

THE RISING STAR OF EPSON

*Is the QX-16 with Valdocs
a "fantastic machine" or an
"embarrassing failure"?*

COVER STORY

by Jonathan Sacks

There was precious little excitement this past October when Epson America called a press conference to announce its second-generation personal computer, the QX-16. In too many ways it seemed like déjà vu. While the Epson name has come to represent the standard in dot-matrix printers (with an estimated 40 percent of that market worldwide), the company's one desktop computer to date—the QX-10—can only be classified a failure.

The new Epson machine is essentially an updated QX-10 with IBM compatibility thrown in for good measure. It bears so many harrowing similarities to Epson's earlier machine—including a dependence on a troubled software package called Valdocs—that one industry insider asked an Epson official whether the whole thing wasn't a bad joke.

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To understand that kind of reaction, you have to know a little bit about the rise and fall of the QX-10. That first-generation Epson, released with great fanfare and a huge advertising effort in late 1983, was elegantly designed, with a spectacular keyboard and a crystal-clear bit-mapped screen. But it was built around an 8-bit Z80 microprocessor at a time when the 16-bit 8088-based IBM PC was fast becoming the standard. Even worse, the QX-10 had a \$2995 price tag—hundreds of dollars more than other 8-bit machines.

Epson's only hope for the success of the QX-10 lay in a revolutionary software package called Valdocs, which came bundled with the computer. Valdocs featured a word processor, a calculator, a "draw" function (that created bar, pie, and line graphs), an electronic mail function with an electronic address book, and a computerized date book.

It also had a user interface that was meant to change the way people worked with computers. Its designer, a visionary named Chris Rutkowski, wanted the computer and the software to be so simple that a neophyte could operate it without opening a manual. He designed the QX-10 keyboard so that, when used with Valdocs, all computer functions could be activated by hitting a single key.

And the keys were labeled in English. A key labeled Menu gave you a menu, a key labeled Draw put you into the draw program. To store a document, you hit a key labeled Store. The text editor was "what you see is what you get." You could boldface or italicize (on-screen and in print) by hitting a key labeled Bold or Italic. You got extensive on-line help for each application just by hitting a key marked Help.

Valdocs was brilliant in its simplicity, and immediately following its announcement, the reviewers went wild. But soon problems began to crop up. Entire documents would disappear in Valdocs for no apparent reason. The electronic mail function usually didn't work. And the whole thing was painfully slow—it took a half minute to delete a block of text and a full minute to delete a file.

Epson and Rising Star, the American software company contracted to write Valdocs, promised fixes and upgrades. Then they missed their own deadlines. Within months after its introduction, the reputation of the QX-10 was forever stained by the debacle of Valdocs. Even Epson's efforts to sell it with a free printer and additional software failed to bolster sales. A year later, the machine was widely discounted to \$1595, and QX-10 unit sales still accounted for less than one percent of all personal computer sales.

A New QX

And so, on that October day in Torrance, Epson had a grim history to overcome. High-ranking company officials flew in from Japan to join American executives in hours of windy speeches that reaffirmed Epson's commitment to carving a niche in the American computer market.

But when at last they introduced their new machine, it seemed that in ignoring the lessons of history, these

men were doomed to repeat their embarrassing failures.

Like its predecessor, the QX-16 uses a Z80 microprocessor to run CP/M and a new version of Valdocs, called version 2.0, which is slated for release by the time this article is in print. In its sluggish way, Epson has also finally given its computer IBM compatibility by including an 8088 coprocessor and a special graphics card that allows it to emulate the IBM PC. Epson claims that the QX-16 is capable of running 90 percent of the programs available for the IBM.

The machine comes with two 5¼-inch slimline disk drives, which have 360K bytes of storage each in the 8088 mode and 768K bytes of storage (quad density) in the Z80 mode. (A hard disk is available from Comrex, a subsidiary of Epson's parent company, Suwa Seikosha, a manufacturing unit within the Seiko Group.) Also included are a Centronics-compatible parallel port and an RS-232C serial port. The QX-16's standard 256K bytes of RAM can be expanded to 512K.

