System 7.5 capabilities. Two printing extensions—one that lets users add watermarks to printer output and one that lets users print multiple pages (in a reduced format) on a single page—will be available from Peirce Software, Inc. Also included are several PowerTalk personal gateways, which provide transparent access from the universal mailbox to other mail and messaging services. Users can send messages using the AppleMail application or third-party applications that support the PowerTalk mail capability.

Software from STF Technologies, Inc. will let users send and receive faxes, and software from Ex Machina, Inc. will let users send pager messages. In addition, the CD-ROM will contain sixty-day trial versions of software from StarNine Technologies, Inc. that will let customers exchange e-mail messages with users of QuickMail and the Internet.

Pricing and Availability

In the United States, Macintosh System 7.5 is available through software resellers and Apple authorized resellers. Macintosh System 7.5 will be available as a single-user product, distributed on either 1.4MB floppy disks or on a CD-ROM, with a suggested retail price of \$134.99 for either configuration. (All prices listed here are valid for the United States market only; pricing and availability may vary outside the U.S.) Macintosh System 7.5 is also expected to be available as a multipack for groups of 10, 30, and 100 users. In the United States, the suggested retail prices for these three multipacks will be \$817, \$2,450 and \$7,772, respectively.

United States customers who purchase the System 7.1 Personal Upgrade Kit, the System 7.1 Upgrade Kit with Apple Font Pack, or the System 7 Pro Personal Upgrade Kit between June 2, 1994 and October 2, 1994, can upgrade to either of the single-user configurations of Macintosh System 7.5. Customers who purchase the System 7.1 Multipack or the System 7 Pro Multipack between June 2, 1994 and October 2, 1994, can upgrade to the ten-user configuration of Macintosh System 7.5. The upgrade prices for System 7.1 customers will be \$39.99 (single-user) and \$339.99 (ten-user), plus tax and a per-copy shipping and handling fee. The upgrade price for customers of the single-user System 7 Pro product is \$19.99, plus tax and a per-copy shipping and handling fee. Customers of the ten-user version of System 7 Pro can upgrade to the ten-user version of Macintosh System 7.5 for just the shipping and handling fee.

System 7.5 will be available in the United States through the Apple Volume License Program, a cost-effective way for customers in the United States to acquire software licenses, support, and maintenance in volume for selected Apple products. Under the program, United States customers may also acquire

volume licenses for site locations outside the United States. This volume licensing will be available through authorized Apple resellers, including direct software resellers, Apple dealers and Apple Value Added Resellers (VARs). Education and local-government customers will be able to purchase volume licenses for Macintosh System 7.5 directly from Apple. Volume licensing programs are also available in other countries.

Availability of Macintosh System 7.5 outside the United States varies by country. Localized versions are expected to be available beginning in September 1994. For information about the availability and price of Macintosh System 7.5 in a specific country, developers and customers should contact the Apple office in that country.

System Requirements

Macintosh System 7.5 is compatible with virtually all Macintosh applications software currently available and will run on Motorola 680x0-based Macintosh and PowerBook computers, as well as Power Macintosh computers—with a hard disk and appropriate memory. (To run QuickDraw GX and QuickTime 2.0, the Macintosh and PowerBook computers must have at least a 68020 processor.)

For a 680x0-based Macintosh computer, Apple recommends a minimum of four megabytes of memory to run the core elements of Macintosh System 7.5 with most applications and a minimum of eight megabytes of memory to use PowerTalk and QuickDraw GX.

When Macintosh System 7.5 is installed on a Power Macintosh, Apple recommends a minimum of eight megabytes of memory for the core elements and 16 megabytes to use PowerTalk and QuickDraw GX. Some of the third-party software products available on the CD-ROM have additional system requirements for use. Information about these requirements is provided with the product.

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News

Your Choice: MPW Pro or E.T.O.

MPW Pro is a new bundling of the core tools you need—development environment, compilers, debuggers, tools, and documentation—to develop products for either the 680x0 Macintosh or Power Macintosh platforms. As part of Apple’s effort to make development tools as affordable as possible, MPW Pro, priced at \$495 in the United States, is considerably less expensive than the old prices of its individual components.

In addition, the first release of MPW Pro includes the first “native” Power Macintosh C/C++ compiler (which runs up to three times faster than the previous 680x0 version) and a new version of the Power Macintosh Debugger,

the first to allow you to run and debug a Power Macintosh application on the same computer.

Two Development Solutions

Apple provides two key products for application developers who need a general-purpose C/C++ development environment for creating, debugging, and testing Macintosh applications. The products, MPW Pro and E.T.O., can both be used to create applications that run on 680x0-based or PowerPC processor-based Macintosh systems.

MPW Pro and E.T.O. are closely related, since all of the MPW Pro software is included on the E.T.O. disc. But E.T.O. also includes the popular Symantec C++ for Macintosh 680x0 development environment and a complete set of printed documentation. Furthermore, E.T.O. updates are automatically sent to subscribers during the subscription year, whereas MPW Pro customers must buy updates separately.

MPW Pro

Here are the main components of MPW Pro:

- MPW Development Environment (including the MPW Shell and the MPW Tool Suite)
- MPW compilers—C, C++, Assembler (for both 680x0 and PowerPC development)

- MacApp application framework (for both 680x0 and PowerPC development)
- Power Macintosh Debugger and 680x0 Macintosh Debugger
- ResEdit resource editor
- Virtual User testing tool
- electronic documentation for tools

Pre-release versions of many tools are also included.

MPW Pro is a CD that comes with three printed manuals that introduce you to MPW and to the MacApp framework: *Introduction to MPW*, *MacApp Tutorial*, and the MacApp release notes. Electronic versions of these manuals and of most of the major components of MPW Pro are included on the CD for easy reference.

MPW Pro is available from APDA for \$495 (#R0505LL/C). You can order printed manuals separately (#R0585LL/A, \$299). All prices listed here are for the United States market only and may be different for international markets. (See page XX for APDA ordering information.)

E.T.O.: Essentials • Tools • Objects

E.T.O. is a deluxe product designed specially for professional Macintosh developers. It includes the MPW Pro software, described above. It also includes the popular Symantec C++ for Macintosh environment, which features fast turnaround and integrated project management for 680x0 development. By providing both environments, you have instant access to the one that best meets your needs.

A complete set of over 20 printed reference manuals comes with the E.T.O. disc. Electronic versions of most components are also included.

E.T.O. is sold by subscription, and new releases with tool updates are automatically sent to you every four months (three issues per year). As a result, your tools are kept up-to-date all year long, so you don't have to worry about whether your set of tools is current.

E.T.O. (#M0895LL/C) is available from APDA for \$1,095.

Which Is Right for You?

E.T.O. costs more than MPW Pro because E.T.O. provides more. E.T.O. includes all the MPW Pro software but it also includes the Symantec C++ for Macintosh software, which APDA normally sells separately for \$375. It also includes the suite of printed manuals that MPW Pro customers must buy separately for \$299. Finally, E.T.O. is sold as a subscription, and you will receive the next two releases automatically. (MPW Pro customers must buy these separately for \$195 each.)

Over a two-year period, the price of E.T.O. and its updates is virtually the same as the price of MPW Pro and its updates. But remember that as an E.T.O. customer, you also receive the Symantec C++ software and the printed manuals.

E.T.O. is an excellent choice if you are a professional developer who will use both the MPW and Symantec C++ for Macintosh environments and if you value

the convenience of receiving periodic updates automatically. Plus, over the long term, E.T.O. is more cost-effective even if you don't include the value of Symanec C++/Mac.

MPW Pro is a good choice if you want to obtain the MPW development environment for the least initial cash outlay—if you're a hobbyist or student, for example. These types of customers typically don't need to track new releases as closely as professionals and so are less inclined to prepay for updates they may not need or want.

Upgrades

APDA will support the following upgrades:

- MPW Pro purchasers can get a \$300 credit toward the purchase of E.T.O.
- Purchasers of the Macintosh on RISC Software Development Kit (SDK) are treated as if they were MPW Pro customers. This means they can update to the latest version of MPW Pro for \$195, and they can get a \$300 credit toward the purchase of E.T.O.
- Current MPW customers can upgrade to MPW Pro for \$295 or take a \$300 credit toward an E.T.O. subscription.

Apple Directions, Oct 94, news-NewtonMail, Williams, page 1

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Apple Announces NewtonMail Upgrade

The Apple Online Services (AOS) division of Apple Computer, Inc., has announced the release of NewtonMail Modules 1.0, which give NewtonMail customers the tools for formulating, sending, and receiving messages more easily than ever before.

The modules enable existing NewtonMail users to copy text from NewtonMail messages to the notepad, easily reply to and forward mail messages, and integrate printing and fax operations from within the MessagePad in-box. In addition, new functions allow users to send mail to many addresses, send multiple messages to one or more users, and access NewtonMail by means of Tymnet/MCI.

In June, Apple launched the eWorld family of online services, which

includes NewtonMail and eWorld for Macintosh. NewtonMail is the mail component of eWorld for the Newton MessagePad; it is built into every MessagePad, as well as every Newton device from third-party licensees. A customer's eWorld address and password remain the same regardless of the eWorld service used. The same approach is planned for subsequent versions, including eWorld for Windows, thus providing true cross-platform integration.

MessagePad users can now take advantage of eWorld's powerful mail services, exchanging text and ink messages, as well as items such as Notepad messages (including graphics), business cards, and calendar appointments with other Newton users. Like eWorld for Macintosh, NewtonMail allows subscribers to exchange text messages with Internet users, as well as subscribers to other services accessible through the Internet.

Through Apple's upgrade program, the modules will be offered free of charge to all NewtonMail users. You can find the modules on eWorld and on AppleLink, or by sending an upgrade request to the following addresses. On eWorld, use the following address: Mail. On Internet, use the address MAIL@eWorld.com. You can also find the modules on AppleLink, using the path Newton:World of Newton:Newton Software Updates. In eWorld, use the shortcut keyword Newton, then follow the path Software Exchange:Official Apple Software.

Apple Directions, Oct 94, news—online, Williams, page 1

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News

Apple USA Expands Online Customer Support

Increasing the accessibility of product support information for all of its customers, the Apple USA division of Apple Computer, Inc., has expanded its current offerings to bring Apple support information to a range of online services. Last June, Apple announced that it is publishing comprehensive support information in eWorld for Macintosh, Apple’s new electronic interactive online service. As of late July, Apple has begun offering support information on the Internet and on the CompuServe online service. Apple also publishes customer support information on AppleLink (available through the path AppleLink Services:Support).

Apple’s strategy for online customer support is designed to offer more

support choices, as well as enhanced accessibility 7 days a week, 24 hours a day. It is designed so that customers can get quick answers to common technical questions, access technical and support data libraries, keep up-to-date on the newest product announcements from Apple, and easily access software and utility updates.

