VISICORP 1978-1984 (Revised)

9   10

A VISICALC™ Screen:

A VisiCalc screen diagram with labels:

- Current Entry's coordinates
- Entry Type: V for value, L for label, /– for repeating label.
- Recalculation Order Indicator: If R, across rows; if C, down columns.
- Memory Indicator: How many K memory available. If flashing M, out of room.
- Explicit Format indication
- Direction Indicator: If ↑, arrows keys will move cursor up and down; if –, arrow keys will move cursor left and right.
- Entry Contents
- Entry Contents Line
- Prompt Line
- Edit Line: flashing block means awaiting input.
- Row and Column labels
- Dollars and Cents Format (/F$)
- Label Entry
- Left Justified Format (/FL)
- General Format (/FG)
- Repeating Label (/–)
- Cursor
- Two windows when the screen is split.
- Right Justified Format (/FR)
- Graph Format (/F*)
- Integer Format (/FI)
- Value Entry

Screen contents:

```
B9  /FI   (V) 1.2*B7                          C↓
VALUE                                          25
+B8*B7
        A             B          K          L
 1 COST/SLS:    .8     1 RATE:        .25
 2 OVHD INC:   10      2
 3  SLS GRW:   .29     3 NPV:       62.0151
 4                     4
 5 YEAR          1979  5  TOTAL  %/SALES
 6 ------------------  6 -------------------
 7 # SOLD         100  7   3066
 8  PRICE       1.20   8
 9 SALES $       120   9   3680       100
10 COST           80  10   2453        67
11 OVHD           15  11    495        13
12 PROFIT          5  12    118         3
13                    13
14                    14   1979  ***
15                    15   1980  **
16                    16   1981  *
17                    17   1982  *
18                    18   1983  **
19                    19   1984  ***
20                    20   1985  ******
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This case was prepared by Professor Richard P. Rumelt with the assistance of Julia Watt. Support for the development of this case was provided by the Price Institute-UCLA Program in Entrepreneurial Studies. The case is intended to serve as the basis of class discussion and is not intended to illustrate either effective or ineffective handling of an administrative situation.

In 1977 Dan Fylstra, a student in the MBA program at the Harvard Business School, wrote a business plan for a newly emerging type of firm, a software-publisher. It began:

> My fundamental idea is to publish and market software for personal computers in much the same way that books and records are produced and marketed. I plan to solicit software from individual aspiring authors, select and publish specific computer programs based on an analysis of what the market wants, reproduce the programs using audio cassette tapes and ordinary printing, advertise and promote the programs through the personal computer magazines and direct mail, and distribute the programs through the emerging network of retail computer stores, and ultimately through calculator dealers and department stores.

In the fledgling microcomputer industry Fylstra, at 26, was something of an old hand. Having studied computers at MIT, he had been a founding associate editor of *Byte*, the first journal expressly devoted to microcomputer hobbyists, and a founding editor of *Computer Dealer*. Like many technically trained people at that time, he was fascinated by the developing microcomputer industry and was determined to make his career in it.

In early 1978 Fylstra and software writer Peter Jennings formed Personal Software to market programs for the Commodore Pet, Radio Shack, and Apple computers. The first programs offered were games and an assembler for the 6502 microprocessor. Soon they also offered a chess-playing program by Jennings and a bridge-playing program (Exhibit 1). Micro-Chess became the largest selling application program in the still infant microcomputer industry, with over 50,000 units sold by the spring of 1979.

VisiCalc

At about the time Personal Software was formed, Dan Bricklin, a student at the Harvard Business School and MIT graduate, was experimenting with the idea of an "electronic blackboard" to take the drudgery out of business calculations. Bricklin imagined a display of numbers linked by rules, with the display responding immediately to any changes. Writing a simple prototype in Basic, Bricklin approached Bob Frankston, a friend he had met while a student at MIT. Frankston, an experienced computer consultant, agreed to help develop a workable version of the program.
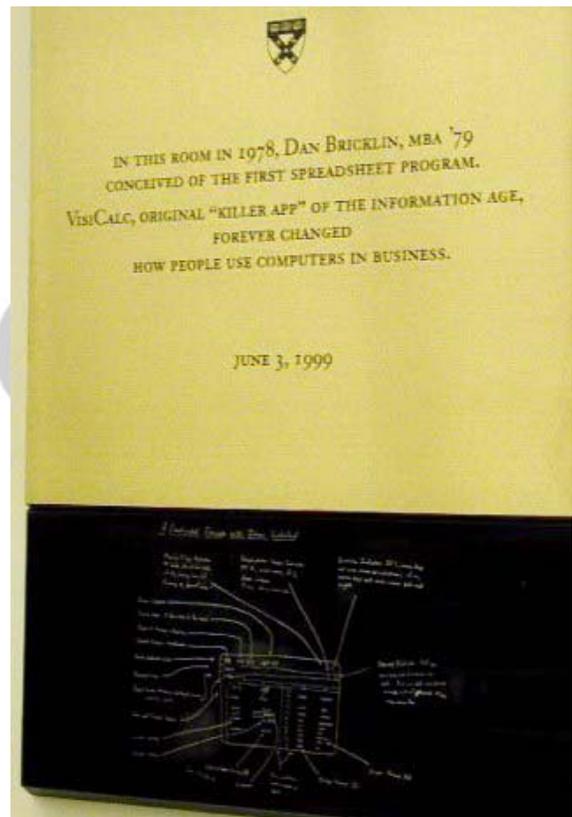
Seeking advice from a Harvard faculty member, Bricklin was warned that time sharing systems were already flooded with financial modeling programs. Bricklin was referred to Dan Fylstra who was known to be interested in new programs. Fylstra liked the concept and gave Bricklin and Frankston an Apple II microcomputer for development, promising to market the product they produced. In January 1979, Bricklin and Frankston formed Software Arts, and continued to work on the project in Frankston's attic.

As the project neared completion, Bricklin and Frankston began to negotiate an agreement with Personal Software concerning the marketing of the program. The contract (Exhibit 2) was signed in April and provided royalties to Software Arts of 35.7 percent of revenues on direct sales and 50 percent of revenues on contract (OEM) sales. In return, Personal Software promised best efforts marketing of the product. The name of the new product, VisiCalc, stood for "visual calculator," and was fashioned in one of the meetings between Fylstra and Frankston.

In May of 1979, Personal Software relocated from Cambridge to Sunnyvale, California, in "Silicon Valley", the center of the growing microcomputer industry. VisiCalc was shown at the West Coast Computer Faire that month and again at the National Computer Conference in New York. Many who saw the program were impressed—VisiCalc was something new under the sun. Industry observer Benjamin Rosen praised the product in the Morgan Stanley *Electronics Letter* saying

> What is about to come on the market is a new concept in software that could well go a long way toward fulfilling [the] needs of professionals and alleviating their frustrations…. Though hard to describe in words, Visicalc comes alive visually. In minutes, people who have never used a computer are writing and using programs. Although you are operating in plain English, the program is being executed in machine language. But as far as you 're concerned, the entire procedure is software transparent. You simply write on this so-called electronic blackboard and what you would like it to do — and it does it.

Rosen went on to say that VisiCalc was the "software tail that might wag the personal computer dog."

VisiCalc was distributed to the public in October 1979. The original price was $99.50 for the diskette and manual. The response was immediate. Dealers found that computer owners were enthusiastic about a non-game product of general utility. The first month's sales more than repaid the entire year's advances to Software Arts for development as well as the up front marketing expenses. As word of the product spread, dealers saw an increasing number of customers buying Apple microcomputers just to run VisiCalc!

First Ad

VisiCalc was an unprecedented retail "hit" in the micro-software industry. In 1979 Personal

Software's revenues were $882,000, almost all from VisiCalc. In 1980 revenues grew to $3.7 million and the firm showed a profit of $157,000. In 1981, revenues from VisiCalc were approximately $14 million, growing to $22.6 million in 1982. Exhibits 3 and 4 show the financial growth of the company and Exhibit 5 provides data on the growth and segmentation of the micro-software industry.

