COMMUNITY, PART I
by Jerry Michalski

Helen Thomas says "thank you," and the presidential press conference you are watching on CNN ends. Right away, a button appears on your screen reading, "Do you want to discuss this further?" You press the button, the press conference shrinks to one side and other windows open. One shows your local public-access cable channel, tuned to a meeting at the town hall, where locals -- many of whom you know -- are starting to discuss how the President's plans will affect your community. You can also tune that window to other participants who are at home. Another window opens a path straight to a discussion group in an online service, where a more geographically varied group of people is meeting, keyboards at the ready, to discuss the same set of issues and implications. Perhaps a subset of those online are from a sister city in a foreign country; you can establish a private channel to chat with them directly, without clogging the "airwaves" for everyone else. When all is set, discussions begin.

Computers have come a long way from calculating ballistic trajectories and balancing corporate accounts. By connecting computers to each other, we have created an unpredictable, organic web that ultimately has little to do with easily definable or quantifiable topics such as statistics and accounting. Instead, the web of collective minds has its own pulse -- it's a cross between Mayberry and Jurassic Park, complete with all the behaviors and distortions of so-called real life. In his new book The Virtual Community, Howard Rheingold compares the net to a nutrient medium, and its participants to micro-organisms that create colonies in that medium. Yet many executives in the communications and computing industries miss or ignore the net's organic nature, possibly because it's hard to see its commercial relevance.

Converging -- to what?
The convergence of communications, computing and entertainment that people agree is underway goes beyond students using online multimedia encyclopedias to get instantaneous access to video clips of indigenous tribal cultures or spreadsheets of demographic data. It goes beyond interactive home shopping (whatever that looks like), on-demand overlays of sports statistics and customized newspapers with your

NOTE OUR NEW ADDRESS & PHONE AS OF JULY 1

INSIDE
COMMUNITY 1
Community and communion.
The business of communities.
Communities in business.
THE MARKET 10
Three layers.
Some players.
THE MEDIUM 20
Less is more, more or less.
Online + cable = ?
AHA! 23
InkWriter gets it.
RESOURCES & CALENDAR 26
Names, phones, books, dates.
portfolio neatly updated, so you can see how much you lost yesterday when the market tanked. The medium is capable of much more, but is stuck with artificial, historic boundaries and very real, antiquated technology. It won't fulfill its potential unless we give it our attention.

Our premise is that a healthy community is stable; fostering such communities online is a good commercial proposition. Companies that focus on building particular flavors of places for people to meet and connect and sell to each other online should succeed as channels for the distribution of other goods and services; those that focus exclusively on the goods and services may find their subscribers flitting to other, less expensive services. In fact, online communities themselves can be profitable businesses. People spend many hours online, drawn in by interacting with other people.

What is a community?

In his sociology masters thesis at UCLA, graduate student Marc Smith studied the Well as a virtual commons, proposing that a community is a "set of ongoing social relations bound together by a common interest or shared circumstance," and that a virtual community helps people create several kinds of collective goods: social network capital, knowledge capital and communion.

Social network capital is a participant's web of contacts. Knowledge capital reflects the powerful way that online systems can accrue and disseminate information and opinions. Communion is perhaps describable as emotional capital, but this definition is misleading because it makes you think that the properties of communion are similar to those of network and knowledge capital, when in fact they are quite different. Consider a community and the feeling of communion as separate elements that sometimes occur together, but often don't.

People are usually attracted to communities by an explicit label -- say, a Presbyterian church, a model railroad or health club, a technology futures newsletter, or a photography SIG (special interest group) online. Along with e-mail, this is the dominant model of online communications, and is often the meaning inferred from the term "virtual communities." The concept of creating collective network and knowledge goods describes much of the activity of communities of interest; such communities can just as easily be called collectives. You can make strong emotional contacts in such forums: the simple happiness of logging in and receiving mail from friends, the connectedness you feel when someone answers your question, or the pang of sorrow and empathy you feel on reading a particularly moving passage.

The feeling of communion is less tangible. It can't be invoked on command. It can be present one moment and vanish the next, so it's not a concrete asset. It doesn't strike everyone in a group at the same time. Communion with others involves private, personal feelings, such as trust and commitment. Though it isn't easy and can be frightening and painful, it can be productive and addictive. It is also an efficient way for groups to work, because a community that is in communion is self-regulating (although it may be too inward-focused and forget its external tasks). Feelings of connectedness, shared purpose and responsibility stimulate a community's members to take care of other members in need. Ideally, participants share the work of moving the community forward, and naturally assume needed roles that fit their skills.
Communion is hard to nail down. It requires balancing opposing tendencies. For example, communion arises from people's actions, not from the host service; yet the host system's behavior and features can catalyze the feeling of communion. A host that antagonizes its subscribers gives them a reason to feel communion, but to the host's detriment. A host that walks the fine line between governor and citizen, that obeys the rules even as it tries to define them, may be part of the communion.

Communities and the feeling of communion are not mutually exclusive, nor do they always occur together. One can sometimes have communion in a group that has no visible shared interests. (The feeling of communion often arises only when a group faces a challenge. Can a group purposely achieve communion without such an external motivator? We'll address this question in a future issue.) Communities and communion serve different purposes, and can act as complementary aspects of life in and outside of Cyberspace: the first is visible, asset-centric and controllable (well, to some extent); the second is organic, evanescent, and unpredictable.

Pranagram for Mr. Barlow

Although technology's ability to hook us up with people around the globe at any time we want is seductive, the best way to feel a sense of communion is face to face.

John Perry Barlow of the Electronic Frontier Foundation recently asked the product manager of a videoconferencing system how he liked the product. A native of India, the manager replied frankly that it was OK, but not perfect: The system could not transmit a person's prana (life force; breath; presence). This is indeed the dilemma. Even high-definition monitors or 3D goggles, excellent sound reproduction and tactile-feedback data suits can't replicate or transmit that prana, and without it an essential element in relationship-building is missing.

So of what use is the feeling of communion, if you can't control or predict it, or even, in some cases, know whether you have it or not? One answer is that it builds strong loyalties between subscribers and their favorite forum, or between colleagues. Consider it a kind of brand-name recognition. When people interact with other people online, time flies and usage increases dramatically. If people interact in real time (as opposed to downloading all the messages they want in one blast and reading them offline), connect times -- and monthly bills -- rise.

In this and a future issue of Release 1.0, human nature meets communications technology. This issue frames the market of electronically mediated

---

1 Some recent issues of Release 1.0 describe the required computing and communications platforms, specifically: 7-92; which covered object markets; 8-92, groupware; 12-92 and 1-93, unified messaging; 3-93, computer-supported meetings; and 4-93, directory services. In addition, community is related to, but not the same as, the attention society described by Michael Goldhaber in Release 1.0, 3-92.
communities and the technologies they depend on. The follow-on issue will focus on the feeling of communion by exploring some of the less tangible factors that help communities form, particularly how they can make the feelings of place and identity manifest.

A little coax, a little fiber...

The alliances that cable, entertainment, computing and communication companies are forming have nearly all the requisite ingredients to deliver compelling services to businesses and individuals. Cable tv companies offer high-bandwidth links to the home. Set-top box manufacturers offer compression and a base of operations in the home. Phone companies offer switching and billing expertise, as well as a better reputation for service and social conscience. Computer hardware and software companies offer platforms for sophisticated applications and a more efficient division of labor through client/server architectures. Media and games companies offer entertainment. But something is missing. That something is a social context, which in the end requires the palpable presence of other people.