Apple is currently publishing the most comprehensive online collection of product information, software updates, and other resources directly from Apple in eWorld for Macintosh. The eWorld Apple Customer Center is the best place for Apple customers to get the most out of their Macintosh, Newton, or Workgroup Server; it features exclusive support information provided by the company, with more planned for the near future. Subscribers to eWorld can also discuss issues and exchange opinions with other Apple users and participate in dynamic live conferences with guests from Apple.

The Apple Tech Info Library—containing over 900 articles on Apple products, past and present—will also be available online, along with other technical information, including comprehensive answers to customers' frequently asked questions.

Apple is providing the support information online in these four categories:

- Company Information—providing product and company news, as well as ordering information
- Support Program Information—providing a directory of where to find

answers online and through other sources

- Product Information—providing technical product sheets, commonly asked questions and answers, and tips and tricks on using Apple products
- Software Library—providing system updates, drivers, and utilities

The Internet, a global internetwork connecting more than 20 million users, and CompuServe, an interactive online computing support service, are the first to carry this key Apple support information outside AppleLink. To access Apple's information through the Internet, Macintosh users need to use TurboGopher software or a terminal-emulation application. The path is Home Gopher Server:Computer Information:Apple Tech Info Library.

To access Apple's information through CompuServe, CompuServe customers can simply type "Go Apple" at any prompt to access the list of Apple services. eWorld customers can find Apple's information using the path Computer Center:Apple Customer Center:Quick Answers.

Apple Directions, Oct 94, news—gateway, page 1

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News from Apple Business Systems

New Apple IP Gateway Simplifies Internet Access for ARA Customers

In August, Apple Computer, Inc., announced the Apple IP Gateway, a new software server product for AppleTalk users that, in combination with Apple Remote Access (ARA) products and MacTCP, enables easy-to-use dial-up access to IP-based services such as the Internet. The new product, part of Apple’s overall strategy to provide standards-based networking solutions, was shown at the Macworld Expo in Boston.

The Apple IP Gateway builds on Apple’s recent announcement to include MacTCP in its System 7.5 operating system. MacTCP client software allows

developer's applications and Macintosh computers on IP networks to communicate using TCP/IP protocols. With the Apple IP Gateway, the MacTCP client can now be used on Macintosh computers connected to an AppleTalk network. The Gateway acts as a translator between AppleTalk and TCP/IP network protocols, allowing Macintosh computers on AppleTalk networks to access IP services as if they were on the IP network.

“This extends Apple's LAN-based services beyond AppleTalk networks to give customers access to a broader range of network services,” said Doug McLean, marketing manager for Apple Business Systems. “Now all AppleTalk users can enjoy access to the services residing on UNIX hosts and all TCP/IP networks, including the vast resources of the Internet.”

Multiprotocol Connectivity

Together with MacTCP, the IP Gateway enables multiprotocol connectivity. While accessing TCP/IP services, using tools such as Telnet, File Transfer Protocol (FTP), Gopher, World-Wide Web, and Wide-Area Information Servers (WAIS), customers continue to have full access to their existing AppleTalk services. Customers can, for instance, simultaneously connect to an AppleShare file server through AppleTalk and a UNIX host through FTP. Developers can now easily incorporate both AppleTalk and TCP/IP services into their applications with Apple Remote Access.

The Apple IP Gateway runs in the background of two kinds of systems: Macintosh computers that use System 7 or later versions of system software, including Power Macintosh systems; or Macintosh OS-based Workgroup

Servers from Apple, which are connected to an IP network through Ethernet. The IP Gateway is especially powerful when run concurrently with the Apple Internet Router or Apple Remote Access Server products. When run with the Apple Internet Router, the Apple IP Gateway provides IP access to any AppleTalk network connected to the router. When run with the Apple Remote Access Personal or MultiPort Server, the Apple IP Gateway provides IP access to any remote Macintosh computer, including a PowerBook computer, that dials into the server.

Additionally, the Apple IP Gateway allows network administrators to manage user access so that only users on specific AppleTalk networks can get access to the IP services. This gives administrators tight control and allows them to easily track use of these services. The gateway also allows administrators to monitor network activity and errors, which keeps them up-to-date on network status. In addition, the IP Gateway has built-in support for the Simple Network Management Protocol (SNMP), so it can be easily monitored by any SNMP-based management station.

Availability and Pricing

The Apple IP Gateway is expected to be available through Apple-authorized resellers in the United States by September 15, 1994. The Apple IP Gateway is a stand-alone software package and will carry an Apple price of \$249 in the United States. Current customers with the Apple Remote Access Personal Server 2.0.1 or MultiPort Server 2.0.1 or the Apple Internet Router 3.0.1 will be able to purchase the IP Gateway in the United States at the reduced price of \$69 with proof of purchase. Price and availability may vary outside the United

Apple Directions, Oct 94, news—gateway, page 4

States. For more information on the Apple IP Gateway, call the Apple Network Information Line at 408-862-3385.

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CD Highlights

System Software Edition, October 1994

This month's disc features the U.S. version of System 7.5, including QuickDraw GX, PowerTalk 1.1, QuickTime 2.0, PlainTalk 1.3, eWorld, and much, much more. Also, the CD Organizational Tweak o' the Month can be found within the "SW Index by Country" folder, at the top level of the disc; aliases to all of the software on the disc relating to a particular country can be found within that country's folder.

In addition to a fixed version of the Macintosh LC/Macintosh Quadra 630 developer note and some new technical notes, here are this month's new and revised packages.

Developer Univ. Course Info

This package provides information on the types, cost, and location of training available 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 current course descriptions, class dates and locations, and information on where to get self-paced materials.

LaserWriter 8

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

Included in this folder are localized versions of the LaserWriter 8.1.1 printer driver. Our purpose is to make readily available the localized versions of the LaserWriter driver for companies who have licensed it for use with their products.

MoreFiles 1.2.1

MoreFiles is a collection of high-level routines written over the last couple of years to answer File Manager questions sent by developers to Apple Developer Technical Support (DTS). The routines have been tested (but not stress-tested), documented, and code-reviewed by DTS. This release adds new routines and fixes several bugs.

MoreFiles provides high-level and FSSpec-style routines for parameter-block-only File Manager calls, useful utility routines that perform many common File Manager-related operations, a robust file-copy routine, and a recursive directory-copy routine. See the file !MoreFiles Read Me for a description of fixes and improvements in version 1.2.1.

Other Apple Software

This folder contains supplementary U.S. and worldwide Macintosh system software, including At Ease, At Ease for Workgroups, CD-ROM Setup, European Video Installer, Express Modem, Network Launch Fix Extension, OneScanner, and PowerCD.

QTime

This folder contains QuickTime sample code from John Wang at Apple DTS. Everything was compiled using Symantec's Think C 6.01 along with the new Universal Headers from Apple Computer, Inc. This code has not been fully

tested, and complete compatibility is not guaranteed, so please do your own testing if you incorporate any of it into your code.

StandardFileIcons

StandardFileIcons is a control panel that allows you to modify the behavior of PACK 3, the Standard File package. Starting with System Update 3.0, PACK 3 began using icons from the Desktop file when displaying files in its lists. This can be slow, especially on a connection such as Apple Remote Access and a modem. The StandardFileIcons control panel lets you disable this feature and return to the previous behavior of PACK 3. Source code in C that compiles for MPW, Symantec 7.0.3, and Metrowerks DR/4 is included.

Next Month

A new subject-based organization (à la September's Reference Library edition), more cool Dylan stuff, some early PCI information, and things beyond human imagination. Well, *my* imagination, anyway.

Alex Doshier

Developer CD Leader

Apple Directions, Oct 94, Williams, page 1

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Human Interface

Sound + Vision

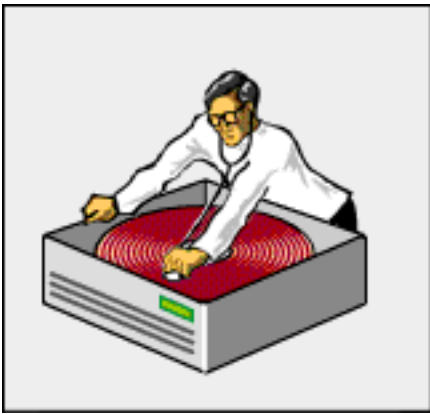
Part 2: Moving Objects and Motion Pictures

By Peter Bickford

Last time out, I talked about how to use sound effectively in your program's interface. I also disclosed secret evidence in the O. J. Simpson case that has shocked the media ever since. (OK, not really, but I'm willing to try any cheap stunt to make you go back and read the first half of this article, which covered sound and the user interface.) This month, I'll fill in the other half of the David Bowie title, giving tips on how to use animation and video to help keep your users informed, engrossed, and educated.

Animation Zen

As typically used on computers, animations and video are not just two ends of the same spectrum; they're really two different animals. Animations abstract the real world, while video captures it literally. Each one has its strengths and weaknesses, and by knowing both, you can use each to its best effect.



Like icons and comics (see “Comics, Icons, and Interface” in the December 1993 issue of *Apple Directions*), animations draw much of their power from the very fact that they're not realistic. They're really visual metaphors for the actual programs, data, and hardware of our computer's world. For instance, when you see Norton Disk Utilities' “Doctor” putting his stethoscope up to your hard drive to check for bad sectors, nobody (I hope!) believes that there's a little physician inside your computer asking it to lean over and cough. Instead, the animator has reduced these objects down to their basic elements, giving you a better chance to grasp the important aspects of what's going on than if you were observing a video of the real thing. Simply by showing the stereotypical elements “doctor,” “stethoscope,” and “disk drive,” the program gives users the

message that a knowledgeable professional is somehow checking out their disk drive (and that everything is in good hands).

The ability of animations to communicate meaning without getting lost in extraneous detail makes them particularly useful for showing status information. Basic examples of this function include the watches, beach balls, and “running men” that various programs use to say, “The computer is still alive and is working ever so hard on your task.” In many ways, this is the most important message you can give a user.

You can use animations not only to show what is happening, but also to show how far along the process has advanced. One brilliant example I saw involved a desktop fax icon, over which the user could drag a document ready to be sent. The fax icon’s “handset” would then lift to dial the number (which users would hear on their fax modem’s internal speaker); once the transmission was in progress, the user could watch the document slowly feed through the fax machine.

Better Than the Real World?

An interesting thing about animations is that professional animators don’t make their characters move in accordance with physical principles—they do it according to what “looks right.” There’s a whole bag of tricks they use in this regard, including anticipation, slow-in and slow-out (defined below), movement along curves, “squooch and stretch,” and more. Although some of these principles reflect the way objects move in the real world, the majority are

concerned with making sure that the viewer understands the purpose behind the action.

For example, we all know that the cartoon character Speedy Gonzalez is fast, but simply showing a mouse moving at 30 miles per hour doesn't give the viewer a real feeling of speed. Speedy appears to move more quickly if you (a) let the viewer see that he's preparing to run by having him jump up and down a few times shouting "Arriba! Arriba!" (b) start him off slowly (slow-in) for the first few steps, showing his legs spinning around his body like a wheel, (c) virtually teleport him to his destination, leaving a cloud of dust behind him, then (d) have him put on the brakes when he reaches his mouse hole, kicking up more dust (slow-out). None of this has anything to do with way things work in the reality, but for the purposes of communicating basic ideas like "speed," cartoons can actually be more effective than images from the real world.