Steven Wozniak, co-founder of Apple Computer, attributed much of his company's rise to the program:

> there were two factors that led to our success—our floppy disk and VisiCalc. Out of the original home computers, which included the TRS-80 [Radio Shack] and the Commodore PET, ours was the only one that had enough memory to run VisiCalc. VisiCalc and the floppy disk sent this company into the number-one position. . . . After VisiCalc, it was perceived that 90 percent of all Apple IIs sold were going to small businesses. Only 10 percent were going into this home hobby market that we originally thought was going to grow to be billions. Originally we were a home hobby computer. Now, suddenly, small businesses were buying Apple IIs, and they wanted more features.... These were all the things that one product, VisiCalc, led to.[1]

Before VisiCalc, many participants in the small computer industry expected that microcomputers would evolve by gradually taking on the power and tasks of mini-computers. In this view, the microcomputers were truncated minicomputers and would gain in speed and power over time until they could run the vast array of software already written for minicomputers. But VisiCalc was a serious application program that had no counterpart in the mini-computer or mainframe world. It performed the functions of financial modeling languages costing $20,000 and more, but did not require that the user learn a language. The program's success was generally attributed to three factors:

1. VisiCalc allowed users with no programming experience to construct quantitative models on the computer. Rather than traditional syntax rules, the program used the metaphor of a spreadsheet and locations on that sheet to structure the pattern of data relationships. As a result, new users could begin to perform useful work on the computer very quickly. Additionally, VisiCalc did not require the user to define the full structure of the model in advance, but encouraged incremental elaboration.

2. VisiCalc exploited the high "visual bandwidth" of the personal computer, providing the user with instant visual response to changes in the model. This allowed users to change a number in the model and quickly see the effects of that change.

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[1]Gregg Williams and Rob Moore, interviewers, "The Apple Story," *Byte*, January 1985, pp. 173-4.

3.   VisiCalc was a general-purpose tool, much like a word processor, and did not force any particular problem solution method on the user. Software that purported to "solve" problems had been, in general, much less well received than software which provided a powerful general-purpose tool.

Building VisiCorp

As Personal Software grew, Fylstra added management. In the summer Skip Vaccarello was hired to manage manufacturing and operations, in October Bill Langenes joined to the firm to handle advertising and promotion, and in November, Ed Esber, a Harvard classmate of Fylstra's came aboard as marketing manager.   In the spring of 1980, Mitch Kapor, whom Bob Frankston had met at the Boston Apple User's Group, was hired to manage new products.

The early success of the company attracted the interest of the venture capital community and in May of 1980 Personal Software raised $540,000 in return for 30 percent of the stock. The principal outside investors were Arthur Rock (Arthur Rock & Co.) and Venrock Associates (connected with the Rockefeller family).   Fylstra personally retained 39 percent of the stock and Jennings held 11 percent.

After the first-round financing, the board pressed Fylstra to hire an experienced executive to serve as president and chief executive officer.   In July the decision was made to hire Terry Opdendyk (32) for this critical position. Opdendyk, known by Hank Smith (representing Venrock on the board), had been corporate manager of human resources at Intel, and had previously served as an engineering manager in software development and in the microcomputer systems division of Intel.

That summer the new management team hammered out the basic product policies for the firm. Games and hobbyist programs now amounted to less than ten percent of revenues. Personal Software, they decided, would move away from the hobbyist market and seek to `publish` products in each of the five basic "generic" application areas: spreadsheets, word-processing, database management, graphics, and communications. It already marketed a simple data base manager (CCA/DMS) written by CCA Inc., and would soon add DeskTop Plan (written by Don Williams), a financial planning language. Mitch Kapor had written a statistical analysis program called Tiny Troll while at MIT and was working on a trend analysis and graphics program. To fill the gaps, Personal Software began to seek out authors who could be placed under contract to produce excellent programs in the communications and word processing areas.

While new products were sought, the marketing executives were busy moving the company from its mail-order origins to one that distributed to dealers. This approach soon proved limiting, however, and the company sought distribution through the growing regional software distribution companies. By the end of 1980, the company sold through over 1000 dealers and regional distributors and used 17 sales representatives. Approximately two-

thirds of its revenues derived from direct sales and the remaining one-third from contract or OEM sales.

In the spring of 1981, cumulative sales of VisiCalc reached 100,000 units. Personal Software raised $2.1 million through a second round of venture capital financing. It also added two marketing executives: Roy Folk became Product Manager and Rich Melman became Director of Product Marketing. Together with Esber, this team developed the concept of a *family* of products. The company's advertising agency suggested that the identity of that family could be established by extending the use of the "visi" prefix from VisiCalc to the other products. The new line that emerged in May was advertised as "from the same people who brought you VisiCalc" and consisted of

> *VisiDex*: an automated rolodex filing program (written by Peter Jennings)
>
> *VisiPlot*: charts and graphics (written by Mitch Kapor)
>
> *VisiTrend/VisiPlot*: regressions and time series analysis (written by Mitch Kapor)
>
> *VisiTerm*: communications management (written by Tom Keith)

Subsequently, other programs were added to the series: VisiFile in October 1981, VisiSchedule in February 1982, VisiWord in May 1983, and VisiSpell in June 1983.

Mitch Kapor had left Personal Software in late 1980 and had developed VisiTrend and VisiPlot under contract. Delivered by year-end and released in April, the products earned Kapor royalties of almost $500,000 in six months. He explained his position:

> I had a very attractive contract from my point of view because when that contract was signed in '79 [the same year as Software Arts'], people didn't really understand the economics of this business. Today, [1984] software publishers offer ten or fifteen percent royalty contracts; I had a *thirty-three* percent contract. [2]

Concerned about the high royalty rate, Personal Software approached Kapor on the issue and he suggested that he would sell full rights to both programs for $1.2 million. "We also sought rights of first refusal on other software Kapor might develop," Roy Folk recalled, "but Kapor wanted full control over IPL, his pet project." IPL was a concept for a language-based spreadsheet. Because Personal Software already had a fine spreadsheet, and a best efforts marketing clause with Software Arts, it was decided to let IPL go.

Another important event that spring was the secret development work on an IBM version of VisiCalc. Personal Software had been chosen by IBM as one of the three pre-announcement development sites of software for the still

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[2]Quoted by Kevin Goldstein, "1-2-3 Steps Ahead, "*Softalk*, February 1984, p. 28.

unannounced IBM PC. Personal Software executives who saw the machine became convinced that the new IBM machine, scheduled for release in August, 1981, would revolutionize personal computing, taking it fully into the corporate world.

Becoming a Development Company

Although Dan Fylstra's original vision was of a pure publishing company, several factors led Personal Software to formulate plans to develop its own software. In part, Terry Opdendyk's experience at Intel led him to believe in the efficacy of organized development work rather than the "garage and attic" pattern that was common in the micro-software industry. In addition, internal development provided a way of avoiding the very high royalties that successful programs generated.

During the spring of 1981 a set of objectives evolved that became broad specifications for a new generation of internally developed software. They were:

> *Fast Switching*. It was currently difficult to switch from one program to another. For example, someone using VisiCalc might need to make a phone call and need to look up the phone number in their VisiDex file. But to use VisiDex one had to exit VisiCalc, reboot the machine and then load VisiDex. After looking up the number, the process had to be reversed to return to the spreadsheet. Such a procedure was not an obvious improvement over a manual file system. These considerations led to the need for a way of rapidly switching between programs or tasks.

> *Data Exchange*. Although Personal Software's products shared a common prefix, they were not fully "integrated." That is, it was not a simple matter to move information from one to the other. Fylstra was convinced that with the right data structures it would be possible to move information between spreadsheets, databases, documents, and graphs easily and quickly.

> *Common Simple Interface*. There were obvious gains to be had in standardizing the ways in which the company's programs displayed and accepted data and commands. In addition to this issue of a "common" interface, Roy Folk argued that ease-of-use would be an increasingly important issue in the industry. As hobbyists were replaced by business users, the winning programs would be those that minimized the time and trouble required to learn to use them effectively.

In July 1981, Xerox announced the Xerox Star Executive Workstation, a new machine using high-resolution "bit-mapped"[3] display, "windows" on the

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[3] Bit-mapped displays required the program to control each point of light on the screen rather than just the placement of characters. The bit-mapped approach gave great control over screen appearance but required substantial extra work from the

screen to contain separate tasks, and a "mouse" pointing device to simplify the user interface. The ideas behind Star came from the on-going work at Xerox's ivory tower PARC (Palo Alto Research Center), and Apple was known to be working on a scaled-down version of Star (later released as Lisa). Personal Software executives began to examine the windows system to see if it met the three development goals.