Some online services create places where we can meet virtually, where social activity can blossom. Call it a piazza, town square, commons, agora, salon, coffee house, bar, pub, cafe or even mall, people are creating online the kind of space that crime, distance and poor urban design deny them in real life. Some online services, such as The Sierra Network (TSN, page 15), actively promote the illusions of place and people's presence with colorful graphics; others, such as the multi-player simulation environments available on the Internet (page 12), rely on the printed words of other people for effect.

The business of communities

You don't have to pay to hang out in a real-world piazza (though vendors will pursue and cajole you to buy roses and lemon ices), and you don't pay much to go to the community dance; why should you pay for the privilege of going to virtual ones? More to the point, how can service providers and others make money by fostering communities, especially when people are notoriously unwilling to pay for information and online services?

Some 3 million people are already paying to be in virtual piazzas such as CompuServe, Prodigy, and America Online. Roughly 6 million participate on France's Minitel, which charges for use of all but the simplest directory lookups. Another 20 million or more are on networks that they may or may not pay for directly. How can the suppliers of their services reduce churn, increase usage, and find new users and new sources of revenue?

A practical way to increase usage is to make online services more available, which is a key reason for America Online's involvement with Zoomer, the handheld device from Tandy and Casio. If you're carrying a handheld terminal with a wireless link, you can log in, check your messages, and hang out with your friends at any time in any place (say, during jury duty or in your own bathtub). Of course, this is also possible over a phone line -- just not as convenient. Easier access will make using the online networks a more natural part of people's work and private lives.

But availability and price are not the only factors that matter. People are quite fickle about their choice of online services. In the 1977 study
"Network Nation," by Turoff and Hiltz of the New Jersey Institute of Technology (the creators of EIES, the first national conferencing service), the authors discovered that people go through four stages of development, which helps explain the migrations. The first stage is Uncertainty (should I stay?); the second, Insight (hey, this is really cool; why doesn't everyone do this?); the third, Routine (gotta get work done); and the last, which not everyone evolves to, is Rising Electronic Expectations (if it can do this, why doesn't it do that?).

According to Dave Hughes, longtime online activist and observer, people switch services when they hit the fourth stage if the service they are on doesn't move to meet their expectations. The popular interest in "virtual communities" that's in the air now, he says, is due to a critical mass of people in the fourth stage who have matured beyond satisfaction with functional graphical front-ends, file-transfer and e-mail capabilities. These users realize the limitations in their use of the medium, and want to improve it. Many are sharply aware of the desire to connect with other people, in groups and not just singly, and the potential inherent in the medium to do so in new ways.

"Only connect."
-- E.M. Forster, Howards End

Eventually, Cyberspace mirrors real life and surpasses it. It has economies, social events and crime. It has public and private areas, religions and social norms.

But each of these features is currently in a separate system, with a different interface. Amix (see Release 1.0, 12-91 and 9-92) has an underlying economic model that allows people to make a living online, but not much else to speak of. The Sierra Network has great multi-player games, but no trusted space where you can know exactly whom you're talking to. All of these systems exist outside the business environment, which is centered around e-mail. Occasionally, business people peek into the online services, but usually only for research.

Wanted: better tools, better systems

Most services' interfaces impose on users what Steve Arnold, president of Bill Gates' Continuum Productions (which is creating new models of content for the digital world), once called "artificial autism." With few exceptions, people communicate despite today's tools, not because of them. Building platforms for community activity opens many opportunities.

The major online services aren't the only companies to write software and sell services. For one thing, third parties created many of the most popular features available online, such as The Sierra Network's Red Baron multi-player dogfight simulation. Second, some entrepreneurs have created their own front ends (often offline readers) for the commercial services. Third, bulletin-board systems (BBSes), a thriving community of their own, have standardized on so-called "doors" that allow third parties to sell modular functions; BBSes are also converging on a graphical standard called RIP (remote image processing) that lets third-party products run across many
systems. Finally, a vast variety of games and communication vehicles has sprung up over the Internet, yet most (even the great games) have plain vanilla text interfaces.

Here are some opportunities:

- **Multi-user games**, especially those that allow the users to affect the virtual environment. This can include smart pets and interior decorations. Pay for a place with the attributes you want. Imagine SimCity meets Cyberion City: Some of the elements of the simulation are real, others artificially generated (and mutated! where's Tom Ray?).

- **Designer personalities**. People will go shopping for their avatars (online personae) the way they visit The Gap today, only there'll be more than fashion available. People will buy nifty features (X-ray vision? body armor? magic skills? invisibility?) that others will envy; good code costs money.

- **Special places**. People will pay extra to visit places with rules, features and other people they particularly like. Some people will want guaranteed "safety" or people of their own kind; some the freedom to explore.

- **Filters and navigational tools**. How does a user handle the overwhelming size and volume of traffic? How does she get from A to B, or make sure the kids can't get to B?

- **New ways to represent/visualize places**. People need to know what's where and which end is up, where one space ends and another begins. They need to know what the rules are when they enter a place. They also want to know where the action is (when you enter a party, you can sense who is having an argument, who is planning an affair). How about a thermal map, where software analyzes the frequency and tone of postings, representing heated forums in red and calm, intellectual discussions in icy blue? How about construction sets so users can apply their own metaphors?

We can easily envision a new set of universal symbols along the lines of the restroom signs and the "do-not" overlay: sorry, no aliases here, only authenticated characters; panic buttons, for people who are hopelessly lost; blasphemy-free zone; and anything-goes zone.

- **Agents**. People who have always wanted a valet or a wife (women included) can have one. Agents can act for you online (new twists for agency law) or have their own character. How should they report back what you did? Agents can know what you like (Jeeves), where you are (Virgil) or what you need to do next (Radar). They can clear a path for you (Passepartout), defend you (Kato) or teach you (Yoda). They can track where you've been and remind you of how you felt last time you were there. They can play Watson to your Holmes or Edison.
• Communication tools. What's beyond bulletin boards and chat? Flexible conversational protocols, such as a baton-passing, or governors that control overeager contributors by limiting their airtime. Representations of participants that are not active in the conversation (footprints? shadows?). Feedback tools and playbacks to facilitate learning.

• Memory. How can a new entrant find out what has gone before? Is there a way to represent activities, events and decisions that frame the life of a community? Can groups distributed in space and time make use of tools such as Corporate Memory System's CM/1 (see Release 1.0, 3-93), which represents arguments visually? Or Oracle's ConText engine (2-93) to summarize large bodies of text?

• Companions and tour guides. Scuba divers use the buddy system to reduce risk. Cyberspace is just as alien and risky, but it's hard to coordinate movement with others. Why not let novices lock arms with remote guides (paid or voluntary) so they stay close, no matter what stupid thing you do? Tour guides themselves could benefit from a tool that lets them show many people around, and puts the same content on all screens. Imagine the Ellipse Line, a ship that takes you on a quick tour of Cyberspace.

• Media integration. Multimedia is coming to the online world: Prodigy is building bridges to cable tv networks; radio talk shows and a movie have premiered on the Internet. We have misgivings about video (see Video, Schmideo, Release 1.0, 12-92), but making it easy to switch between text, graphics, audio or video (or subsets) is essential for managing conflict and increasing the expressive power of Cyberspace. The use of other communication media can be as simple as a pager notification or stutter dial tone that indicate you have replies waiting.

• Transactions. If Cyberspace is to mirror reality, it has to support commerce. Of the systems available today, only Amix has an underlying economic model that facilitates not only the exchange of goods, services and payments, but also the mingling, browsing and recommending that is part of a real market. Cyberspace has a backend called credit card systems. Why shouldn't your new butt and thigh shaper show up on your bill from America Online or Prodigy? Or, for that matter, your paycheck?

