Advent of Graphical Executive Information Systems

 By Rick Crandall

Executive Information Systems (EIS) became an improbable but explosively accepted new software category in the mid-1980's made possible by the confluence of new graphical human factors, the mouse and touch-screen, the IBM PC and the passion of a few entrepreneurial zealots, one of which was Yours Truly. The story of how this product and market came about is not unique. In fact it is undoubtedly typical of most successful new product categories. I'll tell the Comshare EIS story here, with plenty of emails and press articles as substantiation that make the recollections real and not just the imperfect memory of a 25 year old phenomenon.

Elsewhere the story of the founding of Comshare is documented in some detail (*see www.aspenventure.com and click on IEEE Annals History of Computing*). The company was born of typical American entrepreneurial spirit, mixed with serendipity, naïveté, passion and the vision of a few. I was surely not the only one to target the non-technical executive as a user, but I am sure I was one of the earliest.

This drive was born of my early experiences with making timesharing an accepted technology and service truly designed for end users. Its interactivity as opposed to batch processing computing, combined with an early focus on human factors never before considered seriously in computing applications, became almost a religion among those who created the timesharing industry. Great credit must be given to the early efforts at U. California Berkeley, MIT, University of Michigan, and Dartmouth University for laying the groundwork for interactive computing that was then commercialized by the likes of Comshare, Tymshare, General Electric, NCSS and others.

The early users of timesharing are well-documented – they were the scientific and engineering community who had the technical orientation to put up with the imperfections in the software and the frequent system crashes in the early days. They saw and revered the benefits of interactive computing on developer productivity and how it reduced elapsed cycle-time to get a project completed.

That was in the 1965 – 1969 period. Then the recession of 1970 hit – which many called the "aerospace recession" but it went beyond that – many engineers of all kinds lost their jobs, and they were a huge part of the early timesharing customer base.

The timesharing companies at the time were forced to revisit their strategies, which turned out to have a silver lining for some. Comshare refocused its efforts towards applied uses of timesharing that would appeal to the business and financial user, moving away from its engineering-user heritage. That change in strategy led us to offering financial modeling – actually an on-line predecessor to spreadsheet software.

Human factors were still dictated by the terminals that were most popular in use with timesharing systems – namely the character-oriented Teletypes made by Teletype Corporation. No graphics, no screens yet, just characters on a page. The most exciting thing you could find that had anything to do with graphics were the elaborate multi-page images that clever programmers would create (around Christmas time) of Santa and his eight reindeer made of pages full of characters printed much like embroidery patterns.

I definitely had the "serve-the-end-user" fever. I had fully bought into the idea that true differentiation and leverage in the market could be gotten by serving the un-served. In the early days of timesharing that meant serving the real end user and skipping around the data processing organization. However, as timesharing companies proliferated like bunnies on a farm, I found myself searching for end-user populations that were even un-served by timesharing

Our sales force, undoubtedly like most, claimed that when they made sales calls that they "sold high" meaning they got to high-level decision makers. Deeper inspection always proved these were hollow claims. Somewhere in the 1972 to 1974 period I began to 'hallucinate" about how great it would be if we could come up with a product

that the very executives we wanted our sales force to call on, would want to use themselves.

As I thought this through, it was clear to me that to appeal to high-level executives the application would need to be financial – every manager has goals they need to achieve and even then in the 1970's there were plenty of management teams that had a component of performance-oriented compensation. We certainly had the financial modeling software that was rule-based and in which we could capture highly personalized metrics of performance – for strategic planning, tactical performance monitoring and executive compensation schemes. But the outputs in those days were numbers and text on Teletype paper – and similar images on the early CRT screens.

It was then in the mid-1970's that I became convinced that the way to capture the attention of the executive was to add graphics to our products, although there was still the keyboard to deal with. The keyboard was a real barrier in those days for the 50+ year-old corporate executive. A more graphical interface was a concept that in reality, given hardware limitations, it was unclear how to implement. Firstly I was very convinced from my own usage (of expensive graphic artist-based graphics) that the presentation of information graphically was highly sensitive to the graph forms. They also needed new media printing devices to produce hard copy graphic output without engaging expensive and time-consuming graphic artists.

A Graphics Terminal?

So somewhere around 1976 – 77 I did two things: 1) I figured I was an "executive' and therefore in the targeted audience so I spent lots of time discovering which chart forms were most communicative of various performance metrics in Comshare. I also surveyed the charts used in business magazines. While we were much smaller than the Fortune 500 companies we wished to serve, I didn't think the issues were all that different – they just had a bunch of extra zeroes tacked on the end (i.e. $ billions instead of $ millions); and 2) I tasked a staff person to figure out how to assemble a color graphical terminal that had a color CRT and a hidden slide-maker.

The result was comical. Together we created a console that had a visible CRT on which a user could create and see a chart, and hidden below was another smaller CRT with a motorized camera that would take pictures off that screen as a way of producing slides. Of course I wanted immediate gratification, and so I travelled to Polaroid Corporation in 1977 to present my idea and to attempt to talk them into making an instant-slide version of their Polaroid camera. In those days Polaroid was a star company but they only made cameras with instant in-camera processing of print images; no slides.

I created all kinds of wild forecasts for them (isn't that what an entrepreneur does?) and some of the mid-level people actually got excited. But at the end of the day they didn't fund the project and so I was back to the drawing boards as to how to create an executive "graphic' product.

I suspect that if one interviewed any of my management team from the late 1970's they would probably recall my passion for graphics in our products and would liken me to Don Quixote jousting at windmills, but I was not to be diverted. In fact this brings up one of my philosophies of life – *"if you want something to happen, create a clear vision of what it is, open your mind to everything and anything that moves you in that direction, and don't let anyone or anything distract you from the vision."* You have only to ask my wife Pamela about that and you'd get an emphatic confirmation.

Even if you don't know how to go about your vision, if you get out into the world, expose yourself to as much as you can and then rely upon your "mental filters" to recognize the opportunities to achieve the vision. There is definitely a metaphysical element to this belief – i.e. by your very mental commitment to an outcome you can manifest it.

So now we get to where I have memos which commemorate what I'm talking about:

August 25, 1978 R. Crandall Memo to Comshare Management:

Re: Corporate Graphics Project
"I have become very committed to the idea that this is the year Comshare must make a big step in finished quality graphics for financial applications. Events are moving very rapidly with the equipment technology …

"We have a unique vantage point that we can put to profitable use by moving effectively and rapidly toward the objective of leapfrogging the current state-of-the-art in computer graphics and in do doing we add a unique value to various of our products.

***"Purpose: To produce a graphics product that is operable by traditional occupants of the executive office with no technical assistance** …interfaces initially with Questor and FCS … eventually with all pertinent Comshare products in a manner which achieves a breakthrough in over-all ease-of-use.*

"Corporate performance reporting will be the prototype product use."

Attachment: Article on Xerox and the Future, Government Examines Experimental Xerox Office of the Future.

"It was a hush-hush operation. Even the secret service got in on the act …orchestrated by Xerox which has been quietly working on the office of the future … White House and Congress installed Xerox's innovative office information system… Developed at the Xerox Palo Alto Research Center … performs word processing, electronic messaging … printing, filing and document distribution. ***Centered around a workstation that PARC researchers Code named Alto …*** *being used by the White House on an R&D basis for word processing and text editing. It's also being used in interactive graphics experiments, creating such graphical products as statistical tables and charts…"*

-- Linda Flato

Well in what may be TMI (i.e. Too Much Information) I was dating Linda Flato, the Washington reporter who was the author of the article, and she knew of my passion for graphics. She called me to bring my attention to what was going on at the White House. She was convincing that I had to see it and to see how it might figure into our plans.

I began to explore where in Xerox this might be originating. Fortunately by that time Xerox had acquired Scientific Data Systems which was the supplier of our SDS 940 and Sigma 9 computers we were using for timesharing. Some of the SDS executives had been retained by Xerox in the non-copier areas. That gave me an in to probe what this Alto project was all about. Note the following email.

September 11, 1978 R. Crandall Memo to Comshare Management

Re: Intelligence Concerning Graphics
"…. A recent article indicated that Xerox is experimenting with an "office of the future" at the White House. It includes color graphics and the Xerox 6500 color copier. Apparently the system was developed at PARC. I noticed that Bob Spinrad (used to be SDS manager of software) just became director of that Center. I'm trying to get in touch with him to see what's doing."

Prior to getting to PARC, I was travelling anywhere I could find a graphics project to see if anything triggered what I was looking for – and I was learning and forming opinions along the way:

September 25, 1978 R. Crandall Memo to Comshare Management

Re: Color Graphics Update on MAGI
"I've recently returned from a trip to MAGI, the graphics firm in New York that has announced The Slide Machine – a color terminal driven business slide producer …not quite ready for market. Some conclusions follow:

- *don't need high resolution at the user site*
- *putting all the graphics software in the terminal is the way to go. You spend a fair amount of time messing around with the graph and staying online to Commander II (the timesharing system) is too costly.*
- *Graphics need to be integrated with our services products*
- *Develop book plots to replace Q&A*
- *Finding ease-of-use breakthrough*

"I'll call a strategy meeting in October as soon as we have enough data on most aspects of the project."

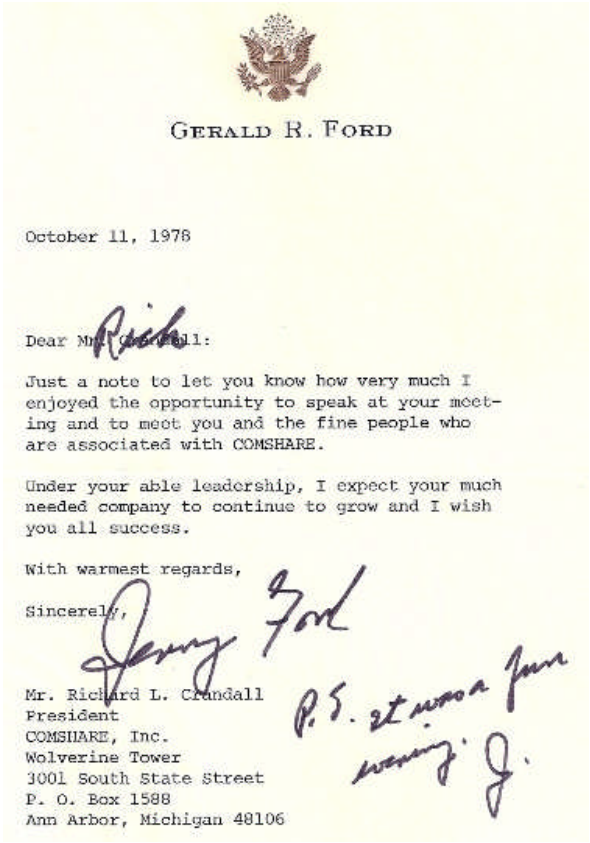
The PARC Epiphany

I finally got through to Bob Adams, who was originally an executive from SDS but at the time I called, he was Vice President of Advance Product Marketing for Xerox. On the call, I was guilty of perhaps typical entrepreneurial exaggeration by declaring to him that

we had an advanced graphical project underway at Comshare that overlapped some of what I heard was work going on at PARC. This wasn't totally false since we actually did have an effort in the form of my chasing around the country looking at graphics products and real business uses of graph forms. I asserted that Xerox and Comshare would do well to match notes on what we were doing and that I was going to be in his neck of the woods in the near future.

