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SOFTWAR

"Integration" will be the byword among software vendors at Comdex. Attracting most attention will likely be Microsoft's newly-announced Windows, vying for attention with VisiCorp's Visi On and an assortment of Visi On-based applications. Windows should be out in mid-1984; Visi On was first shown at last year's winter Comdex and is just now beginning shipping, blessed by a distribution agreement with IBM announced, appropriately, at Manhattan's Windows on the World.

Both Windows and Visi On are "integrating" software, as opposed to the myriad of application packages that describe themselves as "integrated." They provide an environment that makes it easy to build "integrated applications," providing easy transfer of data and common command and menu structures across different applications. (A final variety of "integrated" applications could more properly be described as "all-in-one" software; that is, they perform several different functions using the same underlying structure -- a spreadsheet in the case of 1-2-3, for example.) These integrating environments are in fact extensions of the operating system (included in the case of Windows), and provide a foundation, rather than a replacement, for applications.

VisiCorp and Microsoft are aiming for a different market from most Comdex software exhibitors, and even from each other. The two are in contention for the hearts and minds of OEMs, ISVs, and ISOs; if they get those, consumers will follow. Runners-up such as Quarterdeck's DESQ (Santa Monica, CA, see page 5) and Scientia's ConceptVP (Wellesley, MA) are likely to get caught in the crossfire.

What makes an environment successful?

- The vendor positions the environment as open: He makes specs available, and provides training, toolkits, and programming support. He encourages resale of the system on as large a base of appropriate hardware as possible.
- The environment is open: It is relatively easy to program in. It helps, by providing functions that the application developer wants, such as windows, file transfers, menu management, mouse response, and that the application developer would otherwise have to create on

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his own. However, it does not hinder, exacting a heavy toll in either performance or programming ease for the use of these routines. It runs on a variety of machines, letting the developer write it only once for a broad base of users.

- The environment is financially open, meaning that there are the right endorsements (read "IBM's"), and enough resellers (dealers and OEMs) and ultimately enough of the right kind of users to constitute an appealing target market for applications. Thus, the success of other developers in an environment actually enhances its appeal.

Now, how do the contenders rate according to these criteria? Both are ostensibly open, although both hedge their bets by providing their own applications. Both offer portability, generally letting applications houses write an application once for a variety of machines, a key to attracting independent software vendors (ISVs). Both offer toolkits, although their utility and power are still to be assessed. Visi On will require a greater development effort, commensurate with the more extensive features it offers. But Windows, as yet not implemented, may not be able to offer the benefits it promises, especially memory management, without more redevelopment of existing applications than Microsoft acknowledges.

How will these two sell? Microsoft, in its press conference at New York's Plaza Hotel, displayed a host -- not including IBM -- of signed-up and intended hardware vendors and interested software vendors. However, Microsoft's terms were generous -- it's offering the system to OEMs very cheap -- and the company put unseemly pressure on its customers not to sign up for Visi On. Meanwhile, VisiCorp has access to that all-important IBM distribution channel -- but no promise that Microsoft won't win as much. VisiCorp also has an existing product, shown last week in full operation on machines from TI, Wang, Honeywell, Compaq, and of course IBM -- all of whom have made six-figure commitments to the system. Shipments to fill a 30,000-unit backlog have begun.

The real issue is not, How much momentum can Visi On gain before Windows is available at spring or maybe even summer Comdex? The real issue is, Which approach will how many people prefer? VisiCorp offers a high-end, costly, full-featured environment for development and operation of applications that will have to be substantially rewritten to take advantage of the system's benefits; Microsoft will offer an extension of its operating system that allows existing applications to incorporate some nifty but limited features such as windows with less disruption. But is a meaningful new standard possible without disruption?

Windows

One might say, "Microsoft announces an extension of its existing standard operating system, MS-DOS, which will sweep the market. As long as IBM joins the fold, virtually all current users are likely to adopt the new system. So what?" It takes significant improvements to fight inertia and alter an existing standard, and even then it's difficult for anyone but the arbiter of that old standard to impose the new one. Seemingly, Windows qualifies on both counts. Windows is a clear improvement over MS-DOS, and Microsoft claims it's relatively undistruptive: First, most existing MS-DOS packages can run as are on a floppy-based system under Windows (although mostly without the windows), and the cost and effort required to benefit from the Windows enhancements are less than for Visi On. Second, Microsoft owns MS-DOS, the current standard.

One flaw in this scenario is that while Microsoft **owns** MS-DOS, it is IBM that made it a standard. While we certainly expect Windows to become a new standard, a lack of distribution by IBM -- in the face of its distribution of Visi On -- could split even the monolithic PC/MS-DOS world into two environment camps. (That's in addition to the third would-be environment standard fostered by Apple.)

THINKING ABOUT STANDARDS

Perhaps by definition a standard must be late, because it can emerge only when the need for it has been established. By that time, at least for some people, it is too late: They've had to do the work themselves, and they've ended up with the job done only at great expense and in nonstandard fashion. Moreover, they will have to update and enhance their own solution to the problem, while competitors using the standard will de facto share the costs of improvements with all the other users of that standard. Alternatively, the early solver can abandon his solution and lose his sunk costs as well as undergo the cost and effort of conversion to the new standard.

On the other hand, standards are generally too early, because second attempts, generally by snipers, can often improve on a standard. In this case, is Visi On an early standard, or just a sniper at the MS-DOS standard? Is Windows a late standard, or just a sniper at Visi On?

The other flaw is that Windows does not yet exist. As described, Windows is a timely product or even late. Certainly the time has come to develop a standard for windows, mouse input, pop-down menus, etc. Why should any application developer (let alone a would-be environment developer) now wrestle with doing his own, rather than wait for the Windows standard? Unfortunately, Windows won't be available until "by April 30" (read "after May 1").

Moreover, Microsoft's announcement did not fully address a number of important technical issues. There's the issue of memory management: What happens when two programs attempt to grab the same space? This can be solved, as in Visi On, but it takes substantial rewriting of existing applications. Moreover, windows by themselves don't enhance user comfort without a fair amount of accommodation of the applications within those windows (also requiring rewriting). Tiling (Windows' approach where the windows fit next to, rather than in front and behind of, each other) requires less memory than overlapping windows, but it has the disadvantage of rarely giving the user the full benefit of the application he switches to without resizing.

Finally, although Windows will fit on a floppy-based system, it will operate far better on a hard disk: Memory management or no, you'd have to swap disks continually to run more than one medium-sized application at a time in a floppy-based system.

Visi On

Rather than wait for Windows with its promise of easy adoption, some ISVs will choose Visi On for its timing and its functionality. Some will use both, even though one aim of both systems is for the application vendor to write his application only once and yet address a broad population of target machines. VisiCorp's \$5500-\$7500 one-time fee for the development system, plus the cost of a 68000 UNIX machine or a VAX (vs. a lesser fee and a PC for Windows), is merely a minor deterrent in the face of the substantial development work the ISV must undertake.

But the rewards -- for some -- are worth it: Visi On offers the ISV the chance to develop a system that's unified with its environment; i.e. commands are the same across applications and consistent with those of the overall system. (The bad news is that existing commands and routines must be modified.) On a more fundamental basis, Visi On offers the functions that underlie those commands, which is a benefit to developers of new applications only. In operation there's also a benefit: Because those routines are shared among applications, the entire system including a given set of applications takes up less memory. Nonetheless, all those routines take up space whether you want them or not. Visi On stretches today's hardware to the limit, although it will take good advantage of tomorrow's.

In addition, Visi On provides virtual memory, so that you can have applications and data larger in total than memory size running simultaneously by swapping appropriate chunks of code back and forth to disk. The applications, of course, must be written in such a way that those chunks are easily grabbed by the system. Although Visi On lacks full concurrency, it offers background operation for printing, plotting, communications and mouse management. Additionally, VisiCorp will shortly add Visi On Query, a full-fledged relational dbms that can provide a foundation for dbms-based applications, to the three applications currently available (Calc, Graph, and Word).

Natural segmentation

In sum, Visi On is a sophisticated development environment, with built-in math routines, data base access method, a math library, forms generators and other programming aids, whereas Windows will be simply a operating environment with a few such hooks. Windows will give you a lot of freedom; Visi On gives you a lot of help that you must pay for whether you use it or not. Windows extends the operating system a little; Visi On extends it a lot.

Given these two approaches, how will the market break down? Windows as announced is clearly the easier system to use for vendors of existing applications. It can be adopted with a minimum of effort, and existing users can upgrade easily. For vendors of both existing and prospective applications, Windows currently has the advantage of a large prospective user base: While Microsoft's projection that 80 percent of current MS-DOS machines will be using Windows by next winter is optimistic, it's a realistic expectation for the following year -- given timely implementation, IBM distribution, and not too many surprises. Digital Research's new operating system, noted on page 26, may be one such surprise. So could be a proprietary window-management system of its own from IBM.