Telling Tales With Video

As opposed to animations, which work best in the realm of the abstract and conceptual, nothing can touch film and video for capturing a sense of reality and visual intensity. While animation is probably a better medium for discussing the advantages of B*trees versus heaps, video is perfect if you want to make the user experience something from another time or another place. In other words, video is perfect for telling stories.

Having never personally recorded anything on video more interesting than user-test subjects uttering a string of unmentionables before asking, "The camera's not on, is it?" I decided to call in the pros for help on this section of the

article. After several calls to Atlanta, I found myself speaking to Brian Nelson at CNN. I figured that, as producer/correspondent for CNN's Future Watch segment, he was the perfect source for tips on how multimedia developers could use video to get their stories across in the most effective way.

Storytelling 101

Nelson's advice for video storytellers was to remember the basics: "Tell 'em what you're *going* to tell 'em; tell 'em; then tell 'em what you *told* 'em." This is the same advice that's been given to speech writers and essayists for generations. Whether you're reporting on the ruins of Pompeii or the mating habits of the praying mantis, your goal is to inform the viewer while giving them as little chance as possible to get lost or lose interest.

Telling 'em what you're going to tell 'em: Lead with the best that you have—the introduction to your story should also be where you use your best video clip. If your story is about the Rodney King beating, start with the infamous home videotape of that beating; if your story is the attempted coup in Russia, lead with Boris Yeltsin atop the tank. These types of scenes start your story on a high point, grab the viewer's interest, and provide a lot of information about what's going on. Even before the voice-over introduction, viewers of the King tape can tell that the story was violent and involved police. With their interest captured, you can now proceed to fill them in on the rest of the story.

An interesting point Nelson brought up was that these video clips become icons for the stories themselves. Even today, years later and after numerous trials and riots, it's the videotape of King's beating that seems to summarize it all. You can

take advantage of this effect by showing the original video full-screen, then shrinking it to a smaller “still” that is left on screen to help tie the rest of the story together. You might also allow users to later go back to this story by clicking on the video “still” from your story’s lead.

Telling 'em: As video producers move into the body of the story, they begin using what is referred to as “wallpaper video” to tie the pieces together. For instance, a crime story could contain various shots of court buildings, crowds, and police cars spliced in every few seconds to keep things moving while the narrator fills in the details of the story.

All of this is done to provide the viewer with new points of interest throughout the story. The guideline is that the images on screen should change for every paragraph or so of the story’s script. You might move to a close-up of a picture that had been on screen before, bring in other footage, or perhaps display a chart of related information in a window. The important thing to remember is to make it as easy as possible for the viewer to stay interested.

Telling 'em what you told 'em: This is where you bring in the “talking heads.” When you reach the end of your segment, it’s time to summarize the basic points or the importance of the story. At this point, newscasters typically show the “video icon” of the story in back of a live announcer who summarizes the story’s importance. In longer stories with multiple segments, this is also where you begin setting up the next segment (after the commercial break, of course).

Text, Hypertext, and Video

Nelson made the point that multimedia is really the translation of television to the computer screen. Multimedia can actually be better than regular television in that it can let users interact with it and choose their own paths through the content. On the other hand, that doesn't excuse the multimedia creator from having to develop real stories with beginnings, middles, and endings. The point of technologies like hypertext, Nelson said, is not for people to get lost in a maze of links. Instead, it should allow them to make brief detours to look up related information, then get right back on track.

Multimedia, in the sense Nelson uses it, is also much more than lots of text with some pictures and video thrown in. To get the full benefit of the various sounds, animations, graphics, and video segments (the *multi* in *multimedia*), you should keep the text to a minimum, using it primarily for such things as quotes and reference material. If your "multimedia" title involves scrolling through 18 screens of text to learn about the assault on Normandy, you should consider whether your users might not be better off reading a book.

At a conference two years ago, someone made the comment that computers seem to work as if designed for someone who is deaf, mute, has no feet, and has limited hand mobility. After many years, we're finally at the point where our hardware can communicate with us through gestures, sound, speech, and visuals. With a little ingenuity and a lot of hard work, we can bring these very human qualities to our software. I can't think of any better way to improve the so-called human interface.

Till next time,

Doc

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

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Internationalizing Your Software

by David Gleason

The world software market is changing quickly, and there are new and rapidly growing markets out there, especially in the Apple Pacific regions of Japan, the Far East and Latin America. If you choose to take advantage of the international language support that is included in the features of Macintosh system software, you can release your product in localized versions in many markets more easily than you may realize. In fact, the emergence of dynamic markets in countries such as Korea, China, Taiwan, Thailand, India, Mexico, and Brazil makes localized Macintosh applications a greater opportunity for developers than ever.

Apple Computer, Inc. has made the Macintosh computer the best platform on which you can write applications that are *internationalized*, meaning they can be properly localized in any language, in any country, with relative ease and simplicity. This article describes some of the features that Apple provides for internationalizing your products and offers ways for you to take advantage of them. It focuses largely on the markets of Japan and the Far East, because those countries have the most complex writing systems, which require the most underlying software support. Apple has done a great deal of work to support internationalization, so that you don't have to do as much to get your applications ready for these markets. And the recent release of QuickDraw GX provides a greater level of support for complex writing systems at the level of the font, opening new avenues of opportunity for developers to take advantage of.

This is not to say that localization is always easy; depending on the language and target country, and the nature of your application, there can be lots of issues to deal with. For starters, many languages have lots of characters. Those of us who are native English speakers are spoiled by the simplicity of a language that uses only 26 characters. Other European languages that use the Roman writing system, such as Swedish, French and German, require only a few additional characters. The standard Roman character set that supports the major Western European languages fits in a single byte (just 256 character positions). By contrast, some languages have thousands of characters that must be represented as discrete text forms that can be selected, edited, printed and sorted correctly.

Representation of non-Roman characters requires extensions to a system software character set. Languages such as Arabic, Hebrew, Hindi and Thai

require dozens of additional characters; the character sets for each of these languages can fit in a single single-byte character table. Japanese, Chinese and Korean have thousands of characters, so these require double-byte character sets. These languages also are based on different writing systems, so the ways characters are represented also vary. For example, some writing systems (such as Arabic or Hebrew) display text from right to left; in Japanese and Chinese, characters can be displayed vertically or horizontally.

Other complexities include the ways various cultures display numbers. In Japanese, the number 654,321 can be represented as: 6 tens 5 ten-thousands 4 thousands 3 hundreds 2 tens 1. Even languages that share the Roman writing system have variations in displaying decimals and thousands—in the United States, the format is 1,234.56, while in Switzerland the correct format is 1'234.56. There are issues of calendar formatting, text sorting, currency formatting, and more. For more information on these issues, see the Apple overview document *OV 20—Internationalization Checklist* (see For Further Reading, at the end of this file).

The point to remember, instead of becoming overwhelmed with these issues, is that Macintosh system software already provides a great deal of support for many languages and writing systems and other cultural conventions. You can take advantage of this support without having to know the language or all the cultural issues of a given market.

WorldScript and Language Kits

Apple has long supplied localized versions of the Macintosh system software (there are now 38 different localized versions). In 1992, Apple released WorldScript, a set of Macintosh system extensions for supporting non-Roman writing systems with both single-byte character sets (by means of WorldScript I), and double-byte character sets (by means of WorldScript II). A *script* is a set of software services and routines that support a particular language or group of languages. Scripts are accessed through the Script Manager, the Text Utilities, and other text-related managers of the Macintosh Toolbox (see Script Systems, Characters and Glyphs below for more details). WorldScript is an underlying set of services that developers can call in an application to provide the necessary text manipulation and other features, regardless of the character set, language or other peculiarities of that script. You can access WorldScript through a set of application programming interfaces (APIs) that are fully documented in *Inside Macintosh: Text*, published by Addison-Wesley.

Another feature of WorldScript is that it makes it possible for Apple to provide language kits for Japanese and Chinese. Language kits provide full double-byte support for Chinese and Japanese to customers around the world, not just in China and Japan. This means that users who speak Chinese don't have to go to China to get a Chinese system and a localized version of an application in order to work with Chinese characters on a Macintosh computer. If your application supports double-byte text manipulation, a Chinese speaker in London or Los Angeles can work with Chinese text and print high-quality output from your application.

The idea of entering all these expanding markets probably sounds great for someone with vast resources—but if you're a software developer with limited

resources what does it mean for you? We believe that you can't afford not to take advantage of expanding markets and rising consumer expectations for greater multilingual support. Consumers in many countries are now ready to buy computers and applications that allow them to work and print in their own languages. If you take advantage of the services that Apple provides, you can find a place for your product among these new markets, even with limited resources and at minimal cost.

Where to Begin

There are many non-technical issues to consider when preparing your product for entry into new markets. This article does not go into the issues of marketing and distribution; however, a good source for relevant articles is *The High-Tech Marketing Companion*, published by Addison-Wesley. Also see For Further Reading for other material on these issues.

The remainder of this article digs deeper into the issues involving internationalization, and points you towards information to help you begin preparing your product for entry into new markets. Over time, Apple will introduce new features of system software that will make internationalization easier still, so it also gives you some useful information on what to expect in the future. Apple has provided a lot of material on these subjects, and this article is intended as a road map to show you where to go for what you need.

Depending on the kind of application you have, there are some features to include in your product now, while other features can wait. Apple strongly suggests that you fully internationalize your product, which will allow the easiest, fastest possible localization for as many markets as possible. We

encourage you to think globally when you look to the future, and do the things that make your application ready for world-wide distribution. You will be glad you did.

Localization vs. Internationalization vs. World Ready

A clarification of terminology is in order, because the term localization is widely used with various meanings:

- *Localization* is the process of adapting the functionality, user interface, and on-line documentation of a software product to specific cultural preferences. Localization of a software product includes translation of text strings, modification of date, currency and number formats, and also cultural features, such as spelling (such as the use of the British *colour* instead of the American *color*) and modification of certain symbols (for example, eliminating images of people, which can be considered improper in some Islamic countries).
- *Internationalization* (also called *globalization*) is, by contrast, the preparation of a culturally neutral product that provides the technical underpinnings for script-specific, linguistic and regional variations. An internationalized product can work with any set of cultural preferences, including any language; you should be able to run an internationalized application on any Macintosh computer in any country in the world.
- *World ready* is a term used by Apple to define the state of a software program that is fully internationalized.

If your application is world ready, it can be localized for any market with a minimum of difficulty, without extensive (if any) re-writing of source code. You

want to avoid creating a separate localized version of your source code for each market; otherwise, you will need to provide regular updates of each separate version, and you will have to accommodate new releases of Macintosh system software. If your product is internationalized, localization becomes easier for each market—and you can enter new markets without a major overhaul of your product.