Although the system's three expansion slots will not accept IBM cards, Epson says it will release its own expansion cards in the future.

The standard monochrome monitor is driven by 128K bytes of dedicated video RAM and an NEC 7220 graphics chip. The 12-inch bit-mapped screen has a dot resolution of 640 by 400 in Valdocs and 640 by 320 or 320 by 200 in MS-DOS. Epson says a color monitor and color graphics card will be available in the future.

The QX-16 keyboard is a Selectric-like layout with 18 special control keys across the top. The 10-key number pad is programmable via the "Defkey" function, which is part of Valdocs 2.0.

At the time this article went to press, the company had not settled on a final price for the QX-16. It promised a price of "under \$3000" and the final price was rumored to be around \$2500.

The New Valdocs

In a marketplace that has clearly defined its most important ratio as price/performance, the QX-16 seemed destined to follow in the footsteps of the QX-10. Why, after all, would anyone want to buy an IBM compatible for about the same price they could buy an IBM PC?

"The point is that we aren't positioning this as another IBM compatible," responded Scott Edwards, marketing services manager of Epson's Company Products Division. "We don't think that's its niche. It would never sell as a compatible at this price."

So how exactly does Epson plan to market the QX-16?

"We're depending on Valdocs," said Edwards. "Valdocs is what we have that makes us special. And the latest version is great, just great. It will make the QX-16 a fantastic machine at a fantastic price."

A sadly familiar refrain, except this wasn't the old Valdocs that Edwards was speaking of, the Valdocs that had come to be known as oh so buggy and oh so slow. No, he said, the new Valdocs, Valdocs 2.0, was everything that Valdocs should have been the first time around. (See "An Early Look at Valdocs 2.0," page 64.) This version of Valdocs, Edwards said, has been speeded

up, cleaned up, and polished. This is a Valdocs to make Epson proud.

Epson put on a short demonstration of Valdocs 2.0 that day in Torrance. It included some glitzy draw and paint programs akin to what was available for the Macintosh and the IBM PC. The program now includes a spreadsheet and an improved mail function, which one Rising Star official claimed was as good as any communications package on the market.

"What we tried to do with the first releases of Valdocs was establish that it was possible to create easy-to-use integrated software," said Gordon Mustain, director of marketing for Rising Star. "What we did with version 2.0 was try to make it right."

Valdocs' Big Daddy

When you talk to people who know about Valdocs you hear one name again and again. Depending upon whom you ask, Chris Rutkowski is either a genius or a fool. For better or worse he is the man who created Valdocs and the man who knows it best. To learn more and to get a firsthand demonstration of Valdocs 2.0, I visited Rutkowski at his Carmel, California, home.

Rutkowski was the first American employee of Epson, and he claims credit for the marketing savvy that put Epson printers on top in the United States. That, he says, won him the respect of the Japanese company's hierarchy, and when Epson decided to build a computer for the American market, Rutkowski's offer of help was eagerly accepted.

Rutkowski's business card identifies him as a futurist, and from the outset of Epson's computer project, he took the long view. Plenty of computers were already out there that performed adequately, Rutkowski figured. What was missing, what was necessary before people would make computers part of their lives, was a way to make these new machines easy to use. And so, the concept of Valdocs and HASCI was born.

HASCI, an acronym Rutkowski coined, stands for human applications standard for computer interface, and as the name implies, Rutkowski thinks that someday every computer will have to meet his standard. What Rutkowski intended to create from the outset was an easy way for humans to relate to computers; an interface so simple that even a child, or "a little old lady in Dubuque" as Rutkowski would say, could sit down at a computer for the first time and make the thing work.

What he now claims, but didn't really make clear earlier on, is that the process would take some time and would be done in three phases. Phase One—the one we have seen—was the first series of Valdocs software. Rutkowski says it wasn't nearly as bad as some people thought. Phase Two—the version of Valdocs about to be released—will perfect each module. The final phase, Valdocs 3.0, will be a fully integrated, fully perfected program—the complete computer program, so to speak.

