

The *Inside Macintosh* Story

APPLE AND MICROSOFT—Best friends or bitter enemies? *Apple Direct* Editor Paul Dreyfus comments in his editorial.

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THREE NEW APPLE products are available to help communications development, MacTCP Token Ring Extension, AppleShare 3.0 API Developer's Kit, and MacX25 Developer's Kit, version 1.1.

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NEW INSIDE MACINTOSH volumes aren't the only books Apple is publishing this month. Developers can also purchase new books about localization, CD-ROM development, and card and driver design.

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HACK TO THE FUTURE, this month's installment in the Developer CD series, includes new Tech Notes, a new electronic version of *develop* magazine, new documentation, and new non-U.S. versions of System 7.

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SEE WHAT YOU'RE missing if you're not currently reading *develop*. Issue 11 is currently available, and it's full of valuable Macintosh programming information.

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NEED HELP WITH Apple events and AppleScript? There's a new Developer University course for developers who want to write fully "System 7-savvy" applications.

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IT SHIPPED! LISTS new and updated third-party products that shipped in July 1992.

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APDA IS OFFERING the first three *New Inside Macintosh* books as its monthly “hot products” as well as a variety of other products.

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INTELLIGENCE IS ONE of Human Interface columnist Peter Deignan’s five “new techniques” of HI design.

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BUSINESS & MARKETING

GOING INTERNATIONAL? You can learn how from a variety of U.S. developers who took their products to international markets. Their successes, and the lessons they learned, are recounted in an *Apple Direct Marketing Special Report*.

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CROSS-MARKETING TO education and other market segments can be a way to get more bang out of your current products. Apple Computer’s Janine Firpo tells you how in this month’s Marketing Feature.

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APPLE INTERNATIONAL distribution and developer services contacts can help you if you’re trying to enter international markets.

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At Ease Makes Macintosh Easier to Use

Apple is now shipping At Ease, a simplified Macintosh user interface that makes it easier for Macintosh owners to share their computers with children, students, and novice users. At Ease, an extension to Macintosh System 7 software, simplifies common tasks, such as launching applications and managing documents. It also provides simple protection against tampering for files, folders, and system settings. At Ease is available for you to bundle with your software; see the end of this news item for details.

At Ease allows users to launch selected applications and documents by single-clicking a large button that shows both the item's name and icon. (At Ease does not include any of the applications shown except Mouse Practice, a simple program that teaches new users how to use the mouse.) By clicking a large tab labeled "Documents," the user sees a similar screen of icons for documents that can be launched. (Each screen displays as many icons as it can, with additional items shown on multiple "pages." When multiple pages are present, the user clicks on an arrow at the bottom right corner of the card.)

At Ease requires System 7.0 or later. It also makes it easier for Macintosh computers with 2 megabytes (MB) of memory to run System 7. When At Ease is present, users have up to 200 kilobytes (K) more memory for applications than they would using the Finder. This leaves a 2 MB Macintosh with about 1.1 MB of memory for applications.

At Ease does more than make the Macintosh easier to use. It also helps the Macintosh owner prevent users from accidentally or intentionally doing things like deleting files, changing system-wide settings, altering the System Folder, or running programs other than those available through At Ease. It limits a user's access to the Macintosh in two ways: by removing the Control Panels item from the Apple menu and by optionally preventing the user from accessing the Finder.

Because the Control Panels item is missing from the Apple menu, At Ease prevents the user from accessing control-panel applications, such as General Controls, Monitors, Network, Sound, and Sharing Setup. (The owner of the Macintosh can give the user access to any or all control-panel applications by adding them to the list of applications that At Ease displays.)

At Ease removes most of the Finder's menus, limiting the user to rebooting the Macintosh, shutting it down, or quitting At Ease and going to the Finder. At Ease

can optionally require the user to enter a password before it gives the user access to the Finder. In this way, At Ease can prevent the user from using the Finder to modify the Macintosh and its data. At Ease can also force the user to save newly created files to a floppy disk. (This option makes sense when, for example, a group of students is using the same Macintosh and each student uses his or her own floppy disk for saving work.)

Though At Ease is compatible with virtually all applications, you should note that At Ease usually runs without the Finder. (This is the default situation; the Finder is present only after the user selects the Quit to Finder menu item.) A few products that depend on or modify the Finder will probably not work.

In the U.S., At Ease is available as a stand-alone product through software resellers and Apple authorized dealers at a suggested retail price of \$59. At Ease will also be available to K-12 schools and colleges through Apple's educator channels. Outside the U.S., At Ease will be available through Apple authorized resellers, with pricing varying by country.

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Apple Releases PowerBook 145

This month Apple released its first new Macintosh PowerBook since it introduced the popular notebook sized computers last year—the PowerBook 145. The new computer offers users 30 percent greater total system performance than the PowerBook 140 but at a more than 15 percent lower price.

The PowerBook 145 provides the performance of a PowerBook 170, Apple's top-performing notebook, using the display of the PowerBook 140. It employs a Motorola 68030 microprocessor running at 25 megahertz (MHz) compared with the 16 MHz clock speed of the 140. It retains the backlit Supertwist liquid crystal display of the 140.

The new PowerBook, which replaces the PowerBook 140 as Apple's midrange notebook computer, retails for \$2,399 if it's equipped with a 40 megabyte (MB) hard-disk drive or \$2,799 with an 80 MB hard drive. Suggested retail price for the PowerBook 140 was \$2,999 to \$3,299, depending on how it was configured.

Like its predecessor, the PowerBook 145 features an integrated trackball and palmrest, full-size keyboard, and tilt adjustments. It ships with 4 MB of RAM and choice of 40 or 80 MB internal hard drive. Its built-in floppy drive accommodates Macintosh, MS-DOS, OS/2, and ProDOS formats. It incorporates the full range of standard Macintosh features: System 7 operating system, a SCSI port for connecting a variety of Macintosh peripherals, sound-output port, and speaker.

The PowerBook 145 is available through authorized Apple resellers worldwide. In the United States, it will come equipped with Macintosh System 7.0.1 software, AppleTalk Remote Access software, HyperCard 2.1 software, complete documentation, training software, an AC power adapter, a battery, and a one-year limited warranty. ◆

The *Inside Macintosh* Story

Out With the Old, In With the New

By Martha Steffen

They're heeere....

The first volumes of *New Inside Macintosh*, that is. At Macworld in Boston, Apple released *Processes*, *Memory*, and *Files*, 3 books of the currently planned 15-volume set. But don't throw out your current *Inside Macintosh, Volumes I-VI*, yet! The remaining 12 new books will be released a few at a time over the next ten months. But by Spring 1993, developers will be able to use a completely reorganized and rewritten, thoroughly integrated set of reference and instructional books on the Macintosh Toolbox, Operating System, and more.

To help ease the transition from the current 6-volume *Inside Macintosh* to the 15-volume *New Inside Macintosh*, we thought we'd tell you the story of how this new "official publication" came to be and describe how the new books improve upon the old. We'll also talk about how you can make the change from old to new, and give you complete information on when to expect all the new books and what's in them.

1988: WE DECIDE TO REVISE

It's no secret that we've been revising *Inside Macintosh*. It was never our intention to have those delta volumes IV and V out there so long. But *Inside Macintosh* is documentation for system software, and system software is a living, growing, changing entity. Keeping up with it has proven no mean feat. The revision we planned had to be comprehensive, accessible, and easy to update. In addition, we wanted to make Macintosh programming easier by writing better books.

Planning began soon after the introduction of the Macintosh II, and work on the project—then known as "Second Edition"—began in earnest in 1988. The immediate task was to integrate all five volumes then in print, incorporate the appropriate Tech Notes, and create a comprehensive index. This seemed straightforward enough. But as we worked, we recognized that additional writing was necessary. We heard from many of you—our developers—that *Inside Macintosh* wasn't meeting your needs. It needed more introductory

information. While it needn't be tutorial, it should include more examples and sample code. It needed to discuss the context for use of routines and managers. And we knew we had to design the book for easy revision, to incorporate the next version of system software, System 7.

1989: SYSTEM 7 AND VOLUME VI

In January 1989, we decided to announce and discuss System 7 at the Worldwide Developers Conference that May. The team that had been in place working on Second Edition was reassigned to write the documentation that would be needed. And Volume VI was born.

System 7 — Volume VI, to us in Developer Technical Publications — sucked up every personnel resource that got near it. It grew and grew, like a stand of bamboo or a PROLOG program. It became apparent, in these startlingly lean and mean times, that we could not do both Second Edition and Volume VI at the same time. And we had to do Volume VI; after all, the software was about to ship!

We had to figure out a way to do the projects serially and yet not waste any time getting Second Edition finished. So we essentially turned the project inside out: we planned Volume VI so it could be “exploded” into a comprehensive revision of the whole kit and caboodle. We knew we would have multiple volumes to deal with. So logical chunks, like the toolbox and the operating system, became volumes of their own in our new plan.

The organization and style of Volume VI, then, was a precursor to what Second Edition would be.

SPINSIDE MAC AND BLUENOTE

During this same time period, CD-ROM became a reality for Apple and its developers. Some ambitious folks in Developer Technical Support (DTS) put the original volumes I-V into a Hypercard stack and dubbed it “spInside Mac”. And in tools engineering, they were working on BlueNote, the software that was to become Apple Doc Viewer (formerly known as *Inside Macintosh Viewer*).

And System 7 grew and grew. The scope of the seeding program caused us to seek new ways to deliver the burgeoning documentation. Producing the prerelease CDs gave us experience with electronic delivery and set up a dialog between Apple and developers about what you liked and didn't like about our

implementations. And more and better tools became available to allow us to create paper and electronic versions of everything we write, simultaneously.

1990: INTERVIEWS AND FOCUS GROUPS

At the WWDC in 1990, Tech Pubs made a special effort to get some personal contact with developers. Each person in the department, from writers and artists to editors and coordinators (and even managers) conducted at least three “One-on-one Technical Interview Sessions” as part of a “TELL OooTIS” campaign. These interviews lasted about 20 to 30 minutes, and concentrated on learning your preferences in four major areas: What media other than paper are useful; whether Apple materials should teach, provide reference, or both; how useful sample code is; and how paper materials should physically be packaged. We also asked an open-ended question: How do you like our books so far? Although admittedly informal and unscientific, this exercise got us out of our cubicles and into conversations with real developers.

By 1991, we were well along in writing and planning, but we were working on a set of assumptions that were based on informal input from developers and gut feel. We wanted to test some hypotheses in a quantifiable setting, in ways that met the marketing stamp of approval, so we set up focus groups. The results of these interviews and focus groups, along with countless other communications with developers, led us to decisions you’ll see reflected in *New Inside Macintosh*.

A NEW ORDER

We had identified eight logical chunks that we called parts, and which we imagined as separate bound volumes. This organizational plan proved to be the least controversial of our decisions. In fact, it was met by considerable enthusiasm. We breathed a sigh of relief. We were already anticipating the need to add more topical volumes for system enhancements like QuickTime. This topical arrangement would also make revisions of existing books easier to scope and implement.

BINDERY WARS

Another thing we asked about was your desire for loose-leaf format. Many of you had said you wanted it, and APDA had been (and still is) offering a popular set of Volumes I - V drilled and sliced, with binders. The loose-leaf version of Volume VI also sold well through APDA, but its retail bookstore sales were

disappointing. Our own DTS engineers had been advocating “updates” for years. So in planning for Second Edition, we had gone through elaborate machinations to devise an intricately crafted scheme for updating a set of (then estimated) 4000 pages. We were prepared (honestly) to publish and distribute this beast, if that turned out to be the right thing to do.

Predictably, the developers we talked to divided into two camps. Those in the loose-leaf camp wanted to integrate Tech Notes and their own notes, and some were integrating Volumes VI and V into I, II, and III so they wouldn't have to look in three places for everything. Bound-book devotees liked the portability and modularity that paperback books gave them. They'd gladly re-purchase a whole bound volume rather than spend time inserting update chapters or pages. They saved their Tech Notes all together in one notebook.

But what emerged as the underlying demand of both camps was the assurance that information is current. The status quo had left people with too many places to look for information and too little guidance as to what was really true at a given moment. This revision by topic would be solving most of the difficulties that the loose-leaf fans were dealing with, integrating all the info together.

The solution we developed was this: to publish *Inside Macintosh* as a set of bound books and to revise them as the technology evolves. In addition, APDA agreed to investigate a loose-leaf package similar to the one they used for the original *Inside Macintosh, Volumes I-V*.

C OR PASCAL?

Over the years, C and C++ have become the languages of choice for serious development. Object-oriented systems are at the core of new development; obviously, this is the wave of the future. Why, then, does Apple cling to the Pascal code examples throughout *Inside Macintosh*? Several reasons. For one, C programmers can read Pascal, but not all Pascal programmers are comfortable with C. So more people are able to learn from examples written in C. In addition, our DTS engineers continue to advocate Pascal examples, because their problem-solving is easier when speaking Pascal. Pascal is a part of the history of *Inside Macintosh*, and rewriting the existing examples in C would involve rewriting much of the explanatory text as well.

So for established parts of the system, like the Macintosh Toolbox and Operating System, code examples will continue to appear in Pascal; for new

developments in system software, beginning with QuickTime, code examples will appear in C. Summaries will appear in both languages.

OK, so why not include both? The easy answer is that it would increase the already unwieldy page count beyond manageability. But before we try to solve that problem, we need to look at the more fundamental problem of getting the code in the first place.

WHERE DOES SAMPLE CODE COME FROM?

Sample code — regardless of language — comes into Tech Pubs from a variety of sources. A lot is written in DTS. Some is written in quality assurance or engineering as a test or demonstration of some system enhancement. Many of the lead tech writers write their own snippets of code to illustrate a point they're making in the text. During the writing of Volume VI and the planning of the revision, the *Inside Macintosh* team had an individual dedicated to writing, procuring, assembling, and testing sample code.

The operative word here is “testing.” Untested code is worse than no code at all. No matter how often we issue the caveat that this code is for learning purposes only, we know you're going to copy it wholesale into your program and tweak it rather than start from scratch. This is all well and good, but it puts an added responsibility on Apple to be sure that the code is of good quality. The code you see in *New Inside Macintosh* has been tested to the extent that we know it will compile.