I was referring to our annual Comshare Users Group meeting in Palm Springs, California. I name-dropped that we had President Gerald Ford keynoting. I said I could hop out to visit with PARC right from the Users Group meeting. While the Ford mention had nothing to do with anything we were talking about, he seemed impressed with the mention of Ford and the graphics story intrigued him, so he agreed.

My visit to PARC was certainly a company-changing experience – and maybe even life-changing for me too. They took me straight to the prototype of their Alto workstation and surrounded me with just the right people to explain what it was.



GERALD R. FORD

October 11, 1978

Dear Mr. Crandall:

Just a note to let you know how very much I enjoyed the opportunity to speak at your meeting and to meet you and the fine people who are associated with COMSHARE.

Under your able leadership, I expect your much needed company to continue to grow and I wish you all success.

With warmest regards,

Sincerely,

Mr. Richard L. Crandall
President
COMSHARE, Inc.
Wolverine Tower
3001 South State Street
P. O. Box 1588
Ann Arbor, Michigan 48106

I met with:

- Jim Campbell –
  - V.P. Advanced Business Products
- Jim Kyle – V.P. Planning
- Walt Menetry –
  - Xerox Development Corp.
- Bob Adams –
  - V.P. Advanced Product Marketing

I was so taken with what they were showing me, that I'll make an admission here – I feigned a queasy stomach from some food the prior evening (not likely as I'd had dinner with President Ford and he was fine, but they didn't know that), and used that as an excuse as to why I had to go to the bathroom every ten minutes or so. Each time in the

bathroom I took out pen and notepaper and wrote observations and drew pictures of the screens I was seeing so that I wouldn't forget them ☺

On the plane on the way back to Ann Arbor I created the following memo from my notes. As far as I was concerned I had been given a look into the crystal ball and I saw the future. I became immediately determined that we were going to be part of it and nothing was going to stop us, despite those who knew me rolling their eyes thinking: *"Rick is off on another mission again .."*

Given how prominently the PARC effort figures in so many innovative products, including the Apple Lisa and Macintosh and Microsoft Windows, the memo I wrote undoubtedly has some historical significance.

Here is the memo I wrote:

October 16, 1978 R. Crandall Memo to Top Comshare Management

Re: Heavy Human Factors Code
"You all know that I've been trying to chase down any external code we can find that would add to our knowledge of human factors – particularly as they relate to ease-of-use in graphics and reporting. Well these efforts have finally struck a vein of gold – located at the Xerox PARC in conjunction with Xerox Development Corporation which is a small 15 man development corporation that actually reports directly to Peter McCullough, the Xerox CEO.

The Altos Project
"They have employed some psychologists, some industrial automation people and they've been given carte blanche with the goal of guess what? Producing a breakthrough in ease-of-use in Office Systems!

"They have made some impressive progress … with each of the following five targets:

1. *The Executive*
2. *The Manager*
3. *The Professional Staff*
4. *The Personal Secretary*
5. *The Clerk*

"Note the similarity to our targets (The Executive/Manager and the professional staff).

*"The following notes describe my inferences and observations from what I saw and heard. **This information must be kept confidential**. I promised confidentiality and if we maintain credibility now we may even become a test site for a whole "office of the future" package.*

The Mouse

"Xerox has already gone through some of the research that Batelle (Batelle Memorial Labs) was going to do for us – they looked at the keyboard, the light pen, the touch screen, the Rand tablet, etc. and they have concluded that the best input method is a combination of the keyboard (for data entry) and the "mouse" for commands.
For those of you who don't know what a mouse is, it's a little smaller than a cigarette pack lying on its broadest side, with three buttons on top and some bearings to glide on underneath. It is wired to the terminal screen and any two-dimensional motion you make with it will move a little arrow in exactly that direction on the screen.

"The real advantage is that it is amazingly precise and you never have to look at the mouse – you can keep your eyes on the screen. In effect the mouse is an ideal combination of a precise and fast moving cursor with a three function key pad. I was immediately sold on the idea.

Local File Storage

"The Xerox device also is a simple data management system as far as local (to the terminal) files are concerned. Down on the bottom of the screen there is a picture of a file cabinet (amongst other pictures I'll explain later). If you touch the file drawer with the arrow, you get a display of the subject names of every folder in the drawer. If you touch one of the names, you get a list of headings of each document in the folder. Finally if you touch a heading, you get the document itself on the screen.

"In effect you have a four level storage structure without even using a file name or without ever using a real command. You can sort the documents and move them around in the cabinet just by using the ubiquitous little arrow.

Icons

"The bottom of the screen has some pictures of various printer types and all you have to do to get hard copy is touch the right device with the arrow. Still no commands. Occasionally when there are options, they flash up a row of choices that you can touch with the arrow:

Immed.	*24 Hr*	*35 mm*	*Paper*	*Micro …..*

"You can design your own forms by using the mouse to move lines around until you've got the grid you want, then you touch the calculator option and a calculator pad shows up on a part of the screen … if a field is to be calculated by the form rather than input from the user, you can refer to other fields with symbols (A1, B2, etc.) and then define the math operations by "arrowing" the calculator symbols. These rules then become part of the form.

WYSIWYG (What You See is What You Get)

"When you are done you have not only described the appearance of the form but the data entry rules and the calculation rules that go with it. It's a neat implementation of Dataform, again with no typed commands. To format a report you merely touch the part of the report that needs moving, push one of the mouse buttons to indicate "attach", and then move the mouse which moves that section of the report.

"Other Nifty Items
Another of the bottom pictures is a mailbox. If you address a letter and "drop" it in the mailbox with the arrow, it is sent, via Fax immediately. You can select many fonts easier than changing an IBM golf ball and you can store photos in a fine dot matrix (with the resolution of a newspaper photo). The screen is high resolution (80 lines/inch) and the local storage media can handle the picture dot matrix along with the text.

"Obviously a document can have a graph but you have to build the graph with the arrow. This is interesting but is a real weakness in the system. They've not thought through the graphics and were very interested in our work. They have no plans to add color to this device although they have some fascinating color printers as followers to the 6500.

"This kind of work will be the technology of the 1980's – and the really successful way to put DDP in the hands of the end user.

I felt like Moses must have felt returning from the Mount. I had seen the "tablets" that described how the world was going to be in the future. I made a personal commitment that Comshare was going to be a part of that future. This came at a time when we were starting to see the handwriting on the wall that the days of timesharing were numbered and we were going to have to transition to something else. That we chose to transition to a software company is another whole story (which I will write at some point), but we did make that decision and we already had a good start with the release of System W DSS. However I was looking for differentiation and additional market size, thinking that DSS wasn't enough to replace over $125 million/year of timesharing revenue.

So I became the "advocate" that you always look for to make a new product idea a success. I was better than an advocate; I was the CEO so I had the power to make something happen, despite increasingly difficult financial pressures caused by increasingly viable in-house alternatives to timesharing as a service.

November 30, 1978 R. Crandall Memo to Comshare Management

"The enclosed article has at least one thought provoking comment in it that we should keep in mind. Withington looks at future service possibilities and future vendors of those services. He finds it easier to forecast that the present suppliers of information (e.g. newspapers, TV networks, etc.) will eventually take over information management rather than the DP firms of today.

"I can see his point. The computer service firm has found it difficult to move rapidly to a higher-value approach and , thus, becomes vulnerable to those non-automated firms providing exactly what the market wants, who later find the way to automate (e.g. game retailers taking over electronic games).

"We can use our strategic direction, and the tool of acquisition to leapfrog our own natural lethargy .. we must apply our philosophies of not biting off more than we can chew. Areas that are to large to think of are:

Electronic Mail
Word Processing
Publishing

"Disciplines we should not be opposed to look at are:
Business Graphics
Data Base Generation and Supply
Consulting and Professional Services

"We should encourage creative thinking with regard to strategies for value-added product enhancements at appropriate times in the product services planning cycle."

January 15, 1979 R. Crandall Memo to Comshare Management

RE: Xerox
"Xerox has bitten on my suggestion for Comshare to become a test probe for their advanced word processing system. They want to send some people out to meet us and find out what we are doing in graphics and how we can do some joint R&D."

January 29, 1979 R Crandall Memo to Comshare Developers

RE: Additional Graph Form Specs.
"Enclosed is the package of line diagram variations to complement the bar chart package. All I have left to do are layer charts, pie charts and combined forms…"

February 16, 1979 R. Crandall Memo to Comshare Management

RE: Xerox Probe
"Things didn't work out regarding Comshare being a probe site for the new Xerox word processing station, since we were too far away from Xerox probe personnel…exception regarding their new color printer (6500 follow-on)."

Despite that setback, I funded an internal project, but its first outcome looked to me like more of the same old character-oriented command interface which was NOT what I had in mind:

October 8, 1979 R Crandall to Comshare Developers

RE: Graphics Human Factors
"Somewhere along the line it appears we've dropped the "breakthrough" in human factors (command elimination) in favor of achieving a shorter term release of graphics. I'm not sure this is the best approach and I would like to reassess … (that's me attempting politeness).
"What we originally had in mind was the elimination of commands altogether and subsequent reliance on the keyboard for text and data input only. We were impressed

with the Xerox "Alto" approach and felt the more "physical" means of input were applicable to our project.

