Back to Reality:  
The 1999 PC Forum Prospectus  
By Esther Dyson and Kevin Werbach

This year, we’re going back to reality at PC Forum. The industry has invested billions in everything from infrastructure to eyeball-grabbers. In fact, it seems that the more it spends the higher its companies are valued. The demand for new infrastructure appears insatiable; Web things seem to grow in weeks instead of months, and the pace of business overall is wearing people out. Is the world changing overnight, and do we need to change with it or lose out? Or are we just in the middle of some kind of bubble? Or is it the usual story: Over the long run, some bets will pay off and some won’t.

Stock market returns are booming, but how long can they last without profits to sustain them? By the end of this year, we’re likely to see a substantial erosion of confidence, aggravated by Y2K problems. Y2K glitches probably won’t be catastrophic, but they will contribute to a feeling that we live in a world of unreliable systems (technical, economic, political) that we can’t control. Not only may investments not pay off, some of the infrastructure won’t even work reliably.

Elsewhere in the world, stock prices are lower, and people lack the blind faith in technology in particular and in progress in general that animates US markets and commercial energies. Just free us and we’ll profit! say the e-commercialists of the US. Allow free markets and they’ll compete your returns down to break-even and your social protections down to minimums, say the democratic socialists of the rest of the world.

Given that kind of uncertainty, investors and companies will focus more on sustainable business models rather than dubious long-term promises. We’ll start getting practical: What kinds of returns are we getting? What business models...
make sense? How long will current market conditions last, and what will succeed them? Is market share the Holy Grail? People are beginning to expect answers to such questions. Are those acquisitions paying off? Do the eyeballs translate into increased revenues for the advertisers?

At this year's Forum, we'll be asking tough questions like these and, we believe, getting tough answers.

We have organized the Forum into three days, covering infrastructure, architecture and texture.

MONDAY - UNDERNEATH: THE INFRASTRUCTURE

The infrastructure of this industry consists both of technical underpinnings and the rules of economics and business behavior. People talk about the new economics of the Net, but that's misleading. It's the same old economics - management of scarcity, creation of value, competitive advantage and the like - but the metrics, the balance of power and the cost structures are different from the industrial world we're accustomed to.

How much is enough?

Joel Klein, assistant attorney general, US Department of Justice

Joel Klein got his first taste of antitrust work as a young lawyer whose practice focused on health care. Beginning in the mid-80s, hospitals and physicians were being accused of antitrust violations, and over time Klein represented both sides: hospitals on the one hand, and patients and doctors on the other. He worked at the Mental Health Law project, a public-interest law firm, and later at other firms. He also got a good look at government abuse of power as outside general counsel to the American Psychiatric Association: In 1991 he joined about 20 psychiatrists on a fact-finding mission to the then-Soviet Union. "The Soviet Union was trying to be readmitted into the World Psychiatric Association," he recalls. "We needed to assess whether they were still using psychiatric treatment for political reasons. I learned a great deal about what life was like under Soviet society prior to glasnost and perestroika. It reinforced all my preconceptions about the values of freedom. Walking around in a society where everyone you met could be a KGB agent out to stop you: it makes you realize how you take for granted the day-to-day freedom we enjoy."

From 1993 to 1995, Klein was Deputy Counsel to President Clinton, and he became Assistant Attorney General in charge of the Antitrust Division of the Department of Justice in 1997, after a year as "acting" in the same position.

What does it take to be a good antitrust lawyer? "You need a somewhat particularistic view, both of the government and of private economic power. It's not just a matter of principle. You have to be clear and visible and open about the nature of government assertions of power; you have to challenge government actions through the democratic process. One can always dispute how far the government should go in intervening; the government can certainly be overly regulatory, but it can also fix market
failures. You can also dispute how far you can let the market go in
entrenching economic power. Somewhere in the middle is where I find myself.
I want antitrust enforcement rather than ongoing regulation. Competitive
markets work. Businesses’ goal is to further their own power, authority and
success, without all the scrutiny and sunlight that government actions get.
You don’t have people able to express their views through the next election
in business, but normally customers can just walk away. The major fear I
have is that businesses will get unchallengeable market power. If they get
it through skill, great products, fine, but if they get it through combina-
tions or by abusing monopoly power, there’s a problem.”

Would you trade efficiency for fairness? “It’s not a question of fairness
versus efficiency. The use of monopoly power is generally not efficient.
It distorts the market. But sometimes there are practices such as exclu-
sive dealing arrangements that are efficient but that can be abused in a
monopolistic fashion. In curtailing abuses, you don’t want to undermine
efficiency.”

It’s partly a question of timing. Notes Klein: “Selling below cost, at low
or zero prices, is very good for consumers in the short term, but over time
that can lead to monopoly pricing and recoupment. So, on the one hand you
don’t want to deter low prices. But when a price is too low, that can mean
that over the long term you’ll have [high] monopoly prices.”

To which we would add: It’s not just pricing. What benefits consumers in
the short run - standardization on a single product, stability, compatibil-
ity - may not benefit them in the long run. It’s a delicate job to figure
out when you can wait for the long run to sort things out, and when you
should intervene in the short run to avoid problems in the long run.

PANEL: DOES THE NET FOSTER CONSOLIDATION OR START-UPS?

There’s a continuing tension between standards and innovation, between mar-
ket share and the kind of diversity valued on the Net. Should we worry
more about fragmentation or consolidation? How good are any of the big
acquirers at keeping the talent they acquire? Sheer mass - the bigness that
used to leverage everything and offer economies of scale - can be a disad-
vantange in cyberspace, where speed matters more. Economist Ronald Coase
says that corporations evolved to minimize transaction costs. But on the
Net, transaction costs are low anyway, and the trade-off in flexibility for
 corporate mass and economies of scale isn’t worth it. Employees resist
large bureaucracies, and the best people tend to gravitate to smaller firms.
When their companies are acquired, they often leave.

Even as the larger firms scramble to get larger and do deals that raise
their stock prices, smaller firms under the radar are generating much of the
vitality and creativity in this market. However, they don’t usually gener-
ate operating profits. Will they generate ROI for the companies who buy
them? That isn’t yet clear.

The conventional wisdom is that Internet companies grow fast and get
absorbed young. But that’s only one model. Even as the “Internet” market
consolidates, the Internet itself is allowing many more small businesses
to prosper without necessarily becoming highly leveraged (or overvalued) giants. The large companies are attempting to create a commercial fabric, something like settling a great new territory whose extent is limited not by geography but by the number of inhabitants/citizens/users each can gain. Companies are struggling to set up alliances and lay claim to all this new space before someone else gets to it first.

There’s a sense that it will all be over within a couple of years, with just a few large info-industrial groups controlling all the mindscape. Perhaps so. But within this commercial landscape, the small will be able to flourish. Even as the giants compete each other into friction-free, tight-margin profitlessness where every alliance faces competition from someone slightly more desperate for a deal, smaller companies will profit in unique, targeted niches.

John Doerr, general partner, Kleiner Perkins Caufield & Byers

John Doerr is to venture capital what Al Gore is to vice presidents or Michael Jordan to basketball - the one example well-known outside his own community. Even as he supports the little guy with VC money (and high tech in Washington), he and his firm Kleiner Perkins are building the industry’s greatest network of alliances. Is this the new form of the firm: a set of related content and technology companies benefiting from one another without the strictures of a rigid corporate structure?

The KP keiretsu includes @Home and Excite, Netscape and AOL, Sun and Amazon.com, Sybase and Symantec, but decidedly not Microsoft - about 175 companies in total, and still growing. The term “keiretsu” refers to modern Japanese networks of companies linked by mutual obligation. “The companies in the KPCB keiretsu consistently share experiences, insights, knowledge and information,” says the KP Website. “Sure, we use the term for dramatic effect,” allows Doerr, a KP general partner. “But it’s a misnomer that should probably come off our Website. A Japanese keiretsu usually has a central bank which controls interlocking boards of directors. In contrast, KP is building a network, a web of independent ventures. It’s a free-market, new-economy, western version of the keiretsu, a network without central control.”

He continues: “Wherever you look, networks matter. A network of relationships is important. Though it’s easy today to start a new venture, it’s harder than ever to build an important, durable enterprise - particularly without allies. Strategy is easy, but execution is everything. You need to create a resilient, pervasive, but adaptable culture. You need lots of really smart people who ‘get’ the culture and can inspire, inculcate it in others. Jim Barksdale’s a great example of an inspirational leader.”

Nonetheless, Doerr attributes Netscape’s failure to keep its independence not to culture but to strategic mistakes. These include “late entry into the portal business and misdirection of resources into the e-mail and collaborative tools market. The e-mail market was not unserved. Netscape took on entrenched competitors who were willing to give away product to retain accounts. But Netscape’s effort had lasting market impact: Its e-mail product drove all the vendors to adopt open Internet standards such as HTML, IMAP and LDAP.”
Doerr adds: "In fairness, you have to give the Netscape team full credit for their accomplishments in four short years: 60 million customers, more than $500 million in annual revenue, a $7-billion valuation, and profits every public quarter except one, in the face of fierce competition."

And finally, drawing a careful distinction, he says, "Don't confuse a great team with a great business. Tandem had a great team, but not a great business. Oracle has a great business." Full stop.

Is the industry consolidating or fragmenting? we ask the man who helps it do both. Doerr and his partners were involved in two large recent consolidations, AOL’s acquisition of Netscape, and @Home’s acquisition of Excite. "I see it growing!" he answers with his legendary enthusiasm. It’s like the universe expanding right after the Big Bang, expanding much faster than it can consolidate. For example, there are more search engines now than ever before... And that’s a good thing. Most search engines aren’t good enough."

To compete nowadays, he continues, “You need strong alliances. No single company offers a complete solution.” But he acknowledges that alliances shift over time. “Most venture capitalists won’t knowingly invest in directly competing ventures. But ventures are independent companies that change strategy, and choose to compete in different markets over time.”

Overall, he says, “Network effects are what really matter. They’re everywhere, changing everything. Open Source (Linux, Mozilla) is one example. E-Bay is another example. Viral marketing (ICQ, Hotmail) is still another. Word of mouth matters.

“This new network economy is an attention economy. There’s a severe, worldwide time famine. We’re all time-starved and competing for attention. So in cyberspace we rely more on brands for confidence and to save time. The message is, ‘Be Yahoo! not Infoseek,’ which initially charged for its service. And think hard about the networks that really matter to you, the network of relationships that sustains your friendships, your family, the networks essential to growing your business.”

Suddenly, he launches into his other persona: "We also need networks for civil discourse, to preserve freedom in an increasingly networked, interdependent society. We need to vigorously defend the First Amendment." Doerr is well-known as a co-founder of TechNet, with its emphasis on education reform (as well as investor litigation) but he surprises us: “Despite the sad state of public education, a free press is more important. It’s a false choice, but think about what matters more. There are countries with good education systems without freedom of speech, or belief, without a free press; you wouldn’t want to live in them. 1998 was an extraordinary year for American government, and the free press. We impeached the President and saw two Speakers of the House resign, because of our free press."

In today’s market-driven media, we suggest, the problem is not censorship but pandering to the lowest common denominator. “Let’s not do anything about that,” suggests Doerr. “Let free expression of ideas flourish. There is an appropriate role for civil discourse and public policy to establish ground rules, but then, let competitive markets work. Technology inherently tends to make the rich richer and the poor poorer. The best
counterbalance is investments in education and ideas. We'll have a much better, wealthier world if we invest in education and encourage innovation, spreading the power of new ideas far and wide."

Doerr credits New York Times columnist Thomas Friedman with the insight that nearly all the world's economies have standardized on the same economic "hardware," namely, capitalism and free markets. He adds: "But the problem in the new global network economy is that developing nations are running primitive economic operating systems, like DOS Kapital 1.0! Indonesia, Korea, Russia, others lack the institutions, discipline, transparency, and even rule of law needed to make the free markets hardware work. And that's why Japan's keiretsus, Korea's chaebols, and Russia's cabals are causing Larry Summers, Bob Rubin and Alan Greenspan so much trouble!"

Virginia Postrel, editor, Reason, and author, The Future and Its Enemies

Virginia Postrel is the author of The Future and Its Enemies: The Growing Conflict over Creativity, Enterprise, and Progress, and editor of Reason magazine. "I've been in and around technology as a journalist since the early 1980s, when I covered MCI during the Bell breakup for The Wall Street Journal and wrote about start-ups for Inc. magazine," she says. "Reason, which has always had a large number of technologists among its readers, has been covering the intersection of technology and policy since long before I got there. It ran a cover story on encryption in January 1981. Since I've been editor, we covered the industrial policy debates of the 1980s - Sematech, etc. - and did our first story on Internet regulation in January 1991, covering Operation Sundevil from the civil liberties perspective. It's not a matter of the Valley discovering politics but of our recognition of the need to protect the creative process through which these businesses and technologies emerge from bad policy. I'm interested in these endeavors as examples of (to quote my book's subtitle) creativity, enterprise, and progress. I'm also interested in getting technologists to see their work as part of a bigger picture that values not just technology but the dynamic process of experimentation and learning."

Over time, she noticed that the traditional distinctions between capitalists and market interventionists, between liberals and conservatives, don't explain what is actually happening in the world. She argues that a better distinction is between dynamists and stasists: people who see as desirable an endstate, any endstate... and those who see and welcome a world in continuous flux. "I'm not arguing that the lib/con distinction is meaningless, but there are many areas where it is not the main distinction. Let's take tax policy, a totally wonky topic: Yes, conservatives favor tax cuts, but it turns out that there's a big split about the philosophy of tax policy. One conservative side says it should be as neutral as possible. The other conservative side says there's no such thing as neutrality, and there are certain forms the tax code should favor - for example, the two-parent family, and especially the two-parent family with a non-working mother. Some conservatives have attacked privatization of social security on the grounds that it will encourage married women to work. Dynamists say, 'We don't know how people should live, and probably they should live in a variety of ways'."
Bad behavior?

Inevitably, the conversation turns to Microsoft. Is it an artifact of the free market, or a destroyer of it? "Microsoft is an interesting case," says Postrel. "When the government's lawsuit first started, a lot of people supported it; they saw it as protecting values of openness and competition. But now the trial is changing attitudes; it's not about the free market and contracts. It's about rewriting history and making things come out right. It's about 'bad'. Is Bill Gates bad? Is Microsoft a bad company? They have the personality that they have." She laughs. "Are they people you would like to be your friends? That does not seem to be a matter for the court. There's this question of redesigning the industry.... At first people said it would be absurd to break up Microsoft, but now they're talking about it all the time." Clearly, she thinks that would be a bad idea; the market can take care of it.