Keep in mind that straightforward localization assumes that your application obeys the rules of a “well-behaved” application—you must keep text and other elements in resources, not hard-code fonts in your source code, and so forth. In many cases, localization can be done by an outside agency that has no access to your source code; all necessary changes can be made in resources. Kerry Laidlaw, Manager of Localization Tools in International System Software Support, says, “Localization should be done without modifying source code—but it cannot be done properly without internationalization.”

In fact, there are many degrees of localization that your application can support. It’s up to you to decide how much support you want to implement, depending on such factors as the nature of your product, how much time you have allowed for the next release, how many resources you have available to work on the product, and so forth. The important thing to remember is that an internationalized application is one that is culturally neutral and able to handle any language, so it does not have to be re-engineered for any particular market. You may choose to implement different features for various markets, but the underlying programming can support many localized versions of the product.

Script Systems, Characters and Glyphs

As mentioned above, the world's writing systems are supported on the Macintosh computer through script systems, usually referred to as *scripts*. This support is provided through a series of system software components known collectively as the Macintosh script management system. The script management system performs many of the same functions for entering and displaying text as does a multilingual word processor, only it does so on a system level. You can have your application access these features, instead of writing these features into your product with thousands of lines of source code. The script management system uses routines from the Script Manager, QuickDraw, the Font Manager, Text Utilities, the Text Services Manager and other components of system software.

There are several categories of scripts that require different levels of system support. Scripts are collections of resources that provide for the representation of a particular writing system. Writing systems can differ in line direction; some write from left to right, others right to left. In several languages, the writing direction is from top to bottom. Also, some writing systems are contextual, or context-sensitive, which means a character may change form depending on its position relative to other characters.

Context-sensitive scripts emphasize the differences between a character and a glyph. A character is an abstract concept, such as "lowercase b" or "the number five." A glyph is the written, physical shape of a character. In context-sensitive languages, a character may change its shape, so there must be more than one glyph to represent that character. Even in English, such forms as ligatures change the way a character is represented; prior to QuickDraw GX, a ligature

such as Œ could only be represented in standard fonts (such as Times) by a special character accessed through a series of keystrokes (in this case, on a standard US keyboard, I typed Option-Shift-Q). With QuickDraw GX, ligatures can be recognized by the computer as two discrete characters (in this case, O and E), but they are displayed on the screen or printer as a single glyph. These features are important in contextual scripts (such as Arabic). Without QuickDraw GX, they are provided by the appropriate script; with QuickDraw GX, these features can be built into the font.

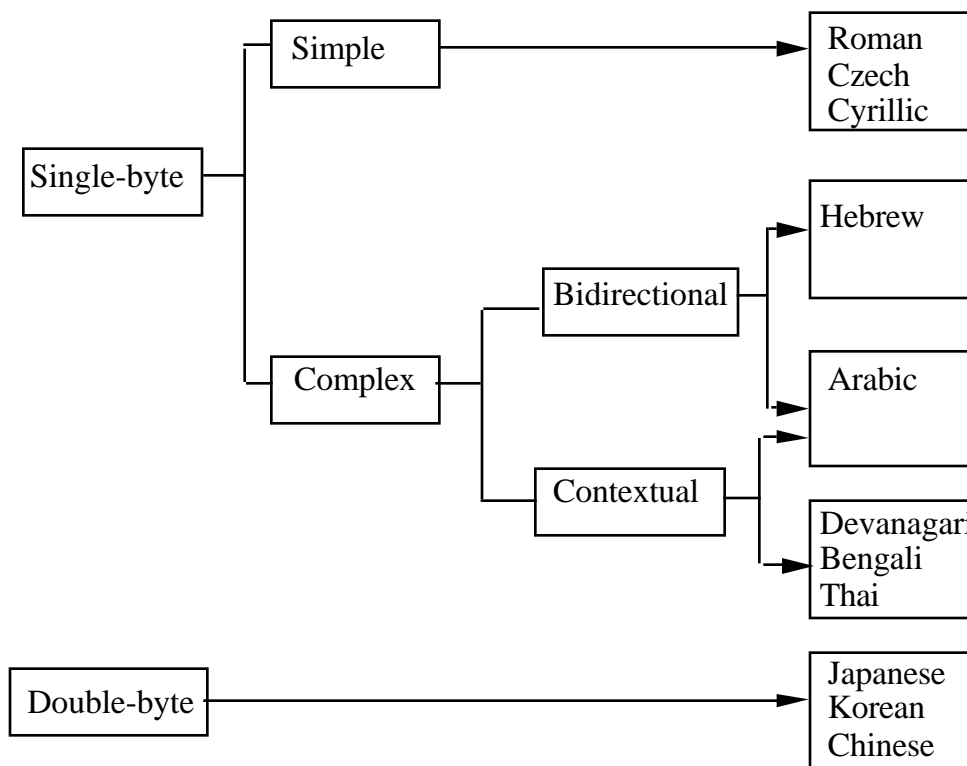
Knowledge of the following basic categories of scripts is useful— you may (and probably will) want to support them, if not right away then at some point in the future:

- *Simple scripts* have small character sets (fewer than 256 characters). Text appears on the screen and on the printed page in left-to-right lines and from top to bottom. Simple scripts include Roman, Cyrillic (for Russian, Ukrainian and Bulgarian), and East European modified Roman (for languages such as Hungarian, Czech and Romanian).
- *Double-byte scripts* have larger character sets (thousands of characters) and require no context information for glyph choice. They use various combinations of left-to-right or top-to-bottom lines and top-to-bottom or right-to-left pages. Double-byte scripts support the languages of Japan, China, Hong Kong, Taiwan, and Korea.
- *Context-sensitive scripts* have a character set of fewer than 256 characters but may have a larger glyph set, since there are potentially several

graphic representations for any given character. The mapping from a character to a glyph depends on the surrounding characters. Most languages that use a context-sensitive script have right-to-left lines and top-to-bottom pages (as in Arabic).

- *Bidirectional scripts* can have runs of left-to-right and right-to-left characters appearing simultaneously in a single line of text. These scripts have single-byte character sets and may or may not have context information for glyph choice. Bidirectional scripts are used for languages such as Hebrew that have both left-to-right and right-to-left text in a line, with top-to-bottom display.

(figure) Categories of single-byte and double-byte writing systems.



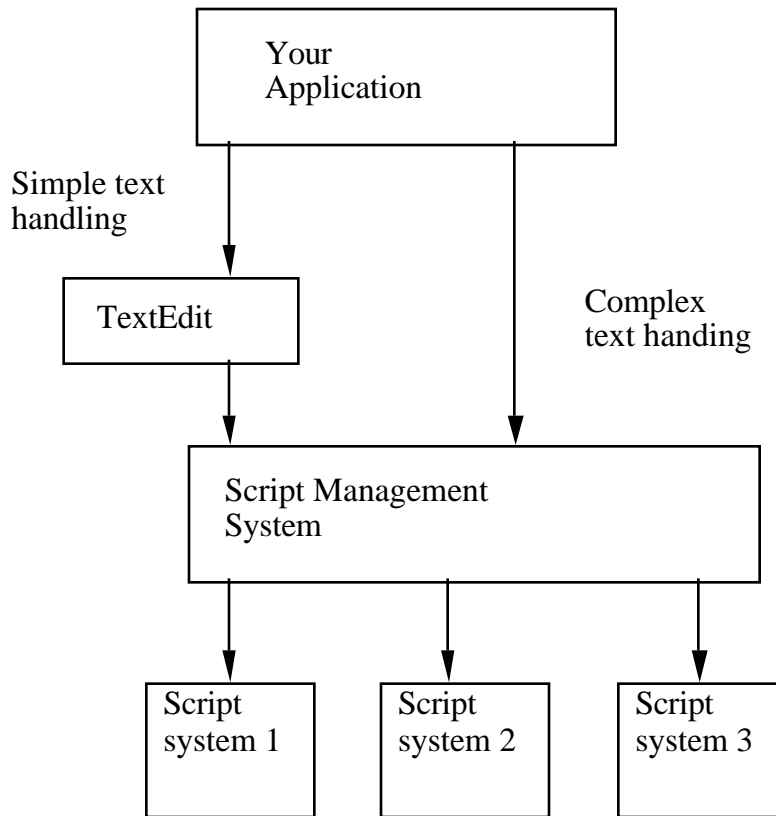
There are a few unusual scripts that fall into more than one of these categories; Arabic, for instance, is both context sensitive and bidirectional.

Relying on TextEdit

If your application—say, for example, a disk-compression utility—is relatively straightforward in handling text, you can choose to manage text (for dialog boxes and so forth) with TextEdit, and let the system resources take care of most localization issues for you (other than string translation). With the proper scripts installed, your application should be able to run on any Macintosh system—in Japanese, French, Russian, or Thai.

TextEdit relies on the Script Manager, QuickDraw, and the Text Utilities to handle text correctly, so your application does not need to call these routines directly. It is designed to work with multiple script systems, and even manages scripts that have different line directions—for example, TextEdit can handle a document that includes Arabic text which is written from right to left, as well as Russian text that is written from left to right.

(figure) Simple text handling and complex text handling.



Your application may have more sophisticated requirements that cannot be handled by TextEdit; for example, if you require support for large files, TextEdit has a limitation of 32 Kbytes, so you will need to provide this support yourself. The same is true of other system resources; for example, your application may require a lot of programming for correct numeric display (if that is the case, see the article "International Number Formatting," by Norbert Lindenberg, in *develop*, Issue 16, December, 1993). The point is that you must first decide what your program is supposed to do, then choose the best way to implement its features. If the services built into the Macintosh system software can do the job adequately, you can save yourself a lot of time and effort.

Input Methods

Chinese, Korean and Japanese all require an input method, of which there are two varieties: one method permits users to create complex characters in a separate window, and then insert the glyph into the application; the other (preferable) method permits users to create characters directly in an application using a technique called *inline input*, which is faster and more intuitive. To provide inline input, your application needs to call the Text Services Manager (TSM).

You do not need to support TSM for languages that do not use inline input; but do consider that you will want to support it for any of your users who might install the Japanese or Chinese language kit (or future language kits). In addition, supporting TSM now means you don't have to build support into your application later. And since supporting TSM requires Apple events, it makes sense to include Apple events support in your application.

Apple also provides a system extension called TSMTE, which greatly reduces the amount of work you need to do to implement the features of inline input, if you use TextEdit. See the New Technical Note "TE 27— Inline Input for TextEdit with TSMTE" (see For Further Reading to locate this document).

While Apple provides its own inline input methods, third-party developers have also created more extensive input systems for supporting Japanese, and this is an opportunity for developers for languages such as Chinese and Korean.

The end result of all this effort should be that your applications are *WorldScript* savvy. This means that:

- Users can enter and edit text in all languages for which scripts are installed on the system;
- The human interface (including dialog boxes and menus) displays text correctly for the installed scripts;
- The date and time format are displayed correctly for the installed scripts;
- The Text Services Manager is supported for all data entry and editing in the languages that require it.