"I'll give a few examples ...
"Let's say the user selected a book plot with standard colors .. and he decides he wants to change colors. I envision him selecting a "color" box on the screen and immediately a color bar appears on the bottom of the screen. Visually this could look like several paint pots and the screen cursor changes shape into a paint brush where the head is colored to indicate the current color mode. To change the brush color all one has to do is "dip" it in the right pot by moving the mouse.

"Another example – let's say the user wants to move titles around. He should touch the title with the mouse, "pick" it and drag it to where he wants.

"This philosophy of using physical motions in place of commands will result in the infrequent user being able to use the device and remember how from session to session. ***I am convinced that the whole graphing mechanism can be converted to this methodology – it makes the keyboard not only non-essential, but inappropriate – which is what it should be."***

Our developers got the message that I was not going to relent on the vision, and I was not going to accept a compromise solution. Another six months went by and finally I started to see "that's what I'm talking about …" kind of results.

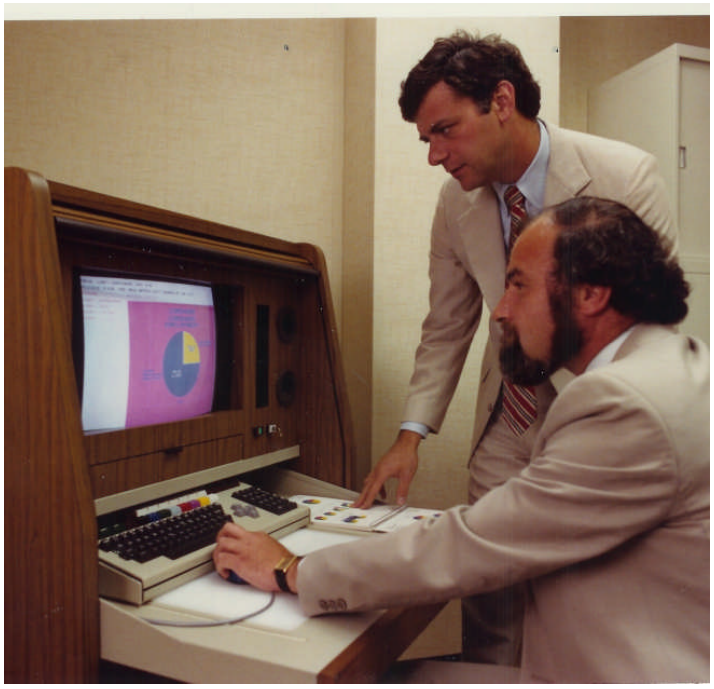
March 26, 1980 R. Crandall Memo to Comshare Management

Test-Market Observations on Execuchart
"We are definitely at a major departure point in human factors…

"The Mouse*: The mouse is going to win. It is rapidly learned and you can use it with great rapidity of motion. In fact, it is so effective that you begin resenting the slowness in the terminal itself and some of the remaining command structure impositions presently placed on the user…"*

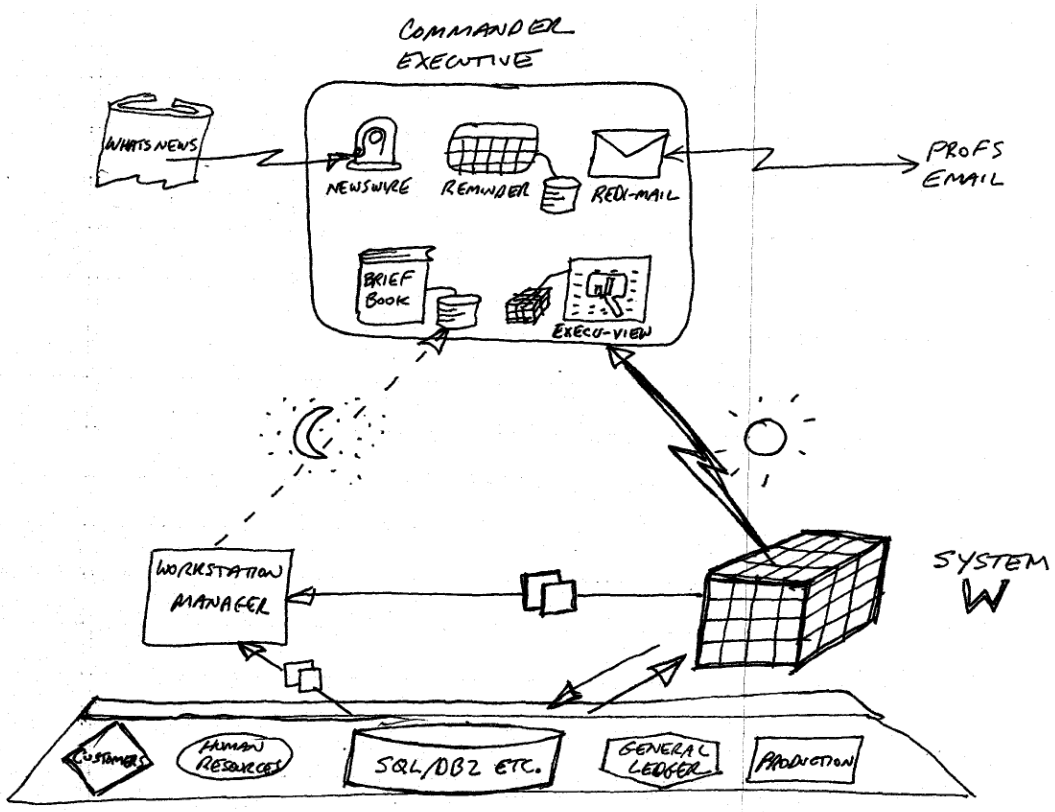
Execuchart "mice," shown with Shary Price of the Company's marketing staff, were the subject of this photo which appeared in more than 170 newspapers around the United States.

Execuchart was a custom graphics terminal that pre-dated Windows (1980) but was graphical, AND was mouse-driven – by a mouse that we created! It was insane that we would have gone so far into hardware, mice, and creating our own graphical software – there was no way we could keep up with the whole software stack that was involved in the creation of Execuchart – but we got something out the door that got plenty of attention, and it poured fuel on the fire I was trying to start..

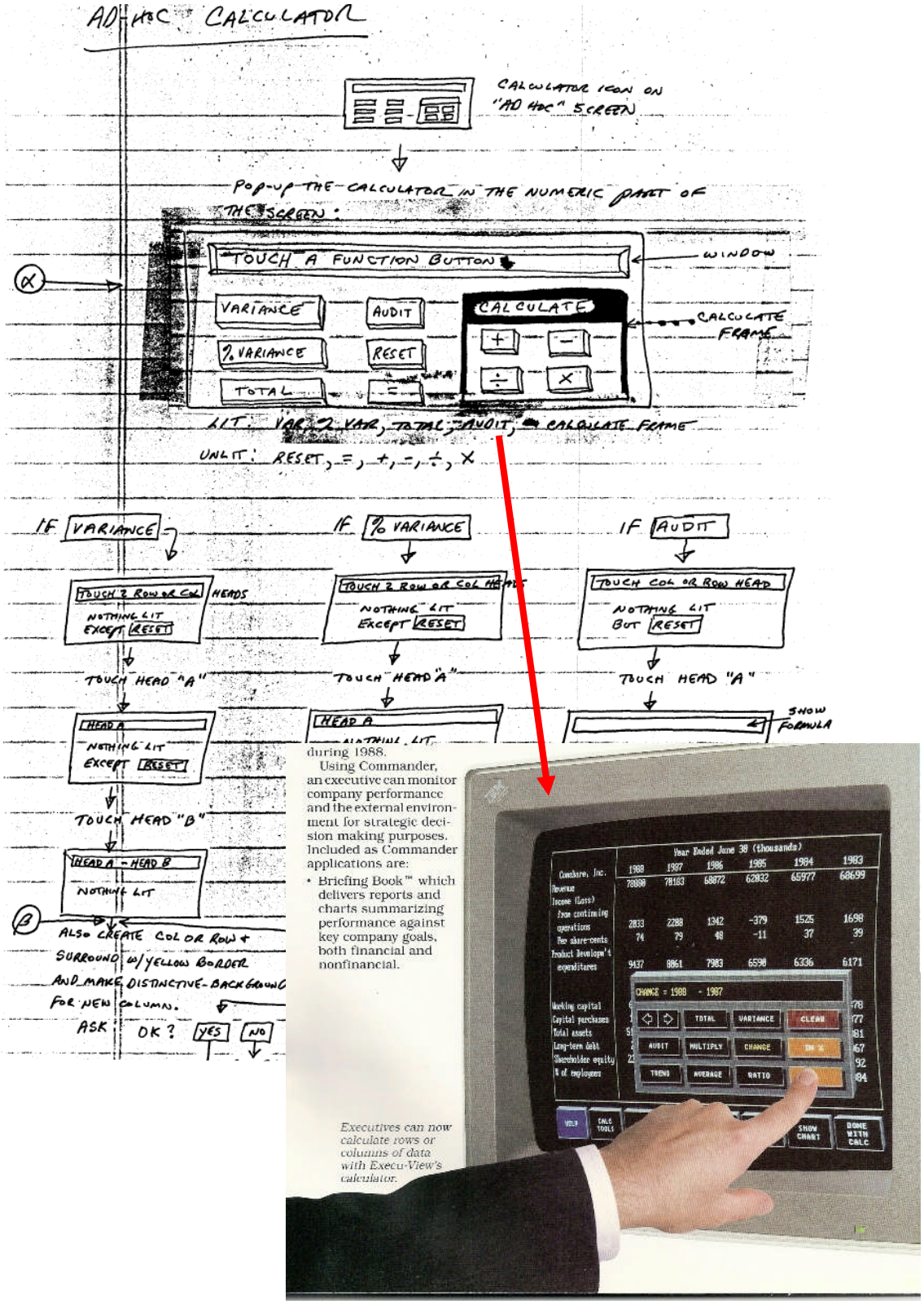


Rick with Kevin Kalkhoven (Comshare VP, seated) using Execuchart in wood cabinet; Kevin later moved on to be CEO of Uniphase