• Security and authentication. The polygraph and AIDS test of Cyberspace. Making sure you are who you say you are matters, as does making sure nobody can impersonate you.

• Real life. The online world is not separate from real life; they are woven together. Online chats turn into face-to-face meetings, parties and weddings. For example, the PC Forum is a face-to-face meeting of people, many of whom keep in touch throughout the year via e-mail. High-value conferences are already being held on the Net, but without presentation tools (could someone check the projector?) and often for free. Virtual and real conferences are only one of many kinds of temporary communities that could be mirrored, complemented or maintained online.

_Release 1.0_ 21 June 1993
Communities in business: conversation systems

Companies are developing knowledge highways to help them develop and disseminate hard-won organizational wisdom. Mostly so far, this means e-mail networks; occasionally, it means Lotus Notes or some other document-sharing or -broadcasting software. Dave Marshak, vp of electronic publishing with the Patricia Seybold Group, observes that companies that installed Lotus Notes with the foresighted intent of building communities often failed because there wasn't enough of a business case; those that installed Notes for concrete business purposes were often surprised to find community behaviors emerging.

Communities foster the conversation that drives business creativity. But communion has less to do with having the right answer than it does with communicating real personal experiences, which quickly involves feelings and other intimate aspects of our identities. Conversations that reveal personal information in this way can only be held in an atmosphere of trust, which is hard to create and easy to lose. It is also often painful to achieve. But this trust and the communication engendered by the feeling of communion can be critical elements in attracting and keeping the best employees, as well as in developing creative answers to business problems.

Giving the desktop metaphor a larger context

The current corporate communication infrastructure is not yet much help in developing this feeling of communion. Online services have a lot to offer. Today corporations use them as reference sources or for communications; eventually, they will license online services' technology and use it to enhance the dispersed desktops with places to build and maintain communities. Corporations will use the systems to build private conversation forums, meeting rooms and document databases; they will make fee-based services available through portals in their own interface.

For example, America Online (see page 16) is licensing its system software to others to create systems of their own. Although it is working mostly with companies such as Apple, which has licensed AOL's system for an entry into public online services, enlightened corporations will also move this way, with system integrators' help.

"Sometimes you want to go
where everybody knows your name."
--theme song from Cheers

The natives are restless

The time is right for a move toward communion in communities. Alienation and a sense of lost purpose are epidemic. People are aching to connect, and make efforts to do so, despite how rough the technology can be. Look at the popularity of call-in radio and television shows such as Larry King Live; of expensive 900-number chat lines and adult services; of Minitel's so-called "rose" services, where people can exchange salacious electronic messages
(the ultimate in safe sex); of the electronic democracy movement in the last election, which featured online discussions and videoconferenced town meetings; of the burgeoning Internet, online services and grass-roots computer bulletin-board systems, which are transforming education and business. Clearly these forms of connection are not all innocent or intent on building communion. But they are sincere efforts to reach out (...and touch someone? what a brilliant slogan) in an accelerating and often violent society.

From Plodigy to Proudigy?

Indeed, people's natural tendency to connect caught Prodigy -- IBM and Sears' online joint venture -- by surprise. Prodigy's architects built a broadcast channel to deliver homogeneous information to the masses. The masses, given the opportunity to connect with each other at a fixed monthly cost, voted with their fingers. Message traffic shot up, and Prodigy had to develop and install software to account for the messages. It also instituted a 25-cent charge for each message, with 30 free messages per month. Users were outraged; they felt Prodigy had broken a promise.

Despite its struggles to change its architecture and pricing model, and despite the troubles its parent companies are having, Prodigy (yes, Prodigy) is moving more quickly than its competitors to build relationships within and outside its industry. Prodigy's recent alliance with The Sierra Network will provide the real-time chat functionality Prodigy now lacks (albeit in a kludgy way, described on page 16), plus a variety of multi-player games in a popular, fast-growing service. Prodigy's pledge to open its doors to cable tv carriers and content producers shows its management understands Prodigy's need for the cable network's bandwidth. It also seems to understand the human need to connect and how to feed it profitably.

--------

2 Prodigy owns and runs its own network, which uses an SNA backbone (what else?) to connect IBM mainframes running TPF (the Transaction Processing Facility created for the airline industry's reservation systems), with local-area PS/2 model 90s running OS/2.
THE MARKET

This section is about the nutrient medium -- the electronic/online market as a whole -- illustrating some of its players' strategies and positions.3

Three layers of the online world

To understand the world of computer-based online services, consider a three-layered model. Topmost is the set of interconnections, the network of networks called the Internet, which has no real boundaries and increasingly links most smaller systems. The Internet is organic, loosely controlled, mostly uncensored (except for the prohibition of commercial use, which is evolving), and hard to use. It is home to a wide variety of databases and message-posting systems -- some very large -- that are replicated everywhere, as well as a profusion of tools to help manage and maneuver the space. Internet events aren't pinned to a service -- they exist in the Net's shared space.

The second layer comprises the major commercial services, described in some detail below. Alongside these are private corporate e-mail systems, such as Quaker's OatMail (sic), as well as richer systems built with document-sharing middleware such as Lotus Notes, or broadcast systems such as Reach Networks' broadcast channel (see Release 1.0, 11-90 and 2-91). Some of these nets have connections to the Internet, others go through private value-added networks or use gateways (e.g., MHS, Soft-Switch and RadioMail). Others, concerned about security, refuse to connect outward.

Under all this is a coral reef of departmental LAN systems, homegrown BBSes, educational networks and municipal Free-Nets. Some charge a fee but many cost nothing at all -- the sysop runs the bulletin board off her own system and the calls are local. Some such grass-roots systems (notably FidoNet) allow inexpensive global message transmission.

Individual, consumer or business?

The three tiers target different audiences. Although there are certainly exceptions and overlaps, we have placed the services in a triangular space defined by three markets (figure one, opposite): individuals (out to connect with others), consumers (out to buy goods and consume services) and businesses (which buy and sell goods and services, and look for information). We start with Minitel and the Internet in the center, then move around the diagram clockwise.

At 6 million low-rent terminals in use, France's Minitel dwarfs the commercial online services. Built to replace paper telephone directories, Minitel has become host to over 18,000 databases from over 4,000 host computers, despite offering mostly 1200-baud service and very basic videotex. Many

-----------

3 Since e-mail can be transformed very easily into a more complex mode of communication (see list servers, page 12), we include it here, alongside real-time chat and bulletin-boards, the other primary modes of online communication.

Release 1.0 21 June 1993
large commercial firms have been successful in providing these services. For example, Aline, a chat line operated by the French magazine Nouvel Observateur, is one of the most popular services on Minitel. Minitel has dramatically changed the relationship between banks and their customers: All the French banks are online, and subscribers control much of their financial life with the service.

In the US, France Telecom and US West have a joint venture called CLM (Community Link Minitel) Associates, which operates Minitel services in Omaha (since November 1989) and Minneapolis-St. Paul under the name US West Community Link. Seattle is next. Most subscribers use the same kind of special Teletex terminals that Minitel supports in France; CLMA also sells emulation software for pcs and Macs. Intelpost gives users access to an international service that will print a letter at a recipient’s local post office in 44 countries. US subscribers can also use many French services, such as the French phone directory, banking, news and business services, but not the "rose" (adult) services. Due to US common-carrier content regulations, US West censors those before they reach the US audience.