Opdendyk knew two talented software engineers working in Texas, Scott Warren and Dennis Abbe, who were independently developing Star-like interfaces. Visiting Sunnyvale, Abbe and Warren "blew our socks off with a demonstration of a Smalltalk implementation on a trash-80 [TRS-80]," one manager recalled. Soon after, a project team was formed to study the question of implementing windows in software on existing machines. The members were Roy Folk (marketing), Bill Coleman (development) and Abbe and Warren, who worked under contract through their firm Rosetta Inc.

The project was code-named Quasar; later the name VisiOn was adopted. Roy Folk recalled that period:

> We really had time to think and plan then. This was, I believe, one of the very few times that an innovative microsoftware product was specified from a marketing point of view. We sat down and defined sixteen objectives for the product. It had to work in 128K of memory or less, it had to reside on floppy disks, it had to have rapid response times. We did extensive research on user needs and the psychology of the interface—how much delay will one tolerate on a file save? On a simple keystroke?

> We did our homework. At one point we asked whether we really needed windows. Could the product work with a simpler split-screen design? Rosetta did a study and discovered that there were things you just couldn't accomplish with that approach.

> It took a while, but eventually everyone came on board. Dan [Fylstra] was skeptical about the mouse for almost a year, but he too became a believer.

By November 1981, the team had a simple prototype up and running on an Apple III computer. In December work shifted to a UNIX-VAX environment and the company began the process of staffing and managing a significant engineering development effort. Detailed specifications of the user interface began. Human factors specialists worked with focus groups and software engineers to refine the user interface and product function specifications.

In early 1982, Personal Software changed its corporate name to VisiCorp and in April embarked in earnest on the creation of VisiOn. At that time the

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microprocessor. Windows were rectangular portions of the screen set aside to contain information about a particular task. A mouse was a device that the user pushed across the desktop to control the position of a pointer on the screen.

product was seen as a mouse-windows environment within which applications programs would run. Although it was expected that outside firms would create applications to run within the VisiOn environment, VisiCorp management was strongly interested in developing its own applications programs for early release.

Comdex/Fall 1982

When Tom Towers, VisiCorp's new vice president of marketing and sales (hired in March 1982), saw the prototype of VisiOn he was astounded at how impressive it was. He argued that the company had a lot to show and should announce and demonstrate the product at Comdex/Fall, the microcomputer industry fall trade show. Others disagreed. Roy Folk, Ed Esber, and David Spencer took their case to Fylstra and Opdendyk, arguing that it was uncertain as to when VisiOn would be ready, that dealers would be angered by announcing a product that might not be ready for almost a year, that there was no upgrade policy in place, that the announcement would hurt the prospects for VisiWord, a new word processor to be released at Comdex/Fall, and that announcement would signal competition.. Tom successfully countered, noting the need to generate excitement and the advantages of pre-announcing technology. "In his heart of hearts," Ed Esber explained, "Tom Towers believed that we were IBM and IBM always pre-announces technology, staving off the market."

The demonstration of the VisiOn prototype at Comdex/Fall "astounded the industry," one executive recalled. Many observers found it difficult to believe that the program was actually running on an IBM PC. A frequent comment on the floor of the convention was "Did you see the VisiCorp *movie*?" Bill Gates, the president of Microsoft, speculated that the PC might be simply acting as a terminal for a hidden VAX. Shortly after the show, Portia Isaacson, the president of Future Computing, visited VisiCorp to watch a demonstration of VisiOn. According to employees, she walked around the IBM PC and checked the cables to assure herself that it was really running the program by itself.

The announced system featured a bit-mapped screen that displayed multiple overlapping windows. Using a mouse pointing device, the user could easily and quickly select commands, obtain help, scroll the material within windows, and move data between windows. The promise of moving information from a spreadsheet to a document, graph display, or even to a modem by simply pointing at the data and clicking the mouse was especially powerful. Exhibit 6 shows some of the proposed VisiOn screens.

The announcement of VisiOn definitely "shook up" the microcomputer industry, and established VisiCorp as a strong contender in the competition to define the next generation of software. It also, however, committed the company to the delivery of VisiOn in the summer of 1983.

Competitive Pressures

Another product announced at Comdex/Fall was Lotus 1-2-3, an integrated spreadsheet, graphics, and data base program. The program was the brain-child of Mitch Kapor and had evolved from the IPL project he took with him when he left VisiCorp two years earlier. Kapor had used the $1.2 million he received from VisiCorp to found Lotus Development. Raising venture capital, he got software engineer Jonathan Sachs to rework IPL into a combined spreadsheet, database, and graphics product that had the working name of Trio. Trio was originally written in the C language, but Kapor and Sachs abandoned that approach in favor of maximizing the program's performance by writing it directly in assembly language. The end result was Lotus 1-2-3.

Lotus 1-2-3 provided an excellent spreadsheet which, by itself, was a highly competitive product. To that Lotus had added neatly integrated graphics ca-pabilities and a set of simple data base functions that operated on spread-sheet information. First shipped in January, by March Lotus 1-2-3 had be-come the best-selling business software package. For the first six months of 1983, Lotus reported revenues of $12.6 million. In August it went public, raising $27 million and establishing a market value in excess of $200 million.

The effect on VisiCorp was immediate. Revenues from VisiCalc reached their all-time high in January and began to slide downwards thereafter (Exhibit 3).

Reviewers and industry observers agreed that VisiCalc was outclassed by Lo-tus 1-2-3 and other second generation spreadsheets like SuperCalc3. While VisiCalc had been one of the first programs on the IBM PC, it had been sim-ply "moved" to the IBM PC rather than redesigned to take advantage of the second-generation hardware it provided. Advanced versions of VisiCalc had been developed by Software Arts for the Apple II and Apple III, but the promised IBM PC version was not yet ready. But even VisiCalc Advanced Version did not provide the integral graphics and data base functions of Lotus 1-2-3.

VisiWord, which had been introduced at Comdex/Fall, also faced problems in the market. The product had been conceptually designed by VisiCorp's mar-keting department and developed under contract by an outside firm. When the results were not satisfactory, an internal development team reworked the product. Unfortunately, the final result did not meet the original perform-ance specifications. Released despite these problems, VisiWord received a number of openly hostile reviews (Exhibit 7).

VisiOn Development

The positive response to the demonstration of VisiOn convinced management to push ahead at top speed with the VisiOn project. A 52-person develop-ment group was formed to move VisiOn from being a prototype to a market-able product. To do this the engineers had to flesh out three layers of soft-ware. The deepest was a shell around the operating system that handled file management, the display, and created a virtual memory   function. One level above that was the VisiOn command system and finally came the appli-

cations program itself. The deepest code was done in assembly language, but higher layers were written in C because Bill Coleman, VisiOn development group manager, wanted to make it easy to move the program to other machines when the need arose.

Despite VisiCorp's public promise to have VisiOn ready for release by the summer of 1983, employees close to the project knew that it was not likely to be ready then. The problems in getting the various applications to share memory and swap information were proving unexpectedly difficult. By February it was clear to all that VisiOn would not be ready for release until the fourth quarter. As the pace of development work increased, it also became evident that some of the original design goals could not be met. Roy Folk recalled that

> A critical compromise occurred when the developers said that the release version would only run on a hard-disk system. They estimated that it would take a prohibitive amount of time to hand-work the code to get it to run on a floppy-disk system. I felt that slipping the floppy-disk design goal was a terrible mistake from a marketing point of view. Hard disk systems accounted for only 16 percent of the installed base and Future Computing forecast that they would account for 20 percent of 1984 shipments. If we couldn't release a floppy system we automatically cut ourselves out of most of the market.

Folk lost that battle. Tom Towers and other executives believed that VisiOn's primary market was the corporate world and that hard disks would be ubiquitous there. They argued that the "fast switching" and "data movement" services of VisiOn would not amount to much if the user had to continually swap floppy disks for each new application. Finally, the delay required to compress the program was considered unacceptable.