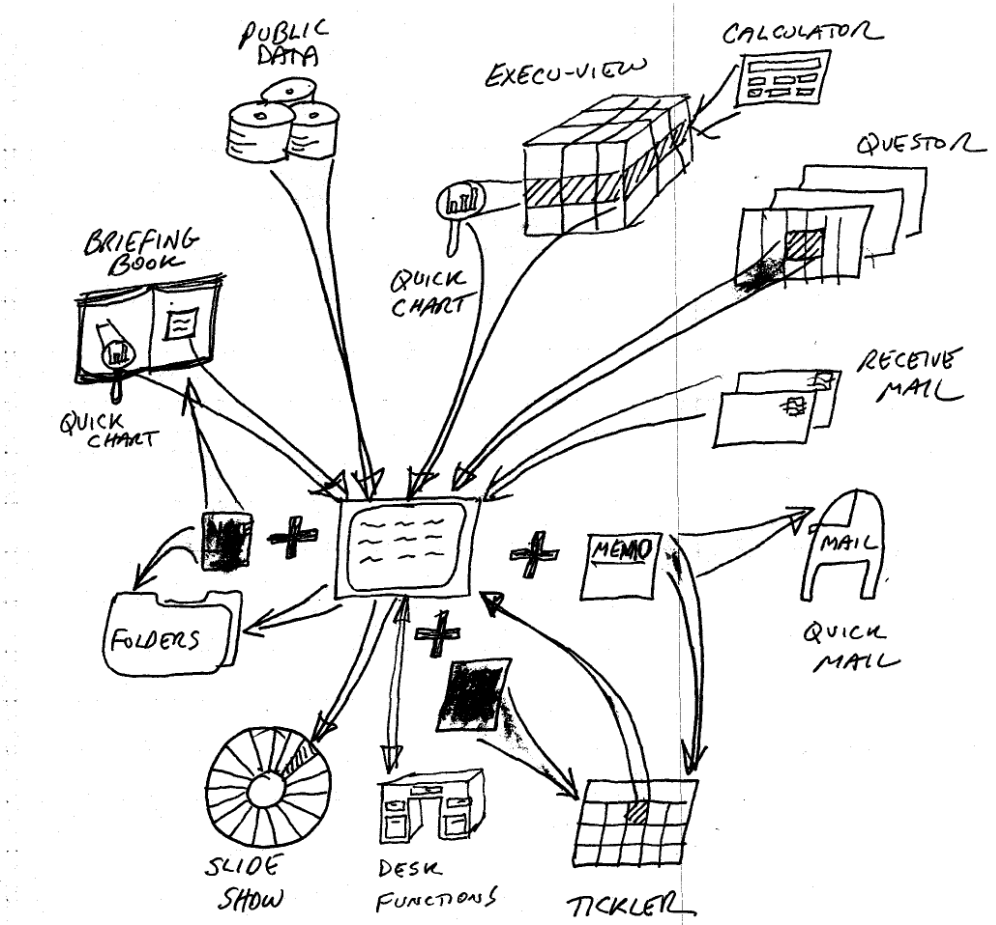
However, I still couldn't find the right technical sponsor internally who was as convinced and as passionate about the project as I was. Fortunately we did have a woman in development, Dorothy Leiffers, who "got it" and who was very good with



human factors. She became my “translator” to development – I would draw the pictures and she would work with the developers to get something close to that in software product form. (e.g. see “Calculator” below)



I drew pictures, wrote memos and allocated development funding. I was especially invigorated with the release of the IBM PC – albeit with DOS and not yet with a Windows graphical interface, so we did what Comshare always did – we created our own.



Even looking at the drawing today in 2009 it still looks like a pretty complete vision for an EIS.

If I'd done a financial model of the project and its ongoing costs, the project could never have been justified, but what entrepreneur does that? At the time I couldn't forecast that IBM or Microsoft would release a viable graphical PC platform and the thought of maintaining our own platform was too daunting to think about. So I didn't, we just did it.

Eventually, due to our partnership with IBM and System W (our multi-dimensional DSS) as soon as we were briefed about OS/2, we began re-developing the EIS to that platform. In hindsight, that was not the best place for us to be due to the subsequent rise of

Windows 3.0. We did later re-develop onto the Windows platform, but didn't (couldn't) drop OS/2, which leads me to another set of observations about multi-platform support that I'll get to later in this document.

First Commercial Release of Commander EIS

It took us a few more years of development, and the restart on IBM PC's with OS/2 that finally gave us the local processing computing power for our growing appetite for local storage, code and graphics processing resulting in commercial release of not just a graphics workstation, but a full EIS faithful to my original drawings, thanks to Dorothy.

Touch Screen and a Mouse

We didn't stop at a mouse-based interface for the EIS which had been so motivating to me from the visit to PARC. We weren't sure that even a mouse would attract the non-technical executive of that era. So we contracted with an early touch-screen maker to create an overlay for an IBM PC monitor that was touch sensitive, which is no big deal today but was a major, unheard of input method back in 1984. All the graphical screens for Commander were designed so that a finger touch could accomplish the same things as a mouse cursor. It was truly "Information at Your Fingertips" in the truest sense (a campaign we initiated a year before Microsoft's "Information at Your Fingertips").

Commander EIS – An Explosive Hit in the Market

Our first ad (above) was a hit, and the growth rocket took off. I think it is fair to describe what happened over the next several years as a true phenomenon. Certainly it was the most fun highlight of my career.

SPECIAL REPORT

EIS Powers Executives

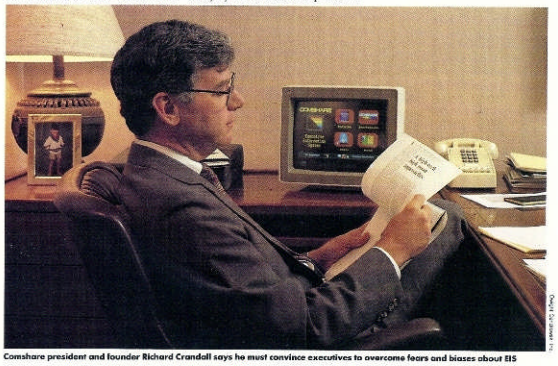
America's corporate top brass is flocking to Ann Arbor to see if Comshare's system lives up to its reputation

Every software vendor tries to sell high up in customer organizations, but Comshare takes this concept to extremes. The president and founder of the leading executive information systems (EIS) vendor spends much of his day selling systems to top executives.

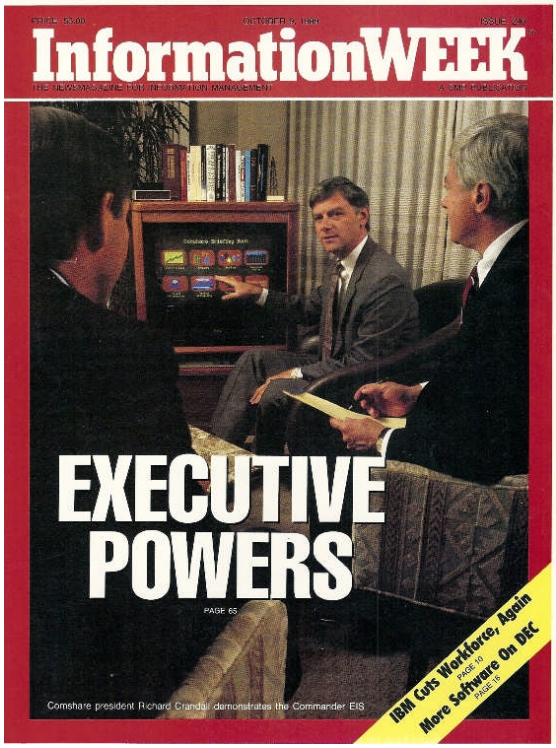
"At first we were amazed when we learned there were seven executives on a jet coming out to Ann Arbor," says Richard Crandall, president of Comshare and a fixture in the computer field for more than two decades. The amazement soon subsided as Learjet after Learjet landed at the Ann Arbor, Mich., municipal airport to view demonstrations of Commander EIS, the firm's mainframe and PC system introduced in 1985 for bringing executives into the electronic age.

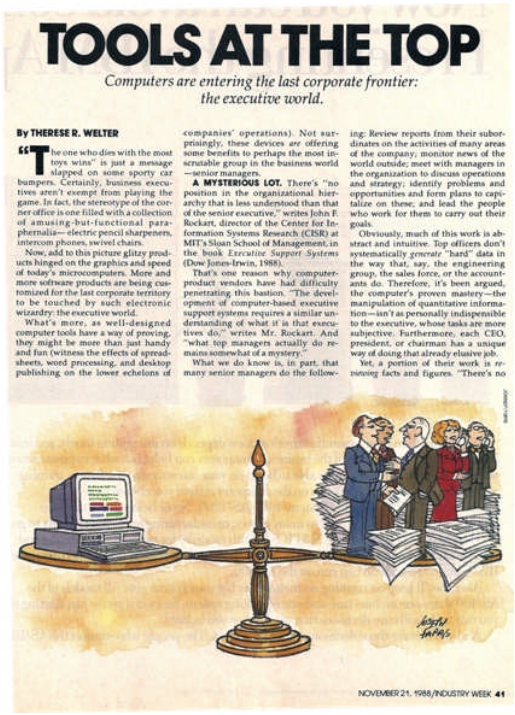
The steady flow of visitors has helped propel Comshare, founded by 46-year-old Crandall and several other University of Michigan graduates in 1966 as a timesharing service center, to the top of the $30 million to $40 million EIS business with 49.3% of the market in 1988, according to a recent study by the Gartner Group in Stamford, Conn. Although Comshare earned most of its $88 million in revenue for the fiscal year ended in June 1989 from its timeshare and decision support businesses, Framingham, Mass.-based International Data Corp. expects Comshare to profit from an explosive growth in the EIS market, which should top $200 million in total revenue in two years.