How do industries evolve, then? "People believe that once a niche is occupied, an Amazon, a Microsoft, that means an opportunity created by that industry is over. That made me think of Swift and Armour, the meat-packing companies. They invented all these things, feed lots, the refrigerator car, and so on. And beyond that, these companies that are still the leaders have made lots of refinements since. The fact that the meat-packing business is not one people would enter today, doesn't mean that innovation stopped forever in food. One generation of companies made succeeding generations possible in related sectors - restaurants, packaging, refrigeration itself, even financial markets - with the growth that began with the Chicago commodity exchanges. I haven't done so, but if you traced it back, you'd probably find that the delivery of blood plasma and organs for transplantation depends ultimately on ideas that originated from meat-packing - getting a perishable product transported over long distances in a timely fashion without spoilage. Innovation survives and moves to another part of the market.

"It'll be the same in software. It's not just products and services but also new processes and business models. For example, there will be increasing returns to aesthetics in [our] rich society. Everybody's memo has to be beautiful now... except for your newsletter!"

Martin Sorrell, ceo, WPP Group PLC

Martin Sorrell has been ceo of WPP Group PLC since May 1985. He joined the company from Saatchi & Saatchi, where he was group finance director (cfo), but the kind who does deals rather than counts assets. Since then, he built WPP into the world’s largest communications services company. Its independently recognizable units include Ogilvy & Mather, J. Walter Thompson, Hill & Knowlton, Ogilvy One, Alexander Ogilvy PR, Mindshare and many others. But even though it is generally considered best to be the largest of something or in a niche, Sorrell has just launched what Ogilvy calls "the Syndicate" - a collection of alliances with seven midrange US agencies. Says Sorrell: "If you're a contrarian, that middle ground is quite interesting. There's a position for an agency that's good in 15 or 20 countries instead of 90. Absolute size doesn't matter; appropriate size does."
Though his resume is establishment, Sorrell is an infiltrator, spreading the word about a changing world to his clients and counterparts. "There are three things that ceos are worried about," he remarks on cue: "overcapacity, new distribution channels and internal communications."

Overcapacity raises the importance of branding, he notes, because branding differentiates commodity-like products and services, with tangible or intangible differences. Differentiation is increasingly difficult, because even fundamental improvements are so easily copied. Sorrell prefers to use emotions, as illustrated in WPP Group advertising work for clients including American Express, IBM, Eastman Kodak, Ford, GTE, Unilever, Kellogg, Kraft, Nestle, Mattel, DeBeers, Shell and Warner Lambert.

The second issue is new channels of distribution. "What's really worrying," he says, "is not just disintermediation, or a different way of selling. It's more: The Internet offers things free or even below cost, so traditional business models do not work and are under attack. Buy.com uses an interesting little theory: You may not have profit but you get cash flow by managing the balance between receivables and payables, and you can fund your operations with equity. The stock market is rewarding companies with high revenues regardless of profit."

Meanwhile, he says, "It's a particularly uncomfortable world for people over 50 like me. It will be different with the next generation, only three five-year plans away. There's a Moore's law of generations." He turned 54 last month. "Most of us really worry most about the third: internal communications. It's the main thing large companies have to do well if they're going to compete with all the new companies out there with time horizons of five weeks instead of five years. You have to make your size an advantage where it could be a disadvantage. If you change the strategy of a company and you change the structure, getting the internal audience in line is probably even more important than external communications. You've got to get them to sing the same song off the same song sheet. Bill Gates is known for this, but it is rare."

How does Sorrell do it? "With difficulty!" he says. "How do you get 33,000 people to face in the same direction, but still maintain the tribes and the loyalties and the cultures? Intangibles: training, awards, personal e-mails from the chairman... down to silly things like that. I send out monthly e-mails to 2000 people in major incentive programs. Sadly, not everyone in the company is on e-mail. Besides, I'm quite candid in what I say about WPP and the lawyers go nuts...."

Les Vadasz, SVP, Intel

Les Vadasz is Intel's other face - the cheerful engineer, business explorer, member of numerous government advisory committees on science policy. An Émigré from Hungary in 1956 (like Andy Grove), he got a degree in electrical engineering from McGill University in 1961. After a long career at Intel, which he joined in 1968 as a member of the founding team, Vadasz now runs Intel's "business development" efforts, including its $2-billion-plus venture portfolio. He is now expanding it outside the US, where PC growth is, he hopes, about to accelerate.
Vadasz's strategy for Intel's portfolio is not that of a typical VC, who simply wants to get rich, nor even that of the kind of value-added VCs who attend PC Forum, who want to get rich in return for a lot of input/interference. Instead, Intel simply wants to foster the industry's growth, on the theory that anything that's good for the market is probably good for Intel. "That's true," allows Vadasz, "but we certainly do it with a bent toward our own interests. Take Inktomi: We wanted to see that software running on Intel machines. I call it enlightened self-interest - whatever moves the market."

Regardless, the company is mostly nonpartisan about its investments, and frequently invests in several competitors in the same space. Correspondingly, it insists on having someone else as the lead investor, and it takes less than 20 percent (unless it buys something outright).

Vadasz considers his biggest mistake to be one of omission: "I don't think we were aggressive enough in broadband infrastructure. There's not one particular company I'm thinking of that we missed, just the overall market segment." However, he's trying to make up for that now: "We're investing at all levels - component technology, the Fantastic Corporation, Copper Mountain, Copper.com, high-speed bandwidth, and on and on and on... a dozen or more companies. There's especially a need to do more in the local loop. Everything in the infrastructure will be used in e-commerce and content, and we're investing a fair amount there as well: Ariba, e-Toys, iVillage and others."

Now that he has managed to turn his biggest mistake into a description opportunity, we ask about his biggest success. "Our most visible one is how we were able to upgrade the visual computing capabilities of the PC. We did it by internal R&D and by investing in companies such as Avid, and a number of hardware companies with AGP components. By aligning our own strategies with those of other suppliers to the market segment, we were able to ramp the technology rapidly in the marketplace."

Intel is also notable for its activity overseas. "Outside the US," says Vadasz, "our focus is the development of the local market, especially in emerging markets. We try to see where the holes are and fill them. We're focused on Asia Pacific; we are really just beginning in Eastern Europe. We have also begun to do some deals in Latin America."

So what are US VCs missing overseas? Vadasz demurs: "I'm not sure that they are missing a great deal. After all, those markets have much less predictable exit strategies. Given their mission, the VCs are right to work in the area they know best. We have a different objective; we have a world market for our technology and we want to see that grow. Therefore we have to learn those markets and stay in them for the long term."
Panel: Will the Infrastructure Hold Up? Will it Pay Off?

Despite the incredible lightness of being an Internet company, physical infrastructure still matters. Users need to get online; bits have to flow from place to place. All that depends on networks, and on the companies that build those networks.

The Net and the telecommunications world are colliding. AT&T is trying to become an IP powerhouse, while ISPs like MindSpring find themselves threatened by cable companies. Lucent is acquiring Ascend to compete with Cisco in the data world. The Federal Communications Commission (FCC), saddled with a legal framework that doesn't consider the Net or convergence, is trying to make sense of it all. One of the most significant battles concerns open access to high-speed Internet platforms. Independent ISPs and AOL have a very different vision for the next-generation consumer Internet than AT&T, @Home and the cable operators.

There will be winners and losers in all these developments, but standing behind them are a set of shared challenges. How will voice and data networks change to meet ever-increasing demands? How will residential end-users get always-on, high-speed connections? How can government help rather than hinder innovation and investment?

Everyone agrees that the communications world is changing and that convergence is happening. Someday we'll all have cheap two-way gigabit pipes in our homes, and multi-megabit wireless connections everywhere else. But how do we get from here to there? From one perspective there is a whole series of bottlenecks, starting with local loops and moving out to core routers and peering points, which could inhibit the ability of the Net to grow and to support new services. From another perspective we're increasingly awash in bandwidth, as new networks dwarf the capacity of existing infrastructure. It's a confusing world for companies who must decide where to put their money. Yet confusion also means opportunity....

Charles Brewer, CEO, MindSpring

Charles Brewer has a folksy manner in keeping with his upbringing in Louisville, KY. But he's also a Stanford MBA and a shrewd businessman who built MindSpring from its Atlanta base into one of the country's largest independent ISPs. In January, MindSpring agreed to acquire the Netcom customer base from ICG Communications, giving the company over one million dial-up subscribers.

Prior to starting MindSpring, Brewer served as the CEO of AudioFAX, which sells fax processing systems to local telephone companies. He first got on the Internet in 1993, and he was less than satisfied with the experience. He founded MindSpring in 1994 "primarily because of the bad experience I had with service and support" at other ISPs. Since then customer service has been MindSpring's greatest asset. "Our primary competitive weapon, our strongest strength, is support."

For Brewer, the ISP business isn't about routers and modems: it's about helping customers. "The essence of what we've done," he says, "has been to help individuals and small businesses connect up to and effectively use
the Net." Until the company became too big, MindSpring required all employ-
ees, no matter what their positions, to work a rotation in the customer service department. Good service and support are also good business because they cut down on churn and customer-acquisition costs. Referrals and good word of mouth also help MindSpring roll out higher-margin value-added serv-
ices such as Web hosting.

That's great, we say, but does it scale as MindSpring grows? Brewer acknowledges that "there's a force like gravity that is always trying to suck us back, to make us like any other company. The bigger the mass, the harder we have to pull against it." If the MindSpring difference came only from its executives, he says, size would eventually eliminate it. MindSpring works hard to embody a defined set of core values and beliefs into its corporate culture, so that they remain in place no matter how big the company gets. Moreover, as infrastructure prices drop, "service and support becomes a bigger and bigger piece of total economic value deliv-
ered."

Brewer is confident that independent ISPs can survive and be profitable, even as more and more facilities-based players jump into the market. "There will be a revenue stream associated with a service," he says, "that lets efficient operators make money. It's not necessarily certain that all that comes from subscriber fees." Advertising, e-commerce, home banking and other services will foster sponsorships that subsidize access pricing, espe-
cially for larger providers.

Brewer sees the Net taking on an increasingly central role in telecommunica-
tions. "Instead of this funny little addition to the telecom world," he argues, "it's going to be the core service." As IP telephony grows it will be subject to the same dynamics governing ISP data services. ISPs will have to help customers figure out how to use the ever-increasing array of servic-
es in the converged telecom world, and customers will always need good serv-
ice and support.

Brewer is "very fundamentally optimistic" about the continued growth of the Net, except for one key area: last-mile bandwidth. He has been one of the leading advocates pushing @Home and other cable Internet providers to allow customers to connect through independent ISPs. Brewer sees open access as critical: "If we don't have some way to share the wire into the house, we're not going to have a competitive telecom market."

Where AT&T argues against government intervention forcing it to open up the cable pipe, Brewer believes open access will ultimately result in a less regulated environment. "The key to avoiding burdensome regulation of the Internet itself," he says, "is to ensure there is competition in getting access to it." In an open environment, customers can choose providers that meet their needs on everything from price to service to privacy policy. But in a vertically integrated world, government regulation is the only way to ensure that consumers are protected. Brewer points to the recent flap over @Home's terms of service, in which customers objected to the company's use of subscriber data and prohibition on use of the system "for any business purpose," as an example of what happens when there isn't customer choice.
Bill Kennard, chairman, FCC

As chairman of the FCC, Bill Kennard heads an agency with broad authority over telecommunications, broadcasting... and potentially the Net.1 Kennard, formerly the agency’s general counsel, has served as chairman since November 1997. Kennard’s FCC faces a host of policy challenges. The Commission is responsible for opening up the communications industry to competition, while technology rapidly transforms the marketplace. An agency created in the 1930s to regulate radio must now confront an Internet that doesn’t fit any traditional regulatory categories.

Inclusiveness and opportunity top Kennard’s agenda. He wants all Americans to be able to participate in the communications revolution. That means everything from wiring schools and libraries for Internet access to improving communications infrastructure on Indian reservations to, perhaps most significantly, fostering widespread deployment of broadband services.

Bringing bandwidth to the masses is a balancing act. Incumbent cable and phone companies promise they’ll deploy new technologies that consumers want... as long as the FCC loosens its rules. New competitors counter that they are being shut out by recalcitrant monopolists... and ask the FCC to pry open the market more aggressively. Kennard has tried to steer between these two poles. The FCC is moving forward with a proposal to give local telephone companies greater freedom to deploy high-speed digital subscriber line services, as long as they offer those services through separate subsidiaries. It also recently declined to require cable operators to open their high-speed Internet platforms to independent ISPs (see Release 1.0, 2-99). Kennard defends this decision on the grounds that the high-speed access market is still nascent. He wants to see competition, but he’s concerned that the FCC could intervene in a way that would slow down deployment.

On one point Kennard wants to be very clear: The FCC doesn’t want to regulate the Internet. Every few months a rumor arises that the FCC is about to impose a modem tax on Internet users. The agency gets bombarded with angry calls and e-mail messages until people realize that it’s not true. The Commission has repeatedly refused to impose access charges on Internet service providers.

It has now been three years since the Telecommunications Act of 1996, but most Americans still don’t have a choice of telephone service providers, let alone broadband Internet providers. What would Kennard do differently if you could rewrite the legal framework? The Act generally got it right as a policy matter, he has stated, but it made it much too easy for companies to hold things up in the courts. After three years of litigation, the Supreme Court recently upheld the FCC’s authority to establish national policies for competition.

Nonetheless, Kennard remains generally upbeat about the progress of local competition. Competing local phone companies have a bigger share of the market today than long-distance competitors had three years after the FCC authorized competition with the old AT&T monopoly.

1Disclosure: Kevin Werbach served as counsel for new technology policy at the FCC until April 1998.
Kennard does see some room for changing the laws that govern the FCC itself. Specifically, he believes the FCC should be reorganized in a way more consistent with convergence. That means moving towards a more functional approach instead of the industry segments around which the FCC is currently organized. The FCC has already consolidated many functions, and has implemented electronic filing and RealAudio broadcasts to allow people to participate in FCC proceedings through the Net. However, the law still mandates separate treatment of cable and telephone companies, for example, even if they offer the same services.

David Nagel, president, AT&T Labs and cto, AT&T

In addition to running AT&T Labs, David Nagel was named AT&T’s cto in August 1997, and in June 1998 he assumed responsibility for the company’s IP technology development. Nagel joined AT&T three years ago from Apple Computer, which makes him one of the few who can claim to understand both the computer and telecom worlds. When we ask him to compare the two industries, he emphasizes the distinction between products and services. Computer and networking providers say that voice service will eventually become free, but don’t realize that the real value lies in the “service” part. Customers will still pay communications providers for value-added services, even if the baseline transmission is effectively free. On the other side, the telecom industry has historically underestimated the power of open platforms and open standards in the computer industry.