On the other hand, for developers of new applications, Visi On can save a lot of work. For large end-user companies developing their own applications, for limited market application developers, and for others who can't spread the costs of development over a large base, Visi On makes a lot of sense. VisiCorp is positioning Visi On appropriately at the high end, where end-users can afford a hard-disk system and the extra cost of Visi On. Among its resellers, besides IBM, will be a substantial number of direct sellers to the Fortune 10^x, but fewer of the retail-oriented hardware vendors waiting to adopt Windows.

So what is success? Would VisiCorp like the size of user base Microsoft is likely to convert to Windows? Of course. Would Microsoft like the higher revenues VisiCorp is likely to earn from each of its smaller number of Visi On customers? Of course. Would either like a firm, exclusive endorsement from IBM? Of course.

VAPORWARE

Recently in Monterey we saw a sign for Vapor Cleaners. It reminded us of that well-known device, a (to be polite) vapor detector. Our vapor detector has been cleaning up lately, finding all sorts of vaporware -- good ideas incompletely implemented -- among the products previewed for display at Comdex. Normally we don't like to be nasty: We'd rather simply be silent. But the current rash of purported revolutions, breakthroughs and new generations requires some comment. It's not that a lot of existing, successful products -- WordStar, dBASE II -- don't have similar problems. But the harsh commercial reality is that these old, imperfect products are by now well-known and supported: Dealers know how to sell them, trainers know how to teach them, and companies have standardized on them. To succeed nowadays a new product must be spectacularly improved, not "just as good as" with one extra feature. In the past few weeks we have seen and been disappointed in several would-be hits of 1984. Among them:

- **A wonderful nonprocedural data base management system.** It would have been terrific with windows -- but it doesn't have them. (At this point, the developers might as well take advantage of Visi On or Windows rather than attempt their own implementation.) This combination text and data processor, the unfortunately named DayFlo from DayFlo (nee Gilchrist) Software, has some impressive features, including the capability to search text, not just headings, for key words. Underneath its surface, the system is a dbms that supports all prospective applications, thus avoiding the clumsy data transfer routines so common in "integrated" applications.

But the interface doesn't suit the powerful fundamentals: The screen blanks out as you move from item to item. The system is designed for the businessman with a PC XT who likes to keep his memos and data in "stacks" of paper, to search within and among stacks, and to switch from task to task at will. But our typical businessman probably feels nervous when he switches from stack to stack, and would like to be reassured that the first stack isn't gone when he moves to the second. (That's the purpose of the windows. True, Lotus has the same problem -- you seem to lose your data when you switch to a graph -- but at least it has the excuse of problems showing text and high-res graphics simultaneously.) Also, we have to wonder, who's going to type in all those random data? Newspaper article abstracts were the sample data in the demo. Maybe in three years when we all have OCRs, or electronic newspapers... DayFlo is expected to sell for \$695 starting in February (although the company says the price may be eased down); the report generator, now in test, will cost extra.

- **A fairly standard (to our eyes) relational dbms.** 10-BASE, from Fox Research, is an extra-powerful relational dbms, with hooks into 10-NET, an Ethernet-like network, but cheaper and slower. 10-BASE is friendly, says Fox, because of its SQL interface. SQL is the front-end language IBM uses on its most modern mainframe dbms, and is friendly only in comparison to IBM's IMS and other traditional dbms (which even programmers find forbidding). Even IBM itself has recently acquired nonexclusive rights to remarket Artificial Intelligence Corp.'s Intellect query system (available soon on micros) as a more comprehensible front-end. SQL itself will probably remain a "standard" dbms interface, but one often hidden from the user by artifices such as Intellect, TI's "natural language" interface or Oracle Corp.'s forms interface.

- **An integrated set of productivity applications.** Integration is nice, but no longer sufficient by itself: The underlying packages should be more than just new versions of the same old Calc, Write, Graph, Base, Comms and Terminal. This package, Integrated 6, sports some terrific graphics capabilities (the vendor is Mosaic Software, developer of Chartman which is now being marketed by MicroPro) and good communications facilities, but we don't think it has enough pizzazz to woo dealers or customers away from the old standbys.

These objections may all sound like minor cavils, and they are probably mostly easy to fix. (Just wait for Release 2.) But they are as offputting to the user as a stick shift is to a driver accustomed to automatic transmission. Sure, he could probably handle the extra work with a little training... But why should he bother?

Fetch-and-carry software: DESQ et al.

While we're on the topic of revolutionary software, there's one feature beginning to appear more frequently that deserves to become de rigueur. That's some kind of sequence capture or canned command feature, starting with the so-called global macros offered by 1-2-3. Rather than an application generator, it's what is known (but rarely implemented) on mainframes as programming by example. (IBM has published research papers on what it calls Office Procedures by Example, but so far nothing commercial has come of that research.)

With such a feature, you can go into a "create" or "record" mode and create a file consisting of a record of your actions (keystrokes); then you can reexecute that file on command. Thus, rather than use a language that tells the machine what to do, you can respond to prompts already existing within the application, and simply have the system mimic your responses. Better yet, you can require responses from the end-user, indicating at certain points that the system should pause, wait for input, and then resume execution. That gets you pretty far, but there are still problems. How do you automatically build a prompt for the user, assuming you're going to give this system to someone else? How do you get it to react differently (branch) to different prompts? And finally, what do you do if you want it to go out of Lotus, into WordStar, into dBASE II, and so on, but you don't want to wrestle with the intricacies of a Visi On or Windows toolkit? (See page 1.)

What you need is more than just a sequence of commands that can't transcend the application you're in. You don't need a whole application generator, but rather an application linker, a sort of fetch-and-carry system that can operate outside and within existing applications and fetch functions and data as necessary, while the operator responds to prompts with menu selections and data as required.

There are some such fetch-and-carry systems already, but the concept (among micros) is just in its infancy. Except for Quarterdeck's DESQ, a notable, pragmatic exception available in January, and Scientia's ConceptVP, still under development, these products are limited to a small universe of applications packages (usually the vendor's own). We expect Visi On, for example, to have such a system in Release 2, but it will of course work only with Visi On applications.

DESQ (RElease 1.0, April 14) will be sold for \$399 both as a windowing and customization system for single users and as a system set-up tool for managers

bequeathing tasks to underlings. Its "Learn" can be used both to develop time-saving routines (a data transfer sequence or a dial-up routine, for example) and to generate full-fledged interactive sessions for other users to operate, complete with prompts, menus, and context management (the system knows whether it's in a window, for example).

Then there is a new set of application products with such a feature built in, Innovative Software's Smart series. Innovative Software of Kansas City comes from a traditional micro background and made its name with a micro dbms, T.I.M. It now has developed the Smart series (\$1465 as a group), which includes the Smart Word Processor (\$475), Data Manager (\$595), and Spread Sheet with Graphics (\$595), for shipment late in January. This system allows the user to create canned applications within and move between these three fairly complete applications -- but if you don't like the applications it comes with, too bad.

Two other systems that come close are MicroPro's Starburst and National Management Systems' Executive Support System. Starburst (\$195) has failed to arouse much interest since shipments started last August, but MicroPro is just now starting vigorous promotion of the product and reviews are favorable. Starburst essentially functions as an application manager, not an application creator, and uses a rudimentary language that lets an executive or manager build up applications sequences for others in his company to use. It will get the user in and out of WordStar, for example, or even in and out of most non-MicroPro products, but once the user is in the application he's pretty much on his own.

NMS's Executive Support System enables the user/developer both to mimic routines and to create panels of menus and prompts which lead the user through a series of routines using his responses to each panel. NMS's system, however, relies on a (simple) language as well as pure sequence capture (and thus doesn't quite meet our criteria), and it is limited to the functions available in its admittedly powerful underlying dbms. (It can send data into a 1-2-3 model, but can't automatically get them out.) The Alexandria, VA, firm was started by Rob Tillson, an ex-IBMer and longtime timesharing executive who understands the needs of corporate accounts who must now figure out what to do with micros.

There are many problems -- aside from ease of use -- that still bedevil such systems. Among them: How do you get the system to understand the context it is operating within? In the Innovative Software demo, for example, we started with several windows, and a normally workable routine foundered when we ended up creating too many windows for the screen to handle. How do you get it to interact with mice? And how do you link in foreign applications? Ultimately, there's a trade-off between total openness and total effectiveness that can be solved only by incorporating the very best applications within the system.

WHY MR. JOHNNY CAN'T COMPUTE: END-USER TRAINING

End-user training is a subject most vendors of hardware and software would prefer to think unnecessary: "You can use our user-friendly product with the push of a button!" the ads proclaim. "Within minutes, you can organize your phone list, your accounts payable, your entire business!" "Track your performance and forecast next year's sales in three easy steps." "...a complete...accounting system you can begin using right away." "Businessland makes forecasting and budgeting as easy as 1-2-3." "PieWriter." "EasyWriter." On television, the salesman peers over the prospect's shoulder as the machine lists prices for cod, scrod, flounder and swordfish... What could be easier to use than a computer?