Less than a month ago, Pascal Lenoir, former ceo of 101 Online, a West Coast Minitel service owned by a private French group, became the ceo of US West Community Link. He emphasizes local content (Community Link has worked closely with school districts) and the difference between its service, which
costs little to use (buy a terminal for under $140, no monthly minimum usage charges, and per-minute charges between 15 and 40 cents), and other commercial services, which require a pc. But pcs are no longer very expensive, and $9 an hour (the cheapest rate) is higher than most of the other services we have covered. Defining a role for a Minitel-style service in the unfolding infrastructure and molding Community Link to fit American tastes and needs are Lenoir's big challenges. Teletex and videotex services have never really caught on in the US; several phone companies have tried and failed.

In fact, the regional phone companies, better positioned than almost any other companies to play a role in carrying all this database, bulletin-board and messaging traffic, have consistently dropped the ball. As a result, they have a negligible market share today, besides providing the local loop, which they have to do. The interexchange carriers -- AT&T, MCI and Sprint -- have fared much better with their e-mail services, which will surely be upgraded in coming years.

Chillin' on the Internet

The Internet, variously estimated at between 20 and 30 million users strong, is in the midst of tremendous growth and change. Once the private domain of government officials and scientists, the Internet is now growing as quickly as any commercial service. Its audience is also growing more diverse.

The Internet is a flexible workhorse, and has many of the features available on the commercial services. Internet Relay Chat offers real-time chat functionality; the UseNet's Net News and automatic rebroadcasting applications called list servers\(^4\) emulate some of the functions of bulletin boards. But the Internet's uncertain dynamics make it a wobbly platform for commerce. It is currently funded by a wide variety of companies and organizations, many of which probably aren't fully aware of the costs involved. Funding is currently a major source of debate; privacy and security issues remain unresolved; billing and other transaction support is nonexistent. Though many companies have begun to build commercial offerings within the Internet, they are forced to build all those functions themselves.

Interestingly, the Internet, which is one of the most Spartan and perplexing environments, also has some of the most sophisticated multi-player gaming environments. Called MUSEs (Multi-User Simulation Environments), MUDs (Multi-User Dimensions) and MOOs (MUDs that are Object Oriented), these text adventure games stem from the dungeons-and-dragons role-playing games that involve magic powers and potions, and can last for months or years. MOOs and their cousins are co-created virtual worlds. See a pet you like? Ask its owner for the code, and you can have your own, and tweak it the way you want (more on MOOs in a future issue). So far, these games make almost no use of client/server architectures or graphics.

Conduits for business: e-mail, Notes and Amix

Mail-enabled applications are turning e-mail systems into transaction-processing and document-management backbones. Unfortunately, tools to sort, 

\(^4\) Interested in discussions about communities? Subscribe to CommuNet: send the message body "subscribe <your name>" to listserv@uvmvm.uvm.edu

Release 1.0

21 June 1993
filter, archive and retrieve those documents are rough or missing altogether. Most corporations view their e-mail systems as utilitarian, and discourage people from using them for personal matters such as the football pool or asking who wants to go to lunch. Also, corporate e-mail systems with gateways to value-added networks or the Internet help eliminate the barriers that separate companies from each other.

We have written about Lotus Notes and Amix extensively (see Release 1.0, 11-90 and 8-92). Notes' ability to synchronize threads of messages and present them offline as a consistent body of documents on a common platform is what the offline readers mentioned above aspire to. In a pilot project, CompuServe is hosting the Notes server for the international Notes users group.

Amix offers a platform where buyers and sellers can meet, mingle, exchange recommendations and reviews, set their own terms and negotiate deals -- like classified ads come alive, but unlike home shopping services, where the host represents sellers, and the buyers had better beware. Buyers talk directly to sellers, and read previous buyers' raves or flames. Amix's market platform can help people in the virtual piazza turn it into a thriving bazaar. Its role as market host (with the attendant fees for transactions consummated online) can be lucrative.

CompuServe: no hype, just execution

Started in 1969 as an independent computer timesharing company, CompuServe Information Services (CIS) was bought by H&R Block in 1980. Now it represents 20.7 percent of H&R's revenues, and 25.1 percent of its pretax profits (preliminary numbers for the year ended April 30 1993). CompuServe has achieved a critical mass, especially in technology fields. Want advice on how to fix a software product? Chances are you can talk to the tech support people on their own CompuServe forum. If they can't answer your question, someone else online probably can.

Many CompuServe forum hosts make a living that way: CompuServe gives them up to 10 percent of the connect charges accumulated by people who spend time in their forums. This approach is different from most other services, and reflects CompuServe's desire to steer clear of responsibility for the activity online, which is what has landed Prodigy -- with over 1 million subscribers, roughly the same number as CompuServe -- in so much trouble. CIS has slowly been moving away from its hobbyist/game playing roots toward a more professional audience.

Enlightened self-interest

Low-key and conservative, CompuServe got where it is by emphasizing execution over flash, and by investing in technological advances that made its system more efficient and profitable. For example, CompuServe developed GIF (the graphics interchange format) and CompuServe B, a file-transfer protocol, which are widely supported by communications software vendors and other service providers. Both are more efficient ways for subscribers to download and upload more and larger files, which increases network usage. CompuServe's own packet-switched network offers broad geographic coverage.

In 1982, a few subscribers who were fed up with having to read and post messages while they were spending money online wrote offline readers such as
TAPCIS (for DOS) and Navigator (for Macs). Seven years later, CompuServe released its own front-end software for DOS and the Mac, called CIM (CompuServe Information Manager, which now has a Windows brother, WinCIM). But CIM is not a speedy offline reader to minimize connect time; it’s a better CompuServe front end to encourage staying online. CompuServe will be offering a batch reader this fall, as well as inbound Internet access.

While developing CIM, CompuServe’s developers studied various communication protocols, including NAPLPS, and decided on a family of home-grown protocols. Over the years, the company has focused on improving performance, especially by balancing the processing load and storage requirements between the host and the terminals. This work may well pay off, as CIS selectively encourages third parties to develop software for its system. Several software vendors will soon announce built-in CompuServe mail support. Although CIS hasn’t announced any activity in handheld platforms or cable tv transmission, it is discussing such ventures.

Those quirky consumers

Prodigy, the joint venture between Sears and IBM (CBS dropped out before the service, then called Trintex, was actually launched), has suffered plenty since it was launched in 1990. As we mentioned earlier, it started out with all the wrong assumptions, and has paid the price in subscriber churn and unrest (estimates are that 10 million people actually tried the service). It now has about as many households subscribing as CompuServe (1.2 million, according to Boardwatch, an industry magazine), and they generate a lot of activity: Prodigy logs 800,000 sessions on an average day. Having lost $70 million in 1992, Prodigy is at a pivotal moment in its history; Ross Glatzer, the new CEO, is wasting no time. Its parent companies are in trouble, and don’t have cash to spend unwisely.

Prodigy is the only service that reserves a part of almost every screen for advertising. Vendors find it works: Being on the opening screen can bring in 50 percent more business than advertising deeper in the service. Until recently, all Prodigy services except e-mail were untimed. Hypothetically, you could keep Prodigy running all day at no extra cost; of course, the service would log you out. This July, Prodigy will institute hourly charges (after two cumulative free hours) for bulletin boards, Easy Sabre, Dow Jones News Retrieval and stock quotes. Due to the huge volume of postings (over 170,000 daily), Prodigy removes bulletin-board messages after a week.

Prodigy’s interface offers nice features, such as attractive marquees framing screens with diverse but low-resolution graphics and a market snapshot that appears automatically when a user logs in, including selected stocks from her portfolio. Prodigy has attracted popular family services, such as Sesame Street, Nova, National Geographic and the Weekly Reader (yes, the same one kids read in school). Prodigy has special pricing plans for support groups, such as those that link doctors with families and social workers, or those based around dependencies. Prodigy has just begun using members as forum co-hosts; they get preferred rates, but not pay.