Nagel admits that AT&T has been “late to the party” in the Internet arena. However, he says that “the rate of change has accelerated significantly in the last year or so,” and that AT&T is moving aggressively into IP. “If we have a core competency, it is service,” Nagel argues. “People expect our stuff to work and it does.” This competence becomes increasingly important as the Internet grows, because unlike most Internet-oriented companies, AT&T has extensive experience operating systems that scale to tens or hundreds of millions of users.

Perhaps AT&T’s highest-profile Net-related move is its plan to offer high-speed Internet access over cable networks through its recent acquisition of TCI. Nagel objects to the notion of government forcing AT&T to open up its cable Internet service to competing ISPs. He is shocked, shocked that forces in the computer industry which have long opposed government intervention in the marketplace are now supporting mandated interconnection rules for high-speed access.

From Nagel’s perspective, AT&T is the white knight, finally creating the local competition that regulators and customers have long desired. “The attempt to change the marketplace by regulation didn’t have much effect,” he says, “until we came along and invested the money to change it” by offering voice and high-speed Internet services over TCI’s network. AT&T tried and failed to compete against incumbent local phone companies through resale, because regulated terms and conditions didn’t support a viable business case. The only workable path, he believes, is facilities-based competition between services over cable and telephone wires.

AT&T ceo Michael Armstrong has said that the company is willing to give independent ISPs access to @Home... so long as those ISPs are willing to
pay for it. Nagel says AT&T will negotiate reasonable agreements, but it won't simply give access away. He argues that unsatisfied ISPs can always offer high-speed services over other platforms, such as digital subscriber line or wireless. "The real issues have very little to do with getting access to the medium on a reasonable commercial basis," Nagel says. The real issue, he believes, is that competitors such as AOL want exclusive control over customer relationships.

Nagel sees technology changing the telecom business in several ways. AT&T is exploring several applications involving IP telephony, especially internationally, and it recently opened an interoperability lab for IP telephony network hardware and service providers to come together. IP telephony and other developments will push prices down, Nagel says, but more significantly "we're going to progressively get away from pay-per-unit of whatever, and more toward flat-rate services." He points to AT&T's Digital One Rate service as a good example.

The issue that really concerns Nagel is the need to address critical technical issues for Internet scaling. Companies are working on quality of service and security technologies, but no one has been able to do both efficiently at scale. "We don't know how to make robust systems, highly available systems that take advantage of best-effort network design, and on the other hand provide virtual-private-circuit levels of performance." AT&T's network handles 250 million phone calls per day with 99.99 percent reliability, but no one has achieved anywhere near that level of reliability over a data network.

Nagel is a member of the President's Information Technology Advisory Committee which recently submitted its final report to President Clinton. The group unanimously recommended additional federal spending for basic research. AT&T has about 500 people in research, but as a public company it has to focus on a foreseeable bottom line. Almost all of its researchers address known business opportunities rather than simply pushing the frontiers of knowledge, and competitors such as MCI don't even operate research labs. Nagel says more academics would focus on these challenges (rather than being lured away to Internet start-ups) if the money was there. "Rather than the government trying to figure out how create a supercomputer market," he says, "they should do what they have done historically incredibly well" - prime the pump with basic research.

Jeanette Symons, CTO, Ascend

As one of the four founders of Ascend, Jeanette Symons has seen the company expand from zero to a multi-billion-dollar company. While the other three left the company many years ago, Symons has stayed on to participate in Ascend's growth. The next phase of the company began recently as Lucent agreed to acquire Ascend for $18.5 billion.

Will Ascend change Lucent, we ask? "Lucent really hopes that it will change Lucent," she answers. Symons says the key challenge for the combined company is to integrate the reliability and robustness of the current telephone network with the innovation and flexibility of the data world. That's the same goal many companies have, but Symons believes that
The new Lucent is in the best position to succeed. The biggest challenge is marrying the two different cultures effectively into one company.

The most significant technical issue Lucent and Ascend face is quality of service (QOS). Symons says that none of the data networking vendors can support the kind of quality of service that customers now take for granted in the voice network. “If the traditional data providers can accept and learn from the voice providers,” she says, “then we have a good shot” at successfully making the transition. The alternative is years - if not decades - of trial and error.

Bandwidth will continue to get cheaper but will never be infinite. Although throwing bandwidth at the problem can address some QOS problems, Symons still believes managed solutions are essential for carrier-grade networks. There needs to be “micro-granular control of bandwidth on a very large-scale network,” capable of supporting ancillary functions such as billing. For example, what’s the equivalent of a phone number in an data world? “By the time we’re done,” she says, “the protocols are going to look very different than they do today.” Symons sees a “carrier-class guaranteed reliability IP network” emerging that has little in common with today’s “free for all” Internet except for its use of the IP protocol.

Symons acknowledges that it will take time for this shift to occur. “If you look at the rate of change in the public network,” Symons explains, “it’s really not as fast as everyone wants you to believe that it is.” New technologies such as IP telephony will take years to achieve critical mass. The challenge is to give carriers a platform that facilitates migration as new pieces become available, while maintaining reliability levels and scalability. As Symons puts it, Ascend is running a “huge worldwide beta program” with carriers eager to invest in packet-switching technology. The company has to be flexible enough to meet customers’ unique needs in such an open-ended environment.

Symons doesn’t believe the last mile is the bottleneck to broadband, as long as bottlenecks in the core of the network remain unresolved. By the time those issues are addressed, she says, last-mile technologies will look different from today’s DSL or cable modems. In general, she says that the less government gets involved in the deployment of new technologies, the better. However, she’s glad to be in the business of selling arms to the combatants and getting bits from here to there, rather than fighting political battles.
Katharine Graham is one of the century's great "content" people. As a young woman, she watched the family news business as an intelligent but uninvolved observer, first as daughter and then as wife. But when her husband died in 1963, she took over with more instincts than experience to guide her.

Her focus on the long-term health of the Washington Post ultimately led to its current success; the Washington Post Company now owns Newsweek, television stations, cable systems, Kaplan Educational Centers and a host of digital properties. It has helped bring self-awareness to the Washington area's own Silicon Corridor. Graham's great professional tests came with the Pentagon Papers and the Watergate story, where she encouraged the slightly scruffy junior team of Bob Woodward and Carl Bernstein to chase down the truth despite both political and financial pressures against it. The rest is history - quite relevant history in this year 1999.

"I don't think we would have done as good a job on Watergate as we did," she says, "if the Internet had been around. Bob and Carl had their sources locked up; no one else could get to them. Meanwhile, no one believed it, and so they had no competition - which would not have been true with the Internet. They got to keep stories back until they were sure. One thing really wrong now is that too many people are saying and publishing too much before they have a chance to check it.

"This whole thing has speeded everything up. On the whole, all the influences have been good; there's more knowledge out there. At the same time, I think that the speed is probably greater than it should be. You get less time to think. I don't mean just for reporters... The government has less time to think; it has to react faster than is good for it. For example, when the State Department learns about some tenuous situation, they can't deliberate, because everyone else has learned about it, too. They have to say something, because everyone else is pounding at the gate. They get their information from CNN or off the Net; it's a strange thing."

But from a business point of view, she's a fan. "The Net is absolutely key for any communications company. The whole change-over was tougher for big papers than for small ones. Those days are over now, and we've kept up as new systems have come in." In fact, the Washington Post's Website is generally regarded as one of the newspaper world's best. Meet the woman behind it all!
Above the infrastructure lies the architecture - the rules and tools for doing business. From a world of nice tidy layers - separate hardware and software, well-defined distribution channels, clear market segmentation - we have moved to a networked world where content is software and vice versa, competitors are partners and vice versa, and products are sold as services and vice versa. Computing devices are everywhere, but increasingly they don’t look like the PCs we’re used to. Who defines the rules of communication when the world has no center?

Companies have to define what they are selling, not just differentiate it. Alarmingly to many, one company’s strategic product may be another’s loss leader. Overall, we’re entering a world where we sell user experiences and subscriptions rather than products. How can we make customers as well as companies comfortable with the new “physics” of the online world, where access may be more important than ownership?

PANEL: What models work for developing software?

In abbreviated form, there are three archetypal models for developing software: the lone craftsman/artist (often a small group, in practice), the factory (large-scale, methodology-oriented development), and the collective (Open Source). This panel explores them and how they can best be used, separately or in combination, to foster innovation, encourage investment and produce good software. The two developer panelists will be joined by Jan Hier-King - a user - for some real-world input.

Although some religious fanatics admit of only one path to virtue, most people would argue that each has its place. The lone craftsman dreams up innovations, and can design beautifully integrated tools and applications - think of Dan Bricklin’s/Bob Frankston’s VisiCalc, or Mitch Kapor’s/Jonathan Sacks’ 1-2-3, Ray Ozzie’s Notes, Robert Carr’s Framework. But then these tools and applications need to be implemented for a variety of platforms; they need documentation and text-handling modules, database interfaces and APIs, and suddenly the work amounts to more than one person wants to or can handle. What happens next? Is it the collective or the factory? And why? Finally, how do corporate buyers react to the Open Source model? Do they trust it? Do they engage in it themselves?

For what it’s worth, it was interesting to write the background for this panel, since both Bill Joy and Eric Raymond tried to wrest control from me. Joy rewrote the whole section; Raymond disagreed violently with Joy’s self-description and (with some encouragement) made many comments interspersed below. And Kevin asked me to add that we have capitalized Open Source this time, to assuage tender sensibilities, even though we lower-cased it in November’s issue of Release 1.0. It should be a lively and enlightening panel! — Esther Dyson

Eric Raymond, president, Open Source Initiative

Open Source is basically software developed by informally collaborating programmers, using freely distributed source code and the communications facilities of the Net. Open Source pioneer Eric Raymond is a leading ad-
 vocate of the Open Source model as practiced most visibly with Linux. He has deeply explored the differences between the factory and collective/collaborative models - in his terms, between “the Cathedral and the Bazaar.” This is the title of the paper that led Netscape to turn Navigator into an Open Source product. (See Release 1.0, 3-98 and 11-98.)

One of the biggest arguments about Open Source (as a movement) is whether it fosters creativity or simply produces innovative extensions. Raymond is certain that Open Source offers the world more than highly parallel, effective bug-fixing, or even broad technical finishing and polishing. In fact, it’s a model for competing innovations, which live or die in a market of other people deciding to adopt/enhance them, or ignore them. Interestingly, this is an information market, unencumbered by prices on the one hand or by bundling deals or marketing on the other.

“You have to understand,” says Raymond, “that the collective is not leaderless. What you’ve written [now edited!] creates the impression that Open Source is pushing only one model, the collective, which I’d rather call the collaborative. What really goes on is creative tension between the lone craftsman and many eyeballs. In the collaborative model, you actually have a lone craftsman who needs followers. The architecture is created by someone who functions like the lone craftsman, but he has a huge halo of people around him helping him debug and enhance. There’s one guy in the middle who’s responsible, but our [Open Source] social structure lets him recruit a lot of help. He’s a benevolent dictator, but he needs to earn his place with good code. And he can lose his power easily; it’s fluid. (Yes, there have been some unfortunate exceptions, but generally leadership turns over as fast as it should.) You can’t be a leader without followers. If the OS market doesn’t buy your latest idea, then no one will help and you’ll be isolated. In competing with a lone craftsman who has been able to attract helpers, the lonely one is probably going to lose. So all the incentives favor people who are good architects and can also attract helpers.”

Joy annotates: “Open Source is indeed a ‘market of ideas,’ but because it is free it is disconnected from many marketplace mechanisms. Its creators do not benefit financially, and there is no market discipline to connect the developers to the customers if the developers get off course.”

“Linux is subversive,” Raymond has said. “Who would have thought even five years ago that a world-class operating system could coalesce as if by magic out of part-time hacking by several thousand developers scattered all over the planet connected only by the tenuous strands of the Internet?” He now adds that, especially with the help of the Net, you can have an extraordinarily large number of minds working together: “Linux is the big shining example of what happens when you connect people who might otherwise be lone craftsmen.”

Both sides agree that innovations come from a single brain or a couple of them working closely together. But the traditional model looks for an appointed, anointed leader, whereas the Open Source approach keeps answering: The leader is whoever is ahead, by acclamation.
Like the workers in programming teams, hackers make use of the components of others. But there is a difference. While the industrial ideal is to treat components as “black boxes” - of which nothing need be known except how to interface to it - hackers generally require access to the artifact's interior and want to understand all parts of the systems they work on, including components contributed by others. This is how Eric Raymond describes his motivation for doing a major rewrite of code contributed to his project by another hacker: “I had another purpose for rewriting besides improving the code and the data structure design...to evolve it into something I understood completely.”

This does not mean that hackers are oblivious to such staple engineering practices as object-oriented programming and information hiding. These and other sound engineering practices are routinely employed when hackers create complex software systems. But the difference between the hacker’s approach and those of the industrial programmer is one of outlook: between an agoric, integrated and holistic attitude towards the creation of artifacts and a proprietary, fragmented and reductionist one. [“Leave out the word reductionist,” comments Raymond.]

Dahlbom and Mathiasen (1993) - building on Levi-Strauss - introduces the terms “tinkering” and “engineering” and discusses briefly how these two approaches relate to software development. They argue that engineers are “modern” and tinkerers “illiterate,” that engineers work “top down” while tinkerers “bottom up” and so on. My first reading left me with the impression that the hackers were the “tinkerers,” while the “engineers” were those using all the “scientific” and professional methods. Then the following paragraph hit me like a sledgehammer:

“Modern societies have engineers, illiterate societies have bricoleurs or tinkerers. As engineers, we organize our thinking in projects, choosing means and tools once the aim of the project has been decided. As tinkerers, we use what we have, letting our means and tools determine what we do. As engineers, we set our goals first, often having to invent tools to be able to reach them.”

Raymond: “Any real developer has to be both a tinkerer and an engineer. This is what you have to learn from transmission outside the scriptures, from working with other people: When you have to be bottom-up and when you have to be top-down.”

Suddenly I understood what the anger surfacing in UNIX-wizards was all about! The hacker had been forced by his programming-illiterate boss into using some tools and methods that he considered unsuitable or inadequate for the task at hand. The hacker wanted to work as a professional, as an “engineer,” and management had forced him to become a “tinkerer.” Raymond: “Yes, that is a frequent source of rage!”
Bill Joy, vp research and founder, Sun Microsystems

Bill Joy says of himself: “I have acted as a lone craftsman, dreaming up innovations in my work on Berkeley UNIX, the vi editor, and NFS (the Network File System). In recent years I have worked with small groups in developing innovative new technologies like SPARC, Java and Jini. Most recently I have developed (with a small group :-) a new licensing model called Community Source Licensing, which attempts to synthesize the best aspects of the three models to maximize investment and innovation.”