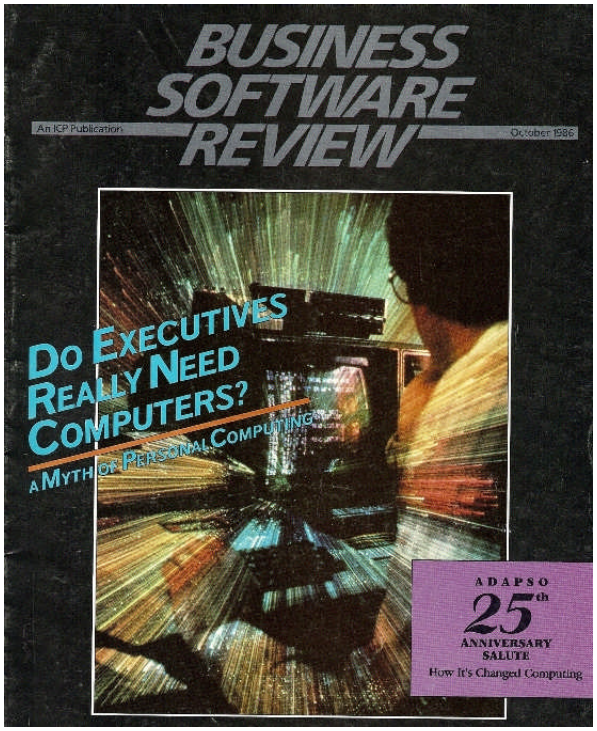
Not that the company is without competition. Pilot Executive Software of Boston is considered a strong contender, with 26.7% of the market, ac-



Comshare president and founder Richard Crandall says he must convince executives to overcome fears and biases about EIS







SPECIAL REPORT

OFFICE OF THE FUTURE

Experts disagree on the long-term impact today's most-heralded trends and technologies will have in the workplace

Brand: The office of the year 2000 won't seem all that different from today's

Many technologies may shape the office of the future, but experts disagree on which, if any, will emerge as the key components. There is also disagreement on whether the paperless office or a vast home work force will come into being. While those whose lives are intimately bound up with business and technology are becoming accustomed to a working environment that changes rapidly, gazing even just a few years into the future remains as difficult a task as it has ever been, perhaps more so because our vision is blurred by so many current promises.

Decentralization

Of the many people involved in the process of creating tomorrow's office environment, **Stewart Brand** offers an unusual perspective. Best known as the man behind the *Whole Earth Review*, Brand spent three months in 1986 working at MIT's Media Lab, a facility devoted to creating the technologies of the future, both for home and office use. Brand wrote a fascinating account of his stint in the land of research (*The Media Lab*, Viking, $20) and recently spoke about what the office of the future may be like.

Brand believes that the pace of development of two key technologies—fiber-optic cable and massive parallel processing—will determine to what degree and how fast the trend toward decentralization occurs. "If fiber-optic cable becomes part of every home and office, rather than being used merely in trunk lines, the communications capabilities it offers could allow people to tie into dense information sources from wherever they wanted," says Brand.

Perhaps the most extreme example of decentralization, and certainly one of the most-discussed issues relating to the office of the future, is the concept of telecommuting (see story, page 41). But **John Woolsoncroft**, marketing director for interactive products at Advanced Systems Inc. of Arlington Hts., Ill., a leading provider of multimedia employee training programs and educational services, sees problems: "Telecommuting is talked about a lot, but it has a lot of roadblocks to it. A lot of functions people do in their day-to-day work need personal contact.

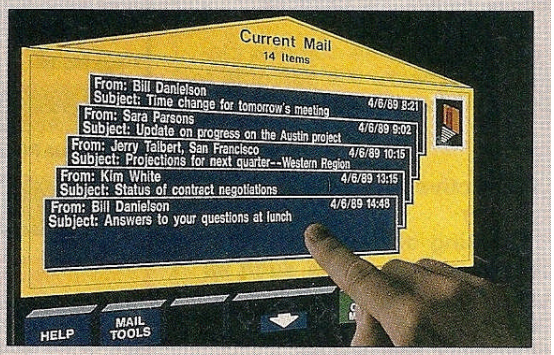
"People like to have a balance," he says. "They like to have some time to themselves, yet they like to have social interaction. Nowadays people are finding the social interaction at work, and they go home to get some work done."

Communications Options

Jim Smith, product manager for Akoa Labs, agrees, saying, "There is

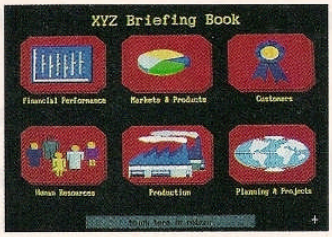
Comshare's Crandall: In the future, executives will make greater use of their computers

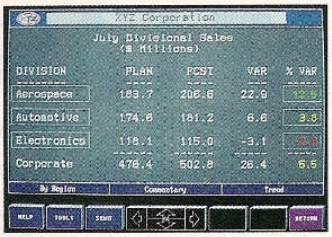
THE LOOK AND FEEL OF EIS



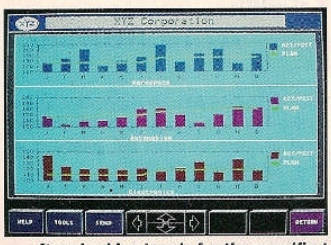
Comshare's Commander Redi-Mail module lets users exchange messages and annotated screens without using a keyboard.

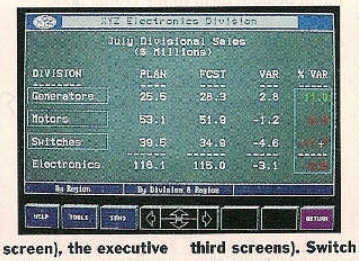
EXECUTIVE LIFE

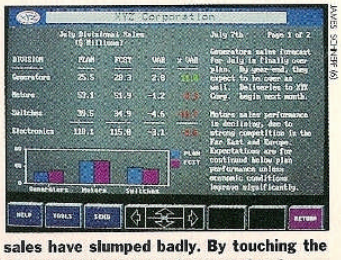




Comshare's Commander lets the CEO "drill down" for detail. Here, the executive touches "briefing book" (first screen), then chooses "financial performance" (second screen), which highlights in red the slip in electronics sales in July (third screen). Then . . .



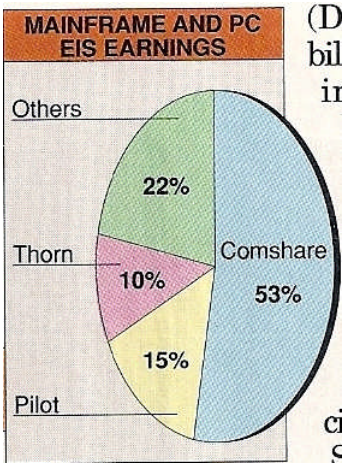




. . . after checking trends for the year (first screen), the executive gets more detail on the troubled electronics division (second and third screens). Switch sales have slumped badly. By touching the −11.7% figure, he can call more screens to probe more deeply.

EIS Market Share Leader

By 1988 Commander EIS was in use in over 170 companies with over 8000 executive users in 10 countries. It had competition, but it had clearly taken a market share lead which we expanded into all of our geographic markets worldwide. It was fascinating to see that this new paradigm of executive use was quite compatible with European executive behaviors.



SOURCE: IDC

EIS MARKET. *In 1989, the EIS PC and mainframe market combined represented about $60 million in revenues for U.S. vendors worldwide, according to estimates by International Data Corp. Comshare was the top earner with 53% of the revenues. Worldwide host-based installations include IBM, VAX, Sun, Unix, HP*

Once we got to Japan, we learned that the simplified graphical large icons (which we'd sized so that they would work with touch screens in addition to mice) were the opposite of what the Japanese preferred. They actually wanted crowded screens with lots of smaller objects, icons and numbers. All you have to do is look at a Japanese newspaper to see where that comes from.

The press was characterizing Commander as *"going beyond user friendly to being user seductive …"*

The Harvard Business School

We achieved a major coup when Prof. Warren McFarlan, then Chairman of the Advanced Management Program at the Harvard Business School (and subsequently Chairman of all of Harvard's Executive Education Programs) decided to do a case study of the use of Commander EIS at Frito-Lay. I met with McFarlan personally, demonstrated the system to him and others at Harvard and he decided to go further to mandate the installation of Commander in the Harvard Advanced Management Program dormitories for visiting executives. He included use of Commander EIS in his curricula.

That is a dream that does not often happen!

We would get dream calls, that we called "bluebirds," from executives of major companies after attending Harvard's AMP requesting headquarters visits to Comshare which we readily accommodated. Executives became willing to be publicized as users of Commander and they told their stories readily – exemplified by this Chevron CFO talking about using the EIS to help fend off the hostile takeover bid by Pennzoil.

Chevron Corp. Chief Financial Officer Marty Klitten and other top managers used the company's EIS to "open a window on Wall Street" for real-time stock information while at the same time fending off Pennzoil's hostile takeover bid. Recently, Chevron executives were able to analyze credit card transaction costs based on on-line data from individual gas stations.

Massachusetts Institute of Technology Center for Information Systems Research

We had penetrated further into academia with the co-sponsoring of seminars around the country with. Jack Rockart, the Director of CISR (Center for Information Systems Research) at the Sloan School of Management, MIT. Jack had published and spoken often about the introduction of the concepts of Critical Success Factors into the executive management of enterprises.

His paper in the Harvard Business Review ("The CEO Goes On line") was surely the seminal academic paper on the subject.

He saw in EIS just the rght vehicle for capturing , measuring and following up on CSF's and so he became a strong advocate – eventually agreeing to serve on the Comshare Board of Directors.

Center for Information Systems Research
Massachusetts Institute of Technology
Sloan School of Management
E40-187
77 Massachusetts Avenue
Cambridge, Massachusetts 02139
(617) 253-6608

John F. Rockart
Director

February 9, 1988

Mr. Richard Crandall
President
Comshare, Inc.
P.O. Box 1588
3001 South State Street
Ann Arbor, MI 48106

Dear Rick:

Here's a copy of the book. We can write about ESS, but you people are making it happen.

Best regards,

John F. Rockart

Harvard
Business Review
January-February 1982

John F. Rockart and
Michael E. Treacy

The CEO goes on-line

New technology and top managers' involvement herald better information systems to serve the executive office

Senior executives of large corporations have customarily relied on functional staff for the information on which to base key decisions. The task of gathering data and preparing analyses has been simply too time consuming, too cumbersome to be left to the executives themselves. Today, however, improved computer technology, coupled with a heightened analytic orientation among top managers, is beginning to change the pattern by which a company funnels information to the apex of its organizational pyramid.

In fact, in some companies the responsibility for using such data-based support has moved into the executive office itself and, perhaps more important, the top managers of these companies have become active participants in the process, executive information systems.

Mr. Rockart is director of the Center for Information Systems Research and senior lecturer of management science at the Sloan School of Management, Massachusetts Institute of Technology. His primary research interests are in planning, control systems, and top management information use. This is his second article for HBR, the first being "Chief Executives Define Their Own Data Needs," which appeared in the March-April 1979 issue.