Organizational Problems

In shifting from a software publishing company to a development house, VisiCorp moved the internal focus of attention from its marketing department to engineering. Terry Opdendyk, as CEO and architect of the change, was openly criticized by many disgruntled marketing executives. One former VisiCorp executive recalls that "Terry ignored the marketing side of the house in favor of the development people, but was never able to adequately control the engineering effort." *Infoworld* would later describe this era as a "corporate civil war."[4] According to Ed Esber, "The tragedy is the number of talented people that Opdendyk forced out. A year ago, VisiCorp had a better marketing team than any company in the industry. And its gone."[5]

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[4] Denise Caruso, "Can VisiCorp Come Back?" *Infoworld*, July 2, 1984, pp. 49-51.

[5] Ibid. p. 50.

One indication of the problems within VisiCorp was the exit of key executives. The list of the best-known VisiCorp alumni who went on to positions of influence in the industry was impressive:

Mitch Kapor, project manager for VisiCalc, left November 1980 and went on to found and act as president of Lotus Development Corp.

Ed Esber, executive vice president of marketing, left April 1983 and went on to become president and chief executive officer of Ashton-Tate.

Richard Melman, director of product marketing, left April 1983 and went on to co-found Electronic Arts and, in 1985, was an independent marketing consultant.

Roy Folk, product-marketing manager of VisiOn, left May 1983 and went on to found Paladin Software and in 1985 became executive vice president for marketing and planning at Ashton-Tate..

Don Farrow, regional sales manager, left June 1983 and went on to become the president of Heads-Up-Technology.

Steve Weyl, product manager, left July 1983 and went on to become a vice president of Syntelligence.

David Spencer, director of marketing communications, left in early 1984 and went on to become a vice president with Computerland.

Tom Towers, vice president of marketing and sales, left in early 1984 and went on to become the chief executive officer of Knoware.

Suit and Countersuit

In September of 1983, VisiCorp filed suit against Software Arts, charging breach of contract, seeking an award of $10 million as compensation for lost revenues and lost good will and an additional $50 million in punitive damages. In its complaint, VisiCorp charged that (1) Software Arts had not met its contractual obligations to deliver agreed upon new versions of VisiCalc, (2) that Software Arts allocated its development efforts towards its own proprietary product (TK! Solver) rather than VisiCalc development, and (3) that Software Arts had misrepresented its willingness and ability to develop new versions of VisiCalc. Exhibit 8 provides information on the new versions of VisiCalc requested by VisiCorp and worked on by Software Arts.

Taken by surprise, Software Arts quickly responded with a counterclaim. VisiCorp, it argued, had not used its "best efforts" to market VisiCalc but had instead channeled its profits into the development of VisiOn and VisiOn Calc, programs which built on VisiCalc technology. Furthermore, Software Arts claimed that VisiOn Calc was a "new version" of VisiCalc, within the meaning of paragraph 12 of the 1979 contract (Exhibit 2), and that it had not been offered right of first refusal on its development and that it was due royalties on its sale. VisiCalc claimed, in response, that VisiOn Calc was not a new version of VisiCalc, so that Software Arts was not due any royalties.

The Release of VISION
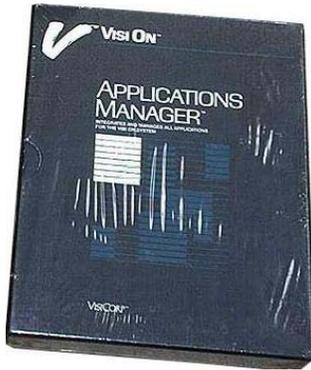
Apple released its Lisa computer in the summer of 1983. Priced at $10,000, the machine provided a mouse and windows interface modeled after the Xerox Star and was intended to be Apple's entry into the corporate world. Lisa was hailed as a marvel of interface design, but many users complained that it was slow—that performance had been sacrificed to obtain ease of use.

VisiCorp released VisiOn in December 1983, thirteen months after its announcement and three months late. It required 2.2 megabytes of hard-disk space and 512K of RAM memory. The pricing was:

VisiOn Applications Manager	$495
VisiOn Mouse	250
VisiOn Calc (spreadsheet)	395
VisiOn Graph	250
VisiOn Word	375
Total package	$1765

Together with the computer and hard disk, the cost of installing a VisiOn system was approximately $7500.

Initial reactions to VisiOn were mixed. On the one hand industry experts praised it as a technical tour-de-force, calling it the "wave of the future," and the "end of operating systems." On the other hand, beginners tended to find the screen confusing and it was slow, even slower than Lisa. Experts were not always sure that they wanted to work with windows and a mouse (Exhibit 10). Retailers found that customers compared VisiOn to Lotus 1-2-3 and found it wanting. One Computerland manager recalled that

> A first time user was simply daunted by the complexity of VisiOn and the investment required to implement it. More experienced users had almost all used or seen Lotus 1-2-3 in action and could not stand the much slower response of VisiOn Calc. It was also common for salespeople to say that "with Lotus 1-2-3 you got three functions for $495," which meant that with VisiOn you paid almost $600 for each function.

Two other events hurt the acceptance of VisiOn. In December 1983, Microsoft announced its intention to offer a new operating environment called "Windows." Scheduled for release by May 1984,[6]   Windows would provide a way for existing software to operate within a windows environment. Microsoft

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[6] Microsoft did not release Windows 1.0 until the spring of 1985. Industry observers coined the term "vaporware" to describe the situation of announced but non-existent or only partially developed software. Microsoft's Windows 3.0, the first version to receive broad acceptance, was released in 1990 (requiring a x386 processor).

said it would be priced between $100 and $250. Secondly, in January Apple released the Macintosh, a $2500 mouse-and-windows based machine. Although little software was available for it, the Macintosh received excellent coverage in the media and began to sell extremely well.

No third-party software was available for VisiOn and Fylstra admitted that it would be slow in coming. The development of a VisiOn application required a UNIX-based VAX and VisiOn development tools, which had just been released in December. Fylstra commented that

> People have come to expect that applications are going to materialize overnight for these new generation window managers and I don't think that is realistic to expect from software developers. Existing applications just aren't designed to share memory with other applications, and they generally are not designed to use the mouse or graphics as part of the display. [7]

To help boost sales, VisiCorp reduced the price of the VisiOn Applications Manager from $495 to $99 in February, and cut the price of the three application package to $990. Orders increased somewhat, but sales continued to be disappointing.

VisiWar

In December 1983, Software Arts delivered to VisiCorp the VisiCalc Advanced Version (VAV) for the IBM PC. VisiCorp refused to accept the product, claiming that it was not marketable.

On February 3, 1984, Software Arts filed an amended countersuit. The new charges were that VisiCorp had advertised VisiOn Calc as a superior replacement for VisiCalc. In addition, Software Arts claimed that VisiCorp had released VisiCalc IV, an enhanced version of VisiCalc, without giving Software Arts its contractually guaranteed right of first refusal on the development of the enhancement. Software Arts sought damages which, under Massachusetts law, could amount to as much as $87 million.

With regard to VisiCalc IV, Fylstra defended VisiCorp's actions, explaining that

> As a stop-gap measure, VisiCorp acquired the marketing rights to the program called StretchCalc, which was then marketed by MultiSoft Corporation as a separate product, to supplement VisiCalc with graphics capabilities and other functions. . . although VisiCorp's marketing efforts have resulted in substantial sales of VisiCalc IV <u>with full contractual royalties paid to Software Arts</u>, VisiCorp has not even recovered its advertising costs from the promotion of VisiCalc IV. Moreover, VisiCalc IV's graphics capability competes directly with VisiCorp's

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[7] Quoted in Ed Scannel, "VisiCorp's Fortunes' Flicker," *Micro-Market World*, March , 1984, p.34.

> VisiTrend/Plot product, which provides stand-alone graphics functions and <u>on which VisiCorp pays no royalties</u>. [8]

As Software Arts filed its counterclaim, it simultaneously informed VisiCorp that its refusal to market VAV for the IBM PC, together with other actions, amounted to a breach of the 1979 marketing agreement. Consequently, Software Arts was terminating the agreement and, according to paragraph 16, was entitled to the return of complete rights to the VisiCalc trademark.

Software Arts' initiative coincided with the 1984 Personal Computer Forum, a yearly meeting of industry leaders. At the Forum, and in meetings that followed, Software Arts' representatives explained the company's actions and announced its intention to form a "SWAT" team to develop a new version of VisiCalc. Software Arts would market the new program itself. Orders for the new product were taken from OEMs and dealers. Software Arts' plans included a mail-order offer to all registered owners of VisiCalc to trade-up to the new Software Arts version for $99.50.