Unfortunately, it just ain't so. Computers are powerful but literal-minded machines which require the user to specify exactly what he wants. Most people aren't sure exactly what they want, let alone how to go about defining it. Computers are forcing people to learn not just computer literacy, but overall literacy and precision of thought. The difference between "a:" and "a;" can confound a computer, while the difference between debits and credits confounds many a computer trainee. Yet even the dimmest-witted assistant is better than the smartest computer at interpreting commands such as, "Write me a letter to that guy, you know, that was in here last week to talk about, uh, The Problem."

The situation is changing. In ten years perhaps, computers will routinely compensate for a user's confusion between "a:" and "a;"; much software will be self-explanatory. But in the meantime, there's a big market building. And even as software gets easier to use, people will still need to learn both how to think and how to avail themselves of the continually greater power harnessed by personal computers.

Distinctions

Over the next few pages we will consider some of the issues in the business of training end-users to use personal computers. Then we will survey the efforts of just a few of the companies currently fielding offerings in the training business. First, some distinctions:

Literacy. We define computer **literacy** as knowing the difference between RAM and ROM, or the definition of EBCDIC. That's interesting information, but it's not very useful to most end-users. (Imagine a course in fountain pen design.) Most end-users don't need to know how to program; they need to know how to get answers from software systems that are still too technology-bound to enable novices to use them without coaching. To use a timeworn analogy, we're still in the age of the crankstarts, when every driver had to be a mechanic. Distinct from computer literacy is computer **familiarity**: There's still a need to familiarize people with the keyboard, reassure them that they can't break the system (easily), warn them of the dangers of bending floppy disks and so forth. But this need, so great now, will diminish as schools and general daily living accustom new generations to such computer basics. (Watch Mommy put the key in the ignition! becomes, Watch Mommy put the disk in the drive!)

Already, most formal pc training is concerned with applications -- how to use a particular application -- rather than with the general practice and theory of how a computer works. Schools that teach children BASIC are teaching the children how to think, a commendable achievement, but they are not teaching practical computer

skills. Training in computer literacy is unnecessary, computer familiarity will be widespread, but training in applications will remain an important, necessary function.

Theory vs. use. Some courses teach how to **use** an application (How can I replicate a cell with VaporCalc?), and others teach how to **apply** it (Now that I know how to use VaporCalc, what do I use it for?). American Training International's training disks and a host of local software schools, for example, make sure the student knows how to replicate a cell, even if he has no idea why he would want to. By contrast, in the productivity software field Knoware, a disk product, and SoftwareBanc's seminars, a service, address the second question, giving executives a sense of what they can hope to accomplish with software without getting down to the nitty-gritty. (There's a third kind of question that also sometimes needs elucidating. In accounting and other business-transaction-type products, for example, the use of the computer is frequently only a side issue: Trainers may find they have to explain the difference between extraordinary items and nonrecurring income just as frequently as the difference between disk A and disk B.)

Services vs. products. Training products include a variety of items: disks, audio and video tapes, television programs, workbooks, video disc, etc. Training services, which often use training products, include seminars, workshops, lectures, tutoring and other kinds of individual or group classes. Both have their points:

Services

Expensive
Must be planned and scheduled
Classes can be tailored to groups,
but individuals may be left behind
Group reinforcement
Dependence on trainer skills
Individual's questions can be
addressed

Products

Relatively cheap
Available anytime, anywhere
User selects pace, but content is
fixed
Privacy (no group ridicule)
Consistent quality (good or bad)
Individual gets answers to standard
questions only

So far, we believe that some form of training-as-service -- it may be no more than an experienced user guiding a novice -- is necessary for all but the most dedicated, persistent users. It's not merely a question of the user's intelligence or diligence. (We are reminded of a conversation we had recently with a PR guy. The PR guy does aerobic dancing; we swim. "How lucky you are!" we said. "You don't need to find a pool; you just find a room and dance." "Maybe," she said dubiously. "But somehow I just can't get up the drive without going to a class.") Maybe all we need is a Jack LaLanne of the computer to give us television type-along classes, but clearly a large part of the world isn't going to learn anything without some sort of realtime prompting and encouragement. Moreover, the variety of questions any given user can come up with far exceeds the capabilities of most training materials (and, yes, of far too many instructors!). Training products are fine in their place, but they're probably most effective as review materials for reinforcement of procedures and concepts originally learned in a class.

The training business: Fragmentation

The fundamental characteristic of the training "industry" right now is its fragmentation. The fundamental trend is efforts by those fragments to grow, absorb other fragments, and establish the necessary critical mass and presence to lock out or at least deter competition. As the need for training becomes conventional wisdom (but far from universal practice), hundreds of contenders from all walks of business are vying to school the unschooled: traditional training firms, schools and colleges, accounting firms, software vendors, hardware vendors, existing and start-up third-party training firms, third-party training package developers, end-user companies themselves, and many of the more enterprising dealer/retailers. All the retail chains you've heard of, and many more, offer classes; IBM, HP, Compaq and others include "Introduction to your Computer" diskettes with their pcs; Digital Learning Systems of Denville, NJ, designed the diskette that IBM uses; American Management Associations trained five to six thousand end-users in 1983. Training is a hot area for venture capital.

Over the next few years, we expect to see a number of companies distinguishing themselves from the crowd. We don't think there's any inherent reason for one kind of firm to be more or less successful than any other, although in the services end, theoretically at least, a retail chain should have a better idea of the realities of attempting to enforce uniform standards on a diverse body of individuals in remote units.

The training business: Its impact

Training is also indirectly contributing to the consolidation of the software and distribution businesses. The impact of the availability of training on the success of a particular product, or on the image and success of a particular (chain of) stores, can be significant.

Resellers. Retailers or dealers offering training services can expect to win at least some customer loyalty; moreover, customers who know how to use their equipment are likely to need more supplies, add-ons, and upgrades than customers who leave their system in a closet or give it to the gardener's teen-aged son. These same customers will also spread favorable word-of-mouth both for the store offering training and for the products it sells. (Most products gain in perceived ease of use when the customer can use them.) Many stores such as Computer City are now offering "training checks" along with customers' purchases; this brings the customer back for training and also frequently enables the dealer to charge closer to list than might otherwise be the case. Businessland has a fully developed training program, with each store holding frequent classes; a local ComputerLand has opened one pilot ComputerLand Learning Center in Indianapolis and is considering more; ComputerEase, a start-up headed by former Macy's and MicroPro marketer Will Luden, considers training a cornerstone of its concept.

Software publishers. Suppliers of software are likely to win the enthusiasm of users and dealers if they include practical, helpful tutorials -- either their own or third parties' -- with their software. Such tutorials can also be helpful sales aids; indeed one company, ATI, offers dealers a training sampler of 10 popular software packages as a free, copiable sales tool: It introduces the would-be user to a variety of programs, so that he can make a more educated choice. (This product goes over better with retailers than with the supplier of any particular product.) Software suppliers can also help ensure the success of

their products by training dealers, so that the dealers can both effectively sell the product and hold classes in it after sale.

Third parties. But the availability of training is not necessarily the result of any particular effort on the software supplier's part (other than providing a product worth training people on). Much of the success of Ashton-Tate's dBASE II, to pick the most notable example, is due to the efforts of Adam Green of SoftwareBanc, whose frequent tours teaching/promoting dBASE II have helped people both to understand the product's powers and to regard it as a standard. SoftwareBanc is now doing the same for Lotus 1-2-3. And next year? (Adam gets to see lots of new software.)

The training business: Size

How big is the training business? That's not a question readily answered, but consider these figures: A typical \$300 (or less) business package is typically supported by a \$70 training package. Now not everyone buys a training package, but some people buy several -- How to use..., How to apply..., and Advanced VaporCalc. Being conservative, we'll estimate that each business package generates only another 10 percent in training materials, including books. Using Future Computing's numbers for the pc business software market of \$3 billion in 1985, that amounts to about \$300 million in a couple of years. Moreover, most pcs sold will probably include some sort of free disk tutorial, which won't appear in the figures at all.

As for services, it's even fuzzier. But assume that only a quarter of the 6.3 million business pc owners (beginning of year) and half of the 3.5 million new buyers predicted by Future Computing for 1985 each take only \$200 worth of training, and you've got a \$700-million market. (Assumptions are ours.) Another source, Dataquest, puts 1986 dp training expenditures at \$800 million, but this figure excludes in-house training run by in-house trainers. (A widely quoted figure of \$3 billion was misinterpreted, according to Dataquest.)

The training business: Services

Mass-producing training materials, whether diskettes, tapes, video discs or even coloring books, is easy enough; trying to maintain the quality and consistency of a service is close to impossible. Yet any successful training business must almost by definition grow larger to benefit from economies of scale in marketing and course design, and in the present era of consolidation it must grow fast to keep even with the competition -- which is legion. The barriers to entry in the training business are even lower than those in the software business, but it's just as hard to survive or even prosper (because of all those guys who can enter as easily as you did).

