Timesharing Companies Specializing in Text:
Sitting Ducks or Top Dogs?

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Note: *the* **opinions** *expressed in this* **essay are** *those of Mr.* **Arnold.** *They -do not reflect* the **views** *of* **Online Inc., nor of any** *other* **organization. Address comments to the author** *at the* **address** *above.*

The word technology has become an audible filler. Listen. Technology creeps into conversation with the same frequency as you *know* and uummm. I say it. You say it. We read it in the daily newspaper. Local six pm newscasters say it. We hear it so often than our minds automatically fill it in when a speaker leaves a pause which is unintentional. For example, we are pawns in the hands of.... Go on. Say it. "Technology."

Neither you nor I want to fall into that trap, nor do I want to take hardware, software, electrical engineering, and any other sciences and crafts which make the information industry possible and push my observations into the realm of science fiction. My subject: timesharing companies whose principal business is the delivery of information in ASCII to customers who use a modem and the telephone to get the data. But I don't want to consider this narrow class of timesharing companies in a vacuum. I want to examine them first, in the context of a larger problem of American business, and, second, in the light of three interesting and relatively recent PC hardware and software engineering innovations.

At the end of this discussion, I want you to get a sense of the vulnerability timesharing companies delivering ASCII information must deal with in the first few years of the 1990s. The outcome of this type of analysis is additional evidence for my argument that the U.S. is the first over-developed country and that business in the U.S. datasphere grows increasingly complex with each passing day. Let me be clear: I do not want to criticize particular companies nor

lament the inevitable loss of U.S. leadership in another industrial arena. I want to describe how a class of high-technology businesses may find themselves out of business in spite of their current best efforts to survive.

Timesharing's Great *Expectations*

Everyone attending this conference or reading its proceedings knows about timesharing. The idea continues to make practical sense even with its newest twist, distributed timesharing. Why put large amounts of data and the software needed to get at the data on a bunch of individual computers? Put it in one place and let the people who need the data dial up and take what they want.

Financially, logically, and practically, the approach makes sense. In spite of that, the industry faces some extraordinarily difficult challenges. Timesharing companies have a natural centripetal force; that's the force that pulls things into a rotating object. Timesharing companies get big, become bureaucracies, move slowly, and in general demonstrate the delightful habits all of us know about when we try to call the Internal Revenue Service and ask a tax question. Timesharing companies have a three-sided problem, which makes their job a bit more difficult than the one an automobile manufacturer or a steel mill operator faces. The three forces are:

. Keeping the physical plant operating and up-to-date

. Making sure that the software works and doesn't compromise the preceding task

. Selling an intangible.

The physical plant idea is easy enough to grasp. A computer center is hardware. That's the "stuff" bankers like to have on the balance sheet. They can value hardware and, more importantly, sell it quickly if the company goes broke. The aspect of the timesharing company's physical plant that only a few people recognize is that it's out-of-date the moment it is ordered. The task for the managers of the timesharing company is to get the plant up and running as fast as possible. The next task is to upgrade the plant in some coherent fashion so the hardware doesn't become obsolete or inoperable because the new bits and pieces that must be ordered won't work. You probably have heard about the PC owner who buys equipment

and laments that it won't operate on his system. Do you think the mainframe and minicomputer buyers get it right the first time?

These are symptoms of a larger problem in American business. The August 15, *1989,* issue of *Datamation* has a brief essay by Tim Mead, the magazine's editor. In the "Opinion" column Mr. Mead says:

> "No silver bullet exists to slay the force that so many information system executives and professionals perceive as their enemy-change. In fact, there's only one thing available to help them manage change. And it's in short supply.
>
> "This scarce resource is leadership. The individuals who can see their companies, agencies and institutions through these tumultuous times are as hard to find in the boardrooms of user organizations as they are in the data centers. And those who do dare to lead are being swept-- either away by misguided corporate management or up by aggressive service/software vendors." [page *77*]

Without leadership any business runs the risk of failure. When the business is dependent upon inherently complex and fast changing systems, the stakes rise exponentially. Without leaders, the future is more than uncertain; it's frightening. I'm going to focus on timesharing companies, but I'm questioning all of U.S. business and specifically their leaders.

Real-World Economics **101**

The way economics works in the real U.S. business world is that once that physical plant has been purchased, it stays. If you doubt the truth of this, take a quick drive around any Rust Belt city and count the number of new manufacturing facilities and the number of old manufacturing facilities. Give me a call when you find a city in the Rust Belt with more new capital manufacturing facilities than old ones.