VisiCorp immediately sought an injunction against Software Arts' planned use of the VisiCalc trademark. However, the U.S. District Court in Boston denied the request. Both companies now claimed the right to the VisiCalc trademark and to the access it provided to the approximately 700,000 VisiCalc users; the dispute would have to be decided in court.

Both Fylstra and Bricklin were quoted in the media as being willing to settle out of court, but no substantive offers were made. "It takes two sides to make a settlement," Bricklin said.[9] Regarding his counteroffensive, Bricklin added "When someone sues you for a large sum of money you can't sit back and say 'Oh.' You have to do something or else pay $60 million. The legal process involves that you've got to defend yourself."

As the court case developed, the critical issue became the ownership of the trademark. Paragraph 14 (Exhibit 2) stated that

> Any trademarks used in connection with marketing of the Product shall be the sole property of the Publisher, but in the event of a reversion of rights in the Product to the Owner [Software Arts] pursuant to paragraph 16 hereof, the Publisher agrees to transfer title to any such trademarks to the Owner *if such trademarks are used solely in connection with the Product*. [emphasis added]

VisiCorp's position was that it had registered the trademark "VisiCalc" and had used it in connection with several other products. Consequently, it was argued, the last phrase prevented the trademark's reversion to Software Arts. Bricklin, on the other hand, maintained that the phrase

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[8] Affidavit of Daniel H. Fylstra in Support of a Temporary Restraining Order and Preliminary Injunction, *VisiCorp v. Software Arts*, February 12, 1984.

[9] Quoted by Carrie Gottlieb, "S'ware Arts Seeking Market Visibility," *Computer Retail News*, March 19, 1984, p.14.

> . . . was inserted at the insistence of Daniel Fylstra to protect Personal Software's <u>already existing</u> trademarks. . . . Fylstra expressed his concern to me that these marks not be included among those automatically returned to Software Arts under its reversionary rights upon termination of the 1979 agreement by Software Arts. [10]

Collapse

In October 1983, Fylstra had predicted that 1984 revenues would top $50 million, a 48 percent increase over 1983 results. At that time, however, third quarter revenues were barely above the previous year's level—Fylstra was counting on VisiOn to pull the company out of the doldrums. But the continuing decline of VisiCalc and the lukewarm reception given VisiOn began to create financial difficulties. VisiCorp lost $1.7 million in the last quarter of 1983 and lost $3.7 million in the first quarter of 1984.

In May VisiCorp cut its workforce by 20 percent and announced price cuts of between 30 and 65 percent on most of its software products. VisiCalc's price was cut from $250 to $99 and VisiOn became available on special promotion for $795. The company also announced that it would market a new spreadsheet, FlashCalc, for the Apple II series of computers. FlashCalc was targeted to compete with Multiplan and Supercalc on the Apple II, and boasted the fastest recalculation and file load times. Lotus 1-2-3 was not available for the Apple II line of computers.

In June VisiCorp received another round of venture capital from its current set of investors, raising about $2 million on terms reported to be $0.20 per share. At its height, VisiCorp stock had changed hands at $11 per share.

In July Terry Opdendyk resigned as president and from his position on the board. *Infoworld* quoted Ed Esber as remarking that the move was "about two years overdue."[11] Fylstra assumed the duties of president and soon thereafter Rich Melman, who had once been a marketing executive with VisiCorp, was elected to fill Opdendyk's position on the board.

With Opdendyk gone and losses mounting, Fylstra accelerated the company's contraction in employment and began a systematic program of liquidating assets. In August the VisiOn technology was sold to Control Data Corporation for a rumored $2.5 million. VisiCorp retained the rights to retail marketing of the product. Control Date, in turn, became the developer and planned to use its sales force to sell the product directly to its *Fortune* 500 clients.

Shortly thereafter, VisiCorp sold its Communications Solutions Inc. (CSI) subsidiary to Control Data, reportedly receiving between $4 and $5 million.

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[10] Affidavit of Daniel S. Bricklin, *Software Arts v. VisiCorp*, 2/9/84, p.3

[11] Denise Caruso, "Opdendyk Leaves VisiCorp," *Infoworld*, July 16, 1984, p.14.

CSI has been acquired in May 1983 and its principle product was Access/SNA, a micro-mainframe communication technology.

In September, after three days of courtroom testimony, VisiCorp and Software Arts agreed to settle their dispute out of court. The terms were

1. VisiCorp agreed to pay Software Arts $500,000 in disputed royalties for past sales of VisiCalc.

2. Software Arts received the VisiCalc trademark. VisiCorp would continue to be able to employ the *visi* prefix but could not market another product using the term *calc* except for FlashCalc.

3. Software Arts promised not to use the term *visi* in any of its future products.

4. Software Arts waived any claim to royalties on FlashCalc and VisiOn Plan (previously VisiOn Calc).

5. The 1979 marketing agreement was formally terminated.

In November VisiCorp began to ship VisiOn Version 1.2, the last work of the in-house development team. The program was 1.5 times faster than the original, made more use of function keys, and supported more printing functions. It was priced at $495 complete.

In the same month, VisiCorp began work on a plan to merge with Paladin Software. Paladin was a start-up development venture founded by Roy Folk, who had been VisiOn product manager up until May 1983. The merger appeared justified to the board because VisiCorp had been selling assets and was cash rich, but lacked any promising new products to push. Paladin, on the other hand, had an exciting new product under development but had experienced trouble in raising a second round of venture capital.

After much discussion, it was decided that the surviving company, although technically VisiCorp, would be named Paladin. Folk explained that there remained an "image problem" connected with the VisiCorp name, especially in regard to the delays with VisiOn.[12]   Fylstra stepped down as president, retaining a position on the board. According to his associates, Fylstra was seeking new entrepreneurial ventures.

Postmortems

Dan Fylstra:

> I think the pre-announcement [of VisiOn] hurt a fair amount, but we had a lot of things on our minds. . . . The fact is that VisiOn is the only

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[12] Quoted by Valerie Rice, "VisiCorp Loses Name as Result of Merger with Paladin," *Computer Retail News*, November 19, 1984, p.6.

system that is real. On of the problems we have had to deal with is our reality versus everybody else's promises. Promises are always better than reality. [13]

Our biggest mistake was not finding a way to extract ourselves sooner from the situation with Software Arts. That problem was much larger than any of the problems we were having with VisiOn. [14]

Roy Folk:

VisiOn suffered because of the early announcement and because of performance problems. Performance suffered because of the early decision to use a bit-mapped display—a decision we never questioned. In this industry a program can survive errors but not performance problems. Many users never push a program far enough to find its bugs, but performance problems nag at you continually. Good management cannot overcome serious product flaws.

VisiCorp's most serious mistake was letting the relationship with Software Arts sour. In retrospect, we should have found a way to keep VisiCalc alive.

Ed Esber:

A lesson to be learned is that it is possible to have very rapid growth *in spite of yourself* and yet to begin to feel like you controlled that growth, that you made it happen. You have a feeling of invincibility that comes from selling so many units. But there is really very little continuing franchise in this business.

VisiOn was a technological marvel; it still is a marvelous product. The engine [IBM PC] just wasn't powerful enough to carry it. VisiOn didn't sink the company, Lotus 1-2-3 or the lack of a better VisiCalc did.

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[13] Quoted by Denise Caruso, "Can VisiCorp Come Back?," *Infoworld*, July 2, 1984, p. 51.

[14] Quoted in "Bloopers Botches & Blunders of 1984," *Micro Marketworld*, December 1984.

VISICORP 1978-1984

Exhibit 2

EARLY ADVERTISEMENT

VISICORP 1978-1984

Exhibit 2

EXCERPTS FROM THE MARKETING AGREEMENT

Agreement made this 26 day of April 1979 between PERSONAL SOFTWARE, INC., of 22 Weitz Street, Boston, Mass. (hereinafter called "Publisher") and Software Arts, Inc. of 231 Broadway, Arlington, Mass. (hereinafter called "Owner").

1. <u>Grant of Rights</u>. The Owner hereby grants Publisher an exclusive world-wide license to copy, publish, sell, license and distribute the following computer software product: VisiCalc (hereinafter called the "Product") . . .