How to manage this growth? We suspect that of all businesses, training is the one where quality control is both most important and most difficult to enforce, especially during fast growth. Thus ownership of the units is probably at least necessary, but not sufficient, for long-term success. Franchising is the easiest way to grow, but franchising compounds the risks of fast growth. Many of these new companies are tempted either to franchise ("We have such a good name here in Puddletown, why don't we go nationwide?") or to sign up with a franchise so as to look like more than just two retired schoolteachers, three former hackers and an

accountant, or whatever the founding group may be. Nonetheless, because of the control problem, we don't expect to see any large, successful franchised personal computer training operations. (We know of none in any other field of training.)

Even in owned operations, maintenance of quality is probably the single most difficult problem: People are harder to standardize than books, disks, retail store layouts and sales pitches, or even hothouse tomatoes. Achievement of outstanding quality is even tougher: Poor trainers can reach adequacy by reading a script, but good trainers get better when they're free to rely on their instincts. It's the ability to hire, train, and retain good trainers that will lead to success in the long run. That's not an issue of strategy, but of implementation.

Implementation issues: Services

Anyone who's ever selected a school for Junior knows the first question to ask: Class size. (Of course, one would rather just know about quality, but it's hard to get a straight answer.) Generally, computer classes range in size from 5 to 15, with one to three people per computer. Having two or three auxiliary instructors to walk around the room checking screens and answering questions one-on-one is a nice touch at firms like Micro Mentor. Surprisingly, private tutoring is often not as effective as group training: Individuals benefit from each other's questions, and from the realization that no one else gets it right the first time either.

The ideal class, of course, consists of about 10 people with a common, high level of intelligence and preparation. The course materials have been carefully prepared by the training firm to be relevant to this particular group: a sample product marketing budget for managers from General Foods, for example, or a schedule management exercise for a group of cosmetic surgeons. Course materials include a copy of the actual software being used, possibly a commercial textbook, a number of printed handouts, and a preloaded data disk so that the students spend time thinking, not typing in data. The instructor controls a large, legible video display on which all the students can follow the action. The instructor and his assistants are friendly, well-informed, technically proficient -- and they speak plain English.

This ideal class probably costs \$300 per person per day; prices range from about \$25 to \$100 per hour, with shorter classes generally costing more per hour. Classes offered by retailers tend to be cheaper or even "free," especially if they're offered in conjunction with purchases.

The training business: Products

For productivity applications, generally speaking, there's a surplus of product and a shortage of distribution channels. (Just try to get someone to stock your new VaporCalc.) In the training business, the reverse is still true. ATI and Cdex have both signed up with larger companies who will distribute their products direct to end-users, while Cdex once did a special promotion through VisiCorp (which has now replaced the Cdex products with its own line of in-house tutorials), and ATI has provided the on-disk tutorial for Peachtree's PeachText 5000. Many software companies wishing to offer (i.e., distribute) their own training are searching for product or someone to write it, while training outfits of all sorts are looking for course materials.

Aside from that, training materials take the same channels as the applications themselves, except for more typically being sold as add-ons. They're probably likely to do a little better in secondary outlets such as bookstores, mail order and eventually electronic distribution. However, they can also be an important source of profits to canny dealers. Once you've sold a \$495 Lotus 1-2-3 marked down to \$399, for example, it's relatively easy to throw in a \$70 1-2-3 trainer at full list, bringing the discount for the total sale back down to respectable levels $((1-(399+75))/(495+75))*100$, to be exact).

Speaking of 1-2-3, how much of a deterrent to aftermarket sales of training materials is a product such as 1-2-3's on-disk tutorial? Most dealers who sell training materials at all find that they can still sell them for 1-2-3 as effectively as for other products -- especially once the prospect has struggled through Lotus's effective but still somewhat cryptic offering. On the other hand, products such as Select, which both are easier-to-use and make more marketing mileage out of their included tutorials, are harder to market third-party tutorials for -- which is why, to our knowledge, there is no third-party training for Select. (The package's relatively small installed base of about 50,000 is another factor, to be sure.)

Implementation issues: Products

Training products range from books and exercise sheets to training disks with software simulations to copies of the actual software used in conjunction with templates and instruction manuals. The current hot new item is interactive video disc, which combines a video disc system with a pc which manages the process and simulates the software (easier said than done); some systems have a single video display, while others offer one for the video and one for the actual software. Training can also be delivered on audio tapes or cassettes, a specialty of FlipTrack Learning Systems of Glen Ellyn, IL.

How much the training should "explain" and how much it should simply "train" remains more a question of taste or specific need than an answerable question. As with text books, the definition of a good offering probably depends as much on the user as on the product, although the principles limned below generally hold true.

_ _ _ **Inside every software package there's a** _ _ _
tutorial struggling to get out.

First, there's general agreement that interactive training is better than training that requires the student simply to stare at a lecturer or a screen. But until recently "interactive" products have frequently required no more from the trainee than the ability to read a screen, press return, and read the next screen. Even now, many products teach the trainee how to take the course rather than how to use the software -- although at least they use his name on every third screen.

Training software that is truly interactive and flexible will accept as an answer, for example, +C6+C5+C4*D1 as well as +C4*D1+C5+C6 (unlike an ATI tutorial we recently examined). If the user gets something wrong, it has the capability (within limits) of recognizing his error and addressing it specifically, rather than merely saying, "Try it again, Sam." This requires costly development time and large numbers of screens that may never actually be seen by a viewer, and is why training products frequently require three to four disks even for a three-hour training session.

Additionally, the training product should not take control from the user. He should always know where he is -- a legend reading Screen 8, Lesson 4 would do fine, for example -- and he should be able to move back and forth within the tutorial with ease. (Imagine a book with unnumbered pages that turn only one at a time, and only forwards.)

In contrast to classes, most software training materials do not use the actual software. It's easier simply to write lessons in authoring languages, some of which can do quite a good job of simulating not only the look but also the functions of the software being taught. Authoring languages are basically development systems that help the software writers create the tutorials, automating the creation of screens, prompts and menus, the simulation of software, and the branching routines (storyboards) necessary in interactive courseware. The better authoring languages provide the end-user considerable flexibility of movement through a complex menu structure; the limited ones restrict the student's progress to one screen, in one direction, at a time. With a good authoring system, it's easy to address the user by name, provide a variety of responses to his variety of errors, and loop out to extra training material for error-prone students (or loop ahead for clever ones). Some of these systems can also control auxiliary devices, such as a video tape or disc.

The use of authoring languages, however, is one reason why the "software" in training materials doesn't always act the same way as the original. For this reason, exercise books, written-within-the-application tutorials or training classes which let the student learn from and fool around with the actual product may be preferable, especially for advanced or adventurous students. On the other hand, the artificial atmosphere of a controlled demo can be comforting for a novice user. Many training packages use the CP/M or UCSD p-System runtime systems, so that the user doesn't even have to install MS-DOS (for example) to run his lessons. That's nice, but perhaps a falsely reassuring and inadequate introduction to real life.

The training business: What's happening?

Training is slowly gaining currency in the personal computer business. Appreciation of its value has been seeping over from mainframe and timesharing companies who have always helped to train their customers, from dealers, and from overworked support groups. Mainframe (software) suppliers, however, have never had to train people of the type and numbers now being addressed by the micro software vendors. End-users to them meant data-processing personnel who gloried in technical terms and fine distinctions (such as between A:file and A: file). End-users now means financial analysts, personal secretaries, busy managers, salesmen -- people to whom a micro is just a tool, or even a threat.

Support -- which includes training -- is one loudly proclaimed reason for large companies' preference for buying from IBM or from mainframe software vendors. It's behind the recent surge back to corporate purchasing. The questions are: Who's going to train our people on all this stuff? And if it's us, how can we possibly support more than one brand of spreadsheet, word processor, file manager?

Appreciation of the value of training has also been seeping up from frustrated retail computer buyers who can't figure out how to use what they just bought. To dealers, these frustrated end-users are customers, who are best seen and heard only when they're buying something. So why not sell them training?

Right now, the training products market remains extremely fragmented. Two smallish companies, ATI and Cdex, lead the pack with annual revenues of only \$3-4 million apiece. They sell at retail and through mainframe training product "giants" ASI and Deltak (owned by Prentice-Hall since 1981). The rest belongs to the software vendors themselves, and to future competitors such as Knoware. In the corporate training services area, National Training Systems, a smaller firm recently acquired by Safeguard Systems, has made a big name for itself as the firm that trained 1000 United Technologies executives on Context MBA. Retail chains should do well in the small-business training services market. Other contenders include the ubiquitous American Management Associations and a host of other training firms who see micros as a hot new subject area.

The profiles below provide some examples of current efforts in training. Many of them are just starting out, and will have changed radically by the time we attempt a RELEase 2 of this survey.