INDEXING

The index guru was perhaps the single most important player on the Tech Pubs team, which also included writers, editors, designers, illustrators, production editors, and many others. The more extensive the information became, the more apparent was the need for an excellent index. All the writers on the project prepared their own indexes. Then the index guru went through and augmented the combined index, sorting out terminology and style at the same time. The indexes in the new books will be far superior to any we've produced in the past, helping developers find the information they need more easily and quickly. Moreover, having index tags imbedded in text for automatic generation during production will also facilitate full-text searching during electronic access.

1992: SECOND EDITION BECOMES *NEW INSIDE MACINTOSH*

System 7 and *Inside Macintosh, Volume VI* (all 1,400 pages of it!), shipped in May 1991, and we turned our attention once again to the revision. More enhancements were made to system software. We divided some large topics into subtopics; for instance, the operating system volume became four separate books: *Files, Memory, Processes, and Operating System Utilities*. We ended up deciding to publish 15 books (so far!), each designed to be revised as needed. We could no longer call the whole thing “second edition,” since some books would change more often than others. But it would still be *Inside Macintosh*, so it would be confusing and foolhardy to change the title outright. And so we decided on *New Inside Macintosh* to distinguish this set of books from the original *Inside Macintosh, Volumes I - VI*.

A DIFFICULT TRANSITION

There is just no easy way to change over from the original books to the new books, for you or for us. These 15 books will be published over a period of ten months (see Table 1 below), and by that time we will probably have announced additional books that describe new technologies. Admittedly, our resources would not allow us to publish all 15 simultaneously, but even if we could, it would pose difficulties for our sales and distribution channels and for you, our customers.

This new set of books will cost more than the old set just because there are more of them. Individually, the new books are priced comparably to the old ones, but (collectively) 15 books will end up costing you more than 6. We respect the dollar investment you put into buying documentation, so we intend to give you the very best value we can deliver. We will also provide you with an electronic alternative to paper, which can help keep the cost down. More about that in a moment.

You can stay posted on exactly what is most current in these ways:

For books that have been announced, stay tuned to the AppleLink bulletin board, (path:Developer Support:Developer Services: Technical Documentation:*New Inside Macintosh* Information. In that folder you'll find:

- An availability listing, with titles of all announced books, order numbers, real or projected publication dates, and price when available. (This listing will include revisions to existing books, if and when revisions are published.)
- A file that contains a brief description of each book.

- A list called “Where the Original Material Went,” which lists the chapters of original *Inside Macintosh* mapped to the *New Inside Macintosh* book where that info now appears. The sidebar below also provides the same information.

- A Q & A containing the most commonly asked questions and their answers.

For system software that is still unreleased, you will get preliminary documentation as a part of the seeding program for the product. In most cases, that seed documentation will eventually become a part of the published *New Inside Macintosh*, after the subject software is final and has shipped.

Many old Macintosh Tech Notes will be rolled into the appropriate volumes in *New Inside Macintosh*. As the content of those Tech Notes becomes part of *New Inside Macintosh*, it will be removed from the Tech Note itself. When you try to find that Tech Note in the place you’re used to finding it (that is, with all the other Tech Notes), instead of the usual technical material you’ll find a placeholder and a reference to the volume that contains the information.

AN ELECTRONIC FUTURE

As the *New Inside Macintosh* books are published on paper, they will also be published electronically using the Apple Doc Viewer, on the Developer CD Series disc. In addition, we’re investigating a dedicated *New Inside Macintosh* CD, which would be published after all 15 books are complete. An ideal electronic product would do much more than allow you to navigate around the book and read and print from the screen. Sophisticated indexing will be needed to query and search all the volumes simultaneously and intelligently. We’ll tell you more about this project as more of *New Inside Macintosh* is published.

TALK TO US

This article is intended to give you some background on why we made the decisions we did, to let you know the direction we’re headed in, and to help you keep stride with us. As always, Tech Pubs welcomes all communication from you at its AppleLink address, DEV.TECH. PUB.◆

Martha Steffen is Apple’s publishing liaison with Addison-Wesley and other book publishers. She works in Developer Technical Publications.

Table 1: *New Inside Macintosh* Availability

These are the dates that the *New Inside Macintosh* books will be available in bookstores. Advance copies of the first three books — *Files, Processes,* and *Memory* — will be available for purchase at Macworld in Boston in August. Dates for the first six books are precise, while the other dates are estimates. This list will be updated as schedules are finalized for the remaining nine books. Availability and prices apply to U.S. only.

APDA #	ISBN #	Title	Price	Available
	62347-0	Overview	\$19.95	Nov 1992
R0355LL/A	62341-1	Processes	\$22.95	Sep 1992
R3057LL/A	62340-3	Memory	\$24.95	Sep 1992
R3056LL/A	62344-6F	iles	\$29.95	Sep 1992
	62342-X	Imaging	\$29.95	Dec 1992
	62343-8	Mac Toolbox Essentials	\$34.95	Nov 1992
		Text	TBD	Winter 1993
		Interapplication Comm.	TBD	Winter 1993
		QuickTime	TBD	Winter 1993
		QuickTime Components	TBD	Spring 1993
		More Macintosh Toolbox	TBD	Spring 1993
		Operating System Utilities	TBD	Spring 1993
		Networking	TBD	Spring 1993
		Communications	TBD	Spring 1993
		Devices	TBD	Spring 1993

Where the Old Material Went In *New Inside Macintosh*

Here's a listing of the chapters of old Volumes I - VI, and where the material in each can be found in *New Inside Macintosh*. It runs sequentially through the original Volumes I, II, and III. Then for IV, V, and VI, the list includes only the new chapters in those volumes, while information from Volumes I - III that was updated in Volumes IV - VI can be assumed to have the same destination as the original material.

Summaries are included in each *New Inside Macintosh* book.

Current Volume	Chapter	<i>New Inside Macintosh</i> Destination
Volume I	1 Roadmap	Overview
Volume I	2 User Interface Guidelines	Overview / Human Interface Guidelines
Volume I	3 Memory Management	Memory
Volume I	4 Using Assembly Language	Overview
Volume I	5 Resource Manager	More Macintosh Toolbox
Volume I	6 QuickDraw	Imaging / Text
Volume I	7 Font Manager	Text
Volume I	8 Toolbox Event Manager	Macintosh Toolbox Essentials
Volume I	9 Window Manager	Macintosh Toolbox Essentials
Volume I	10 Control Manager	Macintosh Toolbox Essentials
Volume I	11 Menu Manager	Macintosh Toolbox Essentials
Volume I	12 Textedit	Text
Volume I	13 Dialog Manager	Macintosh Toolbox Essentials
Volume I	14 Desk Manager	Devices / Macintosh Toolbox Essentials
Volume I	15 Scrap Manager	More Macintosh Toolbox
Volume I	16 Toolbox Utilities	OS Utilities / Text
Volume I	17 Package Manager	OS Utilities
Volume I	18 Binary-Decimal Conversion	Text
Volume I	19 Int'l Utilities Package	Text
Volume I	20 Standard File Package	Files
Volume II	1 Memory Manager	Memory
Volume II	2 Segment Loader	Processes
Volume II	3 OS Event Manager	Macintosh Toolbox Essentials
Volume II	4 File Manager	Files
Volume II	5 Printing Manager	Imaging
Volume II	6 Device Manager	Devices
Volume II	7 Disk Driver	Devices
Volume II	8 Sound Driver	Obsolete Info
Volume II	9 Serial Driver	Devices
Volume II	10 AppleTalk Manager	Networking

Volume II	11	Vertical Retrace Manager	Processes
Volume II	12	System Error Handler	OS Utilities
Volume II	13	OS Utilities	OS Utilities
Volume II	14	Disk Initialization Pkg	Processes
Volume II	15	Floating Point Arithmetic	OS Utilities
Volume III	1	Finder Interface	Macintosh Toolbox Essentials
Volume III	2	The Macintosh Hardware	Macintosh Family Hardware*
Volume III	3	Summary	In each volume
Volume IV	29	The System Resource File	More Macintosh Toolbox/Processes
Volume IV	30	The List Manager Package	More Macintosh Toolbox
Volume IV	31	The SCSI Manager	Devices
Volume IV	32	The Time Manager	Processes
Volume V	5	Graphics Devices	Imaging
Volume V	6	The Color Manager	Imaging
Volume V	7	The Palette Manager	Imaging
Volume V	8	The Color Picker Package	Imaging
Volume V	18	Control Panel	More Macintosh Toolbox
Volume V	19	The Start Manager	Obsolete Info
Volume V	20	The Apple Desktop Bus	Devices
Volume V	21	File Manager Extensions	Files
Volume V	24	The Slot Manager	Devices
Volume V	25	The Deferred Task Manager	Processes
Volume V	32	The Shutdown Manager	Processes
Volume VI	3	Compatibility Guidelines	Overview
Volume VI	4	The Edition Manager	Interapplication Communication
Volume VI	6	The Apple Event Manager	Interapplication Communication
Volume VI	7	PPC Toolbox	Interapplication Communication
Volume VI	8	The Data Access Manager	Communications
Volume VI	11	The Help Manager	More Macintosh Toolbox
Volume VI	14	Worldwide Software Overview	Overview/ Text
Volume VI	18	Picture Utilities Package	Imaging
Volume VI	22	The Sound Manager	More Macintosh Toolbox
Volume VI	24	Notification Manager	Processes
Volume VI	27	Alias Manager	Files
Volume VI	29	Process Management	Processes
Volume VI	31	The Power Manager	Devices

* Not in a volume in *New Inside Macintosh*.

Apple and Microsoft Set Joint Technology Direction

Apple CEO John Sculley and Microsoft CEO Bill Gates recently announced specific plans for their companies to work together to ensure that Microsoft's applications for the Macintosh computer support new System 7 functionality as well as the upcoming PowerPC Macintosh.

Apple and Microsoft continue to be among the leading antagonists in the personal computer operating system wars. Last month's announcement, however, clearly indicated the two companies will remain close allies in developing applications for the Macintosh, which in the current fiscal year are expected to make up approximately \$265 million in annual revenue.

Here are some of the details of the announcement:

- Apple intends to support Microsoft's Open Database Connectivity API (ODBC) as a standard facility of the Macintosh Data Access Manager (DAM), allowing ODBC-compliant applications access to server databases through one set of API calls. Initiated by Microsoft in 1991, ODBC is an implementation of a call-level interface specification developed by the SQL Access Group, a consortium of more than 40 vendors committed to database interoperability. More than 35 vendors have pledged support for the ODBC specification.

In addition, Microsoft and Apple have endorsed the combination of ODBC and Apple Data Access Language (DAL), via Apple's DAM, a cross-platform solution. This combination will allow for decision-support applications requiring ad hoc access to host data residing on a broad range of servers and databases currently supported by DAL today.

Apple intends to build, distribute and support a Macintosh ODBC/DAL client; the client will translate ODBC calls and information into DAL functions and requests and enable ODBC applications access to DAL servers. Apple intends to develop an ODBC/DAL client for Windows. Microsoft intends to distribute and support the ODBC/DAL client for Windows.

- Microsoft will support Apple's Open Collaboration Environment (O.C.E.) in the next major updates to its flagship Macintosh applications, Microsoft Word and Microsoft Excel. Customers will benefit from O.C.E. on the Macintosh by having messaging capabilities part of the operating system and by having easy access to all their mail, regardless of the source.

- Microsoft will support Apple's QuickDraw GX in future versions of its Macintosh applications. Support will be in all three areas of the technology: use of the new print architecture will provide customers with printing features they have long requested, as well as providing more powerful, easier to use printing; use of the new imaging model will provide users with features formerly available in only high-end graphics packages; and use of the line layout manager will provide users with typographic quality text output.

- With Microsoft Excel 4.0, Microsoft was the first to implement support for the Apple Events Object Model and AppleScript. This support enables other programs as well as end users to access Excel's functionality to create multi-application custom solutions. Microsoft will expand support of the Object Model and AppleScript to its other applications.

- Microsoft also announced it will develop applications for the upcoming PowerPC Macintosh. These applications will run in native mode and will be designed explicitly for the new PowerPC chip. Microsoft's position is that developing native applications is consistent with continuing the technological advancements of its leading applications and its commitment to supporting Macintosh technologies. ◆

Communications Developer Products Now Shipping

Apple has just released new versions of three of its communications development products, a token ring extension for its MacTCP software, the AppleShare 3.0 API Developer's Kit, and MacX25 Developer's Kit, version 1.1.

MacTCP is a complete Transmission Control Protocol/Internet Protocol (TCP/IP) implementation that enables third-party developers to provide TCP/IP applications for Macintosh computers. By using the MacTCP Token Ring Extension, MacTCP, and MacTCP-based applications, Macintosh computers will be able to work with other computers via the TCP/IP protocol on token ring (IEEE 802.5) networks. The MacTCP Token Ring Extension, which is also bundled with Apple's MacTCP 1.1 Developer's Kit (APDA order # B0943LL/A), is included on this month's Developer CD.

The AppleShare 3.0 API Developer's Kit (#0177LL/A) provides developers with APIs and documentation that will allow them to write extensions to AppleShare file server software to accomplish server control calls and server event handling. These allow an external program or in it to monitor, control, or administer the file server.

The MacX25 Developer's Kit (#B0314Z) includes the new MacX25 server software, which features support for the Macintosh Quadra line of computers and an application that will allow monitoring of X.25 frames and packets and help troubleshoot communications problems. Also included is the MacX25 Programming Library Kit.

The three products may be ordered from APDA. For APDA ordering information, see the APDA folder. ◆

A Note From Your Editor

If you saw the special insert in July's *Apple Direct* about Apple's aggressive ads showing the advantages of Macintosh over Windows, you might think you stepped through the looking glass when you read about John Sculley and Bill Gates announcing plans for Apple and Microsoft to work closely together (see page 1). You might be thinking (and I'm sure you wouldn't be alone), "One month Apple and Microsoft are bashing each other, the next month they're embracing. What's up?" You might also be wondering at the Apple announcement with Symantec last month to release a cross-platform development tool that allows you to develop for Macintosh and Windows at the same time.