You can choose to implement many features gradually over time; in fact, you may only wish to provide text manipulation in the first release, and then fully localize the product later. But if you want your application to work properly in a new market, it's best to make it *WorldScript* savvy from the start.

Creating a Source Base

Some markets have special requirements that only apply to that one market. For example, you may want to create an Arabic version of your product that supports contextual scripts, but that feature would (at this time) only be relevant in your Arabic version. How best to implement these kinds of features?

Kerry Laidlaw suggests that for many developers, it works best to begin by creating a *source base* for an application; the source base is the part of your code that makes use the Macintosh system services, so as the Macintosh

system is updated, the application keeps working. If you decide create a source base for your code, you can then think of localizing in two different ways:

- You can decide to *localize* your source base, which means you send out your application for localization without changing any source code. This way, you can let outside localizers change the resources (the text resources 'STR ' and 'STR#', the 'ditl' resource and others) for one particular country. You don't need to know the language or do the work in-house, and you don't change any source code.
- You can choose to *customize* your source base, which means you add features to the source code that do not exist in the source base. A good example of this is implementing vertical text display for Japanese.

Customization may require more intimate knowledge of the market and you may want to work with a localization house or distributor to complete this phase of the localization process, in order to get all the features correct.

It is important to be aware that users are very sensitive to localization that is performed incorrectly, and it can hurt your product's chances for success.

Regardless of how minimally or extensively you localize your product, you must allocate time and resources to test your application fully. It is important to use native speakers of a foreign language to test a localized application, as they can best identify mistakes and inconsistencies that might be technically correct, but would be jarring to a user in that market.

Should you make the decision to enter a number of markets, especially markets such as Japan, China and Thailand, you are best served using a full implementation of WorldScript. As Pat Kirkish, Product Marketing Manager for AppleSoft Pacific says, "If you have followed Apple's guidelines for WorldScript

and have localized your product for Japan, you have already done a significant amount of the work for other double-byte writing systems. Localizing your product for Korea and China becomes a small incremental investment.”

What Language Kits Can Do For You

A major benefit of WorldScript is that it makes Apple Language Kits possible. A Language Kit installs language resources, an input method, and fonts for a specific language. After installing the Japanese Language Kit on a French system, for example, a user can enter, edit, and print text in either French or Japanese. This provides essentially the same functionality as the localized system (in this case, KanjiTalk), but the Finder remains in English, and none of your Macintosh system’s existing features are lost.

Apple’s Language Kits greatly expand the market for localized applications. A developer who previously could only distribute Chinese-localized applications in Chinese-speaking countries can now make Chinese language available on applications in the United States, Japan, Australia, Canada, and other countries. Language kits also provide a new level of support for multinational organizations that do business in several countries and want to properly manage text in multilingual documents.

And Now There’s QuickDraw GX

With the release of System 7.5, Apple also released QuickDraw GX, a powerful extension to the Macintosh system software that provides many features of text

management, some of which were formerly available only through the Script Manager, and others which were not available at all. And QuickDraw GX assigns *every* character two bytes, so it can readily support double-byte writing systems.

There has been some confusion over the fact that, in many cases, the routines in QuickDraw GX perform functions that are the same as or similar to those of the Script Manager routines. It's important to realize that there is not a one-to-one mapping of Script Manager routines to QuickDraw GX; rather, the QuickDraw GX routines offer a set of services that replace some Script Manager routines. QuickDraw GX does replace QuickDraw and the Font Manager, but your application will still need to work with the Script Manager routines, depending on the kind of application you are writing and the degree of internationalization you want to provide.

It is also worth noting that QuickDraw GX does not require the Script Manager to use a font correctly. What a user's system does need to work with QuickDraw GX is the proper keyboard resources (for text input), and in the case of languages such as Japanese, Chinese or Korean, an input method. Beyond that, QuickDraw GX fonts have the information built into the fonts themselves to handle much of the glyph manipulation that used to be provided only by the Script Manager. QuickDraw GX also supports writing from top to bottom, which previously could only be supported with some extensive customized code.

A key difference of QuickDraw GX is the way in which it manages glyphs in fonts. Recall that glyphs can represent two or more characters, as in the case of a ligature; glyphs can also represent contextual forms of a character (such as

the various forms of characters in Arabic) that change according to location in a sentence. This means that glyphs do not always map exactly to individual characters. The way QuickDraw GX keeps track of the correct mapping for ligatures and contextual forms is through character mapping tables, called 'cmap' tables. These tables provide a mapping for each character code to a starting glyph in a given font. This starting glyph can then be transformed by QuickDraw GX into other glyphs, depending on the context.

QuickDraw GX allows you to manipulate text shapes, glyph shapes, and layout shapes. When supporting complex languages with QuickDraw GX, you are best served by relying on layout shapes for all text. This insures proper glyph handling and line formatting that is required for multilingual display and printing; for example, only the layout shape can substitute contextual forms in languages such as Arabic and Hindi. In addition, use of layout shapes will eliminate the need for a number of Script Manager routines. It also provides greater functionality in such areas as hit-testing (inserting a caret between characters in a ligature), highlighting, and measuring text.

For specifics on the comparison of Script Manager routines to QuickDraw GX routines, see the "Technical Memorandum: Guidelines for Multilingual Apps," version 1.1 (available on the WWDC Technology CD). Also take a look at Kris Newby's article "Rethinking Your Applications for QuickDraw GX Computers," *Apple Directions*, October, 1993.

If you can't make the change to support QuickDraw GX today, keep in mind that you will need to do so in the near future.

Moving Toward Unicode

Despite all the great features of the Macintosh system software, a major localization issue that Apple (and other computer manufacturers) has not fully addressed is that of multiple character encodings. Converting data from one computer platform to another is very difficult, even if you are working with English text; but if the text is in Japanese, Thai, or Arabic, it can be very difficult to do it with complete accuracy and consistency. With the growth of client-server applications and the expanding use of multiple platforms, there is a tremendous need today for a standardized character-encoding solution that every platform can use.

And that solution is on its way—it is Unicode, an industry standard encoding for all character sets, including all modern languages of the world, single-byte and double-byte. Unicode uses 16-bit encoding, so it accommodates thousands of characters. Some people mistakenly consider Unicode a cure-all for international language support (it does not, for example, provide the means to translate your data); rather, it is just an encoding, but a powerful one that will simplify data exchange across a wide range of computer platforms worldwide.

Apple has already built Unicode support into QuickDraw GX, and it is included in Newton, as well. Apple will *definitely* support Unicode in the future, as will all other major computing platforms. Watch for more information on Apple's Unicode implementation here in the coming months.

For the present, here are three key features of Apple's implementation of Unicode to keep in mind when designing and writing your applications:

Full Unicode support. Apple will eventually support all of the features of Unicode, and it will implement its support across the entire Macintosh product line as a feature of system software. (In other words, there will *not* be any non-Unicode Macintosh computers.)

Backwards compatibility. Apple will make sure that your data can be converted to Unicode format and back again, so that you will not be faced with the daunting task of writing data converters from scratch. At the WWDC, Apple engineers demonstrated the features of Apple's Unicode converter (which is still under development), and a major emphasis was on the ability to convert data to Unicode format, then return it to its original encoding (called a *perfect round trip*). This is essential for the success of the third element of Apple's plan, described next.

A phased approach. Apple will implement Unicode in such a way that you will not break your existing applications, and you will be able to implement Unicode support gradually.

Unicode will assist cross-platform developers in a number of ways. For example, if you have a product that runs on multiple platforms—say a calendar that coordinates meetings for everyone in a company or department—you need a standardized character encoding to ensure that your application will transfer data correctly, even if your product works only in English. With Unicode, creation of multiplatform products will become far easier for all developers.

Apple will introduce its Unicode implementation in the coming months; for now, here are some early guidelines to help you avoid problems with Unicode in the future:

- If you are using the standard 'char' data type, make up a custom data type that can be replaced easily in the future;
- Move all your text manipulation code into subroutines; over time, as Apple introduces Unicode-compatible text-manipulation features, you can replace your routines with Apple's;
- Don't make assumptions about byte values; in particular, avoid hard-coding for single-byte text, and move to complete support of double-byte characters in your code.

As Apple introduces its Unicode features, you will find that these changes—which you can begin making now—will save you time and trouble in the future.

Still to Come

Unicode will be a boon to developers, but it will not address everything that is still required for complete and consistent world-wide localization. Still to be provided are the following features:

- correct international number formatting
- automatic default daylight savings time/summer time
- standard use of universal time (formerly known as *Greenwich Mean Time*)

Future articles in *Apple Directions* will show you where Apple is going with these new technologies. As you move into international markets, you will find that the complexities of localization are still of major concern. But Apple will continue to build more and more features into the base Macintosh system software, in order to leave you more time to create the next generation of great applications.

What You Can Do Now

This article has mentioned a number of features you can implement and ways you can think about making your application world ready and suitable for localization in many markets. In summary, here are the main steps that you can begin to take right now:

- Create a strategy to make your software “world ready” which includes adoption of WorldScript so that your applications fully support all writing systems.
- Plan to support QuickDraw GX layout shapes within the next year.
- Talk to Apple Pacific (Far East and Latin America) for assistance in targeting and entering new markets (see below).

For Help in the Far East and Latin America:

- For more information on the Far East region, contact Doug Nelson in Hong Kong at AppleLink: AFE.INFO, or telephone: (852) 506-8864; fax (852) 506-2833.

- For information on Latin America, write to Susana Craig at AppleLink:
SUSANA.C
- For the Pacific region in general, send your questions to AppleLink:
PACIFIC.INFO.

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***** End of Article*****

***** Text Box—For Further Reading******

***Apple Directions* Articles**

- “Rethinking Your Applications for QuickDraw GX,” *Apple Directions*, October, 1993.
- “QuickDraw GX: It’s Your Type—Exactly,” *Apple Directions*, December, 1993.
- “The Emerging Asian Software Market,” *Apple Directions*, September, 1994

Apple Publications

- New Technical Note, “OV 20 — Internationalization Checklist,” by Norbert Lindenberg, November, 1993. *Bookmark CD (18)*, June, 1994; pathname—
Documentation & Samples:Mac Tech Notes:Overview.

- “Guidelines for Multilingual Apps – V1.1 (published December 20, 1993 as a technical note). *WWDC Technology CD*, pathname—Mozart (System 7.5): Programming Stuff: QuickDraw GX; Documents.
- New Technical Note TE 26, “Inside Macintosh Text and Life Before 7.1,” December, 1993 and March, 1994.
- New Technical Note TE 27, “Inline Input for TextEdit with TSMTE,” December, 1993 and March, 1994.
- *QuickDraw GX Font Formats*, Apple Developer Press, 1994 (document number 030-6197-A).
- “International Number Formatting,” by Norbert Lindenberg, *develop*, Issue 16, December, 1993.