PROFILES IN TRAINING

Advanced Systems Inc., Arlington Heights, IL

Advanced Systems, Inc., is a traditional vendor of mainframe data processing training products -- mostly video tapes with some computer-based course materials. Apparently neck-and-neck with Prentice-Hall's Deltak with fiscal 1983 revenues of about \$45 million, ASI has recently extended its line into the pc market with a reselling agreement for ATI's line of micro software training packages (see below). The company has repackaged and enhanced the 20 ATI products and fields a special sales team to sell them to its base of Fortune 10^x customers.

American Training International, Manhattan Beach, CA

American Training International, founded by Francis Gaskins, a software consultant, and Joel Rakow, a former employee of National Training Systems, sells 25 different training disks for micro software packages. ATI is the leading proponent of "how" training products, stressing skills with an absolute minimum of explanation. Its tutorials generally come on a single double-density disk, and aim to get the user up and running in an hour. For quick thinkers who can figure out what they're doing without explanations, the ATI programs work well; for others, the approach may leave them with skills but little understanding of what they're doing and why.

ATI sells mostly at retail, including a co-labeling program with ComputerLand, and reaches the corporate market through its deal with ASI (above). Privately held with about \$3 million in 1983 revenues, ATI recently sold 25% of its shares to SFN Cos. SFN, formerly Scott Foresman and now the parent of six educational publishers, had revenues of \$273 million in fiscal 1983. With a new ceo installed last year, SFN has kicked up its heels and seems willing to bankroll substantial expansion for ATI. (Other recent SFN acquisitions include ABC Industries, publisher of the New York Law Journal, and Broadcast Advertisers Reports.)

Applied Data Research, Princeton, NJ

Applied Data Research, a mainframe dbms and programming tool vendor, has just announced ADROIT (for ADR Online Interactive Training). This is a high-end authoring and presentation system that lets developers integrate video disc materials with PC-based courseware. ADR's aim is to sell it to ADR software customers to use in creating their own in-house training. We suspect it may also prove popular among independent software vendors, although "presentation" stations including video players and pcs are still too expensive to constitute a big market outside Fortune 10^x companies where such stations can get fairly constant, cost-spreading use.

Ashton-Tate, Culver City, CA

As president David Cole of Ashton-Tate once modestly quipped, "Some people say that dBASE II is not user-friendly, but we say that we're simply providing opportunities for others to add value." Indeed, Ashton-Tate, the vendor of dBASE II and just now going public, has long been one of the primary beneficiaries of the efforts of SoftwareBanc (see below) and others who have helped end-users make sense of this powerful but cryptic product.

But Ashton-Tate recognizes that it must also contribute something itself, and that although no other dbms has gained the currency of dBASE II, one way to maintain its primacy is to make sure that dealers know how to sell and train customers on it. A-T's dealer training program, run by Barbara Weingarten, is one of the most effective in the industry. The company is now studying how to extend this effort to include end-user training. Also, starting last month, A-T has been including a just-developed three-disk dBASE II tutorial with every copy of dBASE II shipped.

Businessland, San Jose, CA

Businessland, now in many ways competing with IBM itself rather than with any other retailer, has considered customer training an important part of its business since the beginning. Each of the company's 15 stores (all owned, not franchised) sports a Learning Center with its own full-time trainer, offering roughly 24 hours of classes a week. Classes are given by the stores only in "supported" products, such as Lotus 1-2-3 and WordStar, and the IBM PC. Because accounting classes are less in demand but more complicated, those are given on a rotating schedule a couple of times a month in each store by district training managers. The classes of 5 to 10 people, with a PC for each one, use Businessland's internally developed manuals and exercises in conjunction with the actual software. The typical price is \$150 per day, with discounts or free classes based on purchase activity. The trainers are trained in Businessland's corporate training center, which also handles the company's internal training needs. In addition to conducting training, Businessland's in-store trainers act as product specialists, supporting store sales personnel with applications expertise and updates.

Cdex, Los Altos, CA

Cdex was founded by a group of people with previous training experience at GEISCO, Bell & Howell (at Interactive Communications Systems, its Apple-based video training product group), and ASI. Their aim was to set up a software factory to

mass-produce training materials. The company makes use of outside experts to design the products, which are then programmed in-house with the Cdex authoring system. Since its first package, Introduction to VisiCalc, was launched a year ago, Cdex's line has expanded to 18, with two more appearing each month. Each consists of three to four disks and takes the user two to four hours. Retail list price is \$70.

Cdex solves the "how to apply" vs. "how to use" problem nicely by offering both: For 1-2-3, for example, there's both 1-2-3 training, and a course entitled "How to Manage Your Business with 1-2-3," basically a review of the components of return on equity combined with exercises based on a series of 1-2-3 templates.

The company sells direct to retailers such as Businessland and ComputerLand, and through Softsel. To address the Fortune 10^x market, it has just signed a distribution agreement with Deltak, owned by Prentice-Hall.

ComputerLand, Hayward, CA

ComputerLand right now is just finding its way in the training business. In Indianapolis, the local ComputerLand has opened a test Learning Center which is under close scrutiny by ComputerLand corporate. The company has decided it needs to offer end-user training, as 25 to 30% of its stores already do independently. In Phoenix, for example, the local ComputerLand chain of three stores is the largest local supplier of end-user training. Now the trick for ComputerLand corporate, says training manager Deborah Saks, is to pick the best of these local programs and perhaps develop some corporate ones or work in conjunction with manufacturers. Then Computerland will formalize them, standardize them, spread their costs, and institute some kind of quality control. The company currently has a staff of three end-user curriculum specialists "assessing needs," and plans to grow it to 10 by year-end, when implementation of whatever corporate programs are decided upon should be getting underway. (This is all in addition to a staff of 35 who handle internal and franchisee training and whose expertise can of course be shared.)

DunsPlus, Wilton, CT

DunsPlus, the new hardware/software/service product described on page 25, comes complete with two days of training on materials developed by National Training Systems. This will generally be provided at one of Dun & Bradstreet's five sales offices, but most of DunsPlus's customers will be large accounts, and for them anything is negotiable.

Executive Computer Network, Fairfield, NJ

Executive Computer Network is a good illustration of the ease of entry into the training business. Founded last summer by a financial analyst, a college computer sciences professor and a customer trainer from Tandem, ECN is now up to three six-person classes a week and also subcontracts to teach courses for the American Management Associations (a good way to establish credibility). Because students frequently approach it for consulting (dBASE II can be daunting even after you know how to use it), ECN expects as it grows to hire part-time teachers who can double as consultants. The premise is that the teaching will help them win

business, while their consulting work will ensure that they understand what they're teaching. Also, the consulting can supplement the \$200 to \$400 a day that's typical pay for such teachers.

ECN, like most training firms, offers courses in the usual array of "hit" software -- Lotus 1-2-3, dBASE II, WordStar, VisiCalc, PFS, Multiplan -- as well as an Introduction to Computers. (It dropped a planned BASIC course for lack of interest.) A full day of training in a class of 5 to 15 people runs each student \$150 to \$200. Because of its substantial sunk costs in developing course materials, ECN is looking for some way to leverage that investment, either through franchising or licensing.

Ferrin Corp., San Francisco, CA

David Ferris became known in the software industry as an explicator of micros to the mainframe world, writing in such publications as Software News and Datamation. Since March, he's been charging for the advice he used to give (almost) for free, in partnership with Bill Guerin, a former mainframe marketeer. Ferrin provides soup-to-nuts support for Fortune 10^x data processing types venturing into microland -- help with product selection, system set-up, and end-user training. (Ferrin has started to distribute certain products to its clients, a direction we consider a strange diversion of resources into a low-value-added effort; just specifying them should be enough.)

Ferrin's courses are more an adjunct to its services than the point of them, although they help to bring in new clients who come for training and stay for more. The classes, four half-days per week now and expanding, include the usual run of how to use 1-2-3 and dBASE II, plus more manager-oriented topics such as comparisons of mainframe and micro financial planning packages. Ferrin writes its own courseware, which consists of the actual software plus 20-page handouts and instructor's notes. When commercial disk-based training packages get better, says Ferris, he plans to use those as well.

Knoware, Cambridge, MA

What Adam Green does in a day, Knoware's \$95 disk can do in a couple of hours -- if it can get a serious executive type to sit down and play a game. The system includes eight usable mini-applications of limited power, but the essence of it is an executive career-simulation (that sounds better than "game," doesn't it?).

The premise of Knoware, which starts the executive at the bottom of the ladder as a mail clerk with a salary of \$50 a month, is that he must handle certain tasks to rise in life. First of all, he must draw a line to stop a thief who keeps on taking mail from the mailroom. When he does so, the system promotes him, raises his salary, and -- lo and behold -- informs him that he has just used GRAPHICS. He moves up into accounting and uses a DECISION SUPPORT SYSTEM, progresses on to dp manager, does some BASIC, becomes PR director and manages a DATA BASE, advances to personnel director and writes a letter, only to discover afterwards that he has used WORD PROCESSING. And so forth. Despite its somewhat cutesy approach, Knoware is designed for executives of the don't-sully-your-hands school: The user learns only generic versions of the basic productivity tools rather than genuine, commercially available ones. Thus, the product has the disadvantage (for Knoware) that it makes its point after one or two uses; it's the sort of thing that might

be kept in a corporate information center (or store or library) and lent out to indoctrinate each new pc-owner in turn. (Yes, it's copy-protected, but...)