The process is evolutionary, and improvements are ongoing, Rutkowski says. What burns him is that the whole thing has been so misunderstood and maligned. "A lot of the negatives have been grossly exaggerated,"

"The criticism came mostly from computer freaks, and Valdocs was never meant to make the computer freaks happy," said Rutkowski.

he said. "You know, it's easier to criticize than to produce, and most of the people who have criticized Valdocs have never made any contribution to our society.

"The fact is that the criticism came mostly from computer freaks, and Valdocs was never meant to make the computer freaks happy. We find that there are certain types of users—those to whom ease of use was important—who loved Valdocs, despite what the critics were saying.

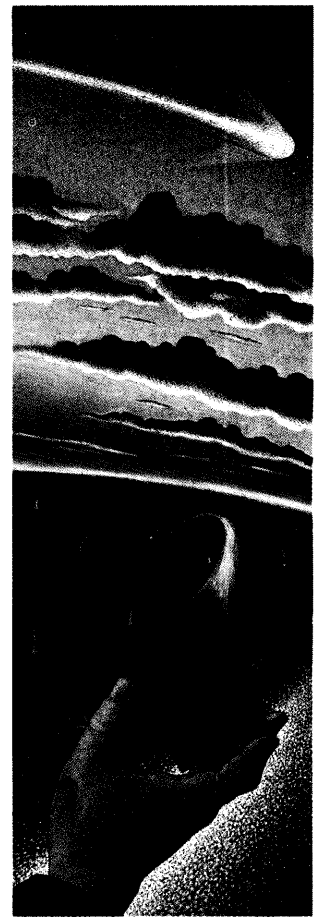
"On some levels, like ease of use, I would put Valdocs up against anything out there. While everyone is worrying about making people computer literate, we are really trying to make a people-literate computer. Someday, all computers will have to be that way."

And what of the specific criticisms, the fact that Valdocs was slow and infested with programming bugs?

"We got the bugs taken care of pretty quickly, and I agree that the first release of Valdocs should never have gone out to the public," Rutkowski said. "Some people said that a program as complex, as huge as Valdocs, couldn't work on a Z80. Well, I have said all along that it isn't the size of the microprocessor that counts, it's the elegance of the code. Valdocs was slower than some other programs and that was because the code had to be refined. It is a constant process. We have made 2.0 significantly faster than previous versions."

The Evolution

The development of 2.0 began with a meeting at the Saddleback Inn in Orange County, California. There, Rutkowski spent four days outlining what he wanted Valdocs to be. The thesis was a simple one. Rutkowski



wanted each module of Valdocs—each application—to be competitive with anything in its field. In other words, the Valdocs text editor had to be as good as Wordstar or Microsoft Word; the mail program had to be as good as Crosstalk.

Just as he had done for the previous version of Valdocs, Rutkowski wrote a “manual” for the nonexistent Valdocs 2.0, outlining what it would include and how each application would work. In addition to an improved “what you see is what you get” text editor, there would be an improved mail program, a spreadsheet, a card-file-type database, business graphics, and a date book.

And, two other programs—pieces of the Valdocs environment—would be offered at additional cost. One would be a draw program, something sophisticated enough so that it could be used for computer-aided design (CAD) applications. The other would be a paint program that would take advantage of full-color graphics.

Rising Star decided that, like earlier versions, the new Valdocs would be programmed partly in assembly language, but mostly in a specially designed version of FORTH that the company called R-FORTH. This

despite widespread criticism that part of Valdocs’ problem was its programming language. FORTH isn’t generally considered slow, but critics of Valdocs have suggested that the sheer bulk dictates that it should be entirely in the more efficient assembly language.