Market Opportunity Documents

- “Market Opportunities in Japan,” *Bookmark CD (18)*; pathname—Business & Strategy Info: Worldwide Market Opportunities.
- “Market Opportunities in the Far East ,” *Bookmark CD (18)*; pathname—Business & Strategy Info: Worldwide Market Opportunities.
- “Market Opportunities in Latin America,” *Bookmark CD (18)*; pathname—Business & Strategy Info: Worldwide Market Opportunities.

Documents on QuickDraw GX

- “Document Portability,” *WWDC Technology CD*, pathname—Mozart (System 7.5): Programming Stuff: QuickDraw GX: Ideas, Opportunities and Info.

- “What is QD GX Savvy?,” *WWDC Technology CD*, pathname—Mozart (System 7.5): Programming Stuff: QuickDraw GX: Ideas, Opportunities and Info.

Addison-Wesley Publications

- *Guide to Macintosh Software Localization*, Addison-Wesley Publishing Company, 1992.
- *The Unicode Standard: Worldwide Character Encoding*, Addison-Wesley Publishing Company, 1993.
- *The High-Tech Marketing Companion*, Addison-Wesley Publishing Company, 1993.
- *Inside Macintosh: Text*, Addison-Wesley Publishing Company, 1993.
- *Inside Macintosh: QuickDraw GX Objects*, Addison-Wesley Publishing Company, 1994.
- *Inside Macintosh: QuickDraw GX Graphics*, Addison-Wesley Publishing Company, 1994.
- *Inside Macintosh: QuickDraw GX Typography*, Addison-Wesley Publishing Company, 1994.

Useful Books on the World’s Languages

- *The Languages of the World*, by Kenneth Katzner, Routledge, New York, 1977, 1986.
- *Writing Systems of the World—Alphabets-Syllabaries-Pictograms*, by Akira Nakanishi, Charles E. Tuttle, Co., Rutland, VT, 1980.

- *The Cambridge Encyclopedia of Language*, by David Crystal, Cambridge University Press, 1987.

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*** SIDEBAR ON PACIFIC MARKETS **

Exploiting the Macintosh Language Advantage

The markets of Apple Pacific are diverse, ranging from India to Brazil, but they have one important quality in common—they are among the fastest growing markets in the world today, and in the coming decade these countries are expected to see the greatest increase in personal computer use in the world. In addition, reduced tariffs and the strengthening of anti-piracy regulations and enforcement contribute to the viability of your product's sales in these areas.

One significant barrier to success in these markets is the incredible profusion of writing systems and languages that have hampered standardization on any particular computer platform. Macintosh system software has a clear and immediate advantage with the capabilities of WorldScript and its multilingual support. This means opportunities for developers who are willing to enter these markets today with localized products.

For more information read “The Emerging Far East Software Market” in the September issue of *Apple Directions* which explains Apple's presence and competitive advantage in this region, as well as marketing and distribution issues. Also, see “Power Macintosh Market Outlook” in the April, 1994 *Apple*

Directions for a global preview of Apple's penetration on the Power Macintosh platform, based on information from *The Hartsook Letter*.

China and Singapore

The People's Republic of China, with its high growth rate and more than a billion people, may be the most exciting market in the world. The demand for computing power is significant, and it will certainly grow in the coming years. The Chinese version of Macintosh system software is a double-byte system that provides full support for the thousands of Chinese characters, as well as proper formatting. China uses the simplified version of the Chinese writing system, as do many Chinese speakers in Singapore, so products that are localized for China can be used in Singapore, as well.

Simplified Chinese text

让您的潜能发挥到极至的威力

Taiwan and Hong Kong

The markets in Taiwan and Hong Kong use traditional rather than simplified Chinese, but since both versions are available on the Macintosh, these Chinese-language markets are also available to your product if you localize into traditional Chinese. In the Taiwan and Hong Kong markets, the Macintosh computer is the predominant platform in areas such as publishing, it owns about 90 percent of these markets today.

Traditional Chinese text

讓您的潛能發揮到極至的威力

Japan

Already more than a \$1 billion market for Apple Computer, Inc., products, Japan has seen a proliferation of applications written for the Macintosh—an estimated 1,000 localized Macintosh programs are now available in Japan, which has an installed base of more than a million Macintosh computers. KanjiTalk is a full implementation of the Macintosh system software, and its success is testified to by the fact that today, one out of five personal computers sold in Japan is a Macintosh.

South Korea

With an installed base of nearly two million units, South Korea represents one of the largest personal computer markets in the Pacific. The Korea market is already supported by HangeulTalk, a double-byte Macintosh system version that provides the many of the same features as KanjiTalk and the Chinese systems. A Korean language kit is under development.

Thailand and India

Major emerging markets of the Far East region include Thailand, where Apple has released ThaiTalk, a single-byte system that supports the complex Thai writing system.

Thai text

โอกาสเป็นของผู้แสวงหา

The Indian government has recently slashed tariffs on foreign products and the computer market has begun to mature; demand is high for English language as well as localized products in the many Indic languages.

Mexico, Central America, and Latin America

Latin America's 400 million people and nearly trillion-dollar economy make it a major market, and it is growing quickly. The governments of these countries have taken measures to drastically lower import duties; in Mexico the signing of the North American Free Trade Agreement (NAFTA) has already lowered tariffs on hardware and software. Interest in computer products is high, and the years of limited availability of foreign products have created pent-up demand. The personal computer market in Latin America is estimated at more than \$2 billion, so there is already an significant installed base and knowledgeable customers who are looking for products.

As distinct from the Far East, a major advantage of Latin American markets is the prevalence of two languages: Portuguese (spoken in Brazil) and Spanish

(used everywhere else). Since both languages are included in the standard Roman character set and are supported in Europe, developers who already have European-language versions of Spanish and Portuguese can enter the markets of Latin America with relative ease. Note, however, that there can be significant language differences in Latin America, so a European localized product should at least be reviewed and probably modified by a localization specialist in each country; also, some localizers prefer to localize directly from the English language version. You'll have to work this out with your distributor.

Apple Latin America has prepared a Latin America 3rd Party Benefit Pack, which includes a document titled "Guide to Successful Distribution in Latin America," market research on the area, and a discussion of Apple's distribution channels, lists of resellers and distributors, and the "Turn-key Localization Guide." Contact Susana Craig (AppleLink: SUSANA.C) to get a copy of the Benefit Pack and other information.

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The complete paper version of *Apple Directions* is available from APDA. To contact APDA, call them at 1-800-282-2732 from locations in the United States, 1-800-637-0029 from Canada, and 1-716-871-6555 from other locations; or you may contact APDA using AppleLink; the address is APDA.

For more information, see "About Apple Directions" in this folder.

Market Research Monthly:

A Snapshot of the European Macintosh Market

It's been more than two years since the countries of Europe began their evolution toward a single European market. And though a truly unified market is still years away, the European Union (EU) is making it easier for developers to sell products across member-country borders. For Macintosh developers, the EU's efforts, along with an improving European economy and robust Apple

computer sales, have created promising market conditions for developers looking to sell products in Europe.

Today, four major market factors are working in favor of Macintosh developers:

- Europe is emerging from a two-year recession.
- Sales of Apple computers in Europe grew at about twice the rate of the overall PC market in 1993, according to Dataquest.
- In the last two years, the number of European outlets selling Apple Computer, Inc., products has almost quadrupled.
- As the installed base of Power Macintosh computers in Europe grows, the demand for localized “native” applications will increase.

This window of opportunity may not last long, however, and developers who are quick to localize native Power Macintosh applications will be able to capitalize on minimal competition and pent-up demand. In this article we help you evaluate this opportunity by providing you with a snapshot of the size, strengths, and channel structure of the European Macintosh market.

Apple European Sales Twice the Industry Average

The Dataquest data presented in the graph “European Macintosh Sales by Country” shows how well Apple’s European market has grown in spite of a two-year recession. *(Note: Figures are at the end of this file.)* Unit sales grew 22 percent last year, a rate that was more than twice that of the total PC market in this region. Brisk sales in Germany and the United Kingdom were the driving force behind these increases. Apple gained market share in both of these countries—not a minor feat in such competitive markets. And, as you can see from the graph, Apple’s traditionally strong markets in France and Sweden

ended the fiscal year with a 14 and 15 percent market share respectively, according to Dataquest.

European Power Macintosh sales are gaining tremendous momentum as the number of native applications increases. In fact, Dataquest estimates that in 1994, Apple will sell 230,000 Power Macintosh computers in Europe. Sources in the field also report that a significant number of first-time Macintosh users have been purchasing Power Macintosh models. (These first-time users traditionally buy a lot of software in the first year of ownership.) Other preliminary Apple data on Power Macintosh users indicate that

- more than 65 percent of Power Macintosh users work for companies employing fewer than 20 individuals
- acceptance among large businesses has been very good
- 40–50 percent of users have installed SoftWindows on their Power Macintosh computers

European User Profile—An Emphasis on Business

Though the cultures and languages of European Macintosh users are diverse, there's one consistent trend across all these countries—the dominant use of Macintosh computers in business. As you can see in the graph “European Macintosh Sales by Market,” 66 percent of these Macintosh customers use their computers at the office. Within this business segment, Macintosh computers have a stronghold in the areas of graphics, desktop publishing, general productivity, and computer-aided design and manufacturing. (See the pie chart, “A Profile of European Power Macintosh Users,” for a more detailed breakdown of categories.) And Apple is the number-one supplier to the newspaper industry in France, Spain, and Hungary.

Apple also holds a healthy 18 percent market share of the European education market, according to Dataquest. These installations are primarily in higher education institutions. (K–12 and secondary school sales are low due to local regulations that restrict purchases from out-of-area vendors.)

And finally, the consumer segment, though relatively small today, grew 74 percent last year. This market should continue to show strong growth as superior price/performance RISC technology trickles down to Apple's low-end computer models. As this segment expands, so will the opportunity for sales of entertainment and entry-level productivity software.

Europe's Evolving Channel Structure

Over the last two years, Europe's poor economic environment brought about some major changes in the traditional dealer network. Small dealers found it difficult to cope with fluctuating inventory levels and erratic cash flow, and this led to an expansion of a previously small channel entity—distributors. Though the role of distributors in Europe is still small compared to their role in the United States, last year top European distributors reported revenue growth of 50 percent or more. (An exception to this trend is in southern Europe, where the distributor channel is just taking hold.) Today, three distributors dominate the market: Ingram, Merisel, and C2000—a German company that sells across most of Europe. (For more details on European distribution, see the article "European Distribution Channels," *Apple Directions*, March 1993; or Chapter 21 of *The High-Tech Marketing Companion* by Dee Kiamy, Addison-Wesley Publishing Company.)

During this channel shift, Apple transitioned many of its traditional dealers into distributors and worked to ensure that distribution agreements were signed in every European country. These new distributors, in turn, have

established relationships with many new retail outlets. The result?—The number of European outlets selling Apple products almost quadrupled in the last two years, an increase that should make it easier for you to sell more products. (For details, see the graph “Apple Outlets Across Europe.”)