Knoware, however, has grander ambitions -- to take on Cdex and ATI with a line of KnowCalc, KnowWord and even specific-product Knowares within a year. The firm has the backing to do this: Distribution is through regular retail channels plus the prestigious American Express software catalogue; funding of \$500,000 with more on the way comes from Rothschild, Inc.; chairman of the board is Rothschild's Archie McGill, late of AT&T; and the rest of the staff is heavy with with ex-VisiMen.

Know How, San Francisco, CA

Know How, a start-up, is holding its first classes this week after a season of beta-testing. With funding from Prentice-Hall and Pacific Technology Venture Fund and advice from Patrick McGovern of International Data Corp. (publishers of ISO World, Infoworld, and various other Worlds) and Allan B. Goldin, former president of Evelyn Wood Reading Dynamics, Know How looks likely to succeed. Its founder, Larry Magid, is a well-connected LA Times computer columnist with a doctorate in education who was once director of publications for Information Unlimited Software and wrote the IBM Easywriter manual. Like so many others, Know How aims to catch the Fortune 10^x market, but in addition to the regulation 12-person classroom it also offers a training boutique. Set in the former Bay-view office of a now-departed co-founder, the boutique will cater to the very highest levels of executives in groups of five or less, with instruction in telecommunications, public data bases, decision support systems -- but limited word-processing.

Lotus Development Corp., Cambridge, MA

Training, not just a good product and good marketing, has contributed to the success of 1-2-3. Lotus proclaims itself easy to use, and it certainly is so compared to many other spreadsheets, but any product that full-featured is inherently difficult to learn simply because the concepts themselves are many and complex. Lotus estimates that it has directly trained about 3600 people since start-up and they -- dealers, resellers such as McCormack & Dodge and DunsPlus, corporate trainers, and even end-users -- have gone on to teach others. The company recently held a full-day set of free training sessions for 120 of its corporate customers. Response to this New York City session was strong enough that Lotus now intends to turn this into a regular event and take it on the road with up to 10 such sessions in 1984.

In addition, Lotus's 12 full-time training people have produced a wealth of courseware, including a disk tutorial with each copy of the program shipped, and course materials for use by dealers, corporate trainers and independent training firms. These materials, which include an instructor's guide with teaching and customization notes as well as 200-page student workbooks and data disks, end up costing about \$40 to \$50 per student in volume.

Micro Courseware Corp., San Francisco, CA

Micro Courseware, a training firm founded and funded three years ago by Donna Bixler and Lauren Sellers, two marketing people from ASI, has discovered the joys of mass-production. The firm has just released its first product, Blue Chip 1:

An Introduction to Micro-Applications, which will compete directly with Knoware. A little less strong on the retail marketing end than Knoware, MCC will probably do more business with the large corporate accounts for whom it holds classes, and with various OEMs. It created the Computer Tutor training diskette that HP is shipping with its new HP 150; this product has already garnered a lot of interest from other software and hardware vendors in need of third-party training materials.

Micro Mentor, Belmont, MA

Micro Mentor is an example of the proliferation of small one-man shows that are now growing into serious businesses, raising venture capital and looking to establish themselves. Founded by Boston Consulting Group alumnus and former Harvard B School faculty-member Eric Vogt (whose father is an anthropologist), Micro Mentor has won business with corporate accounts such as Merrill Lynch, General Electric, Combustion Engineering, PepsiCo, and the Women's Forum of New York. His twelve-person firm uses its own course materials for 1-2-3, PFS and dBASE II, and tailors them to the client with HBS-type business cases relevant to their particular concerns. Micro Mentor uses its own authoring languages created within 1-2-3 and dBASE II to design courseware. While these languages don't offer all the facilities of many others, they enable students to operate with the actual software they're learning.

National Training Systems, Santa Monica, CA

National Training Systems was founded in 1974 by Ron Posner, who had earlier co-founded Tratec, a dp training firm. The company developed custom application and sales training programs for mainframe and mini vendors, especially IBM. Two years ago NTS, working on a training study requested through IBM, was introduced to United Technologies, which needed a custom training program for the large numbers of micros it was buying. NTS developed a course, taught it to some 1000 UTC executives, and found itself in the business of end-user micro training.

Since that time, estimates NTS marketing vice president Karen Orton, NTS has trained some 1500 corporate types in computer familiarity and in applications such as Context MBA and Lotus 1-2-3, with an emphasis on applying them to business problems. Course materials include the actual software plus books, worksheets, decision support simulations and data disks. NTS has its own method of daisy-chaining video displays together so that the instructor can selectively control the displays of his students. The company is just now launching a line of \$95 packaged products -- basically self-paced versions of its training materials -- for distribution through its own salesforce and through distributors and retail chains, and it is selling its \$20 "Getting Ready for Personal Computing" through the prestigious American Express software catalogue. Posner and two partners recently sold the company to Safeguard Business Systems, which should enable the company to grow rapidly from its \$3-million annual revenue base.

SoftwareBanc, Arlington, MA

SoftwareBanc, about two years old, has done a lot to popularize micro software. SoftwareBanc is a distributor of dBASE II, Lotus 1-2-3, WordStar and other software, but it is most famous for its founder Adam Green: A recent series of

ads shows him popping out of a cardboard box, dBASE II manual and SoftwareBanc's User's Guide (45,000 copies sold) in hand, ready to sell product for his dealer/customers. But Adam doesn't like being shipped around the country, runs the copy, and so instead dealers will now get a 15-minute video tape of Adam expounding the virtues of dBASE II. Rather than demo the product, they can run the video tape for one customer and move on to close a sale with another.

But SoftwareBanc is also a serious force in the how-to-apply school of training. Adam Green runs 12 one-week sessions per year (offered by the day at \$175 per day) at various locations across the country and draws steady crowds of two hundred executives at a time. Adam Green doesn't teach his listeners to go home and use dBASE II (or 1-2-3, another program he has adopted recently). Rather, he shows them what the program can do. The executive says not, "Gee, I'm going to go home and create a data base!" but rather, "I'm going to go home and have Juan and Alice set up a data base!" Green's shows are multi-media extravaganzas, with video tapes of dBASE II author Wayne Ratliff and 1-2-3 author Jonathan Sachs as well as software demonstrations.

VisiCorp, San Jose, CA

VisiCorp, the most Fortune-10^x-minded of the micro software companies, is far along in its training effort. The firm has two groups, VisiTraining and VisiTutor (both part of the Service Marketing division), that offer training. VisiTutor publishes tutorials for VisiCalc, VisiCalc Advanced Version, and VisiWord, with others to follow, while VisiTraining is currently developing courses for use by dealers and third-party training outfits. Its big effort right now is courseware for Visi On and the Visi On applications, which should be shipping in January to large end-user accounts with in-house trainers and to third-party training firms such as National Training Systems and TRI-ED, the training arm of VisiCorp rep Technical Representatives, Inc. The aim of the course is to teach both the use and application of Visi On and Visi On Calc, Graph and Word in four half-day business-case-oriented modules; there will also be a full-day module for Visi On Query when that product comes out next quarter.

SPECIAL IBM SECTION

As IBM announced the 3270 PC and the PC XT/370, the big parent was gently taking its retailers by the shoulders, turning them away and saying, No, this is not for you. Now it has given them a placating sop with the PCjr, but many won't be satisfied -- especially those who fancied themselves big enough to play with the grown-ups. As we pointed out in our letter of April 14, IBM won't long be content to leave the increasingly lucrative Fortune 10^x market in the hands of retailers. Two forces, amplified by IBM, are also working in IBM's favor as it reasserts control over **all** corporate purchases: those corporations' own desire for control, and the technological imperative for control and standardization created by both hierarchical (micro-mainframe) and horizontal (local-area) networks.

The PCsr

Both the 3270 PC and the XT/370 give added weight to the role of the PC in the big-business market and attest to IBM's continued efforts to drag this once orphan item into the corporate mainstream. How many executives really need a 3270 on their desks? (And how many mainframe dp types need a PC? They'd probably prefer an XT/370.) Probably not too many. But with the 3270 PC pushed by IBM, the software to make it into a useful end-user machine will appear, the installed base will grow, evoking still further software efforts and greater usefulness.

Indeed, the salient message of this announcement is that IBM's much-touted micro-mainframe links are as yet singularly bereft of linking software: They're hardware connections crying out for communications and network software. Hardware vendors such as Lee Data and TeleVideo can say lamely, Look, we've got the same thing (only better) and IBM is now endorsing our concept. But software vendors can see enormous opportunity.