Can the timesharing companies work around the problem of "old" computer facilities? Yes, to a certain extent. But the consequence is that timesharing companies adopt a conservative approach to upgrades. They eschew the most recent and opt for reliability. The conservatism gives the software a longer useful life.

Avoiding significant change also makes the timesharing company an innovation wasteland. Massive sums of money are spent to keep the hardware operating. These expenditures are presented to senior management as "maintenance," "upgrades," and "modifications." Nobody steps forth and says, "We're spending tons of dough to keep what we've got rolling. We don't dare build a new facility. We would never make our quarterly targets."

Computer hardware specialists can, of course, respond vociferously: "Upgrades are the functional equivalent of getting the newest machines." Truth nestles in the guts of this argument. But the issue the hardware jocks avoid is that significant innovations in computer hardware cannot be transplanted. We are not talking geraniums; we are talking complex, expensive computer architectures. The new ones bear only a passing resemblance to the hardware at the heart of the textual timesharing companies in the U.S. today. Only Dow Jones News/Retrieval has tried to get a parallel processing computer online. The several dozen other companies keep chugging along. Even DJN/R is linking the parallel architecture into the existing system.

Thus, a U.S. timesharing company is vulnerable to a competitor who decides to embrace a new architecture as its basic plant. Granted this new competitor will be struggling to get its plant online before innovation leaves it in the dust too. But the U.S. timesharing companies will be in the buggy whip business while the new guy is manufacturing automobile seat covers.

Why can't a U.S. timesharing company build a new plant? There are actually three hurdles a U.S. company must get over before the new plant becomes more than a l-2-3 sketch.

Three Hurdles for the World Class Executive

First, there's the question of investment. Is it better to build a new plant or simply upgrade the old one? It's probably easy for people with sufficient technical background to argue either side of this case in an informed and intelligent manner. It's another thing entirely when technology questions are debated by people with degrees in law, finance, and film chemistry. Technical issues are easily dismissed by the uninformed. Consequently, it is always easier to say when one is uninformed, "Let's fix up what we've got and see how it

goes." "Okay, no problem," the lieutenants respond. Bingo, the first step down the path of U.S. television and DRAM industries is taken. Losing revenue; investing in an expensive, partially understood computer facility; and having to create new, expensive, and completely misunderstood software is what my colleagues in management consulting called a "tough sell."

Let's talk about software a moment. Bankers and finance types can get their arms around hardware. It has heft. It can be sold at auction. But software? Without a solid understanding of software, an outsider hasn't the foggiest notion of what's involved in getting a new timesharing plant online. They don't even recognize that there are types of software, not one Platonic software. Furthermore, the publicity highly-visible software companies get when they miss their shipping deadlines by several years and millions of dollars doesn't help either. Software is a problem, and it is hard to budget time and dollars to create it. When you're done, you don't have anything to sell. Old software cannot be sold at auction. It's the stuff that ends up at yard sales, and yard sale revenues do not do much to build bankers' sense of security. As a result, budgeting for software and getting the money included in the capital request is a "tougher sell."

The third hurdle is the culture of the timesharing company itself. Visit a mainframe computer center, and you will discover one of two flavors: IBM or DEC. The former is more common than the latter, and it is also the hardware vendor least able to deliver easy online solutions. So when an IBM facility finally gets its service working, who needs to do it again? Not the computer center manager and his staff. These people have Big Blue Blood in their veins. What IBM sells is just fine, thank you. We at least have a chance of getting this stuff to work. As a result, the unwritten orientation of the company itself makes significant change almost impossible. This is, of course, the "toughest sell," because most American managers won't consider a fundamental restructuring. "Yo, status quo," is the cry.

And Three Innovations Begging to Be Products

Against this backdrop I want to project three interesting innovations. Taken as a group, they will drive innovation in timesharing in the first three to five years of the 1990s, and they will be the main

reasons why the U.S. will lose its preeminence in online ASCII delivery to competitors who will not have to struggle with the three challenges and the managers who don't understand technology. The three are:

. Graphical user interfaces (GUIs, for short)
. Packaged results
. Images.

It's my contention that technical developments are moving rapidly enough to create an undercutting effect. Visualize today's timesharing leaders sitting in their stone castles as waves of change erode the foundations. Without prompt, significant action--leadership-the structure will collapse.