Well, what's up could be any of a number of things. Looking at it from a broad perspective, you could compare Apple and Microsoft to the U.S. and the former Soviet Union (or, as one Apple wit calls it, the *USSwere*): On the one hand, they're sworn ideological enemies who need to rattle their sabres at each other, each claiming that their own way is best. On the other, each recognizes that both can thrive by following a cooperative strategy of peaceful coexistence

Looking at it a little more closely, you might see two Microsofts: First there's Microsoft the *operating system developer* trying to enforce its view of computing on "the rest of us." Then there's Microsoft the *applications developer* who's brought the Macintosh OS widespread acceptance through its popular word processing, spreadsheet, and other programs. You might also see two Apples: the bridge-building Apple who capitalizes on the existence of other vendors and supports multiplatform development, and the proprietary Apple who seeks to show that its products are head and shoulders above the competition.

Viewed from that proprietary Apple perspective, the Sculley-Gates announcement is recognition by Microsoft that the Macintosh Operating System *is* the great computing environment we think it is. It's recognition (despite all claims about Windows to the contrary) that the Macintosh is very much here to stay and that Microsoft wants to continue to be part of our exciting story.

However you view the Apple-Microsoft announcement (and I'm sure there are many other ways to look at it), we know Macintosh is definitely here to stay, and there's always hard evidence to back that up. International Data Corporation just announced that Apple finished less than a percentage point behind leader IBM in 1991 for largest share of the U.S. personal computer market (in terms of

units, not revenue). Also, in a recent study of 400 users who work on both Macintosh and Windows performed by Evans Associates, a San Francisco-based research firm, more than 60 percent of those in the study said they prefer using the Macintosh (for all the usual reasons).

And I think this issue says that we still have an exciting story to tell. We're about to begin shipping brand, spanking *New Inside Macintosh*, completely reorganized and rewritten to make your development efforts more straightforward. See our feature to read about how it came to be and how you can make the transition from the current *Inside Macintosh* to the new. Our Marketing Special Report and Marketing Feature give you useful information on getting more life out of your existing products by taking them to different markets. (Next month we'll return to our usual format with a Marketing Feature and a Developer Outlook.) The Human Interface column this month challenges you to make your applications more intelligent so we can continue to make ours the interface of choice among personal computer users.

Stay tuned for even more excitement!

New Apple Books For Developers Now Available

Once you've seen the first three *New Inside Macintosh* books (see our front-page story), you might be looking for a little light summer reading.

Well, Apple and Addison-Wesley have recently published three new books that definitely aren't right for that trip to the beach, but they'll probably help your development efforts.

LOCALIZATION GUIDELINES

The first is *Guide to Macintosh Software Localization* (330 pages, \$24.95, [U.S. only], APDA order # R0422LL/B). If you're thinking of taking Macintosh software into the international market(s) (see this month's Marketing Feature in the Business & Marketing Folder), you'll want to think about localizing it. More than half of all Macintosh computers are now sold outside the U.S. *Guide to Macintosh Software Localization* provides essential information for helping your software reach the booming international market for Macintosh software.

This book presents Apple's official guidelines for modifying a product for sale in a particular country, culture, or region of the world. It describes how Macintosh software can be localized for Japan, France, Germany, and more than 50 other markets, telling you how you can give an application the most successful look, feel, and behavior for each market.

The book is written at a basic level, and you don't need to be a programmer to understand it. It discusses the essentials of Macintosh localization, including variations in the Macintosh user interface around the world, techniques for handling writing systems besides the Roman alphabet, and available tools and Apple support facilities. In addition, it provides detailed reference information on the localization process, such as hints for designing code that can be easily localized, specifications for the localized versions of Macintosh system software, and details of the primary languages and writing systems for each country and marketing region.

FOR CD-ROM DEVELOPERS

Apple CD-ROM Handbook (144 pages, \$14.95 [U.S. only], # M1528LL/B), also on this month's Developer CD, is a unique guide to developing products for the burgeoning CD-ROM market. It provides the steps to consider when developing CD-ROM discs, financial and legal considerations, and software tools that can help you with the development process. The book provides a clear explanation

of video, audio, text, graphic, and animation technologies as they relate to CD-ROM development.

Part I addresses the planning stages. It is designed to help you determine if CD-ROM is the appropriate medium for distributing your data and explains the different disc formats and standards. Part II helps you learn the fundamental concepts and software tools for working with the different types of CD-ROM content, including programs, text, images, audio, animation, and video. Part III covers human interface concerns, describes basic search and navigation techniques for accessing CD-ROM information, and discusses how to manufacture, duplicate, and package your disc.

Developers should be aware that this is not a technical book; instead of detailed descriptions of the various technologies used in CD-ROM development, it provides a general description of the process and helps you determine if and how to get into the CD-ROM content-delivery business. Nevertheless, if you're in this business or thinking of entering it, you'll find this brief but informative book highly worthwhile.

DESIGNING CARDS AND DRIVERS

If cards and drivers are your bread and butter, you'll want the latest expansion guidelines for all expandable Macintosh models, including the new PowerBook and Macintosh Quadra lines. You can find that information in *Designing Cards and Drivers for the Macintosh Family, Third Edition* (640 pages, \$29.95 [U.S. only], #M7075/D). This highly technical tome includes comprehensive guidelines for designing expansion cards for the following computers:

- Macintosh SE and SE/30
- Macintosh II family
- Macintosh LC
- Macintosh Classic and Classic II
- Macintosh Portable
- Macintosh PowerBook 100, 140, and 170
- Macintosh Quadra 700 and 900

Part I describes the implementation of the NuBus™ interface, provides electrical and mechanical guidelines for designing NuBus expansion cards, and supplies information that is essential to the design of declaration ROM and driver software.

Part II describes the processor-direct slot (PDS) expansion interface and provides guidelines for designing expansion cards for the 68000, 68020, 68030, and 68040 Direct Slot expansion interfaces currently used in Macintosh computers.

Part III discusses application-specific expansion interfaces and describes how they are implemented in the Macintosh family of computers to fulfill a unique purpose.

You may order the books through APDA; see the APDA Folder for APDA ordering information, and be sure to use the order numbers listed immediately after each title. The books are also available through your local bookseller. International availability and prices vary by country. ♦

CD Highlights, August '92

Welcome to *Hack to the Future*, the August 1992 issue of the Developer CD Series. (Thanks go to Alex McKale at Computer Curriculum Corp. for coming up with this month's title.)

As promised, the Macintosh Technical Notes have been completely reorganized according to *New Inside Macintosh* subject categories. Also, you'll no longer find the Q&A stack; the information it contained has been rolled into the new Tech Notes. (See the article in the July 1992 *Apple Direct* for complete details of the new Tech Note reorganization.) For those of you who are familiar with the old Tech Note numbering scheme, we have included a folder of numbered aliases to help orient you to the new scheme.

develop magazine on the CD has also been undergoing significant changes. Included with our regular HyperCard version of the new *develop*, Issue 11, will be an alpha prototype of *develop* in the new Apple Doc Viewer format. See page 4 for a description of Issue 11 contents, and please link us your comments about the new electronic version of *develop* at DEV.CD.

You will notice a number of new international system software versions on this disc. Also note that space constraints have forced us to remove all but the latest releases of system software from the CD. We are working hard to address this issue quickly so that we minimize any inconvenience. In the meantime, we will continue giving you the latest versions as they become available.

Here are some of the latest, greatest new materials you will find on *Hack to the Future*:

Apple CD-ROM Handbook: CD-ROM producers and producers-to-be, you must see this outstanding new publication! Being a CD producer myself, I can vouch that there is no other available resource that matches the quality of this pioneering new Apple publication. (I wish I'd had something like this when I started!) See the article about new Apple books (in this folder) for a description. This book could save your organization a lot of time, money, and aspirin.

Apple Events: *AE Text Retrieval Suite* describes the proposed Text Retrieval Suite for Apple events. Readers should be familiar with the AE Registry (also found on the CD) before reading this document. *Beyond the Required Suite* provides you with information on Apple's IAC philosophy, how you can get started implementing Apple events scripting, and descriptions of third-party Apple event-aware products.

Developer Notes: *Hack to the Future* includes two developer notes for new products. *The Personal LaserWriter NTR Developer Note* provides a description of the PostScript Level 2 commands that are unique to this printer, allowing applications to take full advantage of its capabilities. The *Macintosh PowerBook 145 Developer Note* defines the differences between the various members of the PowerBook family and provides essential technical information about this new notebook computer. (See the article in this folder for more about the PowerBook 145.)

Localization for Japan: This book provides an overview of what is needed to successfully introduce a software product in the Japanese market.

Addressing an audience ranging from product managers to software developers, it discusses the important issues to consider when designing or modifying a domestic software package for distribution in Japan. It also provides information on subjects such as document translation and establishing business partners in Japan.

Virtual User: VU Assist Modules for MacApp is a tool to improve compatibility with MacApp applications. It includes versions for both MacApp 2.0.1 and 3.0. VU Tutorials & Scripts provides a quick introduction to the capabilities of the Virtual User script language. Using a step-by-step approach, the tutorials guide readers through the process of creating several scripts that test a sample application.

MacTCP: Included on this disc are three new MacTCP related applications.

First we have MacTCP Token Ring Extension, which is a MacTCP Link Layer Extension that allows MacTCP to run on token ring networks. The package does not include MacTCP, which still needs to be purchased separately through APDA. The MacTCP Token Ring MTU Tool supports an MTU (maximum transmission unit) of 2000 bytes, allowing users to increase the

MTU size to take advantage of higher capacity networks. Also see an updated version of ZapTCP, a system extension useful for debugging MacTCP applications during development. It reduces the number of crashes caused when applications quit unexpectedly.

System Software: We have a number of new versions on this disc, including Croatian 7.0.1, Czech 7.0.1, Greek 7.0.1.1, Hungarian 7.0.1, International 7.0.1.1, Polish 7.0.1, Portuguese 7.0.1, and Russian 7.0.1. There are also a number of new System 7 tune-ups, including British, Danish, Finnish, French, German, Hebrew, Icelandic, Italian, Norwegian, Spanish, and Turkish.

Sharon Flowers

Developer CD-ROM Product Manager

Don't Miss Out on *develop*, the Apple Technical Journal

Although the printed version of *develop*, the Apple Technical Journal, is no longer included in the monthly mailing to Associates and Partners in the U.S., it's still available by subscription. We've heard from a lot of developers who would still like to see printed *develop* but don't. The reasons they give for not getting the magazine vary from the expense and hassle of subscribing to it separately to the fact that it doesn't make its way through the organization to them anyway. Some developers don't even know why they haven't seen *develop* in print since Issue 7 (distributed a year ago), and are unaware of the cool things we've added since then (like a graphics column and a puzzle page).

Well, there's no need to miss out on this valuable resource. Published once a quarter, *develop* costs only \$30 a year (\$50 outside the U.S.). Subscriptions, which include four Developer CDs, can easily be ordered through APDA (order #M0929LL/A). If you'd like to receive back issues, you can order them, too. (For APDA ordering information, see the APDA Folder.)

Here's a look at what you'll see in Issue 11, the latest issue, now available both on paper and now on the Developer CD (for the first time in the same document viewer as the one used for *New Inside Macintosh*):

- "The Asynchronous Sound Helper." Confused about the Sound Manager? Here's help: a detailed walk-through of useful routines for accomplishing common Sound Manager tasks.
- "Around and Around: Multibuffering Sounds." The inside world of multibuffering sounds is exposed to the light, and we discover that it's really not that gory.
- "Living In an Exceptional World." Ever get mad at those "real programs check errors here" comments you see so often in sample code? Here's a workable error-handling methodology that might interest you.
- "The NetWork Project: Distributed Computing on the Macintosh." Distributed computing is looming large on the horizon, and programmers need to be ready. NetWork enables you to experiment with distributed computing right now.
- "Writing Directly to the Screen." The message hasn't changed: Don't write directly to the screen. But if you absolutely need to break the rules, here are some clues for success.

As always, there's a Macintosh Q&A section, Dave Johnson's popular Veteran Neophyte column (this time with musings on whether it's possible to simulate a brain), and funny author bios and photos (some intentionally so). There's also a knockout cover that was made with Ray Dream Designer.

To quote a reader (whom we did not bribe), "*develop*, in its physical form, is beautiful, informative, sometimes funny, interesting, and occasionally inspiring."

So why miss out?

Caroline Rose, Editor

develop

New Course About AppleScript Programming

Apple Developer University is pleased to announce the new Apple Events/AppleScript Programming course (formerly named Advanced System 7), which offers instruction in programming to incorporate AppleScript support. The five-day class uses a combination of lectures, interactive computer-based training, directed self study, interaction with an expert instructor, and prerelease copies of the AppleScript software (provided under non-disclosure) in programming labs.

Upon completion of the class, participants will be able to write applications that users can manipulate and control by scripting systems such as AppleScript and Frontier. Additionally, you will learn how to embed scripts into your documents, attach scripts to items within your application (script attachability), and create an application that can automatically write scripts for user actions (script recording).

By incorporating AppleScript support into your product today, you will position your product to take full advantage of new Apple technologies, such as voice recognition, with little or no incremental engineering work required.

The course is designed to appeal to application developers who wish to ship fully "System 7-savvy" applications and to take full advantage of the Open Scripting Architecture (OSA) and other emerging technologies. Participants should have at least one year of C programming on the Macintosh and have completed the Macintosh Programming Fundamentals course. Completion of the Programming with System 7 course is suggested.

Openings are still available for the hands-on classes of September 14-18, November 2-6, and November 30-December 4, 1992. To reserve your place in a class, or for more information, please call Developer University's Training Registrar at 408-974-6215, send an AppleLink memo to DEVUNIV, Fax 408-974-0544, or write Apple Developer University's Training Registrar, Apple Computer, Inc., 20525 Mariani Avenue, M/S 75-6U, Cupertino, CA 95014. Register before August 31, 1992, to receive 20 percent off the regular class price of \$1375. ♦

It Shipped!

Through the It Shipped! program, you can announce new and revised third-party products in *Apple Direct*. It Shipped! listings are also made available on the 3rd Party Connection AppleLink bulletin board. You can obtain an It Shipped! application by downloading it from the AppleLink network (AppleLink path—Developer Support: Developer Services: Apple Information Resources: Developer Program Information: It Shipped!@ Program). Or call Todd Luchette at (408) 974-1241 (voice) or (408) 974-3770 (fax). Once you've completed the application, send it to Engineering Support, Apple Computer, Inc., 20525 Mariani Ave., M/S 42-ES, Cupertino, CA 95014 Attn: It Shipped! Program. Or send it by AppleLink to IT.SHIPPED.