Hardware. Of course, it's easy to dismiss the 20 percent of a marketplace that IBM leaves behind. That can be a sizable business -- as long as there aren't too many people in it. Certainly a lot of retailers will be eager to carry something to pit against the IBM salesforce. If IBM can scare enough competitors away, it will leave a nice niche for the rest of them. But that doesn't seem to be happening. Everyone seems to be piling into the combination 3270/PC market.

For the moment, IBM's new systems are also notable as an endorsement of hierarchical networks (up and down between host and terminal/PC) at a time when other, horizontal (among peers) networks are just beginning to flourish and IBM's own local-area network is eagerly awaited.

Software. As noted, the software connections between IBM's mainframes and its PCs are still tenuous; the two environments are co-resident on the same piece of PC/terminal hardware, rather than tightly linked. In other words, you can see seven different windows at the same time on the 3270 PC, but the easiest way to copy data small amounts of data between 3270 to PC sessions is generally to re-keyboard them(!). (Large amounts take file-transfer routines.) There's room for a lot of micro-mainframe software to use this micro-mainframe hardware link. Unfortunately, much of this opportunity may be short-lived; we expect IBM to become much more aggressive in the software area, whether by creating its own mostly systems software, or by signing up third-party vendors and effectively

stopping out their competition, who will be relegated to selling through retailers addressing a market effectively abandoned by IBM.

Who's best-equipped for this new world? Certainly MSA, with its PeachLink product, is delighted no longer to have to sell the Irma board, which provided on an add-on basis the hardware connection that IBM will now be supplying (for considerably more money, to be sure, but with the IBM good housekeeping seal). MSA has already sold 100 PeachLink packages; this announcement should boost sales further. Informatics General and VisiCorp together have another micro-mainframe link in VisiAnswer and Answer/DB. Yet another well-positioned company is Cullinet, which is working on a similar, more general system, complete with PC applications, available in December. Cullinet also benefits from the 370 announcement, for its products are ideally suited for distributed processing in the VM/CMS environment.

As usual, the more complicated the world gets, the more it needs standards to handle the complexity. Thus, the announcement could also be a boost for VisiCorp, whose new environment we expect eventually to see handle the problems of mainframe access: VisiCorp recently acquired Communications Solutions Inc., an SNA software house. Write your applications in our environment, will go the pitch, and we'll handle the 3270 issues for you automatically.

On the other hand, all those mainframe software vendors who've developed special PC versions of their mainframe software -- notably Execucom and Comshare -- now will find they can also sell the original, full-featured versions to run on the XT/370. However, it will be some time before the new XT/370 is available, and it's not likely to be as hot a seller as the PC in all its other forms.

In the long run, IBM's moves to take the PC in-house provide an instructive scenario for many software companies, since many of IBM's next moves are likely to be in software. Third-party suppliers will face a new rule: Either you sign up to sell **through**, or you compete **against**, IBM.

Retail. Yes, retailers are left in the cold by IBM's latest move. And, like eager disciples, several micro software vendors have swallowed IBM's bait with all the strings attached. "1-2-3 for the 3270 PC will be sold only through Lotus' Corporate Accounts sales force and IBM's marketing divisions," proclaims the Lotus press release. Again, as we noted earlier, we expect that some of the higher-end retailers such as Morris Decision Systems and Computerworks will find themselves becoming consultants when they can't supply the hardware to their customers. The wise virgins, chains such as Warren Winger's CompuShop which have always aimed at consumers and small businesses, can gloat...

The PCjr

In a daring feat of corporate amniocentesis, IBM has enabled the world to examine the characteristics of the PCjr two months before its actual entry into the world early next year. Despite its Chiclet keys, we found the machine extraordinarily cute and friendly, given its parent, and we expect it to be a big winner (no controversy here). Software vendors have rushed to write for it; customers have rushed to order it, even putting money down; consultants have rushed to predict big numbers for it, feeding the frenzy of the other two groups.

Three points we haven't seen elsewhere are these:

First, we expect it to be a good second or first machine. As a second machine, it will probably replace many Compaqs and other compatibles in the hands of (non-1-2-3) users who have one at work and would like a second one at home. As a first machine, it will be bought by the white-shirted executive who doffs his tie for a plaid shirt (as shown in the IBM publicity photos) on weekends; he doesn't have a PC at work (he **does** have a secretary with a word-processor), but after a few months on the PCjr, which he bought for his kids, he may decide to ask for one at work.

Second, unlike the PCsr, the PCjr has a slot specially designated for an internal 300-baud modem. At \$199 from IBM, it's aggressively priced vs. industry leader Hayes Micromodem (which doesn't yet have a strictly equivalent product), but it should in fact accomplish that much-overtouted act -- increasing the entire market. (A 1200-baud modem system, complete with software for \$429, is available from Microcom of Norwood, MA, which developed the PCjr's Personal Communications Manager (\$100 retail), a package of electronic mail and file transfer routines that can also run on the other IBM PCs.) As IBM spurs this market on, it will boost services like The SOURCE, Dow Jones and CompuServe, and also legitimize the concepts of electronic mail and, eventually, electronic software distribution. (Remember IBM's own remote electronic network for dealer support, which could ultimately reach end-users directly.) This ability to connect to the world outside will be the driving force behind the acceptance of personal computers as useful, not just fun, machines for the home. Microcom, a promoter of communications standards as well as the developer of IBM's Personal Communications Manager, will probably see a simultaneous jump in sales for its products on other hosts, including Apple and Tandy.

Third, although by and large the PCjr is a home machine, some canny software publishers, notably Sorcim and Software Publishing Corp., have business products that can operate in 64K of RAM. They, of course, will be some of the PCjr's biggest promoters, since they have in it a popular environment not all their competitors can address.

SPECIAL IBM SHADOW SECTION

IBM's influence on the pc business is so pervasive that "special IBM section" could frequently be applied to the entire issue. Certainly, one could argue that our discussion of Visi On and Windows (page 1) should be included in this special section... Instead, we consider here a number of new product announcements that one way or another have been shaped by the IBM PC.

DunsPlus: The right stuff

Dun & Bradstreet's Computing Services division, a timesharing house and long-time vendor of Nomad, a mainframe (but nonetheless friendly) dbms/query system, has come out with just about the product/service we would have designed ourselves. It has the right hardware (the IBM PC) combined with the right software (Lotus 1-2-3, Softword's Multimate), the right remote data bases (all the D&B services on-line, including the Official Airline Guides, plus access to others), and the right service (IBM hardware support and a DunsPlus hotline). All the software is nicely integrated and embedded in the DunsPlus shell, which allows access to almost all the functions an executive could want. He can select his tasks from an extensive menu, and resort to help screens when even the system's "friendly" shell fails him. (Oddly enough, given DunsPlus's origin, it lacks a data base, although it's easy enough to install one, or any other outside or user-company-generated application: DunsPlus has made the system as open as possible.)

However, DunsPlus's real ace is none of these features, but rather its salesforce and its ready access to the Fortune 10^x. First, the company had the time and the resources to sit down and design its dream system, using standard, brand-name components. Then, it started building a sales and support force in keeping with what Fortune 10^x companies expect. The essence of DunsPlus is that it will be fully supported by the company (software) and IBM (hardware): Have a problem with your disk drive? Want to install a new application? Tie into a new remote data base? Update your software? All the resources of IBM and Dun & Bradstreet are at your command.

To be sure, one can pick holes in the offering: It doesn't yet support a local-area network; it lacks a calendar system as well as a dbms; and so forth. But DunsPlus was humble enough to keep the IBM label on its machines, thus reassuring the user that not only will he get Release 2 from DunsPlus, due within a year, but he will also be able to use whatever hot new items IBM comes out with. That is security indeed!

North Star: For those who can't afford the real thing

North Star, suffering from a dramatic slowing in its sales this year that it attributes to the IBM PC, is fighting back. Its weapon is a multi-user but PC-compatible system called Dimension. Dimension comprises a multi-user 80186-based system supporting up to twelve 8088 workstations. Along with the advantages of resource and data sharing, Dimension offers the predictable price advantages over a single-user PC XT: For only \$8000, for example, you can get a two-user, 30-MB Dimension system.

Especially for dealers who don't have the IBM franchise, the dimension will be a strong item. Although North Star isn't known for its marketing prowess, it has a

fairly loyal cadre of distributors such as Microamerica who would love a product to offset the IBM onslaught and who will foster dealer acceptance of the system -- opening a nice channel at least until IBM comes out with its own multi-user system. The company's second promising channel is OEM sales; imagine the success of an IBM-compatible Convergent. We can think of a host of timesharing services, office products marketers, and other salesforce-rich companies who could use a product like this. However, we don't think North Star will have the field to itself for long.