Each of these three challenges is an opportunity for information companies. Before we examine these three developments, let me reiterate that I am not talking about a *single* timesharing company. I am referring to a class of companies which deliver ASCII data to customers who pay for [a] the right to access the data, [b] consumer services like the Summit service in California and Delphi in Boston, [c] and business services like Mead Data Central or British Telecom's Dialcom. Officers and advocates of timesharing need not criticize me for incorrect analyses of their particular company. I am describing a general type of business and a class of information delivery companies. If an individual sees his company reflected in this mirror, the image is his projection, not my rendering. My concern is with an industry-wide set of issues, which are broader and deeper than the concerns of a single organization.

1. GUIs

The September 12, 1989, PC Magazine explores graphical user interfaces in depth. These GUIs, pronounced "gooey," make many computer functions more accessible to more people. When a person talks about a graphical interface, I think automatically of the Macintosh screen with its icons and drop-down menus. Microsoft's Windows operates in a similar way but without the pictures. UNIX has GUIs too, including the NewWave, NeWS, and PM/X. I have yet to find a timesharing company making use of GUIs. One new timesharing company will make extensive use of a windowing environment. But the established firms offer their customers the

command-based or partial-menu environment. Even CD-ROM publishers have turned their attention to interfaces which mimic the timesharing companies'. One wonders how they attract individuals with programming skills more appropriate to the late 1960s.

When one sees three-dimensional icons on the NeXT and Amiga interfaces, the paucity of imagination in the timesharing companies' interfaces becomes obvious. Even the half-hearted Windows./286 and /386 graphic environments from Microsoft appear at the cutting edge of technology when one contemplates an unwavering question mark, a dot or two, or some other cheerful invitation to search online. New users find little to encourage them to explore the systems even when they are given "friendly" interfaces. Should the flagging growth in online surprise anyone? The proof of searching competence is mastery of commands. Why should a new customer have to pass a test of fire to obtain information electronically. We're not in the secret society business, or are we? Even super-searchers like Barbara Quint bemoan the hostility of the interfaces for first-time customers.

There are three reasons why GUIs will be important in the next year or two:

. We're running out of people who come to online searching because they are fascinated with computers. True, we'll still find customers who want to learn. Increasingly the customers will be late recruits to online who see the information as the goal and the utility delivering the data as an appliance which should be easy and i'ntuitive. GUI's are, if well-designed, easy and intuitive by definition. In fact, once one learns a GUI, all programs taking advantage of the interface are easily pressed into duty.

. GUIs and the programming toolboxes standardize some code which is difficult to write. Software developers will use GUIs to lessen their work load when writing a new application. The printer drivers, the black boxes which allow drop down menus and help to be created easily, and the management of memory resources are three aspects of programming that the GUI makes less burdensome.

. **People like pictures. In the next two or three years, an entrepreneur can make a great deal of money making data available in an image format: charts, graphs, and ideograms.**

I admit that I have not examined the interfaces of the more than 400 timesharing services cataloged by Cuadra Associates. If I have overlooked a GUI implemented on a major timesharing service, please let me know. We may have a tip on a company whose stock might be gaining value quickly. Remember: GUIs have some history. The concept of little icons did not appear two or three months ago. A decade of development has polished those little pictures. One wonders why in ten years major timesharing companies have been unwilling or unable to take advantage of this interface option. Status **quoitis, perhaps. By the way, this term means that a company loves what it has so much that it resists change of any type.**

2. Packaging Results

XyQuest, the word processing company partially owned by the Boston *Globe,* **sent me the results of its 1989 customer survey. The number one requested feature by users of the Rambo of word processors, XyWrite III + was file conversion.** *File conversion* **means changing the output of one word processor into a format suitable for another word processor. The XyWrite survey summary indicated that about half the users of Rambo WP used another major word processor as well. XyQuest will probably make some effort to provide XyWrite IV with a file conversion capability. If the company doesn't, the Billerica, Massachusetts, could become another footnote in the definitive textbook,** *Major Software Screw Ups.*

It makes some sense that timesharing companies could offer their customers a choice of file formats in which to receive online data. If one downloads ASCII from any of the commercial timesharing services, extra spaces, line feeds, carriage returns, backward arrowhead, ankhs, and other assorted weirdness appear in the file. What does the customer do? He removes this unnecessary baggage and formats the downloaded data in his word processor. Is it not within the capability of the major timesharing services to offer the customer a download format? The majority of companies use one of the top three or four word processing packages, and I know that I

would pay extra to get the file in a format I can use immediately. Housekeeping annoys me--especially when big, fast, dumb computers can do the mundane chores in a few clock cycles.