The following products shipped in July 1992.

<u>Publisher</u>	<u>Product (Version)</u>	
Abacus Concepts, Inc.	StatView (4.0)	
ACROPOLIS SOFTWARE	Make...Repeats+ (2.2)	
AirMouse Remote Controls	AirMouse (1.0.1)	
ATTO Technology, Inc.	SiliconDisk Plus (n/a)	
	SiliconDisk PRO (n/a)	
Bliss Interactive Technologies	Resource Navigator II (1.0)	
Calico Publishing	Tapestry (1.2)	
Central Point Software, Inc.	MacTools Deluxe (2.0)	
Concentrix Technology, Inc.	Connections (2.1)	
	Connections-Sharp Wizard Link	Module
Davidson & Associates, Inc.	Headline Harry and the Great Paper Race (1.0)	
FGM, Inc.	PICTure This (2.0)	
Mathemaesthetics, Inc.	Resorcerer (1.1)	
MentorPlus Software, Inc.	FliteMap (1.0)	
	FliteSchool (2.0)	
Metropolis Software, Inc.	MSI Access (1.5.1)	
Ontrack Computer Systems Inc.	Disk Manager Mac (2.41)	
Peirce Software	Smoothie (1.0)	

Pilot Technologies, Inc.	BookEndz, PowerBook docking station (Model BE147)	
Quadamation, Inc.	ZPS-150cxi (B)	
Radius Inc.	VidelVision (1.0)	
Sassafras Software, Inc.	KeyServer (3.0)	
Science For Kids	"Cell" ebration (1.0)	
Software AG	Natural Connection for Macintosh	(2.1.1)
Tuesday Software	The Tbx System (1.2)	

APDA Top-Ten Sellers

1. E.T.O. Starter Kit & Subscription
2. DAL v. 1.3 MVS/VTAM Server
3. MPW C v. 3.2 bundles
4. QuickTime Developer's Kit v. 1.0
5. MacTCP v. 1.1 License
6. Macintosh Common Lisp v. 2.0
7. AppleTalk SPT + Mac Programming
Fundamentals promotion
8. Macintosh Programming Fundamentals v.1.0.1
9. *Inside Macintosh, Vol. I - VI* + X-Reference
10. APDA Technical Info Mailing

Ordering Information

To place an APDA order from within the U.S., contact APDA at (800) 282-2732; in Canada, call (800) 637-0029. For those who need to call the U.S. APDA office from abroad, the number is (408) 562-3910. You can also reach us via AppleLink; the address is APDA. If you're outside the U.S., you may prefer to work with your local APDA contact. For a list of non-U.S. APDA contacts, see the "International APDA Programs" page in the *APDA Tools Catalog*.

APDA Hot Product — August '92

New Inside Macintosh

Here are the books you've been looking for. Topically organized, and with more sample code and more explanations—the first three books in *New Inside Macintosh* are available now from APDA. (See this month's page 1 feature for complete details about *New Inside Macintosh*.)

Inside Macintosh: Processes

- Describes the parts of the Macintosh Operating System that allow you to control the execution of processes and interrupt tasks
- Shows in detail how you can use the Process Manager to get information about processes loaded in memory
- Provides complete reference information about the Vertical Retrace Manager, Time Manager, Notification Manager, Deferred Task Manager, and Shutdown Manager

(208 pages) R0355LL/A \$22.95

Inside Macintosh: Memory

- Describes the parts of the Macintosh Operating System that allow you to manage memory
- Details strategies for allocating and releasing memory, avoiding low-memory situations, and preventing the use of invalid handles and pointers
- Provides complete reference information about the Memory Manager, Virtual Memory Manager, and memory-related utilities.

(296 pages) R0357LI/A \$24.95

Inside Macintosh: Files

- Describes the parts of the Macintosh Operating System that allow you to manage files
- Shows in detail how your application can handle the commands typically found in a file menu
- Provides complete reference information about the File Manager, Alias Manager, Standard File Package, and Disk Initialization Package.

(510 pages) R0356LL/A \$29.95

Now Available From Apple

Apple

AppleShare 3.0 API Developer's Kit

R0177LL/A

\$99.00

MacTCP Developer's Kit w/ Token Ring Extension

B0943LL/A

\$100.00

MacTCP Documentation Kit w/ Update to MacTCP Administrator's Guide

B0944LL/A

\$60.00

MacX25 Developer's Kit v.1.1

B0314Z/C

\$2,200.00

MacX25 Server Software Kit v.1.1

M0711Z/C

\$800.00

(Books)

Apple CD-ROM Handbook

R0422LL/A

\$14.95

Designing Card and Drivers for the Macintosh Family, 3rd Ed

M7075/D

\$29.95

Developing Object-Oriented Software for the Macintosh

T0495LL/A

\$26.95

Guide to Macintosh Software Localization

R0422LL/B

\$24.95

How to Write Macintosh Software, 3rd Ed

T0150LL/B

\$28.95

Macintosh Programming Secrets, 2nd Ed

T0157LL/B

\$29.95

Programmer's Guide to MPW, Vol. II

T0493LL/A

\$29.95

Tog on Interface

T0494LL/A

\$26.95

Third Party

Metrowerks Modula-2 PSE Professional Standalone Edition

T0207LL/C

\$79.00

The Programmer's Extender GT v.1.1

T1492LL/A

\$495.00

Serius Programmer v.3.0

T0367LL/C

\$395.00

Serius Developer v.3.0

T0368LL/C

\$595

Corrections

Regrettably, *Apple Direct* provided incorrect prices for some of the products listed in this column last month. The correct information follows.

MPW Development Environment Update v. 3.2.3

M0027LL/E

\$25.00

MPW Assembler Update v.3.2.3

M0320LL/E

\$25.00

MPW C Update v.3.2.3

M0325LL/E

\$25.00

MPW Object Pascal Update v.3.2.3

M0321LL/E

\$25.00

MPW C Bundle Update v.3.2.3

B0034LL/I

\$50.00

Macintosh Programmer's C Workshop Update v.3.2.3

B0531LL/C

\$50.00

MPW Object Pascal Bundle Update v. 3.2.3 (Disks)

B0033LL/I

\$50.00

MPW C & Object Pascal Bundle Update 3.2.3 (Disks)

B0035LL/I

\$50.00

In addition, SADE v. 1.3.2 is now available, not v. 1.3.1 as was reported last month.

Designing For a Complex World

Part 2: Intelligence

By Peter Deignan

This article continues the discussion of the five “new techniques” for interface design that were introduced in June’s column: constraints, intelligence, elegance, transparency, and attention to detail. The June article focused on using constraints to simplify the way a user makes choices. This month, I’ll talk about another principle: intelligence. (Editor’s note: The second part of “Stories & Vignettes as Design Tools,” begun in last month’s issue, has been postponed.)

In our everyday life, we carry on countless conversations with people who mispronounce words, use incorrect grammar, or have strange accents. Most of the time, we have no trouble understanding what the other person is saying, even though their speech doesn’t exactly follow “the rules.” These minor “errors” of speech are so common that we don’t usually notice them—indeed it’s considered rude to point them out to the speaker. Only in the rarest of instances will we ask the speaker to restate something that we don’t understand.

Unfortunately, no similar attempt at understanding seems to take place in the world of computers. Instead, we have written a generation of computer programs so that they behave like officious bureaucrats: “comma required between items”, “semi-colon required after previous line”, “first letter of name must be capitalized”. These are the messages of a computer that wants to be shot. A user who reads messages like those will conclude that the computer is either rude or stupid—and they’d be right. It’s up to us to be sure the Macintosh is always thought of as a kinder, gentler, and more intelligent computer: it’s one of the things that keeps all of us from going the way of Brand X.

Our applications need to start behaving with more intelligence. *Intelligent systems* are ones that work hard to understand our input, assist us in arranging and formatting our work, configure themselves to match the computing environment, and (ideally) take care of repetitive or housekeeping chores for us, leaving us free to do our real work.

BASIC INTELLIGENCE

For starters, don't let your application be pedantic about trivial input formatting rules. If the computer knows that the first letter needs to be capitalized, it should simply adjust for it, then move on. People who point out others' trivial grammatical errors can have trouble making friends. Applications that do the same can expect similar difficulties.

For simple cases when the user's input doesn't conform to a formatting rule, you can usually solve the problem by converting code that flags such errors to correct for them instead. When the correct interpretation of a user's input is not quite so obvious, design your application to take its best guess, then ask the user if that was what he or she meant. For instance, if the user enters a customer name that is unknown to your system, have the program offer a list of names similar to the one typed. Ideally, this list would include names that both vary from the one typed by a letter or two (Anderson vs. Andersen), as well as ones that vary greatly, but which are phonetically similar (Anderssonne). Of course, the user should also be able to pick from a complete list of all names in the system (the "see-and-point" instead of "remember-and-type" principle).

Having the computer make formatting corrections needn't just be a way to prevent error; it also lets the computer help the user put things in the form that they really wanted in the first place. Draw programs can provide the option of automatically aligning objects, scanning programs can straighten images, and personal information managers can format text. In all of these cases, you can design applications that can formulate a good idea of what the user wanted in the first place, and apply a few simple rules to transform their input into that form. Of course, the user should also have the option to turn this special formatting off.

DELIGHT THE USER

Beyond these simple formatting changes comes the idea of anticipating the user's needs and having your application adjust its defaults accordingly. A nice example of this is the way a popular drawing application for Macintosh lets you quickly create a series of objects. As with most applications, if you duplicate an object in this application, the copy appears just below and to the right of the original. The really neat part though, is that if you move the copy, say three inches above and to the right of the original, then press duplicate again, the next copy will appear three inches above and to the right of the last one. Since

the program took note of the user's actions and adjusted itself accordingly, it now becomes incredibly simple to create a line of evenly spaced objects.

Another application I admire is the address book application I use. Like most such applications, this one contains a phone dialer, which keeps a record of my local area code so that it knows when to dial long distance. However, the application also realizes that if I enter someone's phone number and I omit the area code, it's more than likely a local call. As such, it formats such numbers with my local area code, which I'd entered in the phone dialer. Sure it's a simple thing, but just like the object alignment in the drawing program, it's one of those features that delights users with its thoughtfulness the first time it's discovered.

HELP THE COMPUTER KNOW ITSELF

The intelligent application never asks the user for information it can find out for itself. Macintosh applications have a real advantage in this regard, as they can use the toolbox to detect a great deal about the operating environment, including the type of Macintosh being used, the operating system features that are available, whether the monitor is color or black and white, and much, much more. By using this information, you can have your application behave appropriately for its environment without quizzing the user on configuration.

Although we've made a good start in having our applications be self-configuring, we can still do more. For instance, the first time a terminal program is used, it can conduct a series of tests to determine whether a modem is connected, what port it's connected to, and the speed at which it's capable of operating. The results of this testing can be used as defaults when the setup is first presented. If the tests are inconclusive, nothing is lost by having tried—but with any luck, such testing can provide much of the information needed for the user to make a connection on the first try.

INTELLIGENT AGENTS: COMPUTERIZED ASSISTANTS

Prior to System 7, the Macintosh System Folder was a mess—home to hundreds of control panels, extensions, preference files, and other miscellaneous items. System 7 cleaned up the mess by making dedicated subfolders for these different types of files, but this introduced a new problem: now the user had to make sure that items wound up in the right subfolder. This problem was solved by adding intelligence to the Finder, which allowed the user to merely drop the different items on top of the System Folder; they would

be automatically placed in the proper subfolder. Because the system knows where the different types of files belong, it doesn't make the user go to the trouble of placing them manually.

As our systems become more complex, there's a greater need for these types of facilities, which free the user from mundane housekeeping tasks. Eventually, intelligent, automated processes called *agents* may become computerized assistants, backing up a hard disk, scanning new services for articles of interest, and sorting mail while users concentrate on their real work. In the meanwhile, we need to look for any opportunities to use our knowledge of the user's actions, and the particulars of the task at hand to automate trivial or repetitive processes.

BE SPECIFIC AND DON'T GO TOO FAR

When creating intelligent interfaces, you should bear in mind a couple of issues. First, your interface can only behave intelligently if it has specific information about the data being worked with—and the more knowledge it has about it, the more intelligently it can behave. For instance, it has to know what a phone number is, as opposed to just a collection of integers. Similarly, you're limited in the amount of intelligence you can bring to bear on a "customer name" field if all your program knows about names is that they fit in a 30-character alphabetic field. You'll need to build the specific knowledge of how to deal with various types of data into your application—while at the same time taking steps not to hard-code yourself into a corner.

Secondly, you need to know when to stop. No matter how valiantly your telephone number parsing algorithm tries, someone out there is going to enter a number that doesn't seem to fit, for instance an international or alternate long-distance number. The same holds for names, and addresses. And yes, sometimes you really didn't want to have your objects aligned in your drawing program. In all these cases, allow the user to override, or even turn off, the intelligence features. If computers are ever to become our assistants, we'll definitely need to raise the level of human-computer communication — but even in human conversation, you sometimes do need to (politely) ask the other person to rephrase what they said. ♦

Peter Deignan runs the Human Interface Lab at Apple's IS&T (Information Systems and Technology) organization.

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The “**” indicates the trade shows/events at which Apple Computer, Inc. is scheduled to exhibit as of press time. This list may be incomplete. If you have information about a show that you want listed here, contact Developer Technical Communications, 20525 Mariani Avenue, Mail Stop 75-3B, Cupertino, CA 95014. For further information check the Events folder on AppleLink (path: 3rd Party Connection:Events).

August 12 through 14

****Apple Enterprise Computing Conference**

Boston, MA

Contact: Rhonda Rekieta

AppleLink: REKIETA.R

(408) 974-0103

September 8 through 12

****Orbit, Basel**

Contact: Kathrin Mäder

Switzerland 1 832 81 11

Fax: Switzerland 1 830 63 06

September 13 through 17

****IOUW - Int'l ORACLE Users Week Conf.**

San Francisco, CA

Contact: Oracle Corporation

(415) 506-7000

September 22 through 24

****UNIX Expo**

New York, NY

Contact: Bruno Blenheim, Inc.