5 The Host-Micro Interface, which includes many protocols, is available from CIS. NAPLPS stands for North American Presentation Level Protocol Syntax.

Release 1.0

21 June 1993
Aside from the previously described relationships with The Sierra Network and cable TV companies (none have yet committed), Prodigy is working to achieve feature parity near term. Prodigy has no chat feature, partly because its network is centralized, partly because of its policy of censoring content: Every message goes through a software filter; borderline postings are reviewed by staff, who return offensive ones to their originators. Prodigy is gradually removing the human censors, and will rely on a software filter that bounces messages back until they are appropriately sanitized, with no check on the writer's intent.

Medium term, Prodigy will roll out a preview feature that lets users see the first lines of a series of postings; offline reading functions; an Exclude Member feature to silence the bothersome; plus (most notably) useful new formats for its forums.

Most forums or conferences consist of lists of topics, nothing more. Prodigy will actually show links between related features on the screen, making it far easier to jump from, say, car classifieds to the automotive enthusiasts' group to the "showroom" or car-loan department. A year and a half ago, Steve Larsen, a man of uncommon energy and sharp ideas, was running Prodigy's Los Angeles regional office; then he spent a year studying new opportunities for Prodigy. Now he's in charge of its bulletin-board services, which the price restructuring will let him run as a profit center.

**Game heaven**

The Sierra Network (TSN) is a six-month-old, playful and innovative gaming system owned by an experienced game software company, Sierra Online. Before you even log on, TSN's software helps you paint a face for yourself (TSN calls them personae, and encourages you to have many), using front-end software not unlike a police Identikit. Next, you log in and end up looking at a colorful and animated map of the Imagination, which has lands, much like Disneyland, to suit different fancies, whether they be shopping, sending email, learning (a future addition), playing arcade or role-playing games, or indulging in more adult pursuits, such as gambling in adults-only LarryLand. TSN is the only service to use a map; the next land will feature sports.

TSN is a social environment: It has no databases and few single-player games. Sometimes it won't let you practice alone (though you can ask to watch someone else); you have to ask people to play games with you. An email newspaper announces new high scores, social events and personals. TSNers get together in person often. TSN is replete with card and board games, some popular arcade-style games, and a large dungeons-and-dragons-like adventure gaming section where the Identikit helps you turn yourself into alien life forms with magical powers. Jeff Leibowitz, TSN's vp of marketing, believes the games are an excuse for chatting, which makes up about half of all the activity online.

Pricing is tiered, with breaks at 60, 80 and 100 hours; $130 a month gets you unlimited service. This is appropriate, because TSN is not quick; subscribers must be patient. Response time in games is reasonable, but setup time and moving from one place to another takes a while.

From a marketing perspective, Prodigy and TSN fit well: Prodigy brings TSN a huge new audience, far more visibility and service providers. TSN gives
Prodigy the real-time features it lacks, such as chat and multi-player games. Both already emphasize graphics, though in very different ways. Prodigy uses protocols to draw and color graphic primitives remotely; TSN stores colorful, high-resolution images and graphic components on users’ machines. As they work together, Prodigy and TSN will have to address their censorship and advertising policies. Who knows, there may be billboards in the ImagINation’s future.

Architecturally, TSN is Prodigy’s antithesis: TSN runs everything on pcs from a single location (though they could be distributed), breaking activity into manageable groups of users. Growth is linear; all TSN has to do when it gets new members is add pcs. Near term, the link between Prodigy and TSN will be jury-rigged. Prodigy subscribers who select the command for TSN’s games will be logged out and automatically reconnected to TSN.

AOL: emphasis on communities

Of the major online services, America Online is the only pure play; the other large players are part of larger companies in other industries. It is also one of the few left that haven’t created a two-tier price structure, separating services such as e-mail or airline reservations from others. This would go against AOL’s populist ethic, anyway: It wants to focus on individuals, providing them an easy, appealing service with a variety of interesting activities and resources, all without hidden charges.

This ethic may limit AOL’s appeal to businesses, since that market would likely need a separate charging mechanism. That isn’t holding AOL back, though. At $50 million in annual revenues from 300,000 subscribers growing at 60 percent annually, AOL is rapidly catching up with the top few systems.

Originally called Quantum Communication Services, America Online started its official life in 1988 on Apple II computers as the Personal Edition of AppleLink (Apple’s online system for developers and staff, since expanded to include customers). In 1989, AOL relaunched the service independently as America Online, and introduced front-end software for Macs. By 1991, pc users could log in with an AOL-developed GeoWorks front end (mouse required); in 1993 it delivered a Windows front end. All of them are simple to install; all are given away to promote trial.

Recently, Microsoft co-founder and multimedia entrepreneur Paul Allen filed with the SEC his intention to increase his AOL holdings beyond his current 24.9 percent. Although Allen has other investments that could be useful to AOL (including StarWave, which is creating a multimedia application development company; Asymetrix, a hypermedia development environment; SureFind, phone classified ads; and Telescan, financial data feeds), AOL wants to remain independent.

AOL’s management evaluates its offerings by whether they contribute to retaining subscribers, not their independent profitability. Since the costs of acquiring a subscriber are amortized over one year, any time they spend online afterward contributes far more to the bottom line.

---

6 This has an interesting effect: Users can chat with other users only in the same "place" (on the same pc); a phone booth helps locate other users.

Release 1.0

21 June 1993
AOL wants to foster local- and special-interest communities. Chicago's Tribune Company and the San Jose Mercury News have both created their own areas online (Chicago Online and Mercury Center, respectively), combining text-searchable articles from their publications with calendars of social events, "talk to the editor" sections, and dining and entertainment guides. In fact, these forums contain background texts not available in the printed editions, such as press releases and company information. Eventually, these publishers will move further into multimedia by offering services such as audiotex news and classified ads linked to the online forums.

Other magazines, including Worth, the New Republic, PC World and MacWorld, are on the service as well. Microsoft hosts a small business forum, where people post questions and advice about running their businesses. Like CompuServe, AOL has worked to attract associations such as the National Education Association (NEA). More importantly, AOL has encouraged links between the teachers in the NEA and CNN, which is also online. Teachers can download lesson plans that complement CNN broadcasts, which the network encourages teachers to tape and use.

America Online adds thoughtful touches that improve the user experience, such as automatic downloading, sending attachments with mail or checking who's in a chat room. Messaging, which does not cost extra, is straightforward -- even out to the Internet. Just put an internet address in the "to" field of a message, and it will go. The message system even strips inbound Internet header information and puts it at the end of a message. Although it uses icons, windows and scroll bars aplenty, AOL doesn't use many fancy graphics. It also has few multi-player games.

Finally, AOL is actively developing technology to make it work with upcoming PDAs, particularly Apple's Newton and Zoomer, the handheld, pen-driven computer venture with Tandy (soon AST), Casio, Geos and Jeff Hawkins' Palm Computing (see Release 1.0, 2-93). AOL is exploring other platforms, including screen phones and interactive tv. Instead of having to log in to check for messages or to know what the stocks in your portfolio are doing, what if you could get a page or a distinctive ring of your telephone?

Smaller stuff: regional systems, BBSes and Free-Nets

Echo and the Well are structurally very similar, though they differ in size and atmosphere. They represent a growing class of mid-sized, regional systems with an attitude. The Well has a West-Coast flavor, detectable when one finds the 20-odd Grateful Dead conferences online. The service was launched in 1985 as a 50/50 venture between the non-profit Point Foundation, which publishes the Whole Earth Review and the Whole Earth Catalog, and NETI, a for-profit (but now defunct) network-software company. NETI's share was bought by the Rosewood Stone Group, a venture outfit formed when Bruce Katz sold Rockport, his shoe company, to Reebok.