Localization and Pricing

Europe is still far from being a homogeneous market, so your products and marketing strategy must be tailored to each individual country. Though English-language software is used for business purposes in many European countries, Apple strongly recommends that developers localize their software for European countries because

- many countries, like France, have regulations that require developers to offer fully localized products
- it will help your company gain mind-share and a competitive advantage within individual countries
- it inhibits “gray-market” product sales by making it more convenient for customers to buy localized products rather than U.S.-English versions. (“Gray-market” sales refer to software and hardware purchases made outside the normal channels of distribution within a country. These sales weaken a country’s software industry by siphoning off revenues that could be used for local advertising, market development, and distribution channel improvements.)

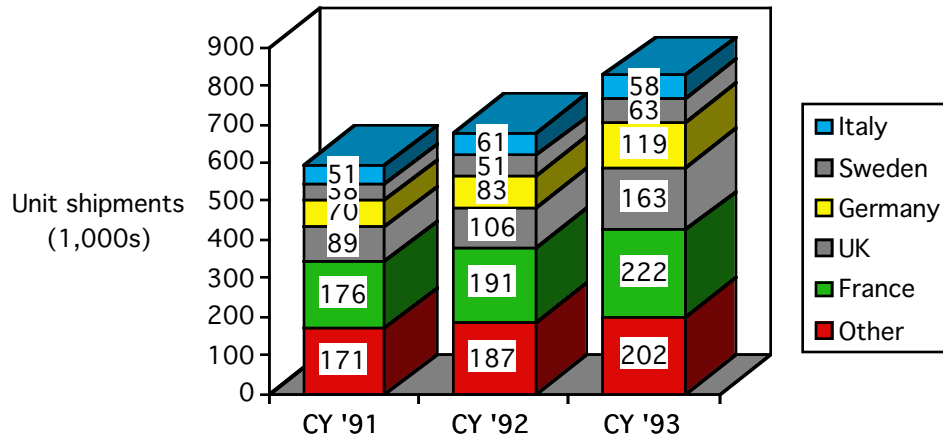
Though localizing a product for European countries requires additional development resources, you can recover some of these localization costs by pricing your localized product slightly higher than your domestic version. This price “premium” varies from country to country, but it’s typically about 15 percent over a U.S. price.

Riding the Trade Winds

Apple developers looking to enter the European market should be aware that favorable “trade winds” are blowing your way. Improving economic conditions, a stronger Apple distribution channel, and brisk Power Macintosh sales should make it easier than ever to sell your products in this region. Perhaps the best starting place for learning more about this market is in the Europe folder on AppleLink. Within this area, look under “Selling into Europe” to find country-specific marketing opportunities, distributor contacts, and localization information.

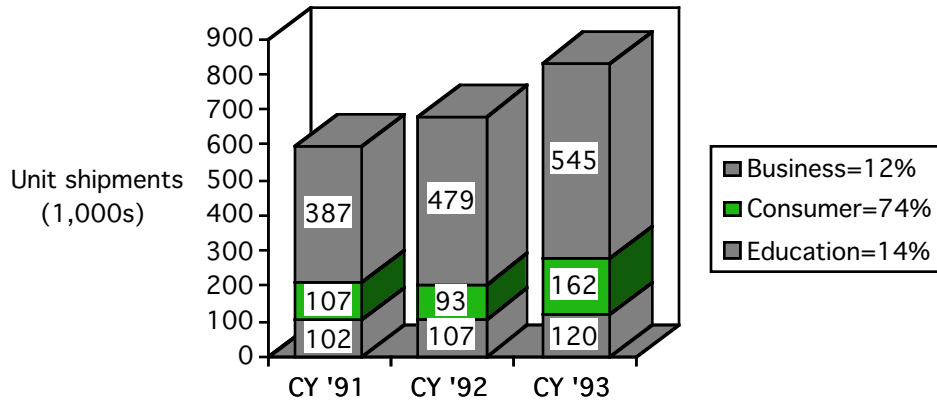
(figures follow)

European Macintosh Sales by Country



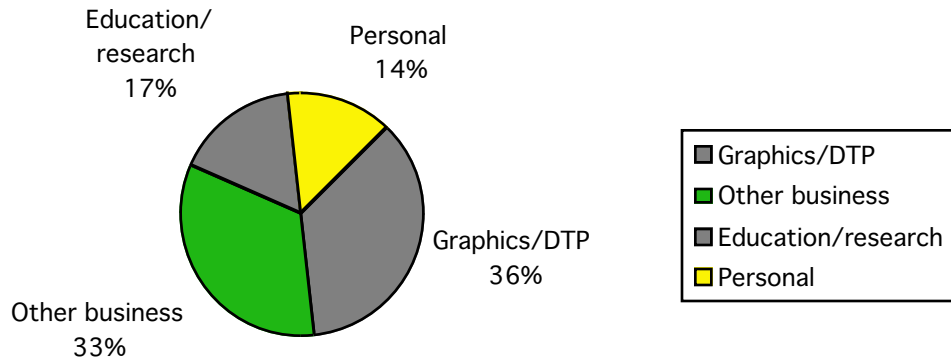
Source: Dataquest 1994

European Macintosh Sales by Market



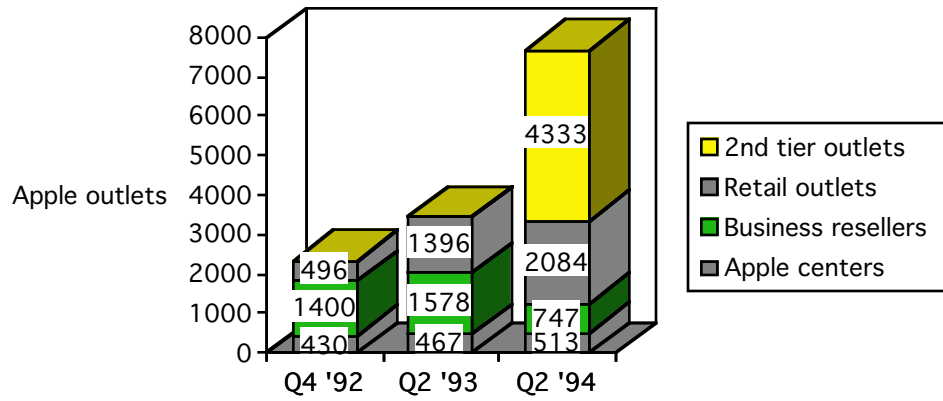
Source: Dataquest 1994

A Profile of European Power Macintosh Users



Source: Apple Computer, Inc., Q2 1994

Apple Outlets Across Europe



Source: Apple Computer, Inc., 1994

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For more information, see "About Apple Directions" in this folder.

Taking on the Market Leader

How a Small Copy-Protection Developer Legally "Pirated Away" Market Share From the Leader

By Audri G. Lanford, Ph.D., MarketingMagic, Inc.

As the computer industry continues to mature and consolidate, it seems that everywhere you turn, big developers keep getting bigger, leaving smaller developers to scramble for what's left of the market. But my faith in the power of small, innovative developers was renewed when I heard the story of a new entrant in the software copy-protection market at this year's Apple Worldwide Developers Conference (WWDC). This non-U.S. developer took on the leader in a competitive market segment and moved from product introduction to market

leadership in just 12 months. In this article I highlight some of the innovative marketing strategies used by this company—MicroGuard, a spin-off of Micro Macro—and then explain how you can successfully apply these principles to gain a competitive edge over established market leaders.

The Mother of Invention—Necessity

Like the ideas behind so many startups, MicroGuard's first product was born of necessity. While working at Micro Macro, Shmuel Okon, cofounder and director of product development, turned his attention to solving the company's biggest problem—software piracy. This Israeli software developer realized that they'd never make significant money on their multilingual software if it wasn't properly copy protected. Okon's first strategy was to buy an off-the-shelf copy-protection solution, but after weeks of research he found no products that met Micro Macro's needs. So he did what many resourceful developers end up doing—he invented his own.

Unlocking the Secrets of Copy Protection

Copy protection is, to say the least, a controversial topic in the software business. In the past, poorly designed copy-protection schemes frustrated both developers and users. But today, with more secure and user-friendly devices available, many software developers who want to protect their software assets from illegal duplication are looking at copy protection again—especially if they sell products in countries that don't honor international copyright laws.

The goal of copy protection is to prevent the use of stolen software. Most protection devices accomplish this by restricting the use of an application to one computer or user. At the beginning of his project, Okon researched three types of copy-protection devices: software-based protection, key disks, and hardware keys. They all basically operate on the same principle: a “lock” is embedded in an application so that it won’t work unless the legal owner’s hardware or software “key” is detected.

Okon quickly determined that software-based protection can be circumvented. And he found that key-disk protection is almost as ineffective, because communication between the application and the key disk occurs only at startup, making it relatively easy for hackers to bypass the key disk entirely. (A key disk is a floppy disk loaded with an application-specific software key. In order for users to open up an application protected by a key disk, they have to insert their key disk into their computer’s floppy disk drive.) In addition to being easy to work around, key disks violate Apple’s cardinal rule—“Thou shalt not annoy the legitimate user.” Key disks frustrate users because they must be inserted each time users want to use the protected program, and they have to be removed whenever users want to use their drives. And, as is the problem with all frequently used disks, key disks often fail, preventing legitimate users from gaining access to their files.

Hardware keys *can* provide foolproof, user-friendly, nondisruptive copy protection. However, Okon felt that neither of the two major Macintosh hardware keys on the market accomplished this. In his opinion, both devices provided unsatisfactory protection, and they made poor use of the Apple Desktop Bus (ADB), which could result in interference with other devices sharing the bus. At

that point, Okon had an idea about how he could design a hardware key that made better use of the ADB, and he began work on the MicroGuard solution.

Physically, MicroGuard's device is a 6-cm-long cylinder with an 8.5-cm ADB cable attached. Housed within the cylinder is an ASIC chip with ten programmable memory areas that are virtually impenetrable to reverse engineering. Software developers purchasing these devices enter their own protection parameters and access passwords, then ship them with their software products. Users purchasing software protected with a MicroGuard device plug the key into their ADB port—usually between the computer and their keyboard cable—and can then forget about their MicroGuard keys unless they buy a new computer. (MicroGuard keys can easily be moved to new systems.) Users owning more than one piece of copy-protected software can daisy-chain up to 15 MicroGuard keys together.

“What makes our product better than other hardware keys is that it doesn't clash with other ADB peripherals and keys, and we offer a far more secure solution. As long as our MicroGuard product has been on the market, the complex algorithms in our ASIC chip have not been cracked or cloned,” says Okon.

Know Your Customers

In solving their own copy-protection problem, Micro Macro realized they had a product that other software developers would buy. At that point they brought on two strategic investors, Marc Belzberg and Bennett Kaplan, to assist in formulating a marketing plan and funding strategy. Kaplan assumed the role of President to oversee the product launch.

Kaplan believes that an important factor in their success was their thorough understanding of their customers. “We were committed to the principle that Macintosh developers really care about the best technology,” says Kaplan. “Culturally, we’re a Macintosh company, so we had a better understanding of our market than our competitors, who came from the Intel-based PC side of the business. And we had an excellent knowledge of Apple distribution channels.”