On Joy, Raymond notes and Joy himself acknowledges that “these [UNIX] innovations were widely shared - and improved on - in source code form.” Says Raymond, continuing a long-standing argument: “Joy's belief that there's a lack of innovation in Open Source is just wrong. Whereas I used to believe that the only thing hackers could do was innovate. They couldn't do the work of turning something into a usable, nicely wrapped system. But look at Linux!” (Yes, Red Hat is doing the wrapping for a service/distribution fee, but the code itself is indeed nicely tuned.) Naturally, both men describe themselves as uniquely moderate on Open Source issues. Says Joy: “The Open Source people see black and white, while we see grey. I have been a strong supporter of code sharing, as practiced in the UNIX community and now with Open Source and Linux.” He believes UNIX has succeeded over about 30 years because it has a clear set of OS concepts and a clean layer that makes parallel development possible.

Joy fought the open-standards wars (against AT&T and Microsoft, among others), and he's clearly a techy, but he's not a traditional Open Source advocate as you might expect. Despite the perennial conflicts between Microsoft and Sun on how to sell software, they're closer than you might expect on how to develop it.

Although he will talk about Jini itself on the devices panel, the way Joy fostered its development at Sun is germane. “It started with twenty years of frustration with C and C++ which didn't produce reliable software because it was built on wrong principles. We developed Java in a small group,” says Joy. “It started with James Gosling creating the language, with great programmers like Patrick Naughton giving him feedback. In mid-1995 when it was going to get big on the Internet with Netscape we formed a group of five people to go over the design very carefully and take responsibility for the God in all the details.

“Our vision for Java technology always extended beyond the client-services model of the Internet today,” says Joy. “John Gage and I encountered Jacques Attali’s book Lignes d’Horizon around 1990, and became firm believers in what has been called variously nomadic, pervasive, ubiquitous or even appliance computing. I came to Esther’s conference in 1992 and I said then that things are getting too complex. I talked how we would address this opportunity: by starting a small group in Aspen, at a place we called the Smallworks, to push for a simple architecture for this imagined future world, which became Jini.”

“We started some work on aspects of Jini in 1994, but until 1997 most of the energy was going into the Java platform,” he says. “Then, in 1997, when we wanted to really crank up the Jini ideas we put it on the East Coast, to protect it by three time zones from the much larger JavaSoft.
client-services effort on the West Coast, with a small group of four archi-
tects designing the system. They were experienced enough to know what they
could do, but smart enough to know that simpler is better... It's a small
enough group that they can sit around a table and have lunch and talk each
other out of complexity. One of the problems with Open Source is that you
get features piled on top of one another; you get too many interfaces and
modules. And you get the same with Microsoft approach, where everything is
allocated rigidly because there are too many people to coordinate. We want
to minimize complexity, and the best way to do that is with a small number
of people with a passion and an esthetic. We do software with physics at
the bottom. It's clean and solid."

Joy created Sun's Community Licensing (www.sun.com/jini/licensing) together
with his longtime Sun compatriot Mike Clary and with Dick Gabriel, newly a
distinguished engineer at Sun and most famous for his contributions to the
Lisp and AI communities. In some ways SCL is similar to Open Source; it
lets you use the source code and encourages modifications. But, says Joy,
"We don't believe that property is theft. Community means stewardship.
Jini has an owner that wants it to be widely used. We charge a trademark
fee, you could say, rather than a copyright license. It's just like Visa.
All the banks who license from Visa agree on certain things - money clear-
ing, etc. For software, there's one additional responsibility: You have to
pass a compatibility test." (Of course, that's the same for Open Source
software distributed by brand-name houses such as Red Hat.)

"However," adds Joy, "you can take it and do proprietary things. You can
show the brand and do whatever you want. Dick and Mike and I spent more
time on this last year than on anything else." Joy is proud of what he
considers the right balance between the freedom and collaboration of Open
Source, and the control and financial incentives of the traditional model.
You get the craftsmen working together not in a vendor-owned factory, but in
a collective that respects the notions of property for those who believe in
them. In essence, developers can play on whatever terms they like, but they
can't impose those terms unilaterally on others.

Raymond annotates: "What Joy fails to understand is that there's a free-
rider problem in Sun's Community Licensing. I don't object to working on
things from which people make money, but I do object to working on something
where I have no choice in the matter. In the Community Source model, if I
don't like Sun's policies, my only option is to opt out. I can't fork off
and compete with Sun. Sun keeps control over critical intellectual proper-
ty. I predict he'll have trouble recruiting... We have a strong taboo
against forking casually, but it has to be possible. Otherwise, whoever's
in control doesn't have to stay honest. Joy sees it as quality control; I
see it as control, period."

Jan Hier-King, svp for electronic brokerage technology, Schwab.com

So what do real customers think about these arguments? Would they buy
Open Source software? Let their programmers work on it? Most don't
really consider that the question: They look at the product, and they look
at the support.
Jan Hier-King modestly refuses to speak for all customers, or even all CIOs. As CIO of Schwab’s electronic brokerage enterprise (Schwab.com), she manages about 150 programmers. She stresses that they mostly apply technology rather than develop it, in contrast to the 80 she managed at the TTI division of Citibank, a job she left for Schwab in 1994.

Schwab.com is mostly a UNIX shop. It uses Netscape Web servers running on AIX-based IBM Silvernode processors. The middleware component is homegrown and runs on IBM SP2 frames; the Web servers and the middleware are connected via TCP/IP, and transactions are authorized by mainframe computers. “The reasons we use Netscape are mostly historical; that was how we started,” says Hier-King. “We don’t use Open Source products for anything on the Schwab.com site. It needs to be industrial-strength and bullet-proof. We need to be able to go back and find out what happened; we have a complex suite. It’s a real advantage: If something goes bad, you can call IBM or Sun.”

Now, given that IBM has started offering support for Apache, she says, “We’re starting to look at Apache. Not because of how it was developed, of course, but because of how it handles images – more gracefully and with more speed. We make decisions on the basis of what can handle the volume we face on the commerce site. We use GNU for developers. My folks presented to me about GNU a few months ago. I have no issues about their being part of the community and contributing code back. It’s kind of a help on the morale side, the opportunity to work with things like Linux.”

Moreover, she adds, “If I were Yahoo! or Excite, and wasn’t handling people’s dollars, then I might be more experimental. Although we can be leading-edge, we can’t be bleeding-edge.” Currently, her next big project, aside from working to maintain the robustness to handle the kind of volumes that have recently caused outages on schwab.com (and E*Trade), is to produce a whole new look and feel for the Schwab site. “It’s a very complicated-looking site, speaking of technologists having their way,” she acknowledges. “The technology folks did it their way, and it’s not geared for the general investor who doesn’t know a whole lot about the Net or about brokerage. In the next couple of quarters it will be grossly simplified. I’m looking forward to that because we get a lot of calls, everything from I don’t understand what a modem is to I don’t understand what an option is.”

PANEL: What business models for selling software work on the Net?

Traditionally, the best way to make money in software is to lead a market into commodity-hood – sell something at a value-based premium while your cost structure matches that of a commodity because you were in first and are way down the learning curve. (If you’re Microsoft, and you can make your product into a standard rather than just a commodity, that’s even better.) As other people enter the market, the leader can enjoy high profits while competitors scramble to catch up. But over time the market does turn into a commodity one, and margins erode. That has happened not just to horizontal PC applications, but also to databases, accounting software... and it may soon happen to Java tools, online multi-user calendars, mail tools. What’s a poor software company to do?
The companies below take a variety of approaches. Sendmail has the benefit of a huge installed base that it must now penetrate with a well-tuned, widely used product. Vitria is positioning itself ahead of the commodity curve, and usually has a working pilot project installed before its competitors can even get beyond sales discussions. And Allaire is seeing its value-added (and revenues) move from a horizontal tool to application frameworks and modules, and potentially software subscription services. Many companies selling to the SOHO market are now offering Web-based services, some paid for directly by customers, others, including multi-user calendars such as Jump and When.com, supported by advertising revenues. Services such as virus protection and spam filtering are now OEMed by ISPs. Suddenly, products are sold as services, and users are, in effect, sold to one another as support groups and communities.

Jeremy Allaire, vp of technology strategy, Allaire Corporation

Jeremy Allaire and his brother JJ, who founded Allaire Corporation, both studied political science, philosophy and economics at Macalester College in St. Paul, MN. That prepared them well to take a somewhat unusual community-oriented approach to the software business, but one that is becoming increasingly common. Mitch Kapor sits on the board and is one of the investors, along with Polaris Venture Partners and BancBoston. Meanwhile, president David Orfao (formerly a leading sales executive at SQA, Claris, Frame Technology, Lotus and Ashton-Tate), tends to the company’s commercial success. Allaire just went public at a valuation of about $200 million, on 1998 sales of $20.5 million (and losses around $10 million, of course). In fact, reading the Allaire prospectus is a pleasure; it is one of the first to use the SEC’s new rules, which require plain English and the use of “we” instead of “the Company.”

In the same way, the company takes a small difference in approach that changes the character of everything. Its basic product suite is a set of Web-oriented development tools, but the focus is on back-end integration rather than front-end presentation. JJ Allaire created ColdFusion early in 1995 and launched it through the Web. Brother Jeremy went out to get all the Web tool developers to support the ColdFusion language. Among them was Nick Bradbury, creator of HomeSite, a visual HTML development tool which Allaire acquired in 1997 and which is now the low end of the Allaire product line-up. HomeSite lets you design pages; ColdFusion lets developers build applications with Web-based front-ends.

There are now more than 200,000 users of HomeSite, which comes in a “non-expiring [and copiable] evaluation version” without support, as well as OEM versions for which Allaire gets a small amount of revenue. ColdFusion in its various forms (tool and application servers) has about 30,000 licensed customers, or 100,000 users, Allaire estimates. Later this year, Allaire plans to introduce Tempest, the code name for a set of packaged systems for content management, e-commerce and customer interaction management - basically, frameworks for e-commerce applications.

The company’s products have fairly traditional prices – $49 to $99 for HomeSite, officially, and $1295 and $3495 for the two versions of the ColdFusion application server. The company sells both through its own Website and other sites such as Buydirect.com, Beyond.com, Realstore.com
and JapanMarket.com, and through traditional distributors such as Ingram. Because potential customers can directly evaluate the software from its Website, 60 percent of Allaire's business is still direct, either through the Web or by telesales and field sales (for the largest customers).

The software is so easy to use, says Allaire, that sometimes customers don’t check in for support when they should - especially when they’re scaling up to enterprise-wide applications. “There are certain tricks you need to know...” he says. But happy customers include autobytel.com, Boeing, Booz, Allen & Hamilton, Credit Suisse First Boston, Hewlett-Packard, Intel, Internal Revenue Service, JC Penney, Lockheed Martin, Lucent Technologies, MCI Worldcom, Microsoft, SBC Communications and United Parcel Service.

Allaire is now one of the leading independent providers of Web application server software; most of its competitors have been absorbed by industry giants Sun, Netscape, Microsoft and BEA Systems.

Programmers' portal

The Allaire Website is something of a portal for HomeSite and ColdFusion developers. There are about 600 third-party developers who offer their software components at the Allaire site (www.allaire.com/developer), mostly with Open Source licenses. The site also includes developer-interest news, some of it only loosely related to Allaire. In addition, the site hosts two “self-service” developer forums for HomeSite and ColdFusion respectively, with hundreds of postings each day. Many of the development staff go online regularly to interact with customers. In addition, there’s the Open Source version of product support: Team Allaire, the company’s designation for outside Allaire developers who earn the title for consistently useful postings. Like Open Source developers, they get prestige but no direct pay. The site’s stats are impressive: 100,000 people have signed up for e-mail updates, and visitors number thousands per day.

“We’ve started experimenting with Open Source in some areas,” says Allaire. “Right now we’re looking at certain modules: Should this or that be a standard? One example was WDDX, the Web Distributed Data eXchange. WDDX is an XML-based technology for transferring data among Web languages in order to build distributed, agent-oriented Web applications. We felt that data exchange between languages shouldn’t be proprietary, and in fact that this kind of tool is perfect for Open Source contributions from a variety of parties. Rather than submit it to W3C [the Worldwide Web Consortium], we just put it on the site. We implemented the technology for ColdFusion, on top of XML, and now other people have come in with code from other communities, including Dave Winer at Userland, Python, Perl, Java, Javascript and PHP (Apache).”

The love you take, is equal to the love you make

He goes on: “What we consider proprietary, in terms of value, is the content on our site. We invest a lot in it; so do our customers. People now are using and investing in our platform and in the site; in a year, they’ll be relying on them, based on what we put in and what they put in. What value can you ascribe to that?” Meanwhile, the company sells subscriptions for upgrades and support, which account for an increasing proportion of revenues, about 20 percent currently. “In the past,” says Al-
"Customers thought of annual maintenance agreements as a means to guarantee product upgrades. Going forward, 'software subscriptions' will increasingly cover content and community assets as well."

Allaire also thinks that new models of software licensing based on application hosting will gain dominance. "With only a Web browser, any company can use hosted Web software running on a cluster of servers. Increasingly, this means that software will become more and more invisible to companies and end-users, and instead they'll think of leasing online business services. At Allaire, we're not actually building developer products that are hosted/leased, but a software platform that allows ISVs, ISPs and corporations to build hostable software easily. In addition, we are making our own visual tools more like front-ends to content and community portals running off allaire.com. In the future we could sell subscriptions to participate in allaire.com, including self-updating software that constantly evolves with the needs of the community.

"The software itself isn't really the center of value anymore," concludes Allaire. He asks suddenly, "What's the most popular piece of consumer software in the world? Not Windows, not directly. The most frequently used piece of software is Yahoo! Millions of people use it every day, and it delivers huge amounts of value."

The only question is how to generate revenues from that kind of value.

JoMei Chang, founder, president & CEO, Vitria Technology

Vitria is JoMei Chang's second company: In 1986 she co-founded Teknekron Software Systems, which was acquired by Reuters for its Digital Trader workstation business, and then left after the acquisition to start Vitria. Technically, she's an expert on complex networked systems, and cut her teeth on Sun's Network File System as a senior engineer. She was also a senior research scientist at AT&T Bell Labs where she developed and patented the first reliable multicast messaging protocol, which is now being used to tackle traffic-congestion problems on the Net.

Chang has since turned to business: She founded Vitria to realize what she saw as the huge potential of enterprise application integration. However, she notes, "The business model is still the traditional one of selling the product. But a startup selling software has to base it on a value proposition and key differentiation. You can't just base it on cheaper or faster, because anyone else with more resources can already do it cheaper or faster. So you have to do something unique. Vitria's uniqueness lies in its ability to manage communications among different applications and databases in real time: This sounds like most middleware, but it works well enough that Federal Express now detects misrouted packages in real-time at its Memphis hub, before someone calls or goes to the Website to find one gone astray. Moreover, it also provides advance notice of package volume to downstream sorting locations. Other customers include KPMG, Hewitt Associates (the HR consulting firm), Quintessent Communications, Covad Communications, Deutsche Bank, Infinity Financials, QAD, Southwestern Bell, and Vanstar Corporation. KPMG uses Vitria's BusinessWare to track people's project work and availability, Vanstar uses it to manage..."
service calls, and Fujitsu uses it to manage five-day call-to-order assembly for PCs.