Mr. Treacy is a doctoral candidate in management information systems at the Sloan School of Management. Upon completion of the degree, he will join the Sloan School faculty as an assistant professor of management science.

The Comshare/ IBM Deal

Commander EIS market share attracted IBM to expand the prior partnership that had been established with Comshare's System W multi-dimensional DSS (for the Information Center) a few years earlier – and one of the first such partnerships between IBM and an ISV (Independent Software Vendor). The sponsor in IBM was Bob Berland, who many will remember with great fondness as one of the most liked IBM representatives to the industry ever, right up to his pre-mature death from cancer.

Once again, news of this new partnership gave EIS another boost in the press.

LEADING EDGE ■ *Dennis Hamilton*

CAN IBM TURN EXECUTIVES INTO USERS?

In Stephen McClellan's 1984 book, *The Coming Computer Industry Shakeout*, the author interviewed the chief executives of the top seven computer makers in America. One striking characteristic they had in common was that none had a computer terminal in his office. McClellan remembered IBM Corporation's then-chairman, John Opal, as having "an office that looked like he just walked around and thought." Technology was not required for this matter of the mind, thank you.

At least on this matter, however, IBM now has changed its mind. It is not only using technology for executives, it is selling it. This should prove an interesting challenge for the world's leading technology marketer.

For vendors of technology, executives have long been considered the Mt. Everest of the user world. Because executives are clubbed early and often with the imperatives of *delegation*, the notion of actually sitting at a computer terminal seems grounds enough to relinquish the washroom key. But IBM Corporation is betting those antique attitudes are on the wane, and is backing that bet with a Cooperative Software venture with Ann Arbor, Michigan-based Comshare, Inc., a relatively old hand in executive information systems and decision support technology.

The two companies have announced an agreement in which IBM marketing representatives will include a special version of Comshare's Commander executive information system (EIS) — called Commander EIS/SQL — in its portfolio of software solutions. IBM representatives will identify prospective customers, present Comshare's marketing materials and accept orders for the product. After that, everything's up to Comshare, which is responsible for implementation and support.

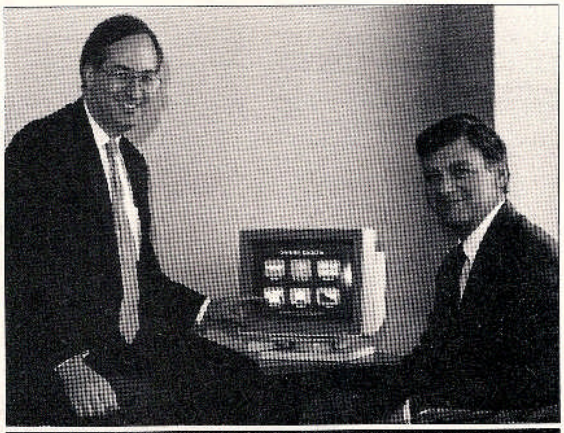
Commander EIS/SQL is being sold on a tiered-pricing basis for between $64,000 and $283,000. That formula is predicated on the idea that the larger the computer, the more value this application can deliver to the corporation. While the high end might seem pricey, Comshare President and Chief Executive Officer Richard L. Crandall says the profit potential for larger companies runs into the millions of dollars. IBM agrees. Says Robert Berland, vice president of vendor and development operations for IBM, "Executive information systems is one of the major software breakthrough areas that allows senior executives of major corporations and government agencies to derive strategic benefits from their information systems."

Comshare's Crandall says the market is blossoming quietly: "More and more major corporations are profiting by their successful implementations, and are trying to keep them secret from the competition." International Data Corporation, a computer industry research firm based in Framingham, Massachusetts, has quantified that secret to some extent, saying the executive information system market now is at $35 million and growing. Comshare, says Crandall, has garnered about 60 percent of that market. That translates into 150 mainframe sites and 7,000 workstations in use by executives, managers and other professionals.

For their investments, executives get systems that are — well, executive friendly. Commander EIS/SQL (as well as the other versions of EIS) do not ask an executive to learn to use a computer, at least not in the conventional sense. Touchscreens have replaced keyboards. Large-screen boardroom monitors are an option. The software selects, summarizes and manipulates data from various sources and delivers it via the Briefing Book, for status reporting, and Execu-View, for ad hoc investigation.

The executive users can get, for example, internal and external financials, product line profitability, cash flow trends, staffing turnover, product quality and reliability ratings, stock turn-

continued on page 17



Berland (L) of IBM and Crandall of Comshare: A coalition to take technology to the executive suite in a market that's quietly blossoming.

Direct Access
Vol.4, No.15 August 15, 1988
FOR CANADA'S INFORMATION SYSTEMS PROFESSIONALS

Comshare/IBM Marketing Agreement

Ann Arbor, Mi: IBM will market Comshare's Commander Executive Information System (EIS) software "to customers across all industries and government branches in the United States", say the companies.

Under a recently signed agreement, IBM reps will identify prospective customers, present Comshare's marketing materials and accept orders for the Comshare product.

Comshare, in turn, will be solely responsible for implementation services and ongoing support of the product at customer sites.

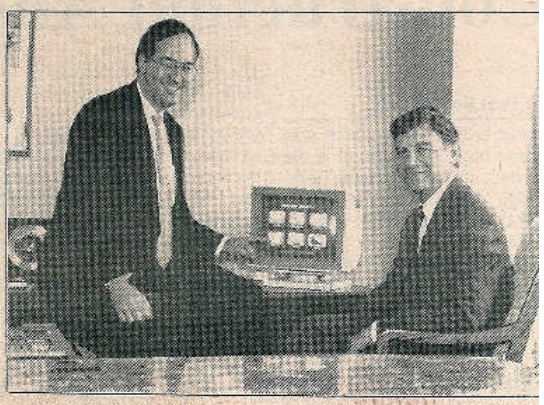
The companies say the offering comprises a special version of Comshare's Commander EIS/SQL, able to operate using IBM's SQL/DS or DB2 management system as the primary EIS storage facility.

Commander integrates a variety of data sources, such as general ledgers, database managers and public databases, and delivers analyzed, refined and summarized information using colour pictorial screens for on-demand use by high-level, non-computer-skilled executives.

Pricing ranges from $64,000 US to $283,000 US, depending on the IBM mainframe configuration.

The package is available now and includes software for 10 executive workstations. ⊐

Hotline #1508



Richard L. Crandall (r) president and CEO, Comshare and Robert Berland, VP of vendor development Operations for IBM.

July 25, 1988 — InformationWEEK — Page 13

THE WEEK

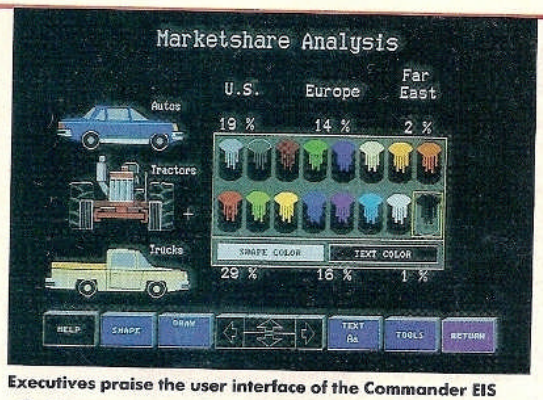
THE INDUSTRY

IBM Joins Comshare In EIS Offering

Executive information systems have donned blue suits and moved a big step closer to becoming a mainstream application now that Comshare and IBM have teamed up. IBM is now marketing Commander EIS/SQL, a version of Comshare's Commander EIS that can use IBM's DB2 R-DBMS or SQL/DS databases as the primary storage facility.

"In the last 25 years I've never seen any area come on so quickly as EIS has," says Robert Berland, IBM's vice president of vendor and development operations. "EIS is the next wave. It gets management involved in the use of technology."

Berland says IBM joined forces with Comshare because the user interface of Commander "is a real breakthrough in terms of ease-of-use."



Executives praise the user interface of the Commander EIS

John Loewenberg, senior vice president and chief administrative official at the Agency Group of the Capital Holding Corp., in Louisville, agrees that the user interface is the major selling point. He is pilot-testing Commander and reports that "the intuitive aspect of the interface really appeals to executives."

Berland claims that an EIS helps a company leverage its information investment. "No one," he says, "is getting more than 10% of the value out of their data." Loewenberg says implementing an EIS forces MIS to make choices. "The issue isn't putting data up there to look at, it's deciding what to put up there."

As for how the product will be sold into organizations, Berland says the effort requires a "trinity partnership" of vendor, MIS, and an "end-user executive champion." Berland says that "with IS alone it will never work."

Commander EIS/SQL is available now and includes software for 10 executive workstations. Prices range from $64,000 to $283,000.

—Scott Leibs

R. Crandall Memos Specifying Additional Exec Applications for Commander EIS

All during this time, I was driving Comshare developers nuts with an outpouring of specifications for additional executive application add-ons to what we'd popularized in the marketplace. I was an unstoppable engine of ideas, but my appetite was a lot bigger than what Comshare could stomach. Some of these did get implemented, but others fell further and further down the queue.

December 14, 1987: Commander's Alert: Dynamic Exception Reporting
January 22, 1988: Commander Folders
April 8, 1988: Commander Folios
May 27, 1988: Graphical 'Comparative Analysis' in ExecuView
June 16, 1988: New Annotation in QuickChart
July 19, 1988: Marketing Requirements for Newswire
November 30, 1988: Exception Reporting
December 16, 1988: RelationalView User Documentation
June 6, 1989: Executive Spreadsheet
August 18, 1989: Newswire Text Search
December 7, 1989: Commander Alerts

Selling EIS

We were pretty convinced we had the better mousetrap (no pun intended) but selling Commander EIS was a whole new experience for a software company. It could not be sold to the MIS leadership; in 1984 they did not believe you could get executives to use computers and they absolutely did not want the exposure and the hassle of servicing high-level, non-technical executives directly. They felt they had enough on their plate with their MIS mission.