2. <u>Term</u>. The term of this Agreement shall commence on the date hereof and shall, unless sooner terminated, continue until the expiration of the last valid copyright anywhere in the world in the Product or any portion thereof . . .

6. <u>Maintenance</u>. Owner agrees to promptly deliver to Publisher modifications to the Product correcting any errors in the Product of which Publisher notifies the Owner within one year after delivery . . . . Owner and Publisher agree that due to the nature of complex computer programs such as the Product, Owner cannot warrant the Product to be completely free of errors at present or in the future.

8. <u>Marketing</u>. Publisher agrees within a reasonable time after delivery of the Product to it, but in no event later than 90 days from the date of such delivery, that it shall commence the public distribution of the Product, and Publisher agrees to make its best efforts to maximize sales and/or licenses of the Product. All aspects of marketing and distribution of the Product shall be in the Publisher's sole control . . . Publisher makes no representations or warranty that the Product will be successfully marketed or that any minimum level of sales or licensing will be achieved.

10. <u>Payments</u>. (a) Publisher shall, except as described in paragraph 10(b) hereof, pay to the Owner the amount of thirty-five & 7/10 percent of the Net Sales Price received by it with respect to all sales, leases, licenses or other transactions, pursuant to which copies of the Product are delivered to customers. . . . (b) The Publisher shall pay to the Owner the amount of fifty percent of Net Revenues received by it as a result of sales, leases, licenses, or other transactions pursuant to which the right to sell, lease, or license the Product is granted to a person or entity which assumes primary responsibility for marketing the Product to ultimate consumers and: (i) such transaction

includes an order for at least 5,000 copies of the Product; or (ii) such person or entity is granted the right to reproduce and sell, lease, or license 5,000 or more copies of the Product. . . .

12. <u>New Versions</u>. . . . Publisher shall have the right, upon written notice to the Owner, to require the Owner to modify the Product for other personal computers than those described in paragraph 1 hereof, and Owner agrees to prepare and deliver to Publisher such new version following receipt of such request within a reasonable period of time, provided, however, that Publisher pays to the Owner reasonable advances against amounts to be paid on sales on such new versions, that Publisher provides Owner with a personal computer of the type for which such new version is intended for a period reasonably necessary for the development and maintenance of such new version and further provided that Owner shall not be obliged to create such new version based on any request therefore received after December 31, 1980. In addition, Publisher shall have the exclusive right to market any new version of the Product developed by the Owner during the term hereof upon terms and conditions comparable to those contained herein, and the Owner agrees to promptly inform publisher of the availability of such new versions. In the event Publisher desires a specific new version of the Product other than as described above, Publisher shall notify the Owner and give the Owner the opportunity to create such new version under terms an conditions comparable to those provided herein. If Owner is unable or unwilling to so create any new versions of the Product within the time reasonably requested by the Publisher, Publisher shall have the right to create such new version itself following written notice to the Owner specifying a reasonable fixed cost to the Publisher thereof and such cost shall be applied against any payments due the Owner for the resulting version of the Product hereunder. As used in paragraph 12, the term "new versions" shall mean versions meeting the Specifications for other personal computers as well as changed and improved versions of the Product which can be described by simple addenda to the Specifications.

14. <u>Trademarks</u>. Any trademarks used in connection with marketing of the Product shall be the sole property of the Publisher, but in the event of a reversion of rights in the Product to the Owner pursuant to paragraph 16 hereof, the Publisher agrees to transfer title to any such trademarks to the Owner if such trademarks are used solely in connection with the Product. . . .

16. <u>Reversion to Owner</u>. If during any period of twelve months following the expiration of three months after delivery to the publisher of the Product, the payments to Owner hereunder do not exceed $1000.00, or if a petition under any bankruptcy or debtors law or a receiver or similar officer is appointed for Publisher and such proceedings or appointment are not promptly terminated and performance of Publisher hereunder does not continue as set forth

herein, or in the event of a material breach of any provision hereof by Publisher, which breach is not cured 60 days after written notice thereof by Owner, then Owner may, effective 30 days after notice thereof to the Publisher, terminate this Agreement and all rights granted to Publisher hereunder shall thereupon automatically revert to Owner except that Publisher may continue to dispose of copies of the Product in inventory at the time of termination unless Owner acquires such inventory form Publisher at the Publisher's cost thereof as then carried on its books. . . .

17. <u>Default by Owner</u>. In the event of a material breach by Owner of any provision hereof which breach is not cured 60 days after written notice thereof by Publisher, Publisher may upon written notice to Owner elect to terminate this Agreement, and the rights granted it hereunder shall revert to Owner as provided in paragraph 16 hereof. . . .

VISICORP 1978-1984

Exhibit 3

VISICORP FINANCIAL RESULTS

($000,000)

|	Total Revenue	VisiCalc Revenue	Product Develop.	SG&A Expense	Net Income
Total 1979	0.88	n/a	0.04	0.44	(0.01)
Total 1980	3.85	n/a	0.41	1.29	0.16
1981 Q1	2.62	n/a	0.31	0.58	0.20
1981 Q2	4.79	n/a	0.52	1.21	0.47
1981 Q3	4.84	n/a	0.64	1.04	0.48
1981 Q4	6.55	n/a	0.65	1.53	0.72
Total 1981	18.81	n/a	2.11	4.36	1.87
1982 Q1	8.48	5.77	0.98	1.70	0.98
1982 Q2	7.61	5.59	1.31	2.14	0.26
1982 Q3	7.58	4.64	1.42	2.38	0.34
1982 Q4	10.05	6.56	1.49	3.31	0.82
Total 1982	33.73	22.56	5.19	9.54	2.40
1983 Q1	11.65	9.35	1.79	2.94	0.78
1983 Q2	12.41	7.60	n/a	n/a	0.27
1983 Q3	8.00	4.76	3.00	3.81	(0.92)
1983 Q4	8.27	1.87	n/a	n/a	(1.77)
Total 1983	40.25	23.58	10.07	16.27	(1.65)
1984 Q1	4.00	1.15	2.40	4.02	(3.68)
1984 Q2	8.17	n/a	n/a	n/a	(7.88)

Note: VisiCalc Revenues for 1982 estimated by casewriter

SOURCE: Company Records, Regulation A Reports, Court Records, Trade Journal Reports, and casewriter's estimates.