Rising Star hired several programmers who worked on customizing the FORTH language for the task at hand—a reverse process, really, of the customization that was done during the creation of earlier Valdocs versions. FORTH is a language designed to be modified, and when the programming began on Valdocs 2.0, the kernel of R-FORTH had swelled from 16K bytes to 22K. It had to be streamlined. By the time that streamlining was done, the kernel was back down to 10K bytes.

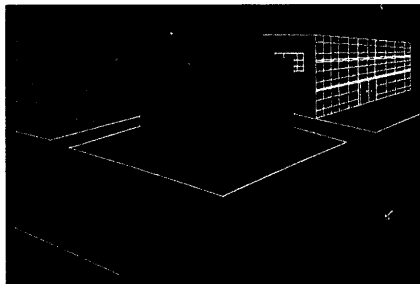
Other programmers—some 40 in all—worked in groups to rewrite and streamline each module of Valdocs: the data-indexing system, the editor, the spreadsheet, and the graphics driver. They did all their work at home. Rutkowski, the futurist, believes that people are most productive in an “electronic cottage” environment. Also, he says, he wanted the best programmers he could find, and he knew he couldn’t convince many of them to move

AN EARLY LOOK AT VALDOCS 2.0

While Valdocs 2.0 was still in testing at this writing, it’s clear that a bug-ridden prerelease version is a vast improvement over earlier releases of Valdocs.

Part of what makes 2.0 better is that it is a lot meatier than its predecessors. There are seven applications modules supplied on one floppy disk for the QX-16 (or three floppy disks for the QX-10). The applications include a text editor, spreadsheet, electronic communications, address book, business graphics, date book, and card file. There’s also a nice little program called Matrix that lets you design your own fonts. And two other impressive Valdocs programs, Valdraw and Valpaint, will be offered at additional cost. These optional programs, which work with a mouse, let you draw, zoom, and paint pixel by pixel.

Rising Star, the company responsible for Valdocs, says it tried to make each Valdocs 2.0 application as good as anything else in its field. It was an impossible goal, and one that Rising Star didn’t attain. However, the company did take a giant step toward



Valpaint (top) and Valdraw screens.

creating a very good software package.

But Valdocs 2.0 has one obvious flaw—a lack of true integration. Although all of the modules function within the same environment, you can’t move data freely from most Valdocs modules to others. In Valdocs you can draw a graph, but you can’t move it into a text file. Nor, for that matter, can you move numbers from the spreadsheet to a text file. State-of-the-art integrated software lets you do those things. (This level of integration will exist in Valdocs 3.0, says Rising Star.)

What exists already—and of paramount importance to Valdocs designer Chris Rutkowski—is a complicated software package that is relatively easy to use. Rising Star officials think Valdocs 2.0 is so easy to use, in fact, that the company will issue the program with only an abbreviated (about 60 pages) user’s guide, which one Rising Star executive described as “something like

what you would get with a power saw.”

For people who want more, a 400+ page reference manual will be available on request. A rough draft of that manual turned out to be a cookbook of Valdocs commands and features.

While it is too early at this writing to pass final judgment on Valdocs 2.0, several aspects of the program deserve a closer look. Valdocs is designed to work with the HASCI keyboard that comes with both the QX-10 and the QX-16. Special control keys work with the system, the files, and the applications.

The Edit key, for example, takes you into the Valdocs word processor, for which many of the other function

to Southern California. Each programmer was assigned his piece and he worked until it was perfected. Notes, comments, and code were sent to several Rising Star on-line bulletin boards for peer review. All code was also sent to a computer bulletin board in New Jersey where Rising Star Executive Vice President Roger Amidon—who coordinated the entire effort—reviewed it, made certain it worked with other modules, and ordered revisions or rewrites.

The concept remained the same throughout—to create a state-of-the-art integrated software package that anybody could use. In its final version, Valdocs 2.0 took over 650K bytes of disk storage. The system contained 68K bytes of help files and more than 300 menus. (Not even Rutkowski could establish exactly how many menus there really are.)