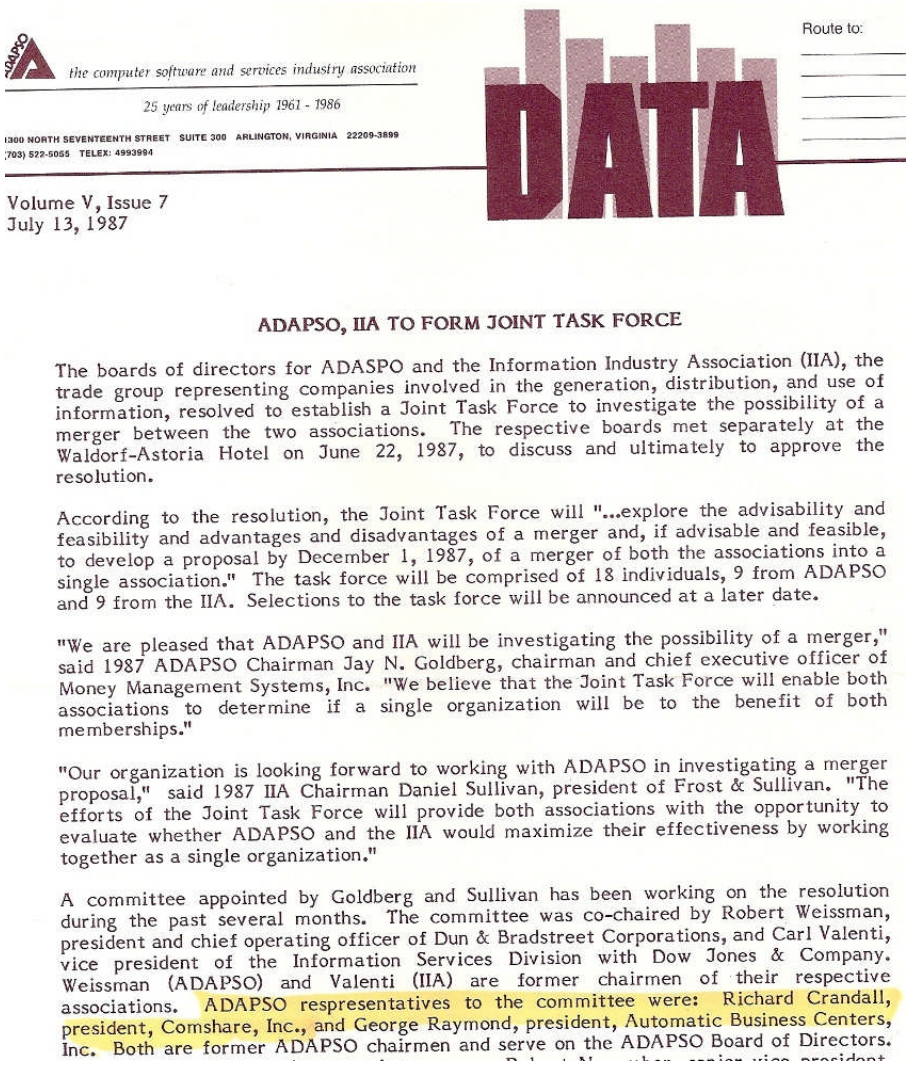
We had to get to the absolute top ranks of the Fortune 500 – not an easy task. Clearly it was made easier with the Harvard relationship, the IBM relationship and all the press we were getting. But there was still the issue of how to sell to them once we got their attention. Early in the commercial release of Commander EIS I decided to use it to manage Comshare. I had a granite sign made up with gold inlay letters that said *"Le Patron Mange Ici"* which means "the owner eats here" – a sign you see occasionally in a quality restaurant in France. Interestingly we were often complimented for this in the press and we were contrasted with most of the rest of the computer industry that did not use their own products in the way customers did (kind of like the U.S. auto industry).

So we set up a Board room version, a walnut-encased office version in my office and we put out a reward to any sales rep that facilitated a headquarters visit from a prospect where at least one member of the group was senior enough to have his name in the prospect's annual report! Don Walker, our VP North America and I teamed up. We must have done three such headquarter visits per week for more than three years!
It was exhausting, but exhilarating and our hit rate on closes were amazing.

The Comshare/Dow Jones Deal – an Industry Story

One interesting story that intersected with a major initiative at the trade association level was in 1989 when Adapso, the computer software and services association, and the Information Industry Association (IIA) decided to engage in exploratory talks of merger of the two associations. At that time I had chaired the Strategic Planning Committee of Adapso for about 10 years and in some of our planning sessions we conjectured that there would at some point be a fusion between the software industry and the information content industry, i.e. the newspapers, magazines, and the computer data base companies that comprised the IIA. I was a representative from the Adapso side and Carl Valente of Dow Jones was the lead from IIA. We both loved the idea and became advocates within our respective trade organizations, which even led to a combined meeting of the two groups. It didn't go well.

The biggest problem was that the IIA folks mainly thought of themselves as print media and had nothing to do with computer services and software – which in retrospect one might conclude was not the best strategic view of what would eventually happen to print media with the advent of the Internet.



ADAPSO the computer software and services industry association

25 years of leadership 1961 - 1986

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DATA

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Volume V, Issue 7
July 13, 1987

ADAPSO, IIA TO FORM JOINT TASK FORCE

The boards of directors for ADASPO and the Information Industry Association (IIA), the trade group representing companies involved in the generation, distribution, and use of information, resolved to establish a Joint Task Force to investigate the possibility of a merger between the two associations. The respective boards met separately at the Waldorf-Astoria Hotel on June 22, 1987, to discuss and ultimately to approve the resolution.

According to the resolution, the Joint Task Force will "...explore the advisability and feasibility and advantages and disadvantages of a merger and, if advisable and feasible, to develop a proposal by December 1, 1987, of a merger of both the associations into a single association." The task force will be comprised of 18 individuals, 9 from ADAPSO and 9 from the IIA. Selections to the task force will be announced at a later date.

"We are pleased that ADAPSO and IIA will be investigating the possibility of a merger," said 1987 ADAPSO Chairman Jay N. Goldberg, chairman and chief executive officer of Money Management Systems, Inc. "We believe that the Joint Task Force will enable both associations to determine if a single organization will be to the benefit of both memberships."

"Our organization is looking forward to working with ADAPSO in investigating a merger proposal," said 1987 IIA Chairman Daniel Sullivan, president of Frost & Sullivan. "The efforts of the Joint Task Force will provide both associations with the opportunity to evaluate whether ADAPSO and the IIA would maximize their effectiveness by working together as a single organization."

A committee appointed by Goldberg and Sullivan has been working on the resolution during the past several months. The committee was co-chaired by Robert Weissman, president and chief operating officer of Dun & Bradstreet Corporations, and Carl Valenti, vice president of the Information Services Division with Dow Jones & Company. Weissman (ADAPSO) and Valenti (IIA) are former chairmen of their respective associations. ADAPSO respresentatives to the committee were: Richard Crandall, president, Comshare, Inc., and George Raymond, president, Automatic Business Centers, Inc. Both are former ADAPSO chairmen and serve on the ADAPSO Board of Directors.

Carl and I were frustrated with the attitudes and the views that there was no reason for a software company and an information company to partner or rub shoulders in any way. We decided to create a partnership between Dow Jones News Retrieval and Comshare, specifically focused on our creating a News application for Commander EIS.

MERGER TALKS END, BUT SPAWN PRODUCT

Merger plans have been tabled for two trade associations dealing with software and information services (databases). The Association of Data Processing Service Organizations and the Information Industry Association were interested, but couldn't work out the details, reported Comshare President Rick Crandall, who was on Adapso's merger committee. "I will guarantee that the subject will be revisited" at a later data, Crandall said.

But the talks did bear fruit of a different sort. In the merger discussions, Crandall said he and Dow Jones VP Carl Valenty, IIA's representative, concluded that a better interface between databases and executive information systems would extend the markets for both types of products. And so, an interface between Comshare's Commander EIS and Dow Jones was developed, and premiered at the Info show. Access to outside information is a primary reason executives need computers, but access has been too difficult, Crandall said.

ADAPSO, IIA scotch merger but link arms

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — ADAPSO, the computer software and services industry association, and the Information Industry Association (IIA) have agreed to work together on a variety of activities, but the organizations have put aside plans for a full-scale merger.

As a result of the merger discussions [CW, June 1], the associations have formed a Joint Government Relations Committee to address common government issues and a Joint Events Committee to coordinate seminars and a joint conference in May 1989.

"The business significance of merging activities is that these activities will bring top executives of software and systems companies together with their counterparts from information companies," said Daniel M. Sullivan, president of Frost & Sullivan, Inc. and this year's chairman of the IIA.

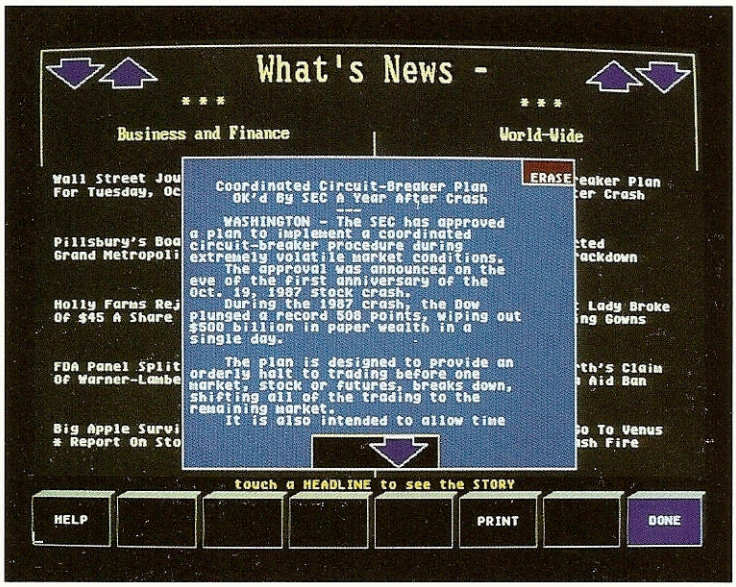
Breakthroughs predicted

"Business as well as technological breakthroughs are certain to follow" from the interaction, Sullivan said.

For example, the merger talks triggered an agreement between Comshare, Inc. and Dow Jones & Co. that will provide corporate users of Comshare's Commander Executive Information Systems with access to the Dow Jones News/Retrieval service.

Richard Crandall, chairman of Comshare and an ADAPSO member, and Carl Valenti, vice-president of Dow Jones and an IIA member, first met while serving on the ADAPSO-IIA merger task force earlier this year.