Oddly enough, she adds, “The more strategic the software is, the shorter the sales cycle. People usually see large-ticket enterprise sales as having a long sales cycle, but we often close within 10 weeks. Our sales cycle is unusually short because we offer a key value proposition they can’t get anywhere else. A typical software sale can take six months if customers do a feature-by-feature comparison, but when customers do in-depth comparisons it means the product isn’t that strategic anyway; it’s something available from several sources. For us, we usually sign a contract for half a million to $750,000 at first. Later on, we do a follow-on deal for several million. Our sales strategy is to focus on getting a key customer showcase in production in a given sector before announcing it. Then we leverage the customer as a showcase account, and have the salesforce sell in parallel.”

Vitria also speeds the installation process by means of the software’s design: “It’s process-driven, which reduces the work of customization. You take the customers’ constantly changing business processes, and instead of hard-coding them, you translate them into graphical software models that are quick and easy to change. We’re working with partners to develop a set of industry-specific models to work as solution templates for spaces like telco and supply chain. This approach lets the customer modify things easily after we leave, too, which is a real advantage. Meanwhile, we have already managed the glue code, so everything deploys in a very short time frame. Typically, we sell initial production (not pilot) projects, and prove how easy the solutions are to implement. By the time we start asking for the real money for a scaled-up system, the customer has already seen a significant benefit.”

Telecom has been a hot market for Vitria this last year, and accounted for 70 percent of its business (over $10 million in 1998, its first real revenue year). “Deregulation and new services, such as wireless and the Internet, forced them to reconfigure everything,” says Chang. “They’re looking at us to help them tie it all together. The ceos want the big picture. Think about the typical question for consumers: What’s your favorite Website? For ceos in any industry, it’s information about their own company, where they can point and click for all relevant information, such as orders and inventory. What’s key to providing that kind of information is the infrastructure integrating all the systems, making sure it’s real-time, that data types are consistent, that the consolidations include all the units. We can also extend this kind of visibility into the business to reach outside to select customers, suppliers and business partners [following the concept of a business “porthole” outlined in last month’s Release 1.0]. So now you could get your own business information on the Web. A company is not going to allow an outside vendor to build that for them; they want that in-house.”

Chang continues: “Another infrastructure play is e-commerce, which is all about integrating Web-based selling systems with back-end fulfillment and billing systems. Most companies start with their internal value chain and then extend the value chain to include strategic customers and suppliers. For example, what we did for Fujitsu was connecting them in-house, and now
they want to connect closer to their distributors. You work across the enterprise boundaries. For the distributors, that’s the future.”

Of course, she notes, as a sales proposition, “That’s traditionally been much trickier. That part used to slow things down, because you need to sell to and satisfy multiple parties. And with that type of business arrangement, you also had to overcome a usually heterogeneous technology infrastructure. You needed to deal with business processes and policies, and then come to business agreement. But our software was designed to handle exactly this kind of complexity, and that’s what we get paid for.”

Greg Olson, president & CEO, Sendmail.com

Sendmail is one of those artifacts experimentalists love: an example of something and its opposite, with most of the other conditions held constant. Sendmail started in not-business in 1983 when developer Eric Allman [also at the Forum] started sending out his sendmail e-mail program, which he had developed at Berkeley, as part of Berkeley UNIX (courtesy of Bill Joy). It went over very well, and Allman, who eventually left for a day job as manager of client software development at database machine company Britton-Lee, also led a collective that enhanced and supported the software, present on the Net as sendmail.org. By 1996 it became clear that more people wanted to use the software than could possibly be supported that way, and there needed to be some mechanism to support and some way to pay for that support. Allman went looking for a business type - but not too suit-y - and came up with an old friend, Greg Olson.

Olson joined the company in 1997 with the express goal of garnering more resources for Open Source sendmail. What resulted was a new hybrid business model, half free, half paid. But the software itself is still open, since it was developed “open”ly and anyone is free to copy it and to improve on it. They can also distribute their efforts, as long as they do so under Open Source terms.

“On the commercial side, it actually looks very normal,” says Olson. “We have 75 to 80 percent of the mail servers on the Internet. We’re already active with Web sales, direct sales, integrators; we need all of them. From the day we announced the company last March 17, the phone started ringing off the hook. We set up telesales and Web sales when we started shipping in December, but for two months all we did was take inbound calls. We started outbound only in February. We also did a lot of work with OEM channels; Sun, IBM, Compaq/DEC have all signed agreements with us. And we accelerated things by buying the business of MetaInfo, which ported Sendmail to NT and already had 15,000 customers and 60 distributors worldwide.

“First product we released was Open Source 8.9, to show we weren’t abandoning the Open Source community. Ninety-nine percent of our customers are Open Source, primarily through OEM distribution. That’s an advantage of being frictionless.”

Is it okay to call the Open Source version a marketing expense? we asked. “Absolutely,” says Olson. “I explained this to investors, which was one of the early challenges. But it’s also a justifiable QA expense. QA is
worth a great deal to us. We were surprised at how lackadaisical the com-
mercial world is about test versions. You call the best sites to see how
they're doing and they say, 'Uh, I'll get around to loading it next week.'"

"...It was appalling," interjects co-founder Eric Allman. "I was horrified.
Also, Open Source gives us a way to drive standards that are compatible with
IETF processes."

Sendmail, of course, is in an enviable position. At least a third of
Sendmail's two million copies are in commercial environments. The company's
business challenge, ironically, is to penetrate its own installed base with
the supported, commercial version of its product. "But we can't grow fast
even to reach that base overnight, so we need to keep our Open Source cus-
tomers happy to avoid erosion of the base," says Olson. "Upgrade selling is
much less expensive than new-contact competitive selling. In our case, Open
Source is very much like traditional first-one-free marketing. These points
add up to a no-brainer proposition for us. If you are starting a software
company from scratch, you may need to think about it more. And the model
makes most sense for connectivity or platform software where ubiquity adds
an important value of its own."

What did you learn over the last year that surprised you? "Aside from how
hard it is to get commercial releases tested? At the moment, we're scratch-
ing our heads over the strength of the NT market. We thought we'd be sell-
ing upgrades to existing users with exactly the improvements they asked for.
Now we're buried under calls from people who have never used Sendmail but
want it for their NT servers. They're not very oriented to the Net or even
to mail; they simply know that Sendmail is the most prevalent software on
the Internet. And we weren't quite prepared for the number of partners who
need support for e-mail: ISVs, VARs, etc. We began being deluged with
requests a year ago, when there were two of us. Now there are 48." (Make
that 57, he adds in a follow-up e-mail.)

Olson continues: "One of the challenges in creating this hybrid business
model is sorting out the controversy around Open Source. On the one hand
we're working with Open Source OEMs such as FreeBSD or Red Hat; on the other
hand, we're explaining Open Source to traditional IP lawyers. We're trying
to explain to both sides why this hybrid model benefits each of them. Not
everyone can be convinced. Richard Stallman talks about free software and
freedom, but in fact he's restricting use with his GPL license. He believes
it enhances freedom, but this is true only for researchers like himself."

"WHY I WAS PUT ON THIS EARTH...."

Geraldine Laybourne, vice-chairman, Oxygen Media

We humbly asked Gerry Laybourne what wisdom she could bring from the world
of television to the world of online. But she refused the bait: "The
things the Web guys don't understand are the same things the TV guys don't
understand. They still think the men make all the decisions. When you
talk to new media executives, they think all you need to advertise is
speed of access. But women make 70 percent of all purchase decisions.
Women need to see the story behind what's advertised. What is the appli-
cation and how does it change their lives? The TV world doesn't get it, and neither does the Web. Seventy percent of all ad dollars target men's products. Now the same mistakes are being made online. It all goes back to consumer focus. It feels more of a piece to me than one group has it right and that group hasn't."

Laybourne's mission is to fix that - or take advantage of it. Her business model is to exploit the "opportunity for someone to launch a brand for women across many media for the 21st century - a brand that deeply understands modern women. You need both media to build the kind of visibility to start a brand that can thrive in this day and age. Our target woman works in the office on a PC and at home she watches television. She wants a brand that understands her and has a deep sense of humor. We see online as a great casting agent for talent, stories, issues of interest to our audience. We knew we need to be an aggregated presence on the Web, so we bought Thrive and Moms Online and Electra, and then we added Oprah.com."

Isn't all women rather a broad target? "We're focusing on women interested in creating or re-creating their lives, women who are leaning into their lives. A solitary TV brand would have trouble dealing with this large group. We can cater to very big differences, using Websites that are specific. We hired Sarah Bartlett from Business Week to figure out women and finance. We're taking this space seriously because this is modern-day women's fantasy: not a suburban mansion with a lawn, but the fantasy of being an entrepreneur, whether you are a 50-year-old vet's assistant in Cincinnati or a 20-something stock broker on Wall Street. They all want to control their own lives.

"When I started, people would say to me, 'Well, kids is just one group, but how can you look at women as a group? They're so different!' Well, ask any 12-year-old; they don't think they have much in common with a 2-year-old. Meanwhile, I'm looking for what's common between me and my 27-year-old daughter. What are the threads that tie women together? I think that's why I was put on this earth."

In traditional TV terms we'd say we're focusing on a younger demographic but we're really dealing with a younger psychographic - including people like me. When I left Nickelodeon, I felt my age - 48. When I left Disney to start Oxygen, I felt 38 again. (I have no idea what age I felt at Disney.) Throwing yourself off a safe corporate perch is energizing. In the corporate world, after you reach a certain level, you just have to maintain the status quo; you aren't testing yourself every minute. As Nickelodeon got more mature, the staff had me pegged as to what I liked and wanted. I could hear them in the halls saying, 'Well, Gerry won't like that,' but what I actually like is new thinking...."
Thus far the Net has transformed just about everything in the computer industry except the computers themselves. Long ago we changed the “PC” in the name of our conference to mean “platforms for communication,” but the outlets for that communication remain limited. The average home has dozens of microprocessor-driven devices that can’t speak to each other. Even connecting someone else’s printer to your laptop can be a daunting task.

Help is on the way. Companies such as Network Computer Inc. are building software optimized for new computing platforms such as interactive set-top boxes. Sun has introduced Jini to make it easy for these appliances to connect to PCs and other devices. Are we witnessing the next great shift in computing, as significant as the transitions from mainframe to minicomputer to desktop PC? Or is this just technology for its own sake? Where some see a revolution, others see nothing but another front in Sun and Oracle’s war against Microsoft.

In the end, consumers will decide through their buying preferences. That means we need to consider marketing, advertising and branding for an increasingly mass-market audience. How do companies interest ordinary consumers, especially women and those who aren’t online, in all these new gadgets? Mary Lou Quinlan, who has spent the past 20 years in the advertising field, may have something to say about this.

Bill Joy, vp of research and founder, Sun

We’ve already met Bill Joy the developer. In this session we take a deeper look at one of his creations: Jini technology. Jini as implemented builds on Sun’s Java platform, but the concept goes back earlier than Java in its current form. Joy traces Jini to a presentation he gave at PC Forum in 1992, envisioning an emerging world of connected devices. Jini is an enabling technology for distributed computing, where traditional networking techniques break down. The reality is that bandwidth isn’t finite, latency is never zero and things break. Loading device drivers for every new service on the network would be too cumbersome even if it worked reliably. Distributed systems require new mechanisms for dealing with objects and services.

Joy describes the traditional computing worldview as Ptolemaic: the PC as the center of the universe, with the world restricted to a local disk drive. Sun’s motto is that the network is the computer (tm), which now means that the Web is the center. Joy calls this the Copernican approach, more interesting but still limited. Jini takes a third approach, which Joy calls Einsteinian or relativistic: “The world of the future is ‘you’ as the center.”

“As you move around, the set of devices and services that are relevant to you changes,” Joy explains. “Hence the ‘lookup’ service, which sees your context as a set of services, represented as objects. You can then find an application which is relevant to the objects in your proximity.” You would certainly want different applications in an airport from what you would want in a restaurant, for example.
Jini is designed to make it easy to use all the networked devices in the vicinity. Every device or service is represented by a Java object. A light bulb need not embody a full-blown Java virtual machine; all it needs is an agent implemented in Java that can move around the network and execute code. Thus, someone with a digital camera could simply plug it into a network (or use a wireless connection) and have immediate access to all the nearby printers.

Anyone who wants to define a new service can simply pass the code around to other points without having to describe the service itself. Let's say you wanted to make global positioning service (GPS) capability available to other devices on the network. The traditional approach would be to define a GPS specification through the applicable standards bodies, or to create a proprietary implementation and force others to implement it. With Jini, the GPS service could simply be made available to all devices.

Sun is also working with consumer electronics vendors backing the Home Audio/Video Interoperability (HAVI) standard for networking entertainment devices. HAVI isn't IP-based and runs only over Firewire (IEEE 1394) connections; Jini can serve as a bridge language to connect HAVI clusters with other devices and services in the home. Of course Microsoft has other ideas. It has announced a Jini competitor called universal plug and play (UPnP), along with a HAVI-alternative called Home Application Programming Interface. But UPnP is PC-centric, and Joy says that “in a world with lots of people moving around, there is no single PC that is the center." Even if UPnP works as a way of sharing peripherals, he continues, it doesn’t really help the market move beyond PCs to simpler and richer appliances.

“Just like TCP/IP paved the way for things like the Web," Joy predicts, "Java and now Jini pave the way for simple and powerful information appliances, tied together by context-aware applications and enabled by agents.”

Mitchell Kertzman, president and ceo, Network Computer Inc.

When Mitchell Kertzman left his position as ceo of Sybase last year to take over Network Computer Inc. (NCI) last year, some people were surprised. After all, NCI is a spinoff of Oracle, Sybase’s mortal enemy. But Kertzman says the move made perfect sense. “Based on the history of the software industry,” he says, “the way to create a software company of significance is to be the leader in a software product category as a new successful platform emerges.” Powersoft, which Kertzman helped found and later sold to Sybase, rode the growth of the client-server platform. Kertzman says the two most significant trends in the industry today are application outsourcing and information appliances... and "NCI represented the leading company" in the latter space.