VISICORP 1978-1984

Exhibit 4

VISICORP REVENUES AND PROFIT HISTORY
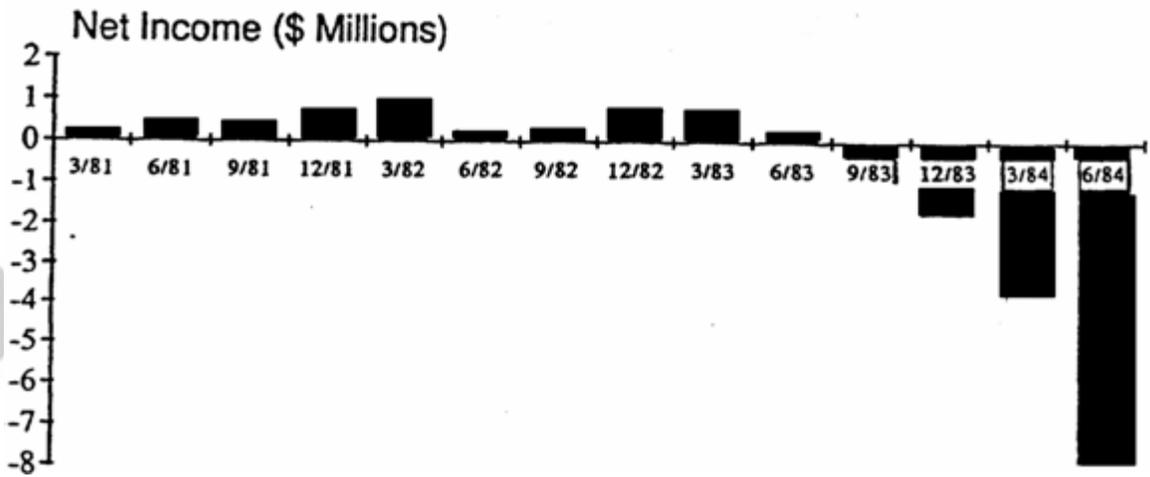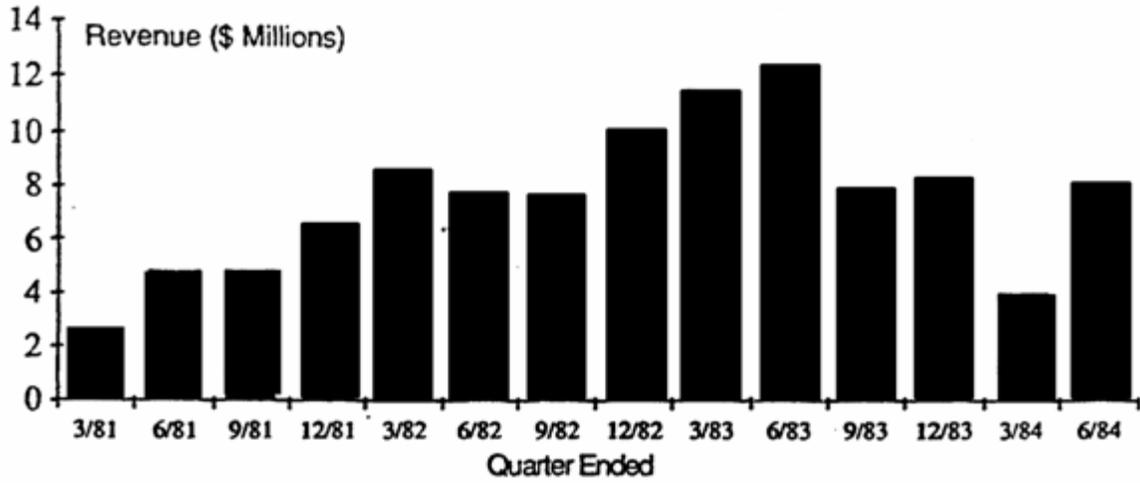
VISICORP 1978-1984

Exhibit 5

MICROSOFTWARE INDUSTRY STATISTICS

	1981	1982	1983	1984
All Microcomputer Software				
Publisher Rev. ($ Millions)	187	398	747	1223
Percent Software for IBM PC				
and PC Compatibles	2	13	37	50
Software Sales by Channel				
Mail Order	31	28	24	17
Retail	58	57	57	57
Direct to Corporations	1	3	4	6
Productivity Software (%)	33	36	44	48

Breakdown of Type of

Productivity Software

|	1981	1982	1983	1984
Wordprocessing (%)	39	36	30	26
Spreadsheet (%)	22	25	15	6
Data Base (%)	30	29	24	21
Multi-function (%)	0	4	20	37
Other (%)	9	10	10	10

Note: VisiCalc falls in the "Spreadsheet" category, Lotus 1-2-3 falls in the Multi-function category and accounts for most of it.

SOURCE: Alex Brown, IDC, industry analysts, Future Computing, and case writer's estimates.
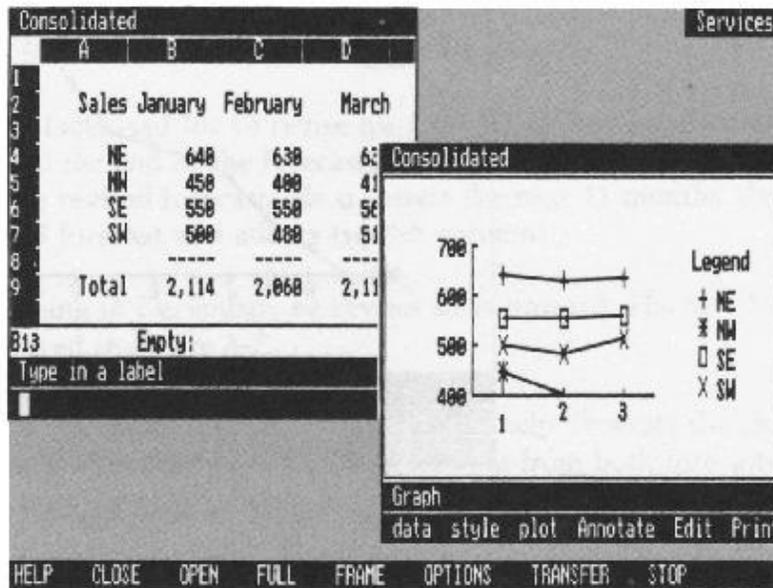
VISICORP 1978-1984

Exhibit 6

VISION SCREEN DISPLAY
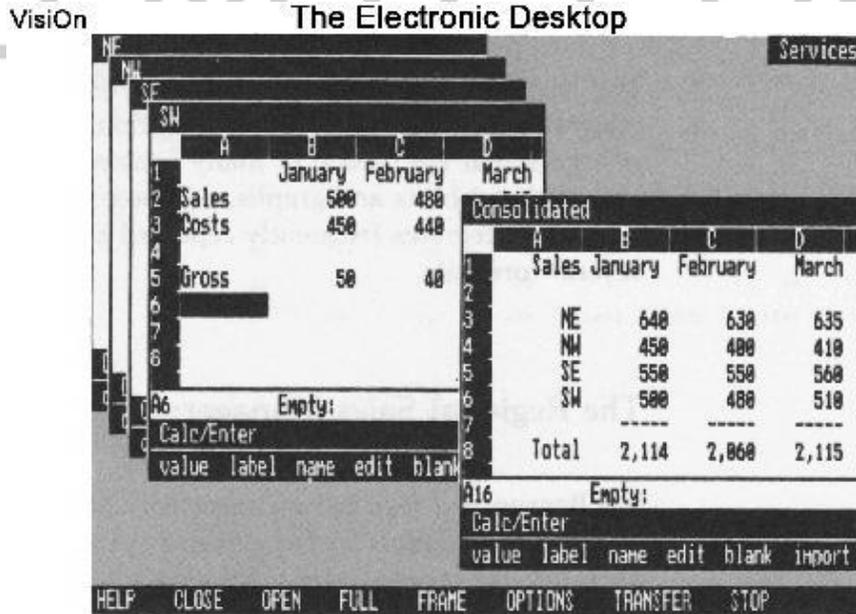
Consolidated graph

Graph preparation is especially fast and simple. You open a graph window, transfer your data, and graph it. These operations are done effortlessly with your pointer.

Electronic desktop showing consolidated spreadsheet and graph.

VISICORP 1978-1984

Exhibit 7

EXCERPTS FROM REVIEWS OF VISIWORD

From Steven Manes, "VisiWord: What you See is (Almost) What You Get, "*PC Magazine*, November 1983, pp. 579-98.

I am not using VisiWord to write this review. A deadline as inflexible as a fixed disk looms. I need speed . . . I need a nice restful screen that doesn't fry my eyeballs and sear my brain while I am working. VisiWord flunks on all counts.

For some reason, VisiWord gives priority to keeping every part of the screen current but the part you're working on. You don't actually lose keystrokes; you just don't get to see them for a good long while. . . . To give myself an idea of the snail-like pace of VisiWord, I hit the Enter key 20 times at the beginning of a document to get a nice clean screen to work with. I waited an interminable 15 seconds until VisiWord was ready to acknowledge my presence again.

You can't combine attributes, so if you want something both underlined and boldfaced, or subscripted and boldfaced, you're out of luck. . . . And the only way to see which attribute has been given an inverse video letter is to move the cursor to it and check the status line. . .

I don't have to think very hard to think of the many things VisiWord does not do—things like footnoting, indexing, multiple windows, and letting you insert non-printing comments in a file.

From *Infoworld*, May 5, 1984, p.17

VisiWord has most of the features anyone is likely to need in a word processor. In fact, it comes close to some of the dedicated word processors in terms of completeness. . . In fact, the only serious problem with VisiWord's performance— and some people may find it a crippling one—is that it does some things very s-l-o-w-l-y.

The menu structure makes VisiWord easy to learn, but some people may find that it slows them down after they become expert.