I was very excited about that prospect and immediately set about the task of designing what the News application would look like on screen. I also moved the project up the priority list and we got it done – Commander EIS Newswire. We developed it, we released it and customers loved it – even though they had to execute an additional fee-based subscription with Dow Jones News Retrieval not unlike the news subscriptions one finds on the Internet today.



Executives using Commander's Newswire can access stories the day before they appear in the business press.

Columns
DOWQUESTions

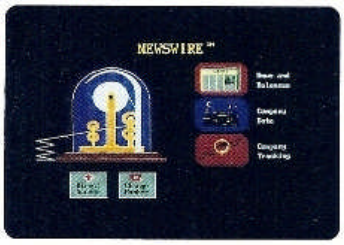
A New Twist for //DOWQUEST: Comshare's Merger of Methods

DOWLINE®
THE MAGAZINE OF DOW JONES NEWS/RETRIEVAL®

by Kathryn Doyle

When Richard Crandall tried //DOWQUEST, he knew he'd found what he was looking for.

Crandall is president and founder of the Ann Arbor, Mich.-based Comshare Inc., a top supplier of Executive Information System software. His system, called Commander EIS, holds more than 50% of the EIS market share. Commander is designed to make data retrieval so easy that top executives can bring up information on computer displays simply by touching an icon.



Both critical internal and relevant external data are available. For example, with a touch of a screen an executive can see—in clear, concise charts and graphs—how a company's sales are and where any downturns are occurring. By simply highlighting a particular area with a touch of the screen, an executive can "drill down" further for more specifics. He or she also can access news and financial data from Dow Jones News/Retrieval with the same speed and precision.

But Crandall wanted more. He knew if an executive found a key business story of interest, he or she would need more detail, more history. So Crandall explored his options. Initially, they included News/Retrieval's //TEXT or //TEXTM. But adding //TEXT with its Boolean based commands to Commander would have been like trying to mix oil and water. And menu driven //TEXTM still wasn't the perfect match.

But //DOWQUEST was different. It, like Commander, was intuitive. And it allowed an executive to "drill down" through levels of external data the same way he or she currently drills down through internal data (such as sales reports) using Commander's features.

Realizing that, Crandall and his team took the ease of //DOWQUEST and combined it with Commander's touch-screen capabilities, creating what he calls the "confluence of two technologies."

This new version of software—like previous ones—allows a Commander user to access a Dow Jones newswire story, but once on the screen an executive now highlights key words by touch or by mouse and presses the option for more related information. Those words are sent to //DOWQUEST's powerful 32,000 processors, where they are searched. The result is the same as a direct News/Retrieval customer gets with an initial search: 16 headlines with the option to go back for more relevant articles.

What this means, says Crandall, is that a Commander user can take a newswire story, sift out irrelevant words, highlight the relevant ones and very quickly get to the heart of what is of interest.

This past summer, Crandall spent a lot of time beta testing this new version of Commander that will be launched in the fall. Along the way, he discovered several new applications for //DOWQUEST, a business tool he says is a "major breakthrough" in text searching.

One of the most powerful uses he found for //DOWQUEST involved regional news from its 370 publications.

First, Crandall used Commander's access to the Press Release Wires to retrieve a press release from a competitor. He then highlighted key words and sent them to //DOWQUEST to search and see if it had been picked up by the media and if so, what was reported. This provided insight into how a competitor's news was being interpreted.

Frequently what he found was that local papers picked up on the releases and followed up with more detail and quotes from company officials. "I know what my competitors are worried about," says Crandall. "So when a //DOWQUEST search provides me with articles that quote a company's chief executive officer, I can read a lot into that."

He says that being able to access both the company's release and subsequent press coverage with such ease is invaluable. "It's fascinating to examine both sides—the before and the after. The Connection Machine [upon which //DOWQUEST is based] can bridge you to that."

So what began as a search for the perfect text-mate to Comshare's Commander EIS has resulted in the marriage of two leading-edge technologies. And it's a combination Crandall himself plans to continue to use as he guides Comshare into the 1990s. "You couldn't blast this system out of here with a stick of dynamite," he says. ■

For more information, call Dow Jones News/Retrieval's Director of Sales, Eric Bradshaw, at 609-520-4626.

Kathryn Doyle is the associate editor of Dowline.

What Were the Bad Decisions in the EIS Project?

I'm not one to dwell on the negatives, but the worst decision I made during Comshare's EIS era was highly negatively impactful on our ability to keep up with customer demands and my own prolific torrent of new product ideas. It is a lesson learned by many software vendors I'm sure – and is undoubtedly a continuing lesson today: I got sucked in by customer and partner pressure to support all three PC platforms in that day – Windows, OS/2 and the Apple Macintosh.

We did it, but at a cost that I did not appreciate at the time. In retrospect I believe multi-platform support was the biggest cause in our not having sufficient funding or development resource to progress the architecture and advance the features of the product. Simply, here's how it happened.

1. When we started the project there was no Windows, nor Apple Mac nor any graphical platform, so we did our own in DOS – Benefit: We were early to market.

2. Our partnership with IBM had a pre-condition that we develop to Presentation Manager on OS/2. My judgment was that the IBM association in the market would outweigh the development costs to support OS/2. In hindsight, while IBM did help us greatly with System W earlier, they had no pull with high-level executives and we didn't need them. Supporting OS/2 dragged on our resources.

3. Then five major clients ganged up on us to support the Apple Macintosh (I remember Dupont was one of them). I resisted at first and then succumbed on the theory that you're supposed to do what your customers want. It turns out Apple itself was cleverly behind each one of them – instead of approaching us directly they did it through our customers. I caved and we went for it – at a much larger expense in opportunity cost than I appreciated at the time.

Oh, we loved the attention showered on us by Apple but in hindsight, the revenue we got came no where near even the direct cost, and the indirect cost was a disaster. My message to

COMSHARE

UserNews

FALL 1990

Commander EIS version 2.1, featuring a number of enhancements and a completely new version of the Newswire executive application, is now available. This version marks Commander's support of Apple Macintosh and IBM OS/2, extending to those platforms Comshare's commitment to supporting EIS users in a mix of processing environments.

The revamped Newswire application, News Navigator™ for Strategic Surveillance, gives executives access to a level of corporate and business information unavailable through any other software product. It includes an easier-to-use interface—executives just click on or touch icons to log on and move through numerous Dow Jones databases—and it's easier to customize to each user's preferences and needs.

Commander 2.1 Released for DOS, Macintosh, and OS/2 Platforms

Multinational organizations or those keeping close tabs on overseas business news will appreciate Newswire's new breadth of coverage. It now includes international and Canadian news as well as U.S. news, including the full texts of corporate press releases. Newswire also features an impressive search capability: executives highlight key words or passages in a news item and the system searches 185 business and trade publications for related stories.

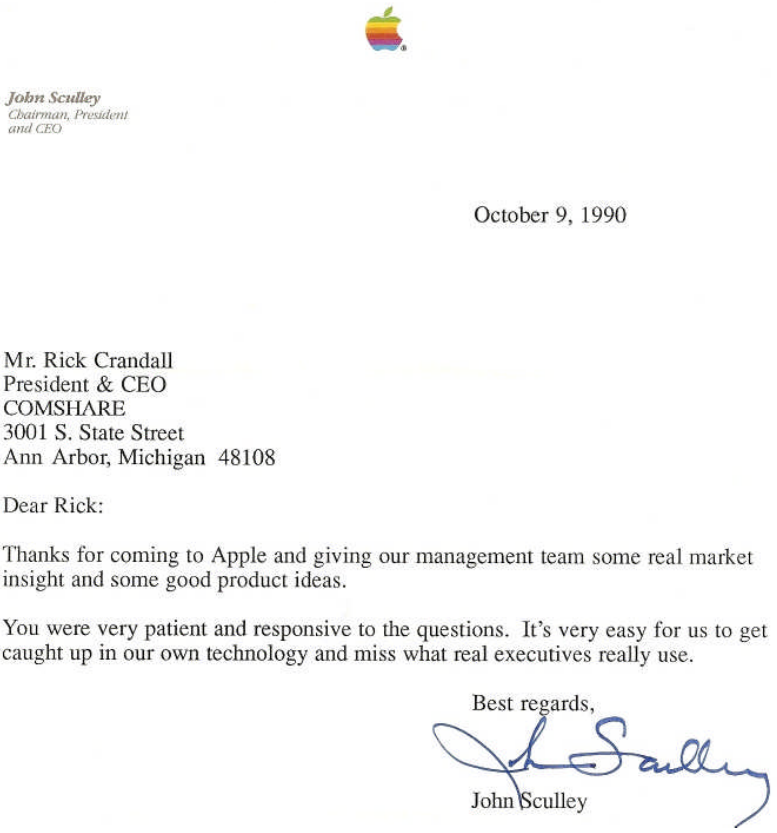
4

Apple's Sculley Addresses Conference Attendees; Links Today's Systems to Tomorrow's Competitiveness

Rodger Crandall, left, President and CEO of Comshare, greets Apple's John Sculley at the 1990 Users Conference.

any software CEO facing similar decisions today is to spend lots of time and analysis on the merits, the market size, the impact on precious resources, cycle times, support costs and all the many factors and complexities of multi-platform support.

While it sounds good, feels good on day of announcement and you then get indigestion big time.



John Sculley
Chairman, President and CEO

October 9, 1990

Mr. Rick Crandall
President & CEO
COMSHARE
3001 S. State Street
Ann Arbor, Michigan 48108

Dear Rick:

Thanks for coming to Apple and giving our management team some real market insight and some good product ideas.

You were very patient and responsive to the questions. It's very easy for us to get caught up in our own technology and miss what real executives really use.

Best regards,

John Sculley

Wrap-up: Wither Goest EIS?

I retired from Comshare in 1994. Certainly today one might argue that EIS's per se are not needed, everyone is computer literate with mouse-based graphical interfaces, touch-screen based smart phones and keyboard-based email and social networking systems. However I would still argue that if you look at the convenience of where EIS's got to and were headed – the ease with which you could drill down into the numbers, chart the trends and access public information sources and generate alerts – I contend that something similar would still win the favor of high-level executives today.

EIS's as packaged software products eventually fell by the wayside after a great 10 – 12 year run. I wouldn't be surprised if someone brings them back – and makes another generation of success of it.