Kertzman sums up the case for information appliances as follows: “I believe the center of innovation, investment, and ROI in the industry has always migrated to the high-volume, low-cost computing and communications device.” The PC has been the low-cost computing device for some time, but that’s starting to change. According to Kertzman, “The nature of the software platform on the PC is such that generally if you have a recent-generation computer, you are not going to see much benefit from upgrades.”
This year's Pentium III has a higher clock rate than last year's Pentium II, but the difference in performance is hardly noticeable for typical applications like word processing. Kertzman believes that "we're going to see diminishing returns to making the PC bigger and faster; instead what's going to drive that upgrade cycle is repeating that process in information appliances." Appliances will drive innovation because they bring new challenges: new form factors, miniaturization, heat management, communication technology.

But the PC seems as entrenched as ever, we protest. Kertzman argues that's the wrong question: "New platforms don't replace old platforms," he says. "They extend computing." Rather than seeing information appliances as substitutes for PCs, we should think about new value that they can add on their own. As a result, Kertzman believes that information appliances will be popular in many homes that already have PCs. You wouldn't want to use a set-top box for your primary word processing, but you might use it to send an instant message to a friend.

Particular kinds of appliances should reflect different design imperatives, Kertzman believes. For example, devices that involve the TV should provide a TV-based user experience. A user sitting on a couch with a remote control is in a very different situation from a PC user with a keyboard sitting 18 inches from a monitor. In particular, TV is a passive medium. Kertzman says that "users have to be able to get as much value with as little interaction as possible, and then scale up depending on whether they want more interaction." NCI's set-top box software incorporates a "walled garden" metaphor, which directs users to a limited base of content but still allows them to venture out onto the open Net if they wish to. NCI mimics the familiar channel up, channel down metaphor in its TV-based devices, because it's easier than selecting bookmarks from a menu and more in sync with user expectations.

No one can be sure what applications will drive the proliferation of networked computing devices in the home, but Kertzman is convinced the market will be huge. He draws an analogy to the early days of the PC. People wondered what the value would be of having a PC in the home. The "killer app" most often mentioned in those days was... recipe management. Remember? Somehow that market never exploded, but PCs invaded the home nonetheless. Kertzman explains that there is a chicken-and-egg dynamic at work. There needs to be enough investment in the platform to convince application developers of the market, but once developers get going they come up with innovative uses the hardware vendors didn't anticipate.

Kertzman is upbeat about the prospects for interoperability among information appliances. He believes that the consumer electronics industry is moving more towards the notion of standards and open platforms, and points approvingly to the recent Jini/HAVI partnership. Kertzman sees Microsoft's UPnP as largely an effort to slow down competing initiatives. The appliance market brings together many large players including consumer electronics vendors and telecommunications companies, all of which are concerned about Microsoft exerting too much control over them.
If information appliances are going to take off, consumers will have to buy them. We're talking about true consumer products, not just things for geeks and early adopters. That means marketing and especially marketing to women, who purchase two-thirds of all consumer goods in the US. Mary Lou Quinlan, who during a career in advertising has handled brand-building for everything from Seiko watches to Avon products, has a unique perspective on this challenge. Formerly CEO of ad agency N.W. Ayer, which worked with clients such as Procter & Gamble, GM and AT&T, she is now vice-chairman of the MacManus Group and head of her own consulting company. Her particular focus is marketing to women across old and new media.

"Most marketers are good at collecting data about people, but they really don't understand the language and the way they emotionally connect," Quinlan explains. If you can elicit from consumers their real feelings, you can better tailor your marketing and advertising to touch what motivates them. Traditional focus groups are too antiseptic to draw people into saying what they truly feel, she says. Quinlan's answer is to turn the focus group into a talk show, "Just Ask Women." She brings together about thirty women in an environment just like a TV studio, with herself as host. "I'm there as their empathetic, Oprah-esque friend," Quinlan explains, not as a neutral researcher. Faced with a caring listener in a familiar environment, participants open up to a surprising degree. In the works: a Web version and an actual TV talk show along the same lines.

What has Quinlan learned about women's response to technology? Women are more and more embracing technology, she says, but they don't like it when advertisers target them in obvious and simplistic ways. The key is to relate products to things women actually need in their lives. As an example, Quinlan points to the AT&T ads in which a mother takes her kids to the beach because she's able to participate in a meeting using her cell phone. (Stay tuned for more case studies live on-screen at PC Forum!) Quinlan says more women are going online today because they see the communications capabilities of the Net, and women love to connect with one another (and with men, too!).

"The thought of interactivity coming to a TV near you is thrilling," Quinlan admits, but vendors still need to explain how will affect people's lives. Instead of marveling at the technology, companies should talk about how your TV can be your department store, research library, and friend in ways that make life more exciting and happy. It's also important that devices be easy to use and familiar: "If it's as simple as a remote control, I don't think there's a family that isn't looking for ways to enrich their lives," she says.

OK, we ask, what would you do if Bill Joy or Mitchell Kertzman hired you to market their products to women? (And would we get a commission?) Provide as many scenarios as you can to show how the product fits into people's lives, Quinlan says. Stay real, don't get jokey or slapstickly. Convince consumers that we are a part of your life, and that we can make your life just a little bit better. But Quinlan cautions that it's important to be "humble enough to look at this and present it as just another simple solution." People building information appliances may believe they're changing the world, but most women have more immediate things to
worry about. Women are usually the ones trying to orchestrate some pattern in the chaos of their families' lives, she points out, so anything that gives them back more time or control is welcome.

Quinlan sees great potential in the Net as a marketing tool, especially for women. "It seems more in sync with where people's lives are than other media," she explains. People seem to be moving faster in their lives, and are more interested in personal growth. Women in particular "have all these roles that they seamlessly move between" - Quinlan's own airplane reading material often includes both Fortune and InStyle magazines. "What's so great about the Net is that it's almost asexual," she says. "I can choose my orientation at that moment." On the other hand, "where old media suffers is that it's kind of static."

The challenge is to take the flexibility and targeting capability of the Net and feed it back into the advertising industry, which isn't used to thinking in those terms.

Thank you, thank you, thank you!

Our thanks to the following companies for providing products and services without which this year's Forum would not have been possible: IBM for NetStations and flat-panel displays, ExpoNet for T-1 connections to the Internet, Tektronix for color printers and on-site signage, Tut Systems for data-over-copper technology on our Forum network, RadioLAN for our wireless network, Allaire for ColdFusion application server software and finally Lante for, as always, superb systems integration. And of course, we are indebted to our wonderful staff (you know who you are...) for all their great work!
WEDNESDAY - ON TOP: THE TEXTURE

On top of the infrastructure and the architecture is what end-users actually see and interact with: content, interactivity, online stores, news. This user experience, in principle, is what it’s all about. There’s branding, messages, market segments.

Nonetheless, we’re still in a technology business. Companies building e-commerce and portal sites need to figure out what consumers want, and then they have to deliver it in a compelling package. Behind the scenes, they have to figure out revenue models: advertising, transactions, stock sales?

MARKETS, NEWS & ENTERTAINMENT: TWO VIEWS

Does a free market produce the best of all possible worlds? Now, we’re not talking so much about competition and antitrust, as about the quality of information, about products, stocks, even current events and government activities. We’d like to believe that people will flock to media that offer the truth. But good news sells when it lets people avoid unpleasant truths. Bad news sells because it’s “interesting” - whatever that means. But does the truth sell? How much should we care, when after all people are getting what they seem to want? Our two speakers on this topic bring different perspectives to it... now that is true!

Barry Diller, chairman & ceo, USA Networks

Barry Diller’s name transcends that of any of the many companies he has been associated with, but for the record he is ceo of USA Networks Inc., which has just announced plans to merge with Lycos and integrate it with other properties including Ticketmaster, Citysearch and Internet Shopping Network. USA Networks also has substantial television interests, including a chain of local TV stations, the Sci-Fi Channel, the Home Shopping Network and Studios USA, a production company. Diller has a unique feel for popular culture and knows how to give people what they want.

Says Diller: “There are all these new information systems that allow you to deconstruct almost everything. There’s disintermediation of information. People can look behind the screens. Some people will want Goto.com; it’s a factual way of knowing who wants your attention the most. Previously, no one cared enough to ask those questions in even the most subtle ways. When you can see who paid for ad space... Is this cynicism good for advertisers?"

Why did you do Lycos? “We started with two areas, Citysearch and Ticketmaster; we had the beginning stages of e-commerce with HSN. But we still needed a national Internet voice, and Lycos has one. In order for us to have all the clay in one tent, to build the business, we needed a national voice, to marry to our video networks. How will we change it? In the end, all these things get back to what’s the service? What’s the product? How does it feel, look, do its stuff? Right now, the Net is not intuitive enough. It does not speak plainly or appealingly or seamlessly. We’re trying to address this with Citysearch. These are not advertising media except in a new definition of advertising, which is direct selling.
But there are a lot of products that won’t really support a chat room about the product itself. You could imagine a Motley Fool for vacuum cleaners. I’m sure there’s an area for it somewhere, but it’s not something that I would pursue."

The Diller approach is plain old direct selling, but far more interactive and at the same time, more direct. Says he: “People’s interests take care of themselves; these Net systems are enabling in that regard. There are people who want to spend their life hearing other people’s opinions. I don’t think they do anything else. If someone wants a vacuum cleaner, you can make them buy yours, artfully or not. You don’t need to get a discussion going.”

[Actually, check out www.dyson.com, the leading UK manufacturer of vacuum cleaners. No chat room, but a lot of other stuff!]

Is the Internet stock market a substitute for gambling? Maybe, says Diller, but he considers another aspect more important: “People have been enabled, because for the first time there’s no filter. It used to be that you put your money with a broker or in a fund and let smart, focused people make investments for you. The Net is empowering and enabling: You get to do it for yourself.”

Not that it’s a good idea. “In fact,” he says, “I think it’s worse than gambling, because people think that they know what they’re doing when they don’t. They’re acting on what they believe to be real hard information, but isn’t. They are doing professionals’ work themselves and feeling ‘smart’ about it. Collectively, they are so in over their heads.... If you track what they say, it’s got about 30 percent smarts in it, but none of it is thought through. The 70 percent that’s missing is all that counts. People are floating opinions and spinning and spinning... It’s monumentally ill-advised. I talk to people who do this; some are very rich, great talents, actors. One friend of mine has $400 million, and he day-trades a million or two a day. This person is telling me what he thinks about these stocks and why, and I think this is really reckless. He can afford to lose what he’s risking, but other people can’t. I have another friend who has put 75 percent of his $400,000 net worth into this. I say to him, ‘Oh my God, please, tomorrow, sell everything!’ I don’t believe it’s gambling, because people don’t understand the risks they’re taking. It’s a new breed of investment, but it’s really unstable and unsound. Can the feather keep rising in the air?”

Larry Summers, deputy secretary, US Department of the Treasury

Larry Summers, a former economics professor at Harvard, recently appeared on the cover of Time magazine along with his boss, Treasury Secretary Robert Rubin, and Alan Greenspan. As the junior member (44) of what Time called the Three Marketeers, he best appreciates the implications of the Net on the economy. Conversely, he sees the Net from an economic perspective. On privacy, for example, he notes that there’s “a set of issues around the fact that Americans don’t like their privacy invaded. But the creditworthy in a poor neighborhood benefit from less privacy, since otherwise they get lumped in with their less creditworthy neighbors. There are a lot of instances like that, where sharing information yields eco-
nomic benefits at the cost of privacy. Those issues have something to do with whether you can have a good capitalist economy if you have TVs but no telephones in your country - that is, no way to check information, or for individuals to send their own back. It's probably a central issue for a lot of people in your audience: How do you foster good but costly information when so much information is free but not necessarily reliable?"

He continues: "I'm fascinated by the combination of those three things... the right organization of an economy given telephones and TVs... which is to say, the Internet. I would make the case - congenial to your audience, I assume - that the one-way broadcast model has become dysfunctional. Markets require not just central information sources, but feedback loops, reputation systems. And ideally that feedback works quickly, not over years." Drawing from his international experience, where murky markets have led to many collapses recently, he says, "Rules requiring transparency can make market response more gradual, but they also impose an obligation on participants to be transparent. You could say that conscience is the fear that someone's watching, and transparency induces that fear."

He muses: "To what extent is transparency so obviously a good thing that it will meet the market test? That is, will it simply come about because people value it and benefit from it? People should flock to transparent markets.... But they don't necessarily. Think of other parts of the world, or of what's going on with online trading right now. People don't ask for information you'd think they should ask for." Indeed! It all makes you wonder why online stock trading isn't better informed. Why doesn't the good information drive out all the trash and hype online? This raises questions, says Summers: "To what extent should transparency be mandated? To what extent should we regulate disclosure? This applies both to financial markets and to things such as privacy."

At Treasury, Summers occupies a unique perch, watching the world change both domestically and overseas. In the US, the market is becoming ever faster and quicker, to the extent that people act too quickly on shoddy information. Overseas, by contrast, information has been hidden, and markets have operated too slowly, building up huge inefficiencies - that is, artificial values - on the basis of artificial, nonmarket rigidities. People believed governments would step in where values got too out of whack. Banks were considered too big to fail. In the Internet world, stock prices are likewise divorced from reality. Do we see Microsoft and some of the others in the role of governments, ready to rescue faltering giants such as Netscape?

**PANEL: HOW DOES THE NET TRANSFORM SALES & MARKETING?**

What happens to sales and marketing on the Net? The new online markets are growing with extraordinary speed even though they're a small part of the overall economy, even in the US. Although everyone talks about the consumer experience, and in the long run it will be the differentiator, the very frictionlessness of the Net makes the math and angularity of commerce more visible and more important. Pricing matters when consumers can compare prices instantaneously. As sites offer thousands of SKUs, you need automated tools such as pcOrder's to keep track of all the combina-
tions, what goes with what and at what prices. As pricing gets more competitive for everything from airline seats to cars, vendors want to find not just the upscale consumers and the people willing to pay higher prices in an auction, but also the hidden demand from people who can help cover costs even if they don't contribute to profits. But, notes Jay Walker, they want that demand to stay hidden so that it doesn't lower prices overall.

Meanwhile, in the financial markets, there's a visible revolution as information is democratized; just as everyone is now a programmer using "user-friendly" software tools, so can every investor become his own investment advisor. And, amazingly, revenues don't drop, because the level of activity makes up for the drop in pricing.

Christy Jones, president, founder and coo, pcOrder.com

In 1989, Christy Jones co-founded Trilogy, the Austin-based company that drew most of its initial employees - including Jones - from Stanford. As vp of marketing, Jones ran a modest internal project with the goal of reconfiguring the entire computer industry, she recalls. The idea is basically a content-filled platform for e-commerce in PCs and related products. It stemmed from Trilogy's work building configuration systems for most of the major US computer manufacturers. "Everyone loved the technology," she says, "but when we started what eventually became pcOrder back in '96, the Net was new. Everyone was trying to sort out what the project meant and how the Net would disintermediate existing players. pcOrder was seen as something that might not support the channel players."