(201) 346-1400

September 22 through 25

****Seybold**

San Francisco, CA

Contact: Seybold Seminars

(213) 457-5850

September 23 through 30

Bureau 92, Brussels,

Belgium

Contact: BKK

02 7627183

Fax: 02 7629434

September 29 through October 1

CAD CAM Show

De Hallen, Kortrijk,

Belgium

Contact: De Hallen

056 204000

Fax: 056 217930

September 30 through October 3

****SPA**, Washington, D.C.

Contact: The Conference Dept. of SPA

(202) 452-1600

October 19 through 21

National AEC Expo - Arch., Eng., Const.

San Francisco, CA

Contact: Expoconsul Int'l

(609) 987-9400

October 21 through 23

****Winworld**, Zurich Window Exhibition

Contact: Kathrin Mäder

Switzerland 1 832 81 11

Fax: Switzerland 1 830 63 06

October 21 through 24

****League for Innovation**

Orlando, Florida

Contact: Monica Sable

(408) 974-8554

October 28 through 31

****Educom**

Baltimore, MD

Contact: Paula McClain

(408) 974-8502

November 8 through 11

****MacIS USA**

New Orleans, LA

Contact: Jerry Starr

AppleLink: JERRY.STARR

(408) 974-3836

November 10 through 12

****Autofact**

Detroit, MI

Contact: Society of Manufacturing Engineers

(313) 271-1500

November 13 through 15

****Networld**

Dallas, TX

Contact: Bruno Blenheim, Inc.

(201) 346-1400

November 16 through 20

C++ World

Secaucus, NJ

Contact: G.G. Schafran

(212) 274-0640

November 16 through 20

****Comdex**

Las Vegas, NV

Contact: Interface Group

(617) 449-6600

November 18 through 23

****NCTE - Natn'l Council of Teachers of English**

Louisville, KY

Contact: NCTE

November 20 through 23

****NCSS - Nat'l Council of Social Studies**

Detroit, MI

(202) 966-8740

International Success Stories

How small U.S. companies hit it big

by David Gleason

Editor's note: This article focuses on U.S. companies that have successfully expanded internationally. A future article will highlight how non-U.S. companies have entered the U.S. and other markets.

While most large, multinational software developers have long been active in the world market, many smaller- and medium-sized U.S. companies still haven't stepped into the global arena. The words "global" and "worldwide" can be intimidating to smaller, resource-limited developers who understandably are hesitant to cross borders—given the pressures of maintaining a successful business in today's market climate.

However, many small development companies are successfully competing in the international marketplace. You don't have to be the size of companies such as Lotus, Microsoft, or Symantec to compete in the world market, but you should understand what is involved before making the commitment.

We spoke with some smaller developers and asked them what they thought made their international forays successful. It was clear from their experiences that it would be difficult to create a step-by-step how-to formula that would work for everyone. But they had a plethora of valuable insight and advice to offer about such important considerations as how they decided to enter markets outside of the U.S; evaluated the opportunities; prepared products for foreign markets; planned a strategy for entering the world marketplace; and made contacts with international distributors.

We hope that some of their experiences will pleasantly surprise you, and prompt you at least to seriously consider if going global is right for you.

The companies profiled here vary widely in size, product line, and marketing and product development strategy. Their experiences illustrate that even a very small firm can be resourceful enough to create and sell products to international markets. They also show that while not all products are right for foreign markets, many kinds of products—such as personal productivity software, screen savers,

optical character recognition software, educational products, electronic mail modules, and others—do have international appeal.

EACH IN ITS OWN WAY

Each company successfully found its own path into the larger and more complex world market. Here are their stories.

PASTEL Development Corporation. In 1991, PASTEL Development of New York City created DayMaker, a personal information management product. It was initially designed only for the U.S. market; when PASTEL considered marketing DayMaker overseas, it worried about competition from gray-market sellers and mail-order houses. The solution was to update the product so that it would run on only the localized version of the Macintosh operating system for each country. Some of DayMaker's source code had to be rewritten to accommodate these changes and to meet localization requirements.

PASTEL also searched for a way to use its projected international sales to boost its overall market share and expand product awareness at home. Because entering foreign markets one at a time wouldn't yield the needed revenue quickly enough, PASTEL opted to take a more global approach.

Dale Scoggin, international sales manager for PASTEL, says, "I don't believe in going piecemeal into one country at a time. Although initially there were a lot of marketing expenses entailed in a global product launch, they were minimal compared to the potential return. I feel that international markets can generate enough working capital to cover the operational costs and finance the steps you must take to generate more and more domestic sales."

From its sales office in Foster City, California, PASTEL followed its domestic release of the updated version of DayMaker with a comprehensive, well-planned worldwide launch; it immediately distributed an English-language version in 12 countries.

Scoggin says, "We timed the international launch to coincide with the Macintosh PowerBook introduction, and positioned DayMaker as the perfect product to use with the PowerBook to get your life organized." By releasing the English-language version of DayMaker in 12 major world markets, PASTEL quickly captured a significant portion of the Macintosh market share for personal information management software.

Since its global launch, PASTEL has steadily introduced localized versions of DayMaker into all the major markets of Europe, as well as in Australia and Japan. It is soon entering ten additional countries, including Mexico, Korea, the countries of Latin America, and parts of the Middle East.

Berkeley Systems, Inc. This Berkeley, California company, best known for the After Dark screen savers, first entered the U.S. market in 1986 with computer access software for the partially sighted. Its first product was inLARGE, a screen magnifier (later licensed to Apple and included in every Macintosh computer as Closeview). At the time, it was a small firm composed of only six people.

Monica Granados, public relations manager for Berkeley Systems, explains, "The development of our disability products was funded by grants. With government funding generally being cut, we realized that if we wanted to keep producing products for the disability market we had to also get into the mainstream market. So we started the personal products division and created Stepping Out: The Software Big Screen."

With the positive reception of Stepping Out, the commercial possibilities became evident, and in 1989 Berkeley Systems introduced After Dark. Within a year the product's large domestic sales allowed Berkeley Systems to expand in a way that would have been unthinkable with its smaller, specialized product line.

"We sort of backed into international business," Granados says. "Following the After Dark launch in the U.S., we got inquiries from dealers, international and domestic distributors, and the press. We had always wanted to get into international marketing, but we felt we were too small to finance it."

The success of After Dark made international expansion too tempting to ignore. Ann Crampton, Berkeley Systems international sales manager, was then hired to expand the international program. She explains: "We had arrangements with distributors to sell Stepping Out II in Australia, Japan, and the U.K., and they picked up After Dark. With all the press coverage we received for the domestic product, all our distributors wanted to carry the product. So we just added it to our existing contracts."

Since releasing the English-language version, Berkeley Systems has localized After Dark into several languages, including Japanese. It works with distributors in Canada, Japan, Mexico, Australia, and nine European countries, including the U.K, Germany, and France.

After Dark has been very successful at home and overseas. The company attributes a good part of that success to the built-in appeal of the product, its affordable price, and the introduction of low-cost color Macintosh computers. "As a screen saver, After Dark is useful, but it's also a product that users can just enjoy," says Crampton. As a low-cost product, After Dark offers too low a margin for some international dealers to sell, but the new trend to "superstores" that sell many products has increased distribution, in the U.S., Europe, and Japan.

International sales of After Dark through distributors now accounts for approximately 15 percent of the company's total business—and the company has since grown to more than 70 employees.

Key Curriculum Press. This education developer, located in Berkeley, California, is a 25-person company that publishes mathematics materials for use in schools. It produces a wide range of education-related materials, including textbooks, workbooks, and video products; software represents about 20 percent of the product line. Key Curriculum's Macintosh product, The Geometer's Sketchpad, is a product that helps students to visualize complex mathematical principles.

President Steve Rasmussen found that his motivation for expanding beyond the U.S. had more to do with his overall philosophy and long-term goals as an educational products publisher than with the compelling forces of the marketplace.

Rasmussen says, "In the long run, we think that strong international contacts will allow us to strengthen our products, and keep us aware of international trends that we could use in developing products for the U.S. So, our number one goal in establishing international distribution was to create some international educational ties, to take part in an international education idea exchange. Goal two was to generate moderate income from international sales that would not require a large amount of additional work, in terms of human resources, on our part."

Key Curriculum chose markets that were appropriate for its goals. "We sell most of our product line in Australia, because in the area of mathematics materials there is a growing exchange between educators in Australia and the United States. We have also established a distribution and localization

arrangement in Japan. We've identified ideas and materials that we want to import from those countries during the next couple of years. In turn, our presence and contacts there will allow us to move into more extensive kinds of business relationships that will potentially allow us to export more products and grow our business," says Rasmussen.

Attain Corporation. Located in Somerville, Massachusetts, Attain is the maker of In Control, a to-do list manager. (The founders of Attain created the original version of FileMaker, which it sold to Claris Corporation.) Attain has five employees and is approaching \$1 million in annual revenue from In Control. The company is targeting approximately 40 percent of its total revenue to come from international sales.

Vice President of Sales Jeff Hulton says, "Based on my 11-years experience in international software distribution, I am convinced that a company like ours can no longer succeed without international sales." While Hulton knew that Attain had to pursue international markets, the issue was determining the best approach.

"Our process for selecting markets was opportunity driven, as is the case for many small companies. We did not have the luxury of sitting back and deciding, in a completely orderly fashion, which market to enter first. We started in the U.K. and Australia because there the cost of entry was lowest, and we were approached earlier by distributors. Then came Germany because we found the right distribution partner there," says Hulton.

Caere Corporation. This 15-year-old Los Gatos, California, company produces a number of software products, including the optical character recognition (OCR) products OmniPage and OmniPage Professional. From the start, Caere's approach has been to build products that could easily be modified for international markets. (For more information, see the sidebar below.)

Like PASTEL Development, Caere developed its product so that it would run only on the correct version of the Macintosh operating system for each country, to prevent losing sales to gray marketers or other unauthorized sellers overseas. (This also protects the marketing investment of the local distributor.) Caere, too, began by introducing an internationalized English version, and it later released localized versions into each country.

Because OCR software reads characters that are scanned into a computer file, Caere decided that the OmniPage product could easily work with other

languages that use the same Latin-based alphabet, such as French, German, and Spanish.

Matt Miller, Caere's distribution manager, explains: "Right from the start, we wanted a product that was suitable for the international market. So we made sure that it supported thirteen European languages. In OCR, that is very, very important." With its standard OmniPage package, Caere provides filters that allow a user to scan and read text in any of those languages.

Having European language support already built in to the OmniPage product was a big asset when Caere began to create localized versions, because all of the OCR capability for that language was already in the product. (For more information, see "Developing An International Product" below.)

Europe was the obvious first choice market for that company to expand into. Larry Lunetta, Caere's director of international markets, says, "Western Europe is an excellent first market to attack. Distributors there understand how most U.S. companies do business. And in Europe, because of the proximity of the markets, you can visit and work with a lot of them more efficiently, whereas in the Far East, you must travel thousands of miles between Australia, Hong Kong, Singapore, and Japan. Plus, right now there is a much larger Macintosh population in Europe than there is anywhere outside the United States."

This doesn't mean that Caere has avoided the Far East. Currently, full OCR capability on personal computers is unavailable for the Japanese market. Such technology requires far more processing power than is currently cost-effective, because of the enormous number and complexity of characters in Asian languages. (For more about Japan, see "[Just a Few Words About] Cracking the Japanese Market" below.)

Instead, Caere found a niche market in Japan for English-based software. "The Japanese obviously do a lot of business in English, so I think there's a growing market: Japanese companies who need English-based tools, such as OCR, and U.S. companies who are doing business in Japan," Lunetta says. "Caere products have been selling quite successfully in Japan, in conjunction with another company's product that translates Roman characters into Kanji."

As of 1991, Caere's international sales had grown to 39 percent of total revenues. The company is adding new countries in Latin America and is investigating opportunities in Eastern Europe, including those countries that speak Cyrillic-based languages such as Russian, Ukrainian, and Bulgarian.

CE Software. This West Des Moines, Iowa, developer currently derives about a quarter of its revenues from international sales. It manufactures a range of products, such as QuicKeys, DiskTop, CalendarMaker, and Alarming Events, but its best-selling product is QuickMail.

CE Software was convinced to begin international expansion with a 1988 trip to Europe sponsored by the United States Department of Commerce (DOC). (For more information about how you can take advantage of the DOC's help, see "The Commerce Connection." below.)

A local DOC representative advised CE Software to participate in a trip to London via a "matchmaker program" that was designed to introduce American companies to European distributors.

Paul Miller, CE Software's international product manager, explains, "We said to him, 'We have seven people in our company, and you want two of us to go to Europe for two weeks? We can't keep up with demand in the U.S., so why should we consider international business?' His response to us was, 'The U.S. isn't always going to be your strongest market. If you start doing international business now, it will be much, much easier as you continue to grow.'"

Also, CE Software has many corporate accounts, and it discovered that many of its U.S.-based customers wanted CE Software products, services, and support at corporate sites around the world—a discovery that helped CE Software accomplish international expansion.

On that first European trip, CE Software met with people who would later become its distributors for France and the U.K. It now has distributors in Japan, 14 European countries, Australia, and Mexico.

Each of these companies has successfully introduced products in foreign markets. While they've all experienced problems and unexpected roadblocks, each has found its own, often innovative, path into the world market. But what they all had in common: an incentive to go international driven by an awareness that the marketplace favors those who do so—and having the right product to sell abroad.

ENTERING THE WORLD MARKET: INCENTIVE AND IMPERATIVE

Truly, national market boundaries have grown increasingly penetrable. "Trade borders" are dissolving, markets are expanding, and buyers are demanding more and more diversified products. The soon-to-be-unified European market,

the enormous Japanese market with its seemingly endless appetite for software, the quickly expanding economies of the Far East, and, most recently, the recovering economies of Latin America all offer opportunities for sales and expansion that very few U.S. companies can afford to ignore.