The Well has a flip, uncensored ambience and attracts sharp minds. Governance is distributed: Many of the Well's groundrules were developed in

7 These systems are accessible from anywhere, but their center of gravity is regional.

Release 1.0 21 June 1993
discussions between members and staff early on. The Well's strong sense of social mission is largely due to its founders and initial staff, five of whom had lived together on the Farm, a commune in Tennessee.

Although a shareware offline reader exists (Jim Rutt's Sweeper) and many subscribers are gaining faster Internet access, most of its almost 7000 subscribers connect using terminal programs over conventional dialup lines. Despite its very low connect charges, the Well has been profitable for several years (more on the Well and Echo in a future issue).

The real virtual corporation

Echo (East Coast Hang Out), a fast-growing system run out of its founder's apartment, has a Manhattanite flavor (to send an Echoid an instant message, type "yo <username>"), an artsy bent (the most active conferences are "culture" and "panscan"), and an unusually large proportion of women online -- almost 40 percent. Women also moderate half of Echo's conferences.

This is in large part by design: Echo's founder and president, Stacy Horn, has taken pains to make the system hospitable to women. The attraction is not better system software (Echo runs Caucus, a BBS package from Camber-Roth, with command structures similar to the Well's Picospan); instead, it's due to careful conference host selection and to connections made online in conferences such as WIT (women in telecommunications), which have then spread by word of mouth to new subscribers.

Horn started Echo in 1990, with an investment of $20,000, after ten years as a corporate telecommunications analyst in New York. Echo breaks even on revenues from operations (Horn took a consulting assignment to cover the upcoming Internet connection).

Let a million BBSes bloom

Finally, BBSes and Free-Nets are the online world's grass-roots, low-cost segment, which is rapidly growing to look like the larger services. Once a struggling industry where most of the system software was shareware, BBSes have emerged as a vital industry in their own right. Over the past couple of years, several of the leading BBS system vendors have adopted "doors," which are standard sockets into which third parties can plug their wares. Soon you'll be able to run a 1000-modem BBS from several pcs, which will open the market to many new entrants.

Free-Nets are mostly municipal systems, and typically carry information on city services, including job postings, park reservations and civic calendars. More importantly, they provide access to community members who otherwise would not be on the Net at all.

In summary

The various services' most common near-term concerns are providing more sophisticated front ends, optimizing their architectures to take advantage of local processing and storage power, and connecting to the Internet. More broadly, a few points stand out:

- Scale matters. On the one hand, the largest services have such a volume of messages that they are forced to delete them quickly (on
Prodigy, most bulletin boards are seven to 10 days deep; that’s it. This has a real impact on a community’s memory. Other services hold messages for years. Simple text-search tools are adequate to find topics of interest. Also, small systems can have an attitude; large ones usually can’t. On the other hand, scale can bring a critical mass of participants that makes disseminating information and getting questions answered easy.

- Roots matter. A service that believes it is a publishing house will structure itself and act differently from one that sees itself as a carrier or an entertainment zone. A service that encourages people to develop alter egos that can remain anonymous will attract a different crowd from one that requires full identification.

- Price matters. Carriers are torn between lowering rates and making the online stay pleasant, or satisfying subscribers who want to get offline as quickly as possible and do their work while the meter is not ticking. Chat is usually a big money maker, since it requires no storage, minimal processing and keeps people online for long stretches. The two styles put different loads on host computers, and have caused most services to change their pricing.

- Billing matters. Not just prices, but the structure of pricing: time or transaction based, percent of new value created, by specific data item, and so on.

The cost of entering this market is plummeting. Startups don’t have to build their own networks. Distributed-computing architectures based on inexpensive processors can match the performance of much larger systems. People buying sub-$1000 handhelds with built-in subscriptions to online services will change the way the services are used. So will the first cable tv links.

It will be a while before the business market, which is beginning to rely on e-mail and middleware document-management systems, meets the online services in any integrated fashion. When they do meet, corporations will have richer ways of sharing knowledge and hosting conversations (as they create systems more hospitable to building relationships) with customers and suppliers, as well as among their own people. The meeting of online services and middleware will also lead to more useful tools for the online services (as they adopt Notes-style features).
THE MEDIUM

Much of what we have discussed so far is text-based, with glimpses of how other media fit in. This section covers the strengths and weaknesses of the various media, as well as where the whole market is headed.

Stuck in the 70s

Participants in the virtual world of online systems are mostly stuck using 1970s technology. Modems and software are nowhere near as easy to configure as fax machines. VT-100 terminal emulation is considered advanced. Bulletin boards follow a rigid structure: A service has conferences that contain topics to which people add messages (the words sometimes change -- forum/item/reply -- but the idea is fixed). Users, stuck with hard-to-use terminal programs, must exert considerable effort to track what’s going on. Offline readers (which fetch new postings automatically and let you read them later) make life a bit easier (and cheaper), but not many subscribers use them yet.

America Online has the richest variety of communication options, ranging from instant messages to elegantly implemented chat "rooms" (where you can easily switch rooms, create new rooms, find profiles of participants and so on), to Center Stage, a virtual amphitheater that allows people in the same "row" to talk privately while the main event goes on. The Sierra Network is a creative runner-up: Its chat rooms are called the Hard Disk Cafe and feature the cartoonish personae of the participants, who can whisper privately to each other. "Talk," TSN's version of chat, puts four clearly labeled buttons on the recipient's screen: Complain, Ignore, Reply and OK. What to do is pretty obvious.

Is less more?

The diversity of participants and the geographic reach of the online world make it a fine way to meet people whose paths you might never have crossed. More importantly, ungarnished online text communications lead you to meet people whom you might otherwise never want to meet.

Plain text wipes away cues that might otherwise bias participants; it is the Great Homogenizer. Its major bias is against the literacy-challenged. You can’t see people’s race, age, build or handicaps. The host of one of CompuServe's most popular forum topics is deaf, blind and mute; online, this matters little. Numeric user names (as with Prodigy), names that are sexually ambiguous (hlr or AstroNaughty) and pseudonyms hide gender. Text also brings out the terminally shy, reclusive or housebound.

Let your mind fill in the details

As many centuries of literary history attest, text is a very rich medium. One can communicate lots of information and evoke powerful mental images and emotional responses far beyond what one would expect from such a simple medium. It’s easy to think you’ve achieved intimate communications with text. The poorer the medium, the more active the imagination.

Release 1.0

21 June 1993
Textual feelings

Stepping creatively beyond literary tradition, people writing online have evolved an often hilarious assortment of shortcuts and emotion transmitters, including abbreviations (ROTF = rolling on the floor, laughing), smilies ;-), emoticons <grin>, hugs and kisses (((**Teddy)))) and stage directions <arches eyebrow menacingly>. If they're really angry, they may bracket a message with "flame on" and "flame off." They reserve upper case for shouting. Notice that the range of expressions ranges from humor to anger; sadness is much harder to convey. If General Magic's Telescript lives up to its promises, it will provide new ways of projecting personal feelings through the communication web. (N)etiquette also includes ways of participating in the online conversation (e.g., break long postings up, hide them, or point to them stored elsewhere) and of responding to others (e.g., place a ">") in the left margin of quoted material).

Researcher to child: "What do you like better, radio or tv?"
Child: "Radio, 'cause the pictures are better."