By the time it reached final testing, Valdocs 2.0 was, in Rutkowski's opinion, a better program than any other he had ever seen. It was better than anything on the Macintosh, which had been introduced during the development of 2.0, because it didn't depend entirely on the mouse, which was, according to Rutkowski, a fine

input device for limited circumstances, but not a replacement for the keyboard. (Anyway, Rutkowski's new Valdocs uses a mouse for what mice do best—paint and draw programs.)

Valdocs was better than Lotus Development's 1-2-3, not because it was more powerful, but because it was usable by people who weren't spreadsheet geniuses. "I have a spreadsheet that people who have never used a spreadsheet can sit down and use," Rutkowski said.

It was better than Wordstar because it was a what-you-see-is-what-you-get text editor. If you wanted something in boldface, you pushed the Bold key and it showed boldface on the screen. It was, in Rutkowski's eyes, state of the art. Period.

"We have set the standard that all others will have to match," Rutkowski said. "Especially in ease of use. I don't think there's anything out there that's better. We're talking magic."

And yet, Rutkowski admitted, Valdocs 2.0 wasn't perfect. While the text editor did give you on-screen bold, italics, three sizes of type, and superscript and

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keys are designed. There are keys to delete text backwards and forwards by character, word, or line, as well as keys for Bold, Ital, Size (to change the type size), and Style (superscript or subscript).

The major criticism of earlier versions of the Valdocs editor was that it was slow. That remains an issue in 2.0. Although Rising Star has speeded up input (to a potential 400 words per minute), it has not brought some word-processing functions up to the speed one might expect. If you want to go from the top to the bottom of a Valdocs file, plan on taking about two seconds for each page of text. Block moves are also cumbersome, although they are significantly faster than earlier versions of Valdocs. Because the editor is menu driven, moving a block of text takes a dozen keystrokes.

A key labeled Calc moves you into the Valdocs spreadsheet, which can handle up to 702 columns and 999 rows. You can divide the screen into as many as four windows for a better look at varied parts of a single spreadsheet, and the screen will display either 80 or 128 columns as you prefer. The spreadsheet works with virtual memory, meaning it uses disk storage rather than RAM only, and there is a trade-off—potential size versus speed. Rising Star claims its program is the fastest virtual-memory spreadsheet in the world, which may well be true. But the Valdocs spreadsheet is much slower than RAM-based spreadsheets such as Visicalc.

The Mail key gives you an electronic address book and various communications functions. This program comes closest to state-of-the-art in Valdocs 2.0. The communications program interfaces with the address book, allowing automatic dialing and log-on. In addition to standard communications protocols, Mail supports batch transmissions. It can instantly convert Valdocs files to American National Standard Code for Information Inter-

change (ASCII) for fast uploading. One wonderful feature is background auto-answer, which answers even if the machine is running another program module, alerting you to press the Mail key to respond to your call.

The Draw key takes you into the business graphics module, which allows you to create pie, bar, line, and scientific charts. All but the pie chart support eight different sets of data, creating overlaid graphs. All charts can be scaled in size.

Through the Menu key, you can access the card-file-like database. Each card can have 14 data fields of up to 56 characters. You can define both primary and secondary sort fields, and an index function lets you include the same card in several databases.

The sheer size of 2.0 makes a hard disk a must if the software is to be used in a business environment. Otherwise, you have to swap floppy disks when you want to move from some applications to others. That is annoying and confusing. A solution to that problem—proposed by Valdocs designer Rutkowski—is to delete from your working-applications disk those Valdocs modules that you don't often use (including help files as you no longer need them), refilling the disk with only those modules you want. It is a reasonable kludge, but it is not the ultimate solution.

Neither is Valdocs 2.0 the ultimate solution to everybody's software needs. Chris Rutkowski and his brethren at Rising Star have undertaken a huge project. They have grand dreams, and they are closing in on them step by step. But Valdocs is still imperfect. It needs integration. It still needs a faster text editor. And, although Rutkowski vehemently disagrees, it probably needs a microprocessor more powerful than the 8-bit Z80 give it the muscle to do the job right. □

Certainly in the realm of integration, companies such as Ashton-Tate and Lotus Development have already left Valdocs in their dust.