Furthermore, in recent years, as the recession has taken a toll in the United States many businesses have found that overseas sales have helped keep them afloat. Some experts speculate that the U.S. and international markets tend to expand and contract in somewhat staggered cycles. Therefore, some businesses have found that a slowing domestic demand for their products can be offset by increased international demand, allowing their companies to survive and even to grow during hard times at home.

Apple's Global Penetration Means Developer Opportunities. Today, almost half of Apple's total revenues come from outside of the United States. Several things are contributing to Apple's global penetration. There are upwards of 30 localized versions of the Macintosh system software currently available. (Many are available on several discs of the Developer CD Series, including the May, 1992 *The Byte Stuff*, and on the July *Butch ASCII and the Runtime Code*. New localized versions are also included on this month's CD; you'll also find updates and additional versions on future discs.)

Furthermore, System 7 includes built-in globalization features, such as TextEdit and the Script Manager, that make localization into non-Roman languages possible. Also, the new WorldScript system software, part of System 7.1 that Apple plans to ship this fall, provides for a single version of the Macintosh operating system to support multiple (and double-byte) languages, including Japanese, Chinese and Korean. In fact, System 7.1 will be the first version of Macintosh system software that can be universally used by Macintosh computers in every country.

Apple also has a business services person assigned to seven regions around the world to assist developers in entering foreign markets. (For a list of those contacts, below). Apple will continue to provide products and services to encourage and assist you in the localization and distribution of software globally.

Therefore, the incentive for developers to at least consider going international is there: The huge, developing world marketplace is far from saturated with

many kinds of products—and the Macintosh installed base and its international features are in place to support your products. The imperative is also there: Companies that don't go global may be left behind by competitors that do.

THE BIG DECISION

The process of moving into global markets has been different for each developer. But they all started with the same first step: making the big decision to go international. As PASTEL's Dale Scoggin states, "It can be a tough decision. Going global changes a business entirely. The whole organization has to change—the company structure, organization, everything." Not every company wants the change, some don't have the resources to handle a global expansion, and not every product has international appeal. You should take a long, hard look at your goals, products, and resources to decide if going international is right for you.

It's particularly important to evaluate your product's international appeal. Is it exclusively U.S.-focused? Does it make assumptions about language, currency, customs, or behavior that are exclusively American (or Western)? Are foreign markets already flooded with similar products that are locally produced and thus less expensive to manufacture and market?

Also, because the international marketplace is constantly changing, consider what your product's appeal might be several years from now: Will it still meet users' needs, or will it be rendered obsolete by new developments in software design, marketing, or changing consumer tastes?

Even if you have the right products, there are other key considerations. For example, unless your home office is well-managed and your product development is on course, your company will face even more-pronounced crises and difficulties if you decide to expand. Therefore it's important to take a candid look at your company and make certain that you are not jeopardizing domestic operations by expanding internationally.

If you determine that you can support international expansion and that your product is right for non-U.S. markets, the next step is to make the commitment and create a plan to do it right. Your overall business plan must be altered to include international operations. It should forecast for several years, and thus

should include plans to periodically reevaluate and, if needed, restructure your foreign operations.

Experienced developers also warn against the natural inclination to initially focus on sales quotas. Your international effort should focus on business/market development. To be successful in the long run, first you must focus on establishing and building the market for your products.

Furthermore, veteran international developers suggest that you assign a person to perform the international function. Don't make it a part-time job for someone who has other responsibilities; if you do, you'll set yourself up for failure right from the start, because the effort needed to establish, develop, and nurture international business is tremendous.

ORGANIZING YOUR APPROACH

As you can surmise from the experiences of the companies mentioned earlier, there are many ways to enter a foreign market. The two main strategies are to launch products concurrently in several markets—the global approach—or to enter markets one at a time as opportunities present themselves.

In either case, success depends on having an open mind about and awareness of the opportunities for international expansion; you must also be poised to capitalize on them when they appear, that is, be ready for and responsive to opportunities.

The Global Launch. Conducting a global product launch allows you to implement your strategy in an orderly fashion and at a pace that you dictate, not the market. Although you may be able to launch globally with both localized and English-language products, most often companies entering new markets first release an English language version in a number of major markets, perhaps a dozen or so. Gradually, these companies prepare localized versions for each major market; they then create versions for additional markets as they generate revenue.

Often, a convenient time to launch globally is a few months before a major trade show, such as Macworld. This gives you a chance to meet distributors from all over the world, demo your product, and set up further distribution contacts. (See “Meeting Distributors: The Trade Show Connection” below.)

PASTEL Development created a product release plan to leverage two closely-timed events that would help promote DayMaker: Macworld in San Francisco and the Macintosh PowerBook introduction. PASTEL launched the English-

language international version simultaneously in the U.S., 10 European countries, Australia, and Japan. Since then, it has released localized versions in all those countries and is steadily adding others, including Mexico, parts of Latin America, and the Middle East.

“The global launch process,” says PASTEL’s Scoggin, “was relatively straightforward. First, we set up meetings at Macworld with potential distributors. Then, to develop interest we showed them demos and explained how well our product was doing domestically. This allowed distributors to visualize their being able to sell the product in their own markets.” It also gave PASTEL a chance to hold a large number of face-to-face meetings in a short time span, which accelerated the process of setting up distribution partnerships in many countries.

In addition to finding distributors at Macworld, PASTEL evangelized DayMaker to Apple personnel. “Right after Macworld, every third-party marketing manager at Apple got a copy of DayMaker, a promotional brochure, and a letter of introduction from us. Creating advocates at Apple really helped to spread the word,” says Scoggin.

PASTEL’s success is not easy to duplicate. Not every product release can be timed with Macworld or a similar event, and not every company can move into several markets so quickly. However, the PASTEL model is a good example of the method, scope, and timing of a global product launch. And as you can see, a global launch is within reach for even a small company.

One Market At a Time. While a global launch strategy can work for a smaller company, many developers prefer to approach markets one at a time. This might mean targeting large, mature English-language markets such as the United Kingdom, Australia, and Canada. (However, don’t forget that although those countries speak the same language, there are subtle nuances in the use of the language and also vast cultural differences to consider when preparing your advertising, promotion, and other marketing materials.)

These markets also have software distribution systems that combine characteristics of European and U.S. ones, making your search for distributors who understand your needs and expectations relatively easier than in other parts of the world.

Key Curriculum chose this approach. “Because our product is in English, the first thing we did was identify places where we could market it with the least

additional effort. Australia and New Zealand were the first markets for which we found distributors, and we also made contacts in the U.K. and Canada,” says company President Rasmussen.

FINDING THE RIGHT DISTRIBUTOR

Finding a distributor for your products is probably one of the biggest challenges you’ll face when launching a product in other countries. You must find a distributor located in the target country who knows the market, has a dealer channel for distributing products, and if needed can provide service and support.

There are many ways to meet distributors, such as attending trade shows, hiring specialized consultants, and using resources such as the Software Publishers Association. All but one of the companies interviewed for this article said they relied heavily on trade shows for making contacts with the key distributors in various markets. (For more information, see “Meeting Distributors: The Trade Show Connection” below).

It is not a trivial task to find the “perfect” distributor in any market. Indeed, there may not be such a thing as a “perfect” distributor. Distributors’ range of services and expertise vary widely by country, market, and the distributor itself. Obviously, there are many, many considerations when it comes to choosing the right distributor and deciding what you want in one. However, the most important points to take away from this are the need to enter the relationship knowing exactly what you want, and to treat your distributor as a partner in your success.

For example, PASTEL Development’s Scoggin says, “A key element I look for in a distributor is that it add value, instead of being only a box mover.” For PASTEL, the distributor must play an aggressive and intelligent role in generating business in the overseas market.

Key Curriculum’s Rasmussen agrees, saying that “a perfect distributor for us is one who minimizes the impact on our company in terms of developing business abroad. As a small company, we have our hands full addressing U.S. product demand. If we can find partners who are experts in their own markets, who can minimize the overhead for us to enter those markets, then that’s an ideal partner for us.”

CE Software values having a solid relationship with a distributor, so it spends time coming to an understanding and mutual distribution agreement. Paul

Miller, CE Software's international product manager, says, "It's not only the distributor working for us, but we work for him, as well. With one of our distributors, we actually sat and talked about the philosophy of distribution. It turned out that this company had the same philosophy we did, so it was a nice match. And this is important because, obviously, European philosophies can be different than American ones. And in the Pacific, you also run into differences such as in business structures. If you can start with somewhat the same philosophy, you've got a groundwork that you can build on."

Indeed, most companies mentioned in this article felt that the essence of a successful relationship is obtaining the distributor's "mind share" so that it is able to concentrate efforts on promoting your product. According to CE Software's Executive Vice President Ford Goodman, "A key is to have a distributor who bases a fair amount of its business on the success of your product line. If I'm one percent of somebody's business, then it's pretty unlikely that I'm going to be an important partner to him. If it's 10 or 15 percent, then it's a different ball game. That's not to say that it's the only factor; certainly, we have distributors that are bigger, and they do a great job for us. But it is a key factor, particularly when you are developing a true partnership. "

WORKING WITH DISTRIBUTORS

Maintaining good, mutually profitable terms with distributors can often be the most difficult part of the process—one where small, inexperienced companies get into trouble. It would require a separate article (at least) to cover all the issues. The companies mentioned in this article offer two key pieces of advice: When localizing, keep costs down, and give your distributor an incentive to market for you.

Keep Costs Down. A U.S.-based product is always at a disadvantage to any locally-produced product overseas due to costs of localization, transportation, communication with local dealers, and so forth. If you don't localize, your English-language version will almost always have less appeal to local customers; in fact, in France, many products cannot be sold unless they are localized into French.

When you do localize, someone inevitably incurs additional expense that is then passed on to either the distributor or consumer. "You must find a way to pay for the development cost up front so that your partner is not motivated to

spend time and effort recouping those expenses,” advises Attain’s Jeff Hulton. “Make sure that distributors are motivated to achieve market share for you. Get the cost of translation covered up front, and then get it out of the way.”

Give Distributors an Incentive. Any distributor, no matter how large or small, veteran or just starting out, needs an incentive to sell and market your product aggressively. Everyone whose product it carries will want full-time attention.

You can help provide an incentive to push your product by educating distributors well about your product’s advantages. They will understand this best if they know your product well. Remember, the distributor will have to convince not only customers, but also dealers, of your product’s value. So the education must start with you teaching the distributor.

Jeff Hulton of Attain says, “The history of the personal computer business is littered with relationships that were created just to get a foreign language product out the door, with little attention paid to how that partner would achieve sales for you. The result is a relationship where your partner recoups costs by increasing the product’s price by 20 to 30 percent.” Often, a promising deal later goes sour because of unforeseen costs.

“The result,” says Hulton, “is that you end up buying them out two or three years later just to regain control—after the market for your product is destroyed.”

Caere decided to find a way to keep its costs down and still offer an incentive to distributors. “We said, ‘We’ll sell you OmniPage at the U.S. suggested retail price, and let you set the retail price for your country. You pay all the marketing and translation costs, but we maintain ownership.’ So we both invested a lot into the process, and the distributor in turn felt it had a strong interest, a strong ownership,” says Caere’s Matt Miller.

“And we also told them that because the semi-exclusive relationship was probably going to last at least two or three years, it would give them a window of opportunity to create the market. Almost all of our distributors recognized the opportunity, and right away translated the product and our ads, and ran them in their market’s publications.”

Similarly, PASTEL worked out a plan to generate demand for their product with the English version; the plan provided an incentive for distributors to sell the English version and subsequently generate demand for the future localized versions. Dale Scoggin says, “Because there weren’t that many localized personal information management products in international markets, I saw that

if we ‘packed the channel’ with the English-language product—got it into distributors’ hands—we’d create enough demand to then move the localized product as well—and become a leader in the international personal information management market.

“So we promised distributors a possible upgrade from the English to the localized version, based on an individual discount plan for each distributor. We also worked it out so that the distributor contracted the localization out to a translation company in its own country, so we didn’t have to pay for it directly.

“That was important for us as a small company that can’t afford the capital outlay. We gave the distributor a discount on an order of international product. So, for example, the first time the distributor orders the German product, we give a discount to help offset localization costs. It’s a good deal for all of us,” says Scoggin.

He admits that such a plan reduces the developer’s control over the localization process, and requires a strong and reliable distributor to do the job right.

In any case, when working with overseas distributors or even on your own, don’t forget to get expert legal advice about import/export requirements, trademark and copyright protection, and other such important matters—which can vary from country to country.

USE AVAILABLE RESOURCES

There are a variety of resources developers can tap into to move to global markets. The developers mentioned in this article urge other developers not to overlook one obvious source: Apple.

With business services managers in every region, in many circumstances Apple can help provide marketing resources, market data, and most important, key contacts with international distributors, dealers, and other developers. Apple can assist by helping you do such things as sort out the good from the less-desirable distributors.

If you’ve worked closely with Apple before, you may also be able to use Apple people for references during the process of finding and working with a distributor. In any case, the earlier you can get Apple involved, the more it can help you.

On-line services, such as AppleLink, can be excellent resources for getting information about international opportunities. We strongly recommend that

before you contact Apple you review the international information available on AppleLink. Several places to look: the Selling Into Europe folder (path—Developer Support:Selling Into Europe); the Worldwide Developer Support folder (path— Developer support: Developer Services: Worldwide Developer Support); the Marketing Information and Services folder (path—Developer Support:Developer Services: Marketing Information and Services); and the Pacific bulletin board.

Apple also publishes a variety of articles, brochures, and other materials about foreign markets. In an upcoming issue of Apple Direct, we'll offer you a bibliography of previous articles regarding international marketing and a list of other available Apple international resources and services.

YOUR FUTURE MAY BE AT STAKE

Despite the risks and potential difficulties, the motivation for even small companies to at least consider going international has never been greater. In fact, some feel it is more than important; it is imperative. Attain's Jeff Hulton sums it up: "Start today. Get going before your competitor does. And remember what John Sculley said, that you should reinvent your future before someone else does it for you!" ♦

David Gleason is a free-lance writer and former localization manager for Apple Computer, Inc.

Developing An International Product— From the Start

Having the right product for international markets is critical. But that's just the beginning. Most companies have to make at least some product changes to move into foreign markets. However, if you plan your product for global distribution from its initial design, you'll greatly increase your chances of success and reduce revision costs and time when you enter new markets. (Even if you don't at first anticipate going international with a product, things do change, and you'll probably be doing yourself a big favor if you at least consider potential international markets during product design.)