Text is also asymmetric, so it is an efficient compressor of thoughts. Like cooking, writing something worthwhile takes longer than reading it (unfortunately, not all writing is worthwhile; many people post willy-nilly and encumber online conversations with unnecessary prose). Human readers can filter text pretty quickly, especially relative to sequential media such as voice and video (even faster if they have tools such as Oracle's ConText Engine, Release 1.0, 2-93). Finally, in this era of high costs, text is an economical and reasonably accessible medium with a broad potential audience. Its storage and transmission cost a fraction of what digitized voice or video would cost. It will remain the lowest common denominator for some time to come.

Text's ugly side

These virtues are hard-won, and are not universal. Communicating competently online can be tough, and this new form of rhetoric is not neatly explained anywhere. Problems with text-based systems include:

- Most systems offer no middle ground: You either post or lurk (the pejorative term given those who post infrequently, or not at all; the free riders of the online world). If you post, you run a risk; if you don't, nobody knows you're there.

- Miscues abound, and the resulting verbal firefights are extremely hard to put out. People mistake irony for humor; teasing for personal assaults. The delays exacerbate the problem.

- Online conversations seem to provide quick emotional feedback, but they don't. As Phil Becker, president of BBS system-software vendor E-Soft states, "The online arena lulls you into a feeling of in-
timacy and access that you don't have." Sometimes you post something you feel deeply about, but nobody responds, which can be demoralizing. Or you write a newsletter and get no feedback.

- A text-only interface inhibits potential participants. Not everyone can compose readable prose; even fewer can type at a satisfying speed (the worst typists may well be the ones who dominate a spoken conversation).

- Text also imposes cultural biases: In some cultures, writing is not a primary (or even valued) form of communication.8

Voice, video and virtual reality

It's easy to fall into the trap of thinking in terms of computer-based online services exclusively, even though everyone's talking about the mystical Convergence of Media. As we pointed out several months back while describing unified messaging, vendors that take a fresh approach can enhance communications significantly. Imagine getting really frustrated during an online chat session and being able to switch easily to a conference call or videoconference, where people's intent is more clearly expressed.

Understanding and taking advantage of the tradeoffs between the different channels of communication is the key. The emotional throughput of a medium -- the conversational "bandwidth" we talk about -- is not directly proportional to its physical bandwidth. Voice can be a richer, more effective medium than video. It carries emotion and helps establish trust. It is easier to lie in a video format, where physical miscues can distract from the content of the speaker's voice, than in an ordinary phone call.

We don't expect virtual reality to be any better at transporting prana than present media. Virtual reality will make for fabulous game simulations and cyberplaces. We will be able to learn things about our friends (the way business associates learn about each other over golf or tennis), but VR will not be the principal way we communicate (see Release 1.0, 10-90).

No more logins, no more waiting

Now we use packet-switched communication systems, but they are connection-oriented. There is still the notion of a session, where you log in and out. Even the flat-monthly-fee services log you out if you show no signs of life for a short period. With a high-capacity, intelligent network (whether broadband ISDN from the phone company, cable with good signaling, or any other alternative), packets can travel only when they need to. Service operators might keep the idea of logging in, to give people the illu-

---

8 Connectivity evangelist Dave Hughes puts it bluntly: "Not everyone communicates in white-man's ASCII text." To increase the communicative power of online services, Hughes has been promoting NAPLPS, a standard for rendering graphics and sounds on remote terminals. To demonstrate his point, he has encouraged Native American artists to use the medium as a way of transmitting the patterns on their shields and blankets, all of which represent narratives of their cultural history.
sion of time spent online as different from the rest of the day, or they might replace it with the idea that the service is available at any in-stant, so it becomes a constant companion, without the feeling that the taxi meter is running all the time.

This changes some fundamental premises, and makes more urgent the need to create tools to build communities and a sense of communion (and therefore loyalty). For one thing, who cares about connect time in this model? Who cares about offline readers?

In a follow-on issue of Release 1.0, we will examine what online services can do to foster a feeling of communion. How can concepts such as place, identity, intent and emotion be made palpable? What have pioneers learned, and who is applying that experience? What are the commercial implications?

* * * * *

AHA!  PEN OVER PAPER

Some time ago we explained (somewhat defensively, perhaps) why handwriting recognition isn't the sole advantage of pen computing. There are lots of things you can do to ink without recognizing individual words:

- resize it,
- select it,
- highlight it,
- copy it,
- attach it to items in a drawing or document,
- tag it and index it and retrieve it by the tag,
- put it on a calendar page or
- fax it to a colleague.

All these leave the understanding up to the humans at either end of the process; the computer manages the artifact much as it would any other black-box data item or graphic. Note-takers offer people the opportunity to take notes and treat ink items much as they would graphic elements on note cards -- shuffle them, link them, etc.

But what's really needed is what Aha! has just announced in InkWriter -- the ability to treat words as words, even without recognizing them individually. (We wanted to show it at PC Forum but founder and designer Greg Stikeleather sensibly refused, thinking that his then target date of May was too far out; now the target date is June or July.)

InkWriter treats the ink-words as a word-processor treats typed words: You can move discrete words or blocks of text, copy around, and insert or delete them. InkWriter doesn't leave spaces such as these when you delete a word; it closes up the gaps and wraps ink-words properly. It even has a rudimentary understanding of notions such as bulleted lists, so that it wraps the text properly, as in the fifth and
sixth bullets above. A future release will be able to handle outlining, with proper numbering and renumbering and management of hierarchies.

To be sure, it requires reasonably neat handwriting or printing in order to recognize words as discrete objects. The system provides a ruled page, to provide guidance, but it doesn’t expect the writing to stay precisely between the lines. The text can be reduced or enlarged as text and then rewrapped properly, so that smaller lines contain more text or larger ones contain less text; you don’t simply shrink a whole page.

The underlying technology is a specific kind of object recognition; InkWriter recognizes words as a general class of objects (not the specific letters or dictionary words). It also manages other wp-style elements, such as paragraphs. It can do them with hanging indents...

Or it can do traditional indented paragraphs (such as this one) or plain block paragraphs. And courtesy of PenPoint, it can automatically generate headers and footers for multiple pages.

In the long run, we could imagine a version with Avalanche’s text-object recognition engine that could identify headlines and subheads and present them in different fonts or use them to generate tables of contents or indices. You could also instruct the system to (attempt to) recognize the words in all the subheads, the first three words of each bullet item, or whatever. And you could change the size of the subheads automatically, or display them with thicker pen strokes.

For example, this is a subhead

Of course, there is a role for character recognition, which will make all the other functions easier, and allow for automatic indexing, classification, filtering, searching and the like. In fact, InkWriter uses whatever text recognizer is installed which works in the background and creates a metafile of what it thinks it has understood -- which is why the translation appears so fast if you select a section of the ink to be translated. Thus you can even search through the text for a word, although given the quality of the recognition combined with the quality of most people’s writing, this can be unreliable. The more important thing is that the product was built to be extensible in this direction. You can easily plug in the best of current translation technology and fail-soft recognition, along with an appropriate dictionary for recognition and spelling correction. (We make typos when we write as well as when we type.)

Making a market

InkWriter will be sold through a variety of channels, including retail and some OEM/bundling deals. We see it as a salesperson’s dream -- an easily intelligible way of showing how pen-paper is superior to paper-paper -- and pen computers to keyboard computers. And from Aha!’s point of view, it’s nice to know that salespeople will be using InkWriter to make a sale for thousands of dollars -- and applying more effort to it than they might to an ordinary $100 piece of software.