Now consider the hoops one must go through to make use of a chart or table. The desktop publishing packages like columns separated by single tabs (ASCII 9). How do charts, tables, and graphs come down the wire from the commercial timesharing companies? In lots of ways but not the one way usable by Pagemaker and Ventura. If you want some excitement, try to move a downloaded table into a spreadsheet. Let me know what technique you use, because I find I have to do quite a lot of twiddling to make the transfer work.

What about the results of a cross-file search? When records form different databases are retrieved, they are indeed all different. Can the customer select an option to have the information from multiple databases homogenized in some coherent fashion?

Each of these examples underlines the customer-insensitivity of the timesharing companies. Granted most of these suggestions would be difficult and expensive to implement correctly. I suggest that the customers would pay extra money to have the output of the timesharing company placed in a format appropriate to the customer's needs for that specific online search. At this time, the output is delivered one way: the way the timesharing companies specify. The information product, therefore, meets the needs of the seller, not the buyer. My reading of the current crop of manage for excellence books says that companies should flop the equation. The timesharing companies should meet the buyer's needs, not the customer meet the needs of the timesharing companies.

One positive step in meeting customer needs has been taken by the duelling duo of Mead Data and Westlaw. Both companies allow their online customers to generate an invoice. Presumably the majority of searches on these two systems are billed to a client who is the unlucky participant in litigation. The Mead service has the ominous name *Payback.* Westlaw has dubbed its billing service Quickview, which has a more chipper ring. Hopefully both companies will make similar strides in allowing their customers to gain greater control of the form and format of the data retrieved during the online search.

Two new companies are making strides in providing more sophisticated information packaging options. One company will be a timesharing service targeted at executives. The customer searches for information about a company or product and then specifies the short, medium, or long report. Each report has a fixed price and is sent to the customer's printer or hard disk in a format which is easy-to-read and shaped to meet the customer's needs. A second firm, headquartered in suburban Washington, D.C., is not a traditional timesharing company. This firm specializes in querying a number of databases, capturing data relevant to the client's needs and interests, formatting the data in a desktop publishing program, and faxing the "personal newsletter" to the executive wherever he is in the world. GEnie and CompuServe also have fax services, but not packaged in this personal way. The big guns of the timesharing industry remain in mothballs when it comes to packaging data according to customer needs. Let's hope those guns don't rust. They will be needed when a real competitor shows up and captures a chunk of their market.

3. Images

I mentioned images a moment ago, and I'd like to return to that subject. Rapid advances in optical technology make it feasible for companies to scan pieces of paper and put a facsimile image of the page on an optical disc. If one looks at the CD-ROM trade journals, a great deal of emphasis is placed upon the CD-ROMs which replicate the online environment. However, when one reads the techie publications *PC Week, Computer Reseller News,* and *InfoWorld,* a different slant becomes evident.

The technical news publications are waxing eloquent over optical drives which work like floppies. The big difference is that these floppies hold several hundred megabytes or one gigabyte plus of data. Furthermore, these products are not the 4.72 CD-ROMs at all. The next generation of flopticals are in the two inch in diameter range. The bigger drives are getting cheaper, faster, and easier to use. Even a Big Blue mainframer can lash a six-pack of gigabytes onto a controller and be online in less than 30 minutes.

With small and relatively cheap storage, organizations are going to go image crazy. The first thrust will be the picture of the page. FileNet, now a unit of Allied Van Lines, is one of the better

known image system integrators, but the next generation of image products will be much broader. Optical technology is more than electronic microfilm; it is an enabling technology which will be able to handle words, pictures, drawings, full sound and motion video, and numbers. What the customers do with the technology is difficult to predict. You can jump into this pond today by calling Maxtor and purchasing their Tahiti optical drive. For about $7,000 you can crunch 500 megabytes of data onto your own optical disc. The drive plugs into your PC and behaves like a plain vanilla 360 K floppy. Hook up the trusty HP scanner and *you* are in the *desktop database publishing* business.

The question is, "Where are the images on the commercial timesharing services?" Maxwell Online and Dialog Information Services offer image products. But the real image action is on bulletin board systems, the computing world's version of the underground newspaper of the Sixties. On Exec PC, one of the preeminent BBSs in the U.S., there are thousands of pictures. The big timesharing companies lament the amount of time it takes to transmit an image. Ironic, isn't it, that when a timesharing company charges for time it complains about the time. Oh, well. Exec PC and thousands of other BBSs with images get around the file size problem by providing a brief searchable index which lists pictures available and offers the customer a compressed file. When the image file is downloaded, it is zipped so its takes as few bytes as possible. At the customer's end, the file is then expanded and viewed. The BBS operators provide free or shareware software to unzip the image and allow him to view it on his PCs monitor. These image databases are among the most popular services on the BBS systems according to usage statistics posted in the message section of the larger boards.