An excellent first step is to study the *Guide To Macintosh Software Localization*, available from APDA or your local bookseller. (For more information about this book, see the story “New Apple Books For Developers” in the News Folder.) By following Apple’s guidelines for localization, you can avoid time- and resource-consuming changes to source code. Putting text strings in resources, allowing room for double-byte characters in menus and dialog boxes, and using international resources for date, time, and currency are basics that you should follow, even in the prototype stage.

Localization can be expensive, especially when the costs are multiplied by the number of markets you enter. Every hard-coded text string can either cause an error or require recoding for each market. It’s better to do it right the first time, then you don’t have to worry about the multiplication factor.

Caere’s Distribution Manager Matt Miller suggests, “Make sure that your product can be easily translated. That will affect how you develop source code, and also how you write your product manual. The manual must be well written and concise, because translation is not inexpensive.”

Also, when launching a product your attention is focused on getting the product out the door. But the little time and effort it takes to follow the Apple coding guidelines can yield marketing benefits that you may not foresee.

For example, while doing a QuickMail demo in Europe, CE Software learned exactly what its programmers had done right. CE Software’s International Product Manager Paul Miller explains, “At a trade show in The Netherlands, a gentleman asked, ‘Will QuickMail run in Arabic?’ We had no idea. He told us he had the Arabic Macintosh system software with him, and asked us to try it. Our president, Richard Skeie, and I went into the exhibit hall after hours, loaded the Arabic system, and our product worked! We were using part of the Script Manager support, but basically, we used TextEdit.”

Even if you plan to market only the English-language version of your software in other countries, avoid the temptation during early design to neglect features that will let your product accommodate multiple languages. If you do so, you may have to pass up a promising market opportunity later on—or spend a lot of money revamping your product. ◆

(Just a Few Words About) Cracking the Japanese Market

The western image of Japan is often one of a closed society, hostile to foreign trade and controlled by a closely-knit association of the Ministry of International Trade and Industry (MITI), the huge Japanese banks, and the industrial cartels. This common anxiety is compounded by the fact that distributors in Japan tend to be very large organizations, often subsidiaries of the huge Japanese global corporations. Doing business with them can be both confusing and intimidating.

In fact, books have been written on the subject. But even small developers can crack the Japanese market, as evidenced by the experiences of the companies mentioned in this article.

Indeed, recent experiences at Macworld Tokyo and other meetings have shown developers that the Japanese market is hungry for software.

But the thought of doing business in Japan can be intimidating, at first. At the very least, say developers mentioned in this article, many American companies are made uneasy by the cultural and linguistic differences between the U.S. and countries such as Japan. But by learning the cultural expectations of your potential Japanese partners, carefully considering the Japanese market's needs, and then examining your product's distinguishing characteristics, you can often find unexpected opportunities.

Key Curriculum's President Steve Rasmussen explains how Apple Computer worked with him to get established in the Japanese educational software market: "Through Apple I established a relationship with a Japanese distributor who was focusing on the education market. These contacts started with correspondence and an AppleLink discussion; then at some point, we established personal contact.

"In Japan, personal contact is very, very important in establishing a relationship. We spent some time meeting with distributors who were here from Japan; that personal relationship and understanding, I think, were important in establishing the dialog that lead to the localization of our product." (For more information about localizing for the Japanese market, see this month's Developer CD for *Localization For Japan*.)

As with distributors anywhere, in Japan it is important to negotiate specific, mutually-acceptable terms that include all the localization steps and other

necessary tasks that prepare your product for the competitive Japanese market.

“If you sit down and work out the details, you can create really good guidelines as to who does what,” says International Product Manager Paul Miller of CE Software. “Our distributor in Japan actually sent a programmer to our offices to assist us. The main area we had trouble with was printing capabilities. As we worked with Kanji and its two-byte characters—our QuickMail product didn’t initially provide for that—they had to come in and modify some code.”

In considering the Japanese market, CE Software identified and exploited an unexpected sales opportunity. Ford Goodman, executive vice president, says, “We had an advantage because Apple released the Japanese version of the system (Kanji) in the United States and Canada, where there are large Japanese-speaking populations. So we do have additional sales of Japanese versions in these locations.”

By selling Japanese versions of their products through U.S. and Canadian distributors, CE Software was able to increase its overall sales of these products and help recover localization costs.

A common advantage for Macintosh developers is the consistency of Macintosh system software, which offers benefits for the Japanese market where many players are contending with a wide range of operating systems.

“The PC side of the house is very fragmented,” says Caere’s Director of International Markets Larry Lunetta. “There are multiple platforms, multiple operating systems, and various environments to develop in. Furthermore, you can have multiple types of operating systems running on a single system, such as a NEC machine. And even for Windows, there’s a Windows for NEC, a Windows for Fujitsu. Apple is nicely homogeneous there.” ♦

The Commerce Connection

Innovative companies take opportunities where they find them. A good example is the way CE Software took advantage of an offer by the local office of the United States Department of Commerce (DOC) to attend a trade seminar

in Europe. It was part of a “matchmaker” program, one of an ongoing series that brings together American manufacturers and non-U.S. distributors.

A DOC officer located in Iowa, home of CE Software, strongly suggested that CE Software participate in the program to start doing business in the United Kingdom. Despite concerns that it was spreading resources too thin by sending two people to Europe for two weeks, CE Software conceded. It was rewarded for taking what it had perceived as a risk.

According to Paul Miller, CE Software’s international product manager, the matchmaker program was “basically a consulting relationship, where the DOC advised us on how to get started overseas. It ingrained in us very strongly what our expectations should be. For example, they said, ‘Don’t plan on setting up partners your first week in the U.K.; in some cases, you’ll have to make a couple of trips and just initially meet with the distributors.’ They taught us that the European and Japanese business culture requires making friends first, before you actually do business. You’re on their turf, so you learn to do business the way their culture does it. For example, in Spain or Italy, you don’t do business at two o’clock in the afternoon.”

Miller recounts his European experience: “We ended up with 60 or 70 meetings during that one week. The first day we were in London, after the meetings were over Richard Skeie, our company president, said, ‘If nothing else, we’ve had enough meetings now to already have paid for the trip, in knowledge gained.’ The third day, our comment was, ‘Now we’ve had so many meetings that we’re totally confused.’”

Despite CE Software’s initial concern, the trip was so valuable that, Miller says, “Any domestic company that is not utilizing the capabilities of the U.S. Department of Commerce ought to be. If nothing else, you get tremendous information about foreign copyright policies, export requirements, and legal issues; we also get continuous reports from the DOC.” And, the shove from the DOC into the international sphere was what CE Software needed to get started.

CE Software is not the only developer to be approached by Commerce for such a program. According to Caere’s Distribution Manager, Matt Miller, “The U.S. Department of Commerce contacted me about two years ago; it had been contacted by the Ministry of Trade in Japan, as part of the effort to help rectify the balance of trade between the U.S. and Japan. They wanted to bring 30 or so U.S. software manufacturers into the Japanese market.

“The DOC told us, ‘We want to have a small, table-top trade show and bring in key Japanese distributors, corporate accounts, and resellers; we’ll have you meet them and help match you with the right partners.’”

Caere participated in the trip, and Miller says, “We went over there and had six fully-packed days with business dinners at night, hosted by the Japanese Ministry of Trade. Our cost was \$2,000 plus travel expenses.”

Larry Lunetta, Caere’s director of international markets, adds, “If you say to the Department of Commerce, ‘I don’t have a distributor in this particular country,’ it will package your marketing material, and for a nominal fee will send it to the person who runs the trade desk in the U.S. embassy in that country. His or her job is to make your material available to potential distributors, and see if one of them is interested in picking up your product.”

The U.S. Department of Commerce will not take the place of your international sales and marketing staff, but with the right contacts and opportunities, it can help you get started in foreign markets by applying the enormous resources of the United States government.

For more information about the expert assistance available from a variety of federal agencies and the Department of Commerce, call (800)USA-TRADE. ◆

Meeting Distributors: The Trade Show Connection

Trade shows are an excellent, cost-effective place to make contact with potential distributors. At the major computer trade shows, distributor attendance is high; with a relatively low investment you can meet with many of them face-to-face, demo your product, and discuss your goals and intentions and learn theirs. At that time, you can also discuss follow-up visits to their home offices and to dealers in their home countries. This will allow you to learn the market and understand distributors’ concerns, problems, and advantages before you sign a contract.

PASTEL Development Corporation was able to capitalize on the large turnout of distributors at Macworld, where it launched the international version of DayMaker. The constant flow of meetings also allowed PASTEL to meet many potential distributors at once and compare them to each another. That

way, PASTEL was able to add distributors during the course of the conference—a critical component of their plan for a rapid, worldwide product launch. Otherwise, they would have been compelled to travel widely to meet distributors in their home countries, and the signup process would have stretched over a period of months.

“At Macworld we were booked solid,” explains Dale Scoggin, international sales manager for PASTEL. “And as word spread, our meetings were constantly being interrupted by people wanting to schedule more meetings.”

Also, distributors who are present at trade shows can see the excitement your product generates among the software-savvy public. That can convince them to carry and push sales for your product.

For example, everyone at Berkeley Systems hoped that After Dark would be a runaway hit in non-U.S. markets, but unique modules such as Fish! and Flying Toasters have to be seen in action to be appreciated. “One thing that helped us,” explains International Product Manager Ann Crampton, “was attending the foreign trade shows. We even exhibited at CeBit in Hannover, Germany this year, which was attended by 650,000 people.”

“When they see our booth, the big distributors at first say something like, ‘Oh, a little screen saver, isn’t that cute?’ Initially, they are unable to conceive the volume business that they could do with a product like this. And then they stop, and say, ‘Wait a minute, you’re exhibiting at CeBit? With a screen saver?!’ Then the potential of what we’ve got to offer dawns on them.” ♦

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How to Move Products Into New Markets

Steps for cross-marketing software to education and other segments

*by Janine Firpo,
Apple Computer, Inc.*

In last month's marketing feature, "Cross Marketing Educational Products," we pointed out many opportunities for developers to move products originally intended for other markets into education markets—or vice versa. The increasing similarities in K-12, higher education, consumer (home), and small business segments—combined with the sheer size of those markets—is creating unprecedented opportunities.

Capitalizing on those markets may not be as difficult or expensive as it may seem. You may be able to move products across market boundaries with only minor changes; or you might want to consider further development to revise an existing product for a new market.

What steps are needed to make the transition? Sometimes, you can make smaller, nondevelopment changes in your product, such as pricing, packaging (even renaming a product), documentation, and others. In other cases, during your next product revision you may wish to make development changes to accommodate new kinds of customers. For both cases, here are some steps you can take to help make the transition more smooth and successful.

THE POWER CURVE

The first thing to consider when moving a product across markets without programming changes is where it falls on the performance curve. If the product is not powerful enough for the target market or if it is too powerful for it, you must invest in further development to be successful in the new market.

For example, a K-12 product should be less complex than a higher education one; higher education students squeeze a lot more information and learning into a quarter or semester than K-12 students do in a year. Therefore, products for these markets should reflect those differences. Similarly, higher education products don't need to be as powerful as do products for small businesses, where very targeted, focused tools are required for increased productivity and/or higher quality output.

In contrast, products that are more general and easy to understand are more attractive to the consumer market; people need to “get it”—understand the product—right away. A consumer product is less likely to be picked up by distributors if it does not have broad market appeal. Big winners in the consumer market are products that save people time. According to one Apple consumer guru, “Time is to the '90s what money was to the '80s. People will buy things that save them time and/or make them money.” They will also buy things that help them or their kids play constructively and learn.

PRICING

Another change that may be required to make your product successful in an education market is pricing. Pricing is very important because the individual education markets have different, strict price points above which people will simply not part with their money.

Generally speaking, for students, the lower the price the more you'll sell. In the K-12 market, products should be priced under \$100. To sell a higher priced item, you must give the user a very compelling reason to buy. In higher education, products for undergraduates should cost less than \$100, and should preferably be priced similarly to a textbook (around \$50). Tools for selected upper division coursework or for graduate students and tools with broad applicability may command higher prices. But even in those cases, \$300 is extremely high.

Faculty members and institutions are sometimes willing to pay higher prices, but if they purchase in quantity for a lab or other academic setting, they will want (read: demand) a price break. In both K-12 and higher education markets, site licensing is critical.

There are more pricing options for products sold into small business markets. These markets have a two-tiered pricing structure for software: one well below \$1,000—ranging from \$300 to \$500—and the other for heavy-duty professional productivity applications that sell for several thousand dollars.

Prices in the consumer market resemble a double-humped camel, with two peaks and a valley. One peak is in the \$50 range; several successful products sell at or around that price. Also, most games are priced under \$59; on-line applications average \$49 suggested retail price for an intro kit, and have monthly fees of \$9 to \$12.

The second peak consists of applications that cost more than \$150, such as integrated products that range from \$150 to \$199 (average street price). The valley lies between \$50 and \$150, where today there are very few products. This is where your opportunities are in the consumer market.

DOCUMENTATION/

USER AIDS

There are also some key differences in documentation needs between the various markets.

Increasingly, K-12 and higher education developers are establishing relationships with textbook publishers to produce combined textbook-software products. Instructional products for the K-12 market must have user aids such as curriculum wrap materials (printed materials that link the software to the curriculum) because of teacher time constraints and lack of technical computer experience. At the very least, documentation should include sample lesson plans and cross-references to other materials, such as textbooks and training materials.

To move into the K-12 mainstream, your product should conform to state curriculum regulations. A product that does not conform can be considered as an important supplemental product; but if you want teachers to buy your products with funds that are earmarked for teaching materials, the products must meet state regulations. (For more information about this topic, contact your state office of education and request its curriculum framework and adoption guidelines for software.)

Curriculum wrap materials are less critical, but still very important, in the higher education market. But the situation is quite the reverse in consumer and small business markets. These users want products that do not require a lot of documentation. They want to get their software up and running quickly.

Quick-start manuals, easy beginners' guides, beginners' sections, and one-page reference cards are examples of how to accomplish this for extremely complex products. Power does not have to mean complexity to the small business user—and it shouldn't.