Jones herself wasn't quite sure at the time, and in early 1996 she spun the company out of Trilogy, which made everyone more comfortable. She recalls: "Because 70 percent of PC and related products go through distribution, working with distributors was the first step. It gave us a proposition to go to the manufacturing industry with. Now everyone is going hybrid [in sales channels]; they need one common platform for all the different modes, so having that channel platform in place has been a huge advantage for us. We started with catalogues and configuration systems, building a standard format that could be used across the industry. HP and Compaq were building their own formats, and would have been totally incompatible with Ingram. Meanwhile, I was trying to understand what our business model would be: Should we be a branded portal? But we saw that it would be a bigger play to be behind each portal, to be the 'Intel inside' for e-commerce. We're just the enabling platform."

She continues: "Since late 96, our customer list has become dominant in the online marketplace. About 70 percent of [online pc] distribution volume goes through us, and about 30 percent of manufacturers' volume, notably HP, Compaq and IBM. We also support about 50 percent of the resellers' business, mostly the major ones; we have lower penetration in small/medium VARs." Of her Texas neighbor, she notes, "Dell has been watching us. Michael and I have traded e-mails. But they've been so far ahead of everyone else, the pain of being nonstandard hasn't been so high."

Now pcOrder is building out its relationships with service providers. "The customer will drive the industry evolution," says Jones. "There will be more efficient flow of inventory, more build-to-order direct from the manufacturer, huge changes in how product gets delivered. But industry
won’t all go 100 percent direct, because customers want a full range of choices. You could envision that if someone doesn’t see value in the hardware, you could take what we’ve done, offer a broad range of brands, and offer it directly to the customer. The value would be in controlling the customer, adding support and service. Someone could do this and gain huge share, selling anyone’s hardware.” That’s an interesting notion, isn’t it?

For all that pcOrder uses Trilogy’s high-value, object-oriented, constraint-based software platform, much of its value is in the company’s continually updated, data-rich database of 600,000 SKUs (stock-keeping units) from 1000 manufacturers, complete with information on what works with or requires what, what’s in stock, and pricing information for individual items and combinations of them. “Content drives e-commerce,” says Jones. “We had always bundled our content: If you wanted to use our software on your Website, you had to use our content. Typically, our customers would pay for the software. They pay us based on the number of software modules (catalogue, configuration, etc.), number of users, and volume of transactions. They also pay for usage above an agreed minimum.

“But now we want to offer our content as a ‘pcOrder inside’ approach too. For example, Egghead.com is using all our content on their Website. We want to be the content provider to anyone who has a PC-related commerce Website. For example, when you buy a ThinkPad, a little box pops up offering you a Xircom card properly configured for the ThinkPad you just ordered.” The business model isn’t quite worked out yet, but it might depend on how many datasheets are served by a Website (pcOrder’s customer), or it could be a (higher) commission on actual sales generated.

Bob Lessin, chairman & CEO, Wit Capital

Until mid-1997, Bob Lessin was just an ordinary, mild-mannered investment banker, but one of considerable standing as vice chairman and head of investment banking at Salomon Smith Barney (part of the Travelers Group, which is now part of Citigroup), and at Morgan Stanley before that. “I was a conventional investment banker,” he recalls, “and then I wrote a book about new opportunities called ‘The Middle Chapter’ and I realized that I would be the world’s worst hypocrite if I didn’t act on my words.”

He spent a year extricating himself properly from Smith Barney Travelers before joining Wit. He met the founders of Wit Capital and had little doubt: He had to either join them or compete with them. Aside from great people, they had “two years of NASD approvals,” and so he joined up, taking a large (but not the largest) share of equity. Now, he says, “I am trying to break into a country club of which I was once a leading member.”

He takes pains to distinguish Wit, an underwriter that operates over the Net, from online securities houses that focus more on trading or even the auction house recently formed by Bill Hambrecht of Hambrecht & Quist fame. Wit has trademarked the term e-manager. “IPOs are the last bastion of fixed pricing,” Lessin says. “It’s clear it will end, but I don’t want to be the one to do it first. Meanwhile, the other firms can trade, but where’s the research, the aftermarket, the quality control? That’s why we brought in Jonathan Cohen [formerly head of Internet research at Merrill
Lynch].  We turn down five times as many deals as we do. Right now, we’re building a reputation, based on the quality of the deals we do, consistently. I can’t wait until I can do a shitty deal and still survive.”

Lessin also takes on the current froth in Internet stocks. “Right now,” he says, “when you do an offering it goes $14...$90...$50. The institutions come in at 14 and sell out between 50 and 90; they’re getting all the upside and selling out. Our clients ask: Why are we diluting ourselves for people who are just flipping the stock? We’re giving it away to people who won’t even be our shareholders at the end of the day. It’s a gimme, a gift! All we want is to give back to the company some of the gap between the 14 and the 50” where the market ultimately settles.

“In the old days,” he continues, “the institutions brought the value of a monopoly; they had access to unique information. Now we have access to the issuers’ user base, and all they have is 10Ks. Warren Buffett bought Coke stock because he liked Coke the drink. In this new world, it’s normal for customers to become shareholders.”

Where are we in the stock market as a whole right now? “You tell me how to price a discontinuity in the world economy, and I’ll tell you how to price the Internet,” says Lessin enthusiastically. Pressed, he continues, “It’s somewhere between the 90 and the 50. That is, prices have swooped up from unrealistically low prices based on old industrial values, to an unsustainable euphoria. But 50 is well above what traditional valuations would lead to.

“We’re in a perpetual deflationary environment. Every deal we see is taking cost out of the system. Growth, in a deflationary world, is to be cherished. Only the Internet and consolidation offer growth in a growthless economy. I feel a sense of panic and urgency. The world will be restructured in five years. After that, the intellectual level needed will be beyond me.”

Jay Walker, vice chairman, Priceline.com

“Why do you patent your business methods?” we challenge Jay Walker, founder of Walker Digital, a think tank (or intellectual property lab, as he describes it), and founder and vice chairman of Priceline.com.

“For two reasons,” he says. He launches into an impassioned defense of the patent system: You can prevent what he delicately calls “margin compression” from “copy-cats who would build on your hard-won R&D and reduce your margins; you want to protect your investment, especially in the early stages. You don’t want to reduce all the incentive to invent. In countries where there are no patents or copyrights, there’s no investment in intellectual property. Anyone can copy anyone else, regardless of the originator’s rights.”

He muses: “The patentability of business methods is worth discussing. For example, should new forms of DNA for a business, a cancer drug, or a new plant be patentable? I think the answer is yes. If there are social reasons to manage pricing, such as with a life-saving drug, that still
shouldn't prevent a patent from being awarded. Inventing is inherently risky and often expensive. It needs to be rewarded."

The second reason, he says, is to help inventors looking to raise capital for their businesses: "A patent serves as a barrier to prevent confusion in the marketplace about what you're doing, and to establish your idea as unique and distinct," he explains. "Our initial patent (there are 17 pending) was one of the reasons priceline.com was able to raise $100 million in three rounds of private financing. We couldn't have done this with $1.50 in a garage. Patents actually level the playing field for the little guy. Larger players like Microsoft or AOL can't copy patented ideas and crush a small startup by giving product away or leveraging their position in the market. The browser war would have been very different if Netscape had owned core patents."

How broad is Priceline's patent? Walker quips, "As the lawyers would say, that requires a legal conclusion. The natural reaction people have to patents in a new area such as business methods is to pooh-pooh them or say, 'Let's wait five years and see what shakes out.' But the fact is these patents are very real. They're here today. And the courts don't take infringement lightly. I look at people who say let's wait five years... and in the meantime I'm in business. This is not to say I'm an apologist for all patents everywhere. The system is deeply flawed and in desperate need of reform."

Priceline also has some intellectual ambitions, based on revenue management - the science that says pricing and other factors can be manipulated by a seller to maximize revenues over time. "The seller can manage prices and inventory - using statistics, buying patterns, trying to project based on history, seasonal factors, weather, competition. The revenue systems of every airline in the country are in overdrive at the moment trying to figure out what to do with 10 percent of the inventory out," he says with relish, referring to the recent American Airlines strike...er, sorry, sickout. "Revenue management tries to figure out how to do that. The ability to adjust pricing in real time electronically is almost complete."

He continues: "In markets with an electronic overlay such as airlines, you have the ability to practice very good revenue management, and with a commodity pricey enough to justify it. The airline industry was the first consumer market to do this. (And yes, stock markets are becoming consumer markets, too. Others will follow.) Basically, People Express was a great concept, but it was put out of business because the other airlines used their revenue-management systems to outmaneuver it and then kill it... the first business info warfare ever...."

He continues: "Traditional revenue management lets you manage price and inventory, but until now you could never see the third dial: What is the demand at each price? Until Priceline, you could never see below-price demand. You could never see how many $199 walkaways there were for a $200 product. Priceline says, 'We can collect retail demand below the price-line,' and you the seller can decide whether you want to accept some of that without sacrificing your price integrity. You can do it privately. Obviously, you want to hide the transaction volume below the price-line; you don't want to upset the full price. And we don't want to embarrass
customers five minutes later by offering something they just bought, at a lower price."

He continues, "Priceline is the first of a class of solutions for collecting demand as opposed to collecting supply. TAT has lots of dark fiber, for example, and would like to see the full potential demand for it. Buyers have never before had the ability to say 'here is my demand;' all they could do was buy or not at a variety of prices offered. Look at the wanted to buy section of the newspaper. Not much there...

"But now the P&Ls of sellers no longer need suffer from this frozen capacity. We see a field of demand collection and visibility building. It's the exact opposite of stock markets, which seek a single clearing price [though it changes from day to day or hour to hour]. Markets are great for buyers." Waxing eloquent, he concludes, "We have borrowed uncertainty elements from the layman's world of physics. This is like allowing light to be a wave and a particle at the same time: a fixed product and an uncertain one at the same time."

Walker Digital doesn't actually run businesses itself, although it helped to create Priceline. "We go to, say, AT&T, and say, 'Hi, we have some new DNA that we think could be very profitable in your company.' We want to license the code that can restructure a business's information practices to large practitioners who can leverage it."

Panel: Portals inside out - What makes them work?

As popular as they have become, portals are something of an anomaly. They trumpet aggregation in a world of increasingly fragmented audiences, and attempt to create stickiness in a supposedly friction-free medium. A few companies such as Yahoo! have shown that this model can lead to profitability. They have been amply rewarded by the market... so far. The landscape continues to change rapidly, with NBC, Disney, USA Networks and AOL all making deals in recent months to acquire portals, and Yahoo! itself buying GeoCities.

Just what kind of business is a portal, anyway? In the media world content is king, but it's not so clear which content really counts on the Web. All the basic components, from news headlines to free e-mail, have rapidly become commodities. Companies that want to succeed will need defensible differentiators. Is audience interaction one answer? Deja News thinks its rich trove of user-generated content gives it a leg up. What about the infrastructure to support streaming media, which broadcast.com considers its secret weapon?

Portals have traditionally thrived on breadth, but now we're seeing the emergence of vertical portals, personalized business portholes (see Release 1.0, 2-99) and portal networks such as Lycos that maintain several narrower brands. Even Allaire's ColdFusion site is a sort of portal, as we described above. Will depth eventually win over breadth? Phrased another way, are portals just a way of driving audiences to the real winners: targeted e-commerce sites?
Like many Internet start-ups, broadcast.com began as a solution to the founders' personal needs. Mark Cuban and his business partner Todd Wagner were both Indiana University alumni, but living in Dallas they couldn't get radio coverage of IU basketball games. When RealAudio came along, Cuban, who had run a successful systems integration company, realized that streaming audio over the Internet could be the solution. He started encoding eight-hour blocks from a local radio station and making the content available on demand. Working out of a second bedroom through an ISDN line, he began offering up live radio station broadcasts in September 1995. The company (then called AudioNet) kept adding stations and sports teams to its roster; today, broadcast.com offers programming from 385 radio stations, 40 TV stations and 420 teams.

Cuban acknowledges, "We thought like everyone else that it was going to be an advertising-driven medium, and we learned very quickly it wasn't." Instead, broadcast.com has used its consumer portal as a proof of concept for its real business - providing Net broadcasting services to companies. "Every company in the world can benefit from real-time communications to their customers, employees, vendors and shareholders," Cuban says. Thanks to its Website, Broadcast.com has already proven that it has the infrastructure and experience to support hundreds of simultaneous events to millions of users.

But how is that a defensible business? we ask. Can't everyone else just point users to the same radio stations? First off, Cuban says, broadcast.com hosts and has licenses to 99 percent of the content reachable through its site. And the remaining one percent that links only to the site have to pay broadcast.com for the privilege. The barrier to entry isn't the front end, Cuban explains; it's the back end. "You are going to have to have the infrastructure in order to deliver," he says, and the infrastructure is subject to economies of scale.

Not only is broadcast.com bigger, but it has three years of experience managing the delivery of streaming media to large numbers of users, and there's no substitute for real-world know-how. Broadcast.com's first-mover advantage also gives it an opportunity to lock up major corporate accounts, and Cuban says building a high-quality sales force has been one of his top priorities. As Cuban sums it up, broadcast.com's business is "eyeballs and content as proof of concept, infrastructure for delivery, and a sales force to adjust for what you have to sell."

Broadcast.com is both a portal and a hub. Users see it as a doorway to content, but for ISPs broadcast.com can serve as an intermediary. For example, the IP multicast standard allows streaming content to be delivered much more efficiently, because every user doesn't have to receive a separate stream all the way from the source. However, ISPs themselves typically have no incentive to multicast-enable their networks. Broadcast.com goes to ISPs and pays them to deploy multicasting, which improves its own ability to deliver content to users and dramatically reduces its costs. Cuban draws an analogy to the satellite industry: Cable networks compete with one another, but they all use the same satellites to deliver their programming.
Cuban believes that convergence, or de-fragmentation of media as he puts it, creates tremendous opportunities for broadcast.com: “In a de-fragmented world, all media forms need a distribution and aggregation point. That’s us.” The company is extending its expertise to any available distribution mechanism, including digital television. Broadcast.com is partnering with broadcasters, so that, for example, Madonna’s new CD could be delivered over a digital TV channel in the middle of the night. “Anything where there is digital distribution of bits,” Cuban promises, “we’re going to be there.”

But the Net is more than just another distribution channel for established media. It also changes media in unpredictable ways. The question, as Cuban puts it, is “What do you get when you combine media and communication in a digital world?” One thing you get is business models that don’t necessarily depend on advertising. Cuban gives an example of a record label that grosses about $4 per CD. It could potentially make much more by releasing individual songs, live tracks or other content via the Web, even if the face value of each component is far below the retail price of a CD. Old media may not be prepared for these models, but Cuban is confident about the growth of Net-based streaming content. A recent study commissioned by broadcast.com found that in a typical office building, 95 percent of desks now have PCs with Internet access, 32 percent have radios, and nine percent have TVs. In other words, for that environment broadcast.com has greater reach than all the TV networks combined.