The commercial timesharing companies' image files are Model-Ts. One wonders what a searcher would pay to get a chart showing the number of PCs sold, not just the numbers. How valuable would the data be if the customer could download the data in a form suitable for editing or manipulation in Harvard Graphics or Freelance Plus? I don't know the answer to these questions, but I do know from many hours at the other end of a speaker's overheads, that pictures, charts, and graphs are the staples in the decision maker's information diet. At this time, he can't get these goodies at his online supermarket. The excuses offered I find interesting. They ring

sonorously to the timesharing companies' staff who know nothing of the images on the thousands of $BBSs$ operating 24 hours a day. To someone aware of what the underground timesharing industry is up to, the excuses are turkey knockwurst.

Opportunities... Probably Too Many

I think it's evident that the opportunities in the timesharing business are exciting.

First, the established timesharing companies can innovate in the way in which they present their interface to the customer. These firms can develop value-added services like specific formats for downloaded data. These firms can allow the customer to select a specific packaging for the results of an online investigation. Timesharing companies can offer new information services by delivering images online. The customer will specify the format of the image so the downloaded data can be used immediately.

Second, software companies can develop products which enhance the user interface. Personal Bibliographic Software in Ann Arbor, Michigan, is enjoying considerable success with its line of interfaces for Macintosh and IBM compatible PC users. Other firms can provide products as well. File conversion programs will be more and more important. However, programs which flawlessly convert file formats from word processor to database package are rare. This product arena offers product development possibilities.

Third, companies not in the timesharing business can build new online delivery systems. With careful planning and marketing, newer technology will give the Nintendos and Quantums (two companies introducing new online services) a significant strategic advantage. If a new player in the timesharing game gets the mixture right, their business could take off like a nitro-methane fueled racing car. The competition will be cruising in 1976 Plymouths. Today's timesharing Goliaths will be tomorrows Harvard case studies.

Fourth, the rapid developments in optical technology will open new doors in hybrid systems. For the first time, distributed databases and online updating of remote databases will be technically and financially possible. The emergence of hardware and software which makes connections between separate electronic files changes the rules of timesharing. Pricing, marketing, applications, and databases--

each of these information factors will be recast. On these changes, the timesharing business of the 1990s will be built.

1990 is Coming Fast *and Hard*

Will U.S. companies keep their traditional stranglehold on online? Yes and no. One or two companies are so large and have developed such an entrenched following that knocking them off their earnings will be a difficult job. Two tough competitors are Mead Data Central in the legal market and Dow Jones in the business and financial news market. Both companies are successful publishers *and* distributors. Both can manage prices, data, and customers because each company has a market and psychological position that is rock solid.

Lesser companies are in danger from U.S. and non-U.S. competitors. On the U.S. front, the competition will come from organizations that are not in the mainstream of the information industry. Remember Allied Vans, the moving van outfit, bought FileNet. Why? Allied Vans is in the information storage business and FileNet lets boxes hold more. There are more Allied Vans ready to compete than some information industry executives want to believe.

Non-U.S. companies can learn by watching. If Nintendo's online-via-game box strategy flops, will other Japanese companies tear up their online plans? Probably not. In fact, government-sponsored or private companies can buy timesharing market share. Database producers want to receive their royalties for time and hits. If someone pays the royalties and gives away the product to get market share, the database producers won't squawk too much. They're getting real dollars, remember. The traditional timesharing companies with their rapidly escalating overhead and bizarre pricing schemes won't be able to match the low-ball prices. Customers, always in search of more bang for their buck, will go for the name brand data at the lowest price. Overnight market share figures spin like the numbers on the Illinois lottery board. The losers? U.S. timesharing companies, and they cannot do anything about it. Their plant is old; their customer orientation is off base; and their ability to innovate is crippled. *D-RAM II*: Scene Two, Take One.

In conclusion, the U.S. timesharing companies are in for a heat wave. When the weather changes, different flora and fauna will inhabit the online information datasphere. From where I sit, U.S.

timesharing companies are like the stuffed animals at the Kentucky State Fair. For a buck, the competition gets to throw three hard, fast ones at targets which can't move, hide, or adapt. They might not even seen the missile coming. As long as the competition can get hardware to throw, the timesharing companies are easy targets. The happy quack, quack of contented pond ducks will draw the big dogs fast.