VISICORP 1978-1984

Exhibit 8

NEW VERSIONS OF VISICALC DEVELOPED BY SOFTWARE ARTS
AS REQUESTED BY VISICORP

Version	Date Requested	Date Promised	Date Delivered
TANDY III	11-80	6-81	10-81
IBM 156	12-80	7-81	9-91
IBM VAV	2-81	6-82	12-83[a]
IBM 177-1	2-81	6-82	nd
APPLE II VAV	2-81	3-82	8-83
APPLE III EV	3-81	8-81	11-81
HP 125	3-81	5-81	10-81
TANDY II EV	7-81	9-81	12-82
APPLE III VAV	11-81	6-82	10-82[b]
DEC VAV	12-81	8-82	nd
SONY	12-81	4-82	2-83
APPLE II DOS VAV	7-82	2-83	nd
TANDY IV	7-82	4-83	7-83
TI VAV	10-82	3-83	nd
WANG VAV	2-83	8-83	nd

[a]VisiCorp claimed this version was unacceptable

[b]VisiCorp claimed this version contained major bugs

Note: "nd" means the version had not been delivered. VAV refers to VisiCalc Advanced Version. Other versions shown are enhancements of the original product.

SOURCE: *VisiCorp v. Software Arts*, Plaintiffs' Answers to Defendants' Interrogatories (First Set), 12/21/83. This information was provided by VisiCorp in response to legal interrogations and to support its suit. Software Arts did not necessarily agree with this information.

VISICORP 1978-1984

Exhibit 9

EXCERPTS FROM A REVIEW OF VISION

From Thomas Bonoma, "VisiOn: Enough Functionality to Sink a Ship?" *Softalk*, **July 1984, pp. 24-32.**

VisiOn was conceived in 1982 as the answer to knowledge workers' need for complete functional integration—integration between user, screen, storage, and computation. . . .

Although there are some restrictions on the transfer command, data transfer among VisiOn applications is, for the most part, a miracle of ease. You simply point the mouse to the area of the spreadsheet, report, or whatever it is you want to move, and the transfer is managed automatically. It is even possible, for example, to point to a rectangular block of numbers on a spreadsheet, then point to the graphics screen, and have a bar chart appear. Pure black magic!

With all this functionality underlying every application, you might suspect that VisiOn would be a little slow in operation. It is and it isn't. It's slow in some cases and deadly slow in others. . . . Moreover, the use of the mouse for everything imaginable means that user sophistication will in large measure determine satisfaction with the system. Even fair typists will likely become inpatient with VisiOn's leave the keyboard, hit a mouse selection, wait, hit a confirmation, wait, wait, choose "done," wait, move back to the keyboard, nope, choose another selection, wait, <u>et cetera</u> style. The option to enter commands at the keyboard instead of via the mouse is not much help on this score. What's going on is that the program is constantly running out to the disk for one thing or another; these disk calls cause delays ranging from half a second to five seconds, and their net effect is to make you wait no matter how you've entered your command.

VisiOn Word is in many ways the star of the system . . . Word falls short as a consequence of its being a part of the VisiOn system rather than a stand-alone word processor. . . . the program lacks a certain functionality that a professional writer might demand. There is no provision, for example, for mail-merge, spelling checking, automatic figure numbering, or insertion of graphics.

In summary, the VisiOn system is a milestone in personal computer software. Like many other milestones, it both points the way toward the future and falls far short of it.

VISICORP 1978-1984

Exhibit 10

INTERVIEW WITH TERRY OPDENDYK IN
CREATIVE COMPUTING, MARCH 1984

VisiCorp speaks.

At Comdex I got a chance to ask Terry Opdendyk, president of VisiCorp, to help lift the shades on the window issue. The interview follows:

Creative Computing: Windows, windows, windows, Terry. What makes the windowed approach better than any other?

Terry Opdendyk: When you have the capability to do multiple applications simultaneously, you make better use of the computer and your own time. And if can view multiple applications simultaneously, you make the best use of a concurrent system. There is where the power lies.

But that only is helpful if those applications are designed to be useful in that fashion. Taking an application that is designed for a large window and putting it into a tiny window doesn't do you much good. We have run standard applications the same way everybody else does. But to run in a window, you need something more. You have to design the application to take advantage of windowing power.

When we sat down at the (Visi-On) system, you were into the depths of the graphics product and the calc product in less than ten minutes. And yet the capabilities of those products is a generation beyond those of existing packages. The fact that you can get at it so easily, so intuitively, so painlessly, is what makes windows the word.

CC: But in a way you are making a point Barry brought up earlier. That is that the mouse is really a training peripheral, and once the user has learned a system, he is ready to move to keyboard commands.

T.O.: Yes and no. Yes, when you are at the keyboard entering away, you don't want to lift your hand off the keyboard and grap for that mouse. Always you want the fastest and most efficient approach. That's the difference between "easy-to-learn' and "easy-to-use.' You can have a system that is easy to learn, but a real pain to use, or vice versa. We have all seen examples of one or the other. The easy-to-use system is the one that takes four weeks of training, and then you say to yourself, "wow, I finally got it.' Then there is the ultimate easy-to-learn system, and after you have gone through the pedantic motions, unfortunately you can't do anything with it.

CC: Not to mention feeling partronized in the process.

T.O.: Exactly. Now when I am in the entry mode, I want to stay on that keyboard. When I'm in the basic mode of contact selection or positioning, a pointing device is the single most natural device for doing it. For me to use cursor keys to get it up, for me to type a

cryptic command, is difficult and time-consuming. With a single button mouse, the eye and hand get to do what they are really great at. All you have to do is say "I want that there.' On that score the mouse will always dominate, and the more you use the system, the more the mouse will dominate.

CC: Even if you have been reared on cryptic command codes?

T.O.: Even if you have been reared on cryptic commands.

CC: Even to open and close windows.

T.O.: You'll do it with the mouse.

CC: You know, I'm not sure in my case getting the screen to look like my desk would be a big advantage. My desk is usually a mess.

T.O.: A quick tangent. A profile of all of our field trial users--hundreds and hundreds of people--has shown a correlation between what their desks look like when they work and what their windows look like. We have some people who had things all over the place and some accountants with one neat little window on the righthand side of the screen.

CC: You have your anal users and your non-anal users.

T.O.: Let's get back to opening and closing windows. I'm not anal, and I have five windows on the screen. I just want to put one aside. I need to identify that window, either by position or by name. Point and click, and you've got that window. No multiple cursor keystrokes, no names to remember.

CC: It's intuitive.

T.O.: You got it. That's why windows tested out at Xerox. They had the tile approach and threw it away. It didn't test. To give this three-dimensional feeling, you do not want to be bothered with increasing and decreasing lines that partition the screen. You want it to work the way sheets of paper work.

CC: That's why it can become second nature in a very short time.

T.O.: It's a metaphor--that's why it works.

CC: Okay. Multiple applications are obviously useful, and a pointer peripheral may be too. But does the typical user need so many levels upon nested levels?

T.O.: Let's take the most pathological case--the dedicated spreadsheet user. He's sure he wants to continue using VisiCalc IV. He's a CPA or a member of one of the big eigth accounting firms, and he is skeptical about windows.

Then he realizes what he can do with two or three spreadsheets on the screen and the ability to move information between them.

CC: What about help levels?

T.O.: The system is seamless. I don't know if you're familiar with the old concept of Hypertext, from work ten or eleven years ago.

CC: Ted Nelson. You know, wherever I go, his name keeps coming up.

T.O.: Ted Nelson's work. There is, in essence, a Hypertext system at work in our package. When I'm at a very high level, and I want help, I get high-level help. If I'm nested deep and stuck in something, I get very specific, detailed items. I can traverse that help structure, across products, and across the system. I can even ask for an overview of help, to see the very tree structure that composes it.

CC: And then bring it up in a window.

T.O.: Windows are just one element of a complete system. Here's a virtual memory system. Here's an automatic, contact-sensitive data transferring capability. I don't have to care whether "this' is text, and "that' happens to be columns and rows. Or that "these' are poxels off in a graph and "those' happen to be numbers. The program in effect says "point to what you want, and I'll go ask the system what it can interpret, and I will make the appropriate transformations between the particular items.'

And if you know one product in the system, if you spend 15 minutes with Visi-On, you will be able to dive into the depths of any other product--because it will operate the same, it will handle things the same, and it can work simultaneously with the other products.

Dan (Fylstra) has a saying that "windows are mirrors.' If you try to say "Gee, we got windows,' and you try to sell a system simply on the flash and dash of that, you are doing it with mirrors. If you have a total system, with superior functionality, seamless integration, and data transfer, as well as ease of use, then maybe your windows are worthwhile. They will be a tool for the rest of the system.