PACKAGING

Packaging is very important for products in any market, but it is especially important in the consumer market. These customers often buy software directly from a computer store, whereas K-12, higher education, and small business

customers are more likely to purchase directly from developers or through such channels as catalogs. (Word-of-mouth is very important in selling to the latter customer group.) Business owners may also enlist a consultant's help to buy software.

When introducing an education product to the consumer market, don't underestimate the importance of packaging, especially if you're selling in a competitive retail environment. People buy software the way kids buy cereal: First they are attracted by the box, then they examine the box to see what goodies are inside. So, make sure your box tells or shows what is inside.

However, the most important thing to ask yourself is whether your packaging will sell the product to the uninitiated. Consumer market customers tend to be very literal, so it's important to avoid being subtle, cute, or clever. Instead, make the box exciting, simple, and easy to understand. Try to produce a package that jumps out at the "window shopper." Use pictures that reflect the box's content. People will not purchase your product if the box doesn't compel them to pick it up.

Since I can't even begin to give the topic of package design its due here (it's a very complex subject), suffice to say that it is critical to step back and reevaluate your packaging when crossing into the consumer market—or from the consumer market into education ones. However, the September *Apple Direct Marketing Feature* will focus on the do's and don'ts of product packaging and how to create a package that sells.

DISTRIBUTION

Distribution is a difficult issue for every developer. It becomes even more complex when you cross markets, because each customer base has slightly different purchasing habits. The best distribution choices for each market depends on customer preference, product complexity, and support requirements.

Customer preference can be particularly sticky, because it differs not only across markets, but also within them. So to successfully sell across markets, you may need to consider several distribution alternatives.

Current trends in hardware purchases should offer some insights into software buys. New customers making individual purchases, such as home buyers and students (both K-12 and higher education), will purchase hardware and software products from a computer store twice as often as from another

source. As these customers become familiar with their systems, however, they shift their software purchase preference to mail order.

The situation is different for customers purchasing more-complex or multiple systems, and for whom network communication may be relevant. Again, computer stores are the first hardware purchase option for K-12 teachers and small business owners. However, these stores are not as highly regarded because they offer the buyer little support. Some small businesses solve this problem by hiring a software consultant, but the cost of doing so is prohibitive for many businesses, and it is rarely an option for schools.

In contrast, by a 3 to 1 ratio higher education faculty members look first to the hardware developer and then to a computer store. These educators want direct contact with the company from which they are purchasing, and wish to establish an ongoing relationship. This may make building relationships with textbook publishers a very appealing distribution option for higher education developers, especially when you consider that publishers already have established relationships with faculty members. (Next month's Developer Outlook will provide more information about working with textbook publishers.)

Software Purchases. If most customers look first to computer stores or to the manufacturer when they are ready to make a hardware technology purchase, we feel they are also most likely to buy software products that are market-leaders; this is because many customers may not be aware of the vast number of alternative, powerful solutions that are available. This is a very large hurdle for smaller software companies. It's the old chicken-and-egg dilemma: How do you get a distributor to take on a product that hasn't made a name for itself? And how can you make a name for your product or company if no one will help you distribute or market it?

Apple is aggressively working to provide alternative solutions to this stalemate. Our goal is to give customers much more comprehensive information about product availability, and to provide easier ways to demo and purchase software. Therefore, Apple is investigating several new distribution mechanisms and partnerships. (Watch future issues of *Apple Direct* for more information as it becomes available.)

Other companies are also developing alternatives. For instance, Macworld Communications (publisher of *Macworld* magazine) recently announced a new venture through which it will publish a quarterly CD-ROM for resellers. The

Macworld Resources CD will be given free to resellers and Apple Education Sales Consultants.

It will include a database of products available for the Macintosh, as well as a section in which developers can purchase space to provide marketing materials, demos, and other product information directly to resellers. The CD can be set up in a kiosk in a retail outlet, so customers can peruse product information and obtain purchase information. (If you are interested in purchasing space on the CD, contact Macworld Communications in San Francisco at (415) 243-0505.)

In the future, Macworld Communications may sell the CD directly to end users on a subscription basis. It plans to promote the product through its magazine and trade shows.

And for small businesses, Apple is considering a new channel that will allow small, independent vertical market consultants to qualify for dealer prices so that these consultants can compete with computer stores—but also provide additional, superior services.

REVVING YOUR CURRENT PRODUCT

If to penetrate these markets you must make more far-reaching product changes than those already discussed, there are several things to consider as you develop the next version of your product.

Design Considerations. One of the first things to consider is your design preference for the next 12 to 18 months. In one word, it should be *color*. Color is gaining acceptance across the board. While many black-and-white (B&W) systems are already in the installed base, new systems being purchased are predominantly color ones. This is even true in education, a market that traditionally has been price-driven.

When B&W systems were far less expensive than color ones, there was no question in education markets about what to purchase. The introduction of the Macintosh LC, however, has spurred more and more schools to adopt color. LCs are often sold with 12-inch color monitors to K-12 customers, so it is important that your product run on this screen.

But don't neglect the 13-inch monitor, even if you are exclusively a K-12 developer, because it will become more important in the future. In the consumer market, 45 percent of the systems are color. And, as you might deduce, small businesses also prefer and buy color.

Color is least significant in higher education, where a lot of students own the Macintosh Classic. So while color is growing in this market, don't overlook product opportunities for 9-inch B&W systems. K-12 is a Macintosh LC market—and that is the platform to target in that market. Higher education supports a range of systems that run from Classics to Macintosh Quadras to PowerBooks. College students are very mobile and want to take their work (and therefore their computers) with them to class, the library, study stacks, their friends' dorm rooms. The best advice for this market: Be versatile.

While small businesses have high-end systems, be careful not to overestimate the machine-power residing in this market. The platform to target here is the Macintosh IIsi. And in the home? Go for the Macintosh LC.

Another consideration: Whether you should develop products that require the use of internal hard-disk drives was once an issue. Now, not only do most systems have hard drives but the average size of the drives has increased from 20 megabyte (MB) to 40 MB. By the same token, RAM constraints are now less problematic across the board. For one thing, Apple now ships every system with 2 MB of RAM, and in the future, education systems will ship with 4 MB. In the home market, 3 MB-plus systems are the recommended targets.

A big question today is when it will be time to develop for CD-ROMs. I believe the time is now. Although today the installed base of CD-ROM drives is relatively small, the situation is changing rapidly. Apple plans to release a platform with a built-in CD-ROM drive in the near future. We hope that this type of system, coupled with Apple's internal efforts, will quadruple the installed base of CD-ROM drives in one year.

Collaboration Features. There are several reasons to consider adding collaborative features to your products. Educators in both K-12 and higher education are talking a lot about the value of collaborative learning. And an area of growing interest is systems that allow home users to interact with other people on-line in real-time.

There should, however, be a compelling reason for your product to have collaboration features, and that reason should be inherent in your application's

design. This is especially true for K-12 products. When your product allows for collaboration that extends beyond the classroom and into labs, libraries, and homes (or dorm rooms), you've added real value. The ability to run over a network is especially useful in the K-12 market, where many classrooms or labs consist of diskless computers connected to a file server.

Group Technologies' Aspects product is an example of a well-designed collaborative application. Aspects is used in higher education for teaching college English. With this product, practicing writers can share ideas and gain immediate feedback on works in progress from fellow students and instructors.

Authoring. In K-12 and higher education, instructors do not want to be locked into teaching either by textbook or a software product. This is especially true in higher education, where professors are more inclined to have a "not developed here" attitude and have a greater propensity to themselves develop their own teaching software, or courseware. A recent study published in a prominent higher education journal indicated that 48 percent of computer use by faculty members is for courseware development, and that one of their key criteria for purchasing a computer-related product is that it promote easy courseware development.

Therefore, it may be a good idea to include an authoring component in your software for education users. It does not have to be extravagant, but teachers and professors should be able to build their own course materials from your product. In addition, students should be able to create their own materials, such as reports or problem sets.

ENABLING DISABLED CUSTOMERS

Regardless of your market, you may want to consider products for disabled people. In the U.S. alone there are more than 40 million disabled people. It is possible that with minor changes your product could be especially beneficial and useful to this group.

Recent legislation in the U.S. requires that educational institutions must provide equal access to disabled persons. This may be of special interest to developers because this requirement extends to technology purchases. In the future, education institutions that buy site licenses or volume-purchase software may require that products provide equal access to disabled students.

PRODUCT SUITES

If you have established a reputation for your product in a particular market, you could build new products for other markets based on your original offering. This way, you can leverage your initial success and build a suite of products. For example, you could add entertainment elements to a K-12 product, create a consumer image by changing the product name and packaging, and sell this “new” product into the home market.

If you decide to create a product suite, don’t forget the price and power considerations mentioned earlier. The more sophisticated markets require enhanced functionality. You’ll probably also have to change your product’s name. In that case, it is best to maintain a link to any name recognition you have already established.

For example, you could add the words Pro, Version 2, or a variety of others to your existing product name to let customers know this is an advanced version of an earlier product. However, if your current product has a “cute” name, drop it when you move up the curve to a more sophisticated group of users, even if it means losing your name recognition to some degree.

Student Versions. A special opportunity exists in higher education, where students make up a huge part of the market. Offering a lower-priced “student version” of your product can be a winner. Companies such as Wolfram, MacroMind, Authorware, and Extend have repriced their products to sell to students.

However, sometimes even extreme price reductions for education—such as a \$695 product selling for \$195 to \$250—won’t put the product into a student’s price range. Remember, realistic pricing for higher education mainstream students is \$50 to \$100.

Other companies, such as Brooks-Cole with its Maple product, have taken another approach. It provides low-cost student versions, but in some cases key features are removed and the product is repackaged with special documentation.

Another way to capitalize on student versions of products is to develop a partnership with a textbook publisher; together, you can create a coursework product consisting of software and a textbook wrap (printed materials that link the software to the curriculum). The product can then be sold directly to faculty members through the publisher’s established sales and marketing organization.

Then it is placed in the textbook section of the student bookstore, where students buy it as a course requirement rather than as a discretionary purchase.

User Levels. Because product suites, including student versions, require increased maintenance and manufacturing costs, this approach may not be appropriate for you. Another less extreme option to increase market opportunities is to incorporate user levels in your existing product. Through a preferences option, users could select baseline, intermediate, or advanced user levels. This way, a powerful application will be more appealing to and will not be as likely to intimidate new users.

Modules. The advent of interapplication communications, object-oriented programming, and AppleScript may drive the concept of highly-targeted product suites a step farther in small businesses, where customers want applications to work together. A trend toward modular programs—that is, smaller, very specific applications that meet a particular customer need—seems to be evolving.

These targeted products, or modules, will have features that ensure that applications share data, initiate processes, and function in an integrated manner. Customers can then choose the application modules that best fit their needs, thereby creating custom solutions.

For example, WealthBuilder has built a relationship with Prodigy, Dow Jones, and Quicken that will offer home users a comprehensive money management system. Since these products will be interconnected, the user will be able to manage money and make informed investment choices from the comfort of his or her home. In the future, customers may be able to build these types of integrated solutions themselves.

CONTENT AND MULTIMEDIA

The education market is clamoring for software products that go beyond traditional “tools” and incorporate curriculum-based content. Instructors see multimedia as one method of increasing the value-in-use of software products. In fact, 80 percent of higher education faculty believe that multimedia-based simulation is essential to fully integrating computers into the curriculum, according to a study published in a prominent higher education journal.

Unlike the days of old when development basically required having a great programmer and a great marketer, developing and marketing these new product concepts require a wider breadth of expertise. The key to success is building partnerships with experts, such as content providers, graphic designers, and others.

Depending on the product, content providers could be textbook publishers, instructors, media providers, or some combination. Often a textbook publisher will be the developer's direct contact, and the publisher will subsequently establish a relationship with an instructor. Getting input from instructors or professors is critical: If you are developing a higher education product, it is essential that a reliable, well-regarded team of professors evaluate it for content accuracy and scope.

Graphic designers also play a key role in the production of multimedia content products, which are visually-oriented. To be really successful, you need a professional artistic, interface, and graphic design multimedia product development team. If you don't believe this, compare the artistic quality and relative success of professionally-produced products with many university-developed products.

For example, the anatomy product from ADAM Software has achieved international acclaim because of its depth of content and visual beauty. Not surprisingly, this product was developed by a team of professional medical illustrators. Even their lead programmer was at one time a professional artist.

Other great examples are Broderbund's Living Books and Kid Pix. Both products are visually compelling and have been very successful.

Distribution. Products that are integrated into the curriculum also require a unique marketing, sales, and distribution approach. Textbook publishers can provide a well-established distribution channel for completed products.

However, if you decide to partner with a publisher be careful not to tie your product to a single textbook. This will limit how well your product is received to how well that textbook is accepted.

While this may not be as big a problem in K-12 markets, it is an important consideration in higher education, where every professor makes his or her own textbook choices. Since you may have to establish an exclusive relationship with the publisher, you may want to link your product to several of its texts, or also provide it as a stand-alone product.

ELECTRONIC TEXTBOOKS: A NEW FRONTIER

Imagine a mathematics textbook that not only provides course material, but also allows a student to manipulate mathematical equations and formulas—to see the visual elements behind mathematics. Addison-Wesley has created such a product, *Exploring Mathematics With Mathematica*—a textbook contained completely on a CD-ROM. The entire text was developed in Mathematica “notebooks.” Other developers have also begun creating such products.

Any subject can be brought to students via an electronic textbook. In addition to offering students improved text retrieval and manipulation, electronic texts can provide supplementary materials, sound (imagine being able to hear a recording of an historical speech), enhanced graphics, animations, and video.

What I hope you see from these two articles—last month’s discussion of the size and potential of education, consumer, and small business markets, and this month’s tips about how to cross-market products—is that the possibilities to expand the market for your products are almost boundless. Next month’s Developer Outlook will give you a real-life example of how one company, Knowledge Revolution, took advantage of these opportunities. ◆

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APPLE DIRECT

Apple Direct is Apple's monthly developer newspaper, covering business and technical issues for decision-makers at development companies. It is published by Apple Computer, Inc.'s Developer Support Systems and Communications (DSSC) group.

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