In executing their marketing plan, MicroGuard believed that their biggest challenge would be mindset. Developers have very little interest in software copy protection, which is usually imposed on a company by the people responsible for the financial health of the business rather than by the technical people. But since the technical staff ultimately decide which product to use, MicroGuard decided to focus their efforts on reaching this key audience.

Kaplan says, “We felt that Apple developers would be willing to make a decision based on the best technology, rather than taking the easy route of selecting the established product. So to help us gain a more thorough understanding of Apple’s technologies, we did everything we could to get on Apple’s pre-release product testing list. We saw this as crucial for quickly implementing superior products.”

Evaluating the Competition

For the purpose of this article, MicroGuard’s primary competitor will be called *Goliath*. Goliath was the market leader, holding more than 90 percent of the market. MicroGuard’s assessment was that this company’s Macintosh product

had significant technical problems because they hadn't strictly followed Apple's development guidelines.

"For example, Goliath hard-coded in a permanent ADB address rather than allowing the ADB Manager to assign its own dynamic address," says Kaplan. "That meant Goliath's keys couldn't be daisy-chained, and conflicts with other ADB peripherals might prevent their keys from working. In addition to a simplistic use of Macintosh technology, we felt the security component of the Goliath keys could be improved upon."

MicroGuard also believed Goliath had an unfriendly image in the market. But since Goliath was the established player in the market, customers felt secure buying their technology. As the old saying goes, "No one would lose their job for selecting Goliath."

Overall MicroGuard found three key competitor weaknesses:

- flawed product
- a limited understanding of their customers (Macintosh developers)
- an unfriendly image

Their next step was to see how they could take advantage of these weaknesses in their own product launch.

The Marketing Plan: A Focused Approach

MicroGuard entered the market with no presence, credibility, or references. But one clear advantage they had was their size—startups and small ventures can be fast on their feet. They're not locked into using an established marketing approach, and they can use creative guerrilla marketing tactics to compete successfully.

MicroGuard developed a simple marketing plan that used the element of surprise, leveraged Apple's channel efforts (trade shows, mailings, and publications), and took advantage of their competitor's vulnerabilities. The plan focused on three strategies:

- *Ship a superior product.* MicroGuard recognized that Macintosh developers are very sophisticated from both a technical and an aesthetic standpoint, so they made sure that these facets of their product were better than their competitors'. They gave their new product a friendly and familiar Macintosh Classic®- like appearance, with rounded edges and the Classic putty-gray color. And they labeled the product's connector with Apple's standard ADB logo. Their competitor, on the other hand, took a very "un-Macintosh" approach: Goliath's product looked generic, like something you might buy at a PC clone shop.

- *Use guerrilla tactics to get customer mind-share.* To capture customer mind-share, MicroGuard knew they had to be unconventional. First, for their product launch, they chose the best forum to reach Macintosh developers—Apple's WWDC. Second, they chose the right tone and image for the conference audience: Kaplan describes it as "humorous and hip." Then they put together a high-quality developer information kit that was both amusing and educational.

The kit had two goals: to get the attention of developer decision makers and to convince them of the product's technical merits. This information kit, illustrated with pirate graphics, contained an *Inside MicroGuard* product manual and an educational CD called *Lock Around the Clock*. The kit's contents—including type, design, colors, screen dumps, and paper weight—were designed with the look and feel of Apple products, so it would appeal to their prospects. In addition, MicroGuard created a striking brochure. The results of their developer conference introduction were impressive: They gave away their supply of 65 developer kits in the first few hours of the conference, and 900 developers ordered their free CD-ROM discs. As a new entrant in the market, their presence caught their competitors completely by surprise.

- *Provide first-rate service and support.* Taking advantage of Goliath's unfriendly image, MicroGuard's service and support strategy was simple—to do everything humanly possible to keep their new customers happy. They made sure that developers working against a deadline could find MicroGuard product information, day or night. On AppleLink, they posted MicroGuard data sheets, sample implementation routines, all their communications libraries, a Q&A brief, and Technical Notes to guide developers through advanced features. In addition, they offered a 24-hour turnaround time for developers' questions. Complex questions were referred to and quickly answered by the product's inventor.

Building Customer Trust

After their WWDC launch, MicroGuard had mind-share, but no sales. Their next step was to prove that they could deliver the product and provide great support. A major breakthrough came when some important potential customers called for help. MicroGuard representatives immediately got on a plane and flew to the United States, ready to provide whatever these customers wanted. For example, one very large customer said they'd like to buy 250 keys for testing purposes. MicroGuard responded by shipping the customer 250 keys, which arrived the following day with an invoice that read "no charge." (Later, MicroGuard learned that when the same customer requested samples from Goliath, Goliath ended up dickering on price, and MicroGuard's approach helped them clinch the deal.)

MicroGuard also made sure that Okon was at all important pre-sales meetings. As the inventor of the product, Okon could answer technical questions on the spot, and he was excellent at educating customers on the technical superiority of MicroGuard's product. This was particularly important because MicroGuard understood the paradox they faced: customers weren't interested in how their product worked—they simply wanted to know that it would make their problem go away. Yet, for customers to choose their product, they had to believe that MicroGuard's technology was superior.

Another way they boosted product exposure was by leveraging Apple's own marketing efforts. Besides making a splash at the WWDC and on AppleLink, they placed ads in the European and Australian APDA tools catalog and *MacTech Magazine*. And at Macworld San Francisco, they rented space at the Developer Central pavilion so they'd be seen as an Apple-approved tool. They sent product information to all Apple offices and independent distributors

worldwide, and got many of them to mail their promotional CDs to the developers in their regions. And finally, since the vast majority of Macintosh developers are in the United States, they opened an office in Denver, Colorado so they could quickly supply customers with keys (even overnight) and so time-zone differences wouldn't affect customer service.

This service orientation ignited word-of-mouth sales. Orders started rolling in. Developers started telling their friends, "Not only is this product great, but these people are completely trustworthy." And by the time they showed up at the WWDC this year, it had become clear that not only did they have technological leadership, but they had market leadership as well.

Coping With Competitor Backlash

MicroGuard's impressive first-year gains obviously didn't go unnoticed by their competitors, and their next challenge was to react correctly to their competitors' counterattacks.

Fortunately for MicroGuard, the speed at which they entered the market threw Goliath off balance, and Goliath made some poor decisions. Though Goliath correctly realized that they had to introduce a new product that was ADB-savvy, their new version, by definition, wasn't backward-compatible with their old version. This meant their customers could no longer use their old keys and had to rewrite their software to accommodate the new keys. This upset Goliath customers, and since they had to start from scratch anyway, some switched to MicroGuard. Kaplan says, "Goliath also dramatically dropped their prices and circulated strong, and in some cases false, anti-MicroGuard information."

MicroGuard's strategy for dealing with competitor backlash was to hold their prices firm and "maintain composure under fire." To minimize the damage of false claims, they sent letters to their customers matter-of-factly explaining the situation. Kaplan's advice on this type of situation is, "Your competitors must learn that they can't run over you. And even more important, your customers must be reassured that you deliver on your promises."

Preparing for the Next Phase

MicroGuard has done exceptionally well for a two-year-old company. Their products are shipped with successful products such as Aldus's After Effects digital compositing software, QuarkXPress (with several international versions), and Electric Image Animation System. From their own analysis of published data, MicroGuard estimates that they now have 60 percent of the Macintosh copy-protection market.

MicroGuard's next challenge is to successfully change their mindset from that of an underdog to that of a market leader. Kaplan says, "Launching a startup organization is like launching a space shuttle. It takes a lot of power to get an enterprise into orbit, but once it's there, it requires less energy and more careful piloting. We're trying to keep up the momentum with our current product and develop our next great product. In the Macintosh world, more than with other platforms, the technology is the thing. And if you develop a superior product, then implement a focused marketing campaign, you will be noticed." ®

Audri G. Lanford is president of MarketingMagic, Inc., located in Carmel, California. This company provides marketing information and support to small high-technology companies with exceptional products. Previously, Lanford was cofounder and CEO of Micro Dynamics, Ltd., the leading Macintosh-based document-imaging company.

(sidebar) Ten Tips for Challenging Market Leaders

Overtaking a leader in an established market category is difficult, but it's not impossible. Small innovative developers have several advantages on their side—the freedom to design a product using the latest technology, the ability to react quickly, and the element of surprise. The strategies that MicroGuard used to get ahead in the copy-protection market can be used by developers in other market categories as well. Here are some of those strategies:

1. Ship a first-rate product. Shipping a “me-too” product in an established market category won't sustain a startup. In order to overtake the market leaders, your product has to be *hands down, the best*. Being number three or four in a category may generate revenue, but not profits. Understanding, appreciating, and correctly using Apple Computer, Inc., technology is paramount to creating excellent products.

2. Know your customers. With limited resources, your best strategy is to develop products in a growing market segment that you're familiar with and that you're able to cost-effectively reach through events, online services, or direct

mail. Make yourself accessible to customers and communicate with them through vehicles like face-to-face meetings, beta testing, and online forums.

3. Focus your marketing plan. With the information overload that occurs these days, you need to keep your marketing plan focused on reinforcing one to three key competitive messages. A laundry list of messages doesn't have as much impact as a few carefully crafted competitive advantages. (See the article "So What's Your New Product All About?" in the February 1992 issue of *Apple Direct*.)

4. Use guerrilla tactics to get customer mind-share. When you're a startup or small venture, you're more agile than established companies. Don't hesitate to make use of the element of surprise, unconventional guerrilla marketing tactics, and creative marketing approaches.

5. Provide first-rate service and support. Many established market leaders grow complacent, leaving a door open for you to lure away their customers. Make sure you deliver on your promises and treat your customers exceptionally well.

6. Design marketing materials that make your prospects' decisions easier. Prospects will appreciate marketing materials that educate them and make their product evaluation process easier. Target your marketing materials to your prospective market and help them find out how good your product is by providing demonstration software, third-party competitive product reviews, time-saving kits, and so on.

7. Build word-of-mouth sales. Word-of-mouth marketing is extremely important within the tightly knit Macintosh community. Make the most of this by making evaluation copies and customer success stories part of your regular marketing deliverables. Send them to the press, dealers, sales representatives, industry gurus, and user groups.

8. Leverage Apple channel efforts. Apple has a plethora of marketing vehicles that you can use to reach customers. These include dealer, user group, and developer mailings; general and vertical market trade shows; educational customer seminars; and third-party solutions guides—to name just a few.

9. React constructively to competitor backlash. If your product launch comes off well, expect your competitors to launch a counterattack. If it takes on a negative tone, meet your competitors' attacks positively and, most important, candidly and honestly explain your situation to your customers.

10. Look ahead to the next product. If you succeed in moving from underdog to market leader, your business will be faced with a whole new set of challenges. Just remember to keep your eye on the horizon, embrace change with a positive attitude, and don't forget to have fun in the process!