Founder Stikeleather previously worked for GO, and before that with GO chief technical officer Robert Carr at Forefront (creator of Framework). Not sur-
prisingly, he is a big fan of PenPoint, which makes such extensibility easy. Venture funding comes from Asset Management.

...and Jot!

Separately, the tiny pen industry has displayed remarkable maturity in getting together early to settle upon a standard for representation of ink, called Jot. Ink, of course, is not just pixels on a screen, but a complex set of data comprising line width, color/opacity, scale, stylus tip force, etc. It is by representing ink this way that you get capabilities such as InkWriter's and other products' to change the boldness or line-width of ink, and InkWriter's (unique) we believe ability to italicize printed text. Now these features are represented, of course, could be different from vendor to vendor -- but it won't be, thanks to Jot and the efforts of Slate's Dan Bricklin. This metarepresentation, of course, also allows for much easier compression and data transfer, so that you can retain richness without spending too many bits. (Note however that Jot is not generally used as an internal format, but only for interchange, since each developer have already built their own internal representations.)

--Esther Dyson

**COMING SOON**

- Performance support.
- New! Improved! Multimedia!
- Logistics as a business.
- Holography and optical computing.
- Constraint-based reasoning.
- Pen stuff.
- And much more... (If you know of any good examples of the categories listed above, please let us know.)

---------------------

Release 1.0 is published 12 times a year by EDventure Holdings, 104 Fifth Ave., 20th Floor, New York, NY 10011-6987; (212) 924-8800. It covers pcs, software, CASE, groupware, text management, connectivity, artificial intelligence, intellectual property law. A companion publication, Rel-EAST, covers emerging technology markets in Central Europe and the former Soviet units. Editor: Esther Dyson; publisher: Daphne Kis; contributing editor: Jerry Michalski; circulation & fulfillment manager: Robyn Sturm; executive secretary: Denise DuBois; editorial & marketing communications consultant: William M. Kutik. Copyright 1993, EDventure Holdings Inc. All rights reserved. No material in this publication may be reproduced without written permission; however, we gladly arrange for reprints or bulk purchases. Subscriptions cost $495 per year, $575 overseas.

---

Release 1.0 21 June 1993
RESOURCES & PHONE NUMBERS

Greg Stikeleather, Aha! Software, (415) 988-2080; fax, (415) 988-2081
Jean Villanueva, America Online, (703) 883-1675; fax, (703) 883-1509; jeanv1@aol.com
Jack Rickard, Boardwatch Magazine, (303) 973-6038; fax, (303) 973-3731; jack.rickard@boardwatch.com
Barry Berkov, CompuServe Information Services (CIS), (614) 538-4498; fax, (614) 457-0504
Steve Arnold, Continuum Productions, (206) 649-3300; fax, (206) 643-9740; stevear@continuum.com
Stacy Horn, Echo Communications, (212) 255-3839; fax, (212) 627-5191; horn@echo.panix.com
Phil Becker, E-Soft (TBBS), (303) 699-6565; fax, (303) 699-6872
Dave Hughes, Old Colorado City BBS, (719) 636-2040; fax, (719) 593-7521; dave@well.sf.ca.us
Jeff Papows, Lotus (Notes), (617) 693-8254; fax, (617) 693-4663
David Marshak, Patricia Seybold Group, (617) 742-5200; fax, (617) 742-1028; dmarshak@mcimail.com
Steve Larsen, Prodigy, (914) 993-8748; fax, (914) 993-3531
Howard Rheingold, (415) 392-1716; fax, (415) 332-3110; hlr@well.sf.ca.us
Marc Smith, UCLA, (310) 642-0080; smithm@nicco.sscnet.ucla.edu
Pascal Lenoir, US West Community Link (Minitel), (612) 642-5774; fax, (612) 642-5770
Ken Williams, Jeff Leibowitz, The Sierra Network (TSN), (209) 642-0700; fax, (209) 642-0888

For further reading:

Howard Rheingold, The Virtual Community: Homesteading The Electronic Frontier, Addison-Wesley, October 1993.
Marc A. Smith, "Voices from the WELL: The Logic of the Virtual Commons," master's thesis, Department of Sociology, UCLA, 1993. FTP: nicco.sscnet.ucla.edu
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 18-21</td>
<td>InterAct 93: Solving the interactive services mystery - Toronto.</td>
<td>Sponsored by the Interactive Services Association. Keynotes by</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Richard Green, Cablelabs; Richard Tompane, 3DO. Speakers from</td>
</tr>
<tr>
<td></td>
<td></td>
<td>America Online, Checkfree, Ogilvy &amp; Mather Direct, Reality Technologies,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZiffNet and others. Call Robert Smith, (301) 495-4955; fax, (301)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>495-4959.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Howard or Beth Sadler, (310) 457-5850; fax, (310) 457-4704.</td>
</tr>
<tr>
<td>June 27-July 1</td>
<td>SIGIR '93 - Pittsburgh. Sponsor: ACM, U. of Pittsburgh School</td>
<td>of Library and Information Science. Three panels on NLD. Call</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chris Tomer, (412) 624-9448; fax, (412) 648-7001.</td>
</tr>
<tr>
<td>June 29-30</td>
<td>Lap &amp; Palmtop portable computing and communications conference and</td>
<td>exhibition - Anaheim. Sponsor: Laptop Expositions. Call Fred Schuler,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(212) 682-7968; fax, (212) 867-8277.</td>
</tr>
<tr>
<td>June 29-July 1</td>
<td>@PC EXPO - New York City. Sponsored by Bruno Blenheim. Keynote by</td>
<td>Bill Gates. Call Annie Scully, (201) 346-1400 or (800) 829-3976; fax,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(201) 346-1532.</td>
</tr>
<tr>
<td>July 11-15</td>
<td>AAAI/IAAI 93 - Washington, DC. Sponsor: American Association for</td>
<td>Artificial Intelligence. Keynote by Herbert Simon. Call Carol Hamilton,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(415) 328-3123.</td>
</tr>
<tr>
<td>August 9-13</td>
<td>*Groupware '93 - San Jose. Sponsored by The Conference Group.</td>
<td>See groupware in action -- or at least in demo. Contact:</td>
</tr>
<tr>
<td>August 12-13</td>
<td>*Workflow conference on business process technology - San Jose.</td>
<td>Study the tools... Sponsored by The Conference Group. Call David</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coleman, (415) 282-9151; fax, (415) 550-8556 or Jim Burks, (602)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>661-1260; fax, (602) 661-0449. Followed by...</td>
</tr>
</tbody>
</table>

Please let us know about events we should include. -- Denise DuBois

*Events Esther plans to attend.
@Events Jerry plans to attend.
Lack of a symbol is no indication of lack of merit.
SUBSCRIPTION FORM

Please enter my subscription to Release 1.0 at the rate of $495 per year in the U.S. and Canada. Overseas subscriptions are $575, airmail postage included. Payment must be enclosed. Multiple-copy rates available on request. Satisfaction guaranteed or your money back.

Name __________________________________________
Title __________________________________________
Company ________________________________________
Address _________________________________________
City _____________________________________________ State _______ Zip __________
Telephone ________________________________________

☐ Check enclosed.
☐ Charge my
  ☐ American Express  ☐ MasterCard  ☐ Visa
Card Number ___________________________ Expiration Date __________________
Name on Card ________________________ Signature ________________________

☐ Please send me information on your multiple-copy rate.

Please fill in the information above and send to:

EDVENTURE HOLDINGS INC.
104 FIFTH AVENUE, 20TH FLOOR
NEW YORK, NY 10011

If you have any questions, please call us at 1 (212) 924-8800;
Fax 1 (212) 924-0240.

Daphne Kis
Publisher