SofTech's Liaison: Unconnected

SofTech Microsystems has beaten the pack with the announcement a month ago of a full-featured 16-bit network operating system. Liaison, as it is called, solves all the user's problems of dealing with a network, and even provides something of a development environment. Based on the UCSD p-System, the system works with, and connects, a variety of hardware, including IBM PCs, Apples of all varieties, the Corvus Concept (a 68000-based machine), and others. The bad news is that you're pretty much restricted to using p-System applications or trading files between single-user MS-DOS and other non-p-System environments. (This is the same flaw that hampered Digital Research's CP-Net, since abandoned, and that it claims it will have solved when it ships its SoftNet, showing now at Comdex, in March. See below.) We suspect that most users will wait at least until SofTech comes out with something more accommodating to the now-standard MS-DOS environment, which we gather from winks and smiles is on its way. However, they should soon be able to get the the same capabilities from VisiCorp and Microsoft as well as DRI, to say nothing of IBM itself.

Digital Research's Concurrent CP/M 3.1: Connecting

It's generally acknowledged that Digital Research's Concurrent CP/M-86 is one of the finest micro operating systems around -- with the signal flaw that it won't run most existing (i.e. MS-DOS) applications. Now DRI is edging the OS into the mainstream with its Comdex announcement of Concurrent CP/M 3.1 with DOS Facilities. This new operating system has all the powerful multi-tasking features of Concurrent CP/M-86, plus a network option, plus windows...plus the capability to run PC-DOS programs, says Digital Research president John Rowley. If the system works as advertised, Digital Research, gaining credibility lately, could have a real winner on its hands.

Microsoft's and DRI's System 5: AT&T's standard

What about UNIX and the AT&T camp? Intel, which hired Microsoft essentially at the behest of AT&T to do a port of UNIX System 5 onto the 80286, has now given the job to Digital Research. What does this imply? Not much. It turns out that Microsoft's work, essentially a rewrite of Xenix, was much too fancy for AT&T, which simply wanted a plain jane UNIX that would match those being written for Motorola's 68000 and Zilog's Z8000. But both Intel and Microsoft didn't want to divert Microsoft's stretched resources from the genuine 286 Xenix, and so they both agreed that Intel would look elsewhere for the vanilla port, while Microsoft continues work on 286 Xenix. Here again DRI is moving into the mainstream, while Microsoft is attempting to create a standard with its possibly "better" but definitely not AT&T-standard UNIX implementation.

RELease 0.5: Half-Baked News

Hello/goodbye. TI has left the home computer market, IBM has announced its entry, and Atari and Coleco are raising their prices effective next year. We suspect that this holiday season will be a boomer: All the retail figures show people are beginning to look beyond next month to the good times ahead, and Christmas is the time when you spend in anticipation. We think the country wants to give itself a treat. Apple should be the biggest beneficiary of this spirit, since it has the most product available; TI, also with lots of product available but with less-than-profitable pricing, will at least be able to wring some cash out of its inventories. Coleco seems simply to have recognized that its price was low and raised it in the absence of downward pressure and a need to make up for lower units than forecast with higher prices. Atari likewise seems to feel an easing of pricing pressures. No word from Commodore.

Apple/Rana. Apple has announced how it will achieve a degree of PC compatibility on at least one of its systems, the Apple //e. Rather than handle the job itself, Apple is leaving it to Rana Systems of Chatsworth, CA, whose vp of engineering is the man who designed the Apple Softcard for Microsoft. Apple will endorse Rana's system, although it will be sold to retailers only by Rana itself. Like several companies, Rana offers an 8086 add-on board with MS-DOS. Rana, however, is a longtime vendor of Apple //e add-on high-capacity floppy disk drives and claims to have the unique capability to read both IBM and Apple floppy disks, quite a feat considering that not just the formats but the actual technology of electrical coding are different in the two systems. Thus the user who buys the Rana add-on -- two disk drives, an 8086, and 256K of RAM in a neat little box for about \$1700 -- does not need to buy Apple disk drives at all.

How the Mack, excuse us, the Apple 32, and the Lisa will achieve IBM compatibility has not yet been revealed -- or probably even decided.

More sign-ups for the dbms stakes. One of the most celebrated holes in the pc software business is the one that lies between Ashton-Tate's dBASE II and Software Publishing's PFS:file & report. Trying to fill it now are two promising candidates, although each lists strongly to one or the other side of the pit. Concentric Data Systems' Concentric Information Processor, from a bunch of ex-Data General employees still located in Westboro, MA, is a single-file system notable for its power and flexibility -- once you get used to a somewhat unusual use of tab and control keys and unfamiliar menu choices. The \$395 system lets you reformat your forms and reports by moving titles around on the screen -- about as simple as you can get -- and limits typing to a minimum -- if something has a name, you can select it from a list, where other systems might make you type it.

At the other end of the spectrum up close to dBASE II is Power-base, from GMS Systems in New York City. Power-base is a full-fledged, menu-driven, multi-file relational dbms. While it lacks the flexible report-formatting capabilities of CIP (but has them for forms), Power-base has its own special features, among them DataZoom, which lets you move across files. For example, you could find an invoice in a customer record, zoom across to the invoices file for a look, zoom into one line item for a full product description, and then "unzoom" back to your customer record, all with a few deft strokes of the functions keys. Also appealing are three ready-made applications included in the \$395 price: an electronic phone directory, a project management system, and a stock tracking system.

But this may not be all. GMS is in discussions about offering a simpler version of Power-base for novices under the auspices of Knoware (see page 18), about as smooth a channel into the novice market as one could hope for.

Seagate/Atasi. We aren't yet seeing any great shakeout, but it's hard not to notice that there are a lot more little disk drive companies than the world will need by the time most of them grow up. Prices of disk drives are coming down rapidly, even in the face of shortages. Accordingly, it makes sense for the little ones to team up with a staunch, established big one **before** the going gets rough. That's exactly what Atasi, the maker of high-capacity Winchesters, has done in its recent absorption by Seagate. As for Seagate, it means a nice position in the nascent market, and one fewer competitor to fight off.

Photon. "Wait a minute," says Juan to Alice. "Let me turn on my computer and find out if I'm free for lunch on December 13." Or, "Let me load my VisiCalc disk and see if those figures you just gave me add up. It sounds like an expensive vacation." ??? Not likely. One of the fallacies behind most calendar and phone-list applications is that these applications are nice, but hardly worth turning on or even rebooting your computer for. But as window systems like Windows, Visi On and Lisa (see page 1) proliferate, they will create an ideal environment for little packages that wouldn't be worth using all by themselves. With a good window system, you can have instant access to your calendar, your phone list, your mantra, or perhaps even a calculator.

Such a calculator is now available from Photon Software of Bellevue, WA, and it doesn't even require Windows or any other window systems: Called Tenkey, it runs on top of MS-DOS and switches on and off without interrupting the resident application. Although it's totally electronic, existing only in software, it costs more than a real one: \$50. After all, you can't lose it on a nonmetaphorical, messy desk; it doesn't have batteries to run down; and you can transfer the answer directly to any point in the other application on your screen.

W.H. Smith, computersellers. Any American who's ever been to Britain probably has bought something from bookseller W.H. Smith, if only an International Herald Tribune. The company has now become the UK's largest computer chain, a la Tandy, with computer sections in 22 of its larger stores. The top seller right now, of a range that starts with the Sinclair ZX-81 and tops out with the Apple //e, is the Electron, Acorn's follow-on to the BBC Micro. (See our issue of June 24.) Despite its success in the UK, however, we're dubious of Acorn's chances in the US education market, where the BBC's endorsement carries a good deal less weight.

Encore! Ferox Microsystems has been besieged by bad luck. Imagine losing the rights to your own product in the settlement of disagreements over a distribution contract you signed years ago. And imagine having to sell exclusively to Fortune 10^x customers while your distributor gets the lucrative mass market. The good news is that those conditions are probably ideal training for entering the decision support system business. Ferox is now bringing out its second product, Encore! It's totally new -- Ferox was legally enjoined from just rewriting its first effort, Micro DSS/Finance -- and incorporates all the wisdom Ferox has learned in three years of selling to the Fortune 10^x. Second time around, Ferox should do well.

Credible Jack. One of the greater small successes of 1983 has been The Incredible Jack, an integrated package for the Apple //e, with over 12,000 copies sold. While it benefited from a lack of competition -- everyone's chasing after the IBM PC -- it also happened to be a very simple-in-appearance system that combined word-processing, filing, and calculation. Now the company, Business Solutions of Kings Park, Long Island, has raised some money, developed an IBM PC product, and is going out into the big world to fight it out. Its IBM product, Jack2 (\$495), is similarly understated, but ample for the needs of most memo-writers and genuinely simple to operate. It can graph data, put text or graphs into columns, and do simple calculations and word-processing -- and make them all appear on the screen (no windows). We don't expect Jack2 to win many high-powered data analyst converts from Lotus 1-2-3, but it could attract quite a few novices who'd like to see their work on the screen exactly, and for whom "***GRAPH HERE**" just won't do.

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