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subscript, it was still slow. The business graphics were good, but the graphs, although they could be scaled from postage-stamp size to full screen, could not be moved into the text editor.

The spreadsheet figures in Valdocs 2.0 could be translated into graphs but again they couldn't be moved into the text editor or the card file. "That's the next step," Rutkowski said. "It's evolutionary."

The Unveiling

Like other versions, Valdocs 2.0 was late in arriving—months later than it was supposed to be. Six weeks before its proposed late-1984 release date, various bugs were still floating around within Valdocs 2.0. The reason for this, Rutkowski said, is that a version would be stabilized and readied for release, then Epson would delay release, and then Rising Star would add or change the program again, creating new bugs.

That didn't explain why six weeks before the proposed release date the Valdocs manual was still in pieces. It didn't explain why at that late date Epson had yet to approve 2.0 for release at all.

Even assuming that the Epson QX-16 and Valdocs 2.0 make it onto the market in early 1985, it seems unlikely they will have much impact on the computer world as we know it today. Rutkowski's Valdocs, while conceptually strong, is still in development—imperfect, if you will.

For reasons only he knows, Valdocs 2.0 doesn't take advantage of the QX-16's 16-bit coprocessor. Despite Rutkowski's insistence that the Z80 can handle the enormity of Valdocs, it seems that the processor is straining. Valdocs 2.0 continues to suffer from speed

problems, especially when making block moves in the text editor. Because so many things go on in background—for example each time a document is stored it is automatically indexed by date—functions such as saving a file take a very long time.

That Rutkowski agrees work still needs to be done on Valdocs is both reassuring and distressing. It is reassuring because it reaffirms what anybody who has ever met him suspects—he's a bright guy, worthy of the task he has undertaken. It is distressing because Rising Star has a history of giving us too little too late.

Because in reality, as charming as Rutkowski's notions are, HASCI has not become a standard, and it doesn't look like it ever will. One can't help but wonder whether Apple, with its Macintosh, won't whisk past Rising Star. Certainly, in the realm of integration, companies such as Ashton-Tate and Lotus Development have already left Valdocs in their dust.

Once again, there is a lot to love about Valdocs. Rutkowski is especially banking on his draw and paint programs, which allow you to zoom in on the screen and create images pixel by pixel. In demonstration these programs are wonderful, and Rutkowski thinks they are flashy enough to sell computers.

Perhaps Rutkowski is right, and thousands—even millions—of people out there are looking for a computer that is easy to use, and perhaps they are willing to trade some of the annoyances of learning to use other computer programs for some of the annoyances of Valdocs.

Epson hopes so—but the company is hedging its bets anyway. At the unveiling of the QX-16, Epson announced that it is also starting its own software company to develop products for the QX-16. (Rutkowski and Epson both claim the new company will not compete with Rising Star.)

While Rutkowski says he hopes to have a long and lucrative relationship with Epson, he claims to be unconcerned about whether the public accepts the QX-16 or Valdocs 2.0. The way he sees it, sooner or later the world will recognize the value of what he is doing. Rutkowski, remember, is a futurist. He takes the long view. "I'm already past 2.0, and the design work for 3.0 is already complete," he says. He's ready for other projects, and soon, he says, he will be done with computers altogether.

Rutkowski talks, you see, not in terms of selling computers, but in terms of setting historical precedents, of bettering the lot of mankind, of being remembered long after names like Macintosh and IBM PC are forgotten.

"I'm here to research the leading edge of technology," Rutkowski says. "I'm trying to create technology by which mankind can improve existence on this planet."

It is an awesomely long way from Valdocs 2.0 to such a heady dream. But the longest journey begins with a single step, they say. And anyway it might explain why some of what Rutkowski does is so mystifying to the rest of us. After all, in his league what does it matter if you have full integration this month or next?

Come to think of it, in his league what does it matter whether you ever sell a computer? □