Peter Neupert, CEO, drugstore.com

When Peter Neupert left Microsoft last year, he could have done just about anything in the industry. In 11 years at the company, he had risen to vice president of news and publishing for the Interactive Media Group, responsible for such high-profile - albeit low-profit - ventures as Slate as well as MSNBC. Yet rather than moving to a media or content-oriented venture, Neupert took the helm at embryonic e-commerce venture drugstore.com. But Neupert says his new job was an “unparalleled” opportunity, the confluence of a huge market category, good people and good investors.

We asked Neupert how, as a targeted site, drugstore.com plans to compete for eyeballs against the monster portals. “It has more to do with technology than with eyeballs long term,” he says. “As long as the Web is growing very quickly, portals play a very important role in terms of identifying to users where to go.” But as users become more experienced they develop stickier relationships with destination sites.

Neupert thinks the more significant question is: “Do the portals try to impose technology on other sites as a way of creating stickiness, and is that what customers want?” For example, portals may offer users one-click shopping across a network of hosted or partner stores, but that functionality doesn’t operate elsewhere. Neupert thinks that eventually user information will migrate away from individual sites (to the browser or some intermediary), which will reduce the hold that portals have over users.

At first glance, it seems that drugstore.com is simply trying to replicate a physical drugstore in cyberspace, but Neupert points out that there are many products in a typical drugstore that the company has chosen not to
carry - photo finishing, consumer electronics and food, for example. “What we’ve focused on are products for your body, where information value really matters,” he says. Drugstore.com hopes to empower and educate users with features such as personalized shopping lists, e-mail reminders and e-mail access to live pharmacists and beauticians. On the other end of the spectrum, Neupert says the company hopes to offer products usually sold through department stores, so long as they fit into the general health and wellness category.

We spoke to Neupert the day after drugstore.com went live. With interest piqued by Amazon.com’s acquisition of 46 percent of the company, drugstore.com experienced extremely heavy demand right off the bat. Neupert says his biggest initial surprise was how willing customers have been to try out online prescription fulfillment. Drugstore.com offers 15,000 over-the-counter products along with prescription fulfillment. Neupert believes the online prescription service appeals most to customers with chronic medical needs who are looking for better service than they get from brick-and-mortar pharmacies. The company has regulatory approval to ship prescription drugs to all 50 states. To fill a prescription, customers have four options: ask drugstore.com to contact their doctor for approval; transfer their refills from another pharmacy; mail the prescription to drugstore.com (which then contacts the doctor); or ask their doctor to contact drugstore.com.

Several other companies have either entered or announced plans to tackle the online drugstore space, including Greentree, PlanetRX and Soma.com. Neupert is unfazed, saying that “the biggest competitor is customer inertia. These are things people buy all the time.” The mail-order pharmacy business alone generates $13 billion per year in the US. As with any new business, drugstore.com’s challenge is to build a recognized and trusted brand, although the company’s early visibility and the Amazon.com relationship should help. Neupert believes portals are a “necessary but not sufficient” distribution channel for e-commerce sites such as drugstore.com, and that effective communication with customers will make the biggest difference.

Tom Phillips, ceo, Deja News

What do the portal guys not get? we asked Tom Phillips, just to get things started. “Well, he muses, “a portal is the point of entry, the first place you go... The dilemma - I’m sympathetic rather than critical: just because you’re a utility doesn’t mean you need no emotional content. Let’s face it: There ain’t a lot of personality in these sites. Yahoo! is the king because they’ve got a great name. Yahoo! - the brand - is nicely evocative and tongue-in-cheek. But there’s nothing tongue-in-cheek about the brand Excite; it’s too literal. I use it, and as a utility, it does it for me. Likewise, Lycos and Infoseek are dry and techy.”

He goes on, “This is the dilemma. This medium has been boiled down to utility. And too often, any real connection to the consumer has been boiled away. Go is the most recent and in some ways the condensed version of this phenomenon. It’s gotta load fast and do everything and so you end up with go.com. Sort of dreary...."
Wow!  Glad we asked!

He continues: “Deja News is not a portal. It looks like one right now; it’s confusing and misleading and not very interesting to most Web users.”

But of course that’s why Phillips, former president of Disney’s ESPN Internet Ventures and ABC News Internet Ventures, took the job: the challenge of turning it around.

Since he arrived three months ago, he has been mostly pleasantly surprised. While Disney/ABC is a fairly traditional company, Phillips was also co-founder of Spy Magazine, an earlier decade’s version of talking back to authority. Deja News is one of the Web’s more interesting properties: It’s a modern way into one of the Net’s oldest treasures, the Usenet newsgroups of user-generated content. They are more than chat groups; here, people post passionately on topics they care and often know a great deal about.

“What lured me was the company’s distinctive position as the primary purveyor of substantive user-generated content on the Web,” says Phillips. “From this position, we adopted a new core value: Empower consumers with shared knowledge. Sure, that’s a bit corny, but if you can deliver it as a business, it’s compelling. The 95 people here all think it’s a great goal to work for, and there’s a business in it.”

What will Phillips’ makeover look like? “I don’t know yet. We want to send the message of consumer power: You as a consumer now have the ability to control your own destiny, more than before. Right now, consumer empowerment on the Web is oriented to having you choose the right hip-hop album. Here, we have the unique ability to go beyond that. We can give you peer reviews and ratings of everything under the sun. Most stuff relating to the dozens of decisions we make every day is ratable. Mates are hard to rate, but as well as products, we’ll rate political candidates, media properties, television shows, sports, sports figures. We’ll be launching this at the start of the baseball season. We’ll have people rating the teams, not just chances of success but pitching, hitting, fielding and team chemistry.”

The technical questions revolve around information management, he says. “We’re not that interested in editing content, but in directing consumers to shared knowledge. We need to develop the right templates and software, give people the right formats to express themselves, so that the information gets heard by the people who want to hear it.... The Usenet is the foundation. The house we’re building is all the community elements, the links, the aggregation, the datafication, the visualization of it. The foundation remains the Usenet search technology we’ve developed over the past few years. We apply that search technology outside the Usenet across a lot of other public and proprietary databases - reviews, product offerings, product specs, anything that serves our mission....”

“When I arrived, I was hoping that there was a real platform to build from, and there is. I came here somewhat on faith. I liked the board, the fundamental positioning, the biggest platform in substantive user-generated content... All that is proving out. In fact, it surprises me that a company that had yet to identify a compelling business strategy was able to maintain the talent it has. The talent here is phenomenal. Only
one guy who was really good left, and all the rest have stayed. I would have expected more attrition. This is a consumer-oriented tech company, and that's still a rare beast in Austin. The staff here believes in the power of the Usenet.

"Usenet is an incredibly resourceful medium. I'm always doing these searches to see how relevant we are. We always have something, and it's up to date. And not total garbage, like chat rooms! Health, computer technology, and arts and entertainment get the most activity. Health is a little smaller, but it's the most intense. Take any specific topic in health, and people can find each other.

"Advertising is changing. It's ever more the direct marketing efforts of people who sell through this medium. We'll rent real estate for merchants. And that will be most of what we do for the near term. In the long run, that is six months, we will be doing commerce of our own [beyond the current T-shirt offerings of the Deja News store]. Yup, we've killed that store already! But even in 2000, that probably won't be the majority of our business."

Jerry Yang, chief Yahoo and co-founder, Yahoo!

We all know the story. While grad students at Search Engine U. (aka Stanford) in 1994, Jerry Yang and David Filo hack together a directory of their favorite Web sites. Eyeballs, venture funding, an IPO and all the rest follow shortly thereafter. Yang stays on board as chief Yahoo, helping to shape the company's business strategy and partnerships.

Yahoo! received an average of 167 million page views per day in December, making it far and away the most popular site on the Web. The backbone of the site remains its directory and navigational guide, to which the company has added news, stock quotes, chat, free e-mail, maps, white pages, calendaring, clubs, stores and more in rapid succession. The company's pending acquisition of GeoCities gives it an even larger lead in traffic and reach than it had before. Yahoo! intends to target e-commerce and auction offerings at GeoCities homesteaders, and to offer GeoCities' home page building technologies to Yahoo! users.

To most people Yahoo! is the epitome of portalhood. However, the 'p' word scarcely appears in the company's publicity materials. Instead, Yahoo! today refers to itself as "a global Internet media company." As a media company, Yahoo! faces competition from even larger players like NBC and Disney. So far, the company has disclaimed any intention of merging with or acquiring a traditional media property. If anything, Yahoo! seems to be moving away from a pure advertising-backed model, looking to add revenue from direct marketing and premium services.

Another challenge for Yahoo! is the impending shift towards high-speed access. One of Yahoo!'s traditional strengths has been its clean organization and sparing use of graphics, which reduces loading time over dial-up connections. On a cable modem or digital subscriber line connection, however, the site's plain appearance could be a liability. Yahoo! has an internal project to optimize content for broadband distribution. On the infrastructure side, Yang recently suggested that high-speed access provid-
ers should open up their networks, but he stopped short of committing to the independent ISPs' side of the open access debate (see the discussion under Monday's infrastructure panel). According to participants in Yahoo!'s on-site analyst meeting earlier this month, the company plans to partner with a high-speed access provider by the second half of this year.

Yahoo! also plans to expand aggressively outside the US. The company was one of the first to offer local versions of its directory targeted at major US cities. Using a similar model, it now has localized international versions for 16 countries in 13 different languages.
COMPANY PRESENTERS

We are pleased to bring you 15 company presenters at this year's Forum. Seven of them are launching their companies or products for the first time, which makes them Debutantes: Blue Martini, Cha!, Frictionless Commerce, MarketSoft, PrivaSeek, Responsys.com and The Springfield Project.

What do all these companies have in common? On a broad level, they all illustrate this year's theme. Each of them uses the Net to solve real-world needs and to generate return on investment for their customers. Going back to reality doesn't mean being boring. These are companies with novel technologies and business models. They attack different challenges in different markets, and their customers range from individual consumers to the largest enterprises.

We've organized the presenters into four conceptual groups. For the most part, the companies under each heading aren't direct competitors. They would probably express surprise at the way we've broken things up. But we think the categories illuminate some of the underlying dynamics at work. The method to our madness is... the letter M. M stands for money, apropos of our theme. The four company presenter groups are:

Market Makers create or support new markets in digital goods.
- Cha!'s 1ClickCharge offers a lightweight system for online micropayments.
- InterTrust enables security and rights management for digital content.
- PrivaSeek allows consumers to broker with vendors for use of their personal data.
- Stamps.com facilitates electronic postage stamps through a Web-based system.

Market Movers, a related category, allow existing transactions to happen more fluidly or bring them online for the first time.
- Arbinet makes it possible for telecommunications carriers to buy and sell capacity through a real-time market.
- Blue Martini provides a merchandising solution for companies moving into e-commerce.
- Frictionless Commerce allows consumers to compare products along multiple dimensions.
- The Springfield Project helps small businesses sell on the Web.

Masters of the Middle want to be new centers around which companies or information revolve.
- Centraal lets users find Web pages through familiar brand names rather than the domain name system.
- MarketSoft handles the flow of sales and marketing leads through an enterprise.
- Oblix builds directory-based applications that automate provisioning and modification of people-centric information.
- Responsys.com outsources e-mail based marketing and customer retention functions.
Meaning Makers extract understanding out of masses of undifferentiated information.

- Maxager tracks product flow through factories to tell manufacturers how to maximize their profitability.
- Narus pulls semantic information out of ISP network traffic to support value-added services and customer intelligence.
- Neuromedia allows customers to interact through natural language with automated virtual customer-service agents.

Don’t like our taxonomy? Feel free to roll your own! Herewith the more detailed descriptions of this year’s presenters, in alphabetical order. (D) stands for debutante.

Arbinet

Former commodities trader Alex Mashinsky started Arbinet (short for arbitrage network) in 1994. “The plan,” he says modestly, “was basically to change the way communications had been purchased or provided.” With deregulation and technological change transforming telecommunications, “it became obvious that the old model of ‘build your own network’ was going to disappear. People were going to buy segments from many different providers completely independent of the phone companies.” Traditionally, carriers would negotiate long-term point-to-point capacity agreements. In the new environment, speed and flexibility become increasingly critical.

To address this need, Arbinet has built a global clearinghouse called the AGCN (Arbinet Global Clearing Network) that connects communications networks in real time. Other existing bandwidth exchanges such as Band-X and RateXchange (see Release 1.0, 6-98) began by simply bringing together buyers and sellers, who then had to negotiate the actual arrangements for traffic exchange. Arbinet connects its central local node (CLN) devices to carrier networks so that it can immediately execute transactions and switch voice traffic between networks. For example, if AT&T needed additional capacity to route calls between Los Angeles and Hong Kong, it could find a supplier through Arbinet’s Web-based interface. Arbinet would handle the routing, call management and other administrative functions to allow traffic to flow from AT&T’s network to the company on the other end.

Mashinsky, pointing to Wall Street as a model, believes real-time execution is essential. Arbinet processed 174 million minutes in 1998, which he says represented about 90 percent of the total bandwidth exchange market. This year the company plans to handle 350 to 400 million minutes. This still represents a tiny percentage of total international traffic, but Mashinsky believes that bandwidth exchanges will ultimately handle about half of total traffic. He says that by the end of this year Arbinet will offer futures transactions in addition to its current spot market; eventually it will expand from trading in voice minutes to trading in data bandwidth as well.

Mashinsky says Arbinet is simply making communications look more like other markets. As products become commodities and the number of players increases, intermediaries emerge to facilitate more efficient transactions. Multilateral markets scale much better than bilateral transactions. According to Mashinsky, “the idea was that telecom would have ex-
actually the same functionality because it's becoming clearly a commodity on the bandwidth side and the services side." As service providers are forced to compete more extensively, "the pressure to be efficient is tremendous. The trend in the industry to outsource elements of the network is increasing because of the need to be more efficient and more nimble on the operations side."

In addition to matching buyers and sellers, Arbinet fosters more flexible quality-of-service arrangements than are possible under the traditional model. "Quality used to be a very determined fact," Mashinsky says. "You could pretty much foresee the quality you would get from AT&T. Today you cannot predict what quality you're going to get. The routing is so complex and so broad that you never know if you're going to go directly to the corresponding carrier." As an intermediary, Arbinet can switch traffic in real time between different providers if it sees the quality degrading or vendors not matching the parameters set by the buyers. Mashinsky calls this "market segmentation done in real time."

Last year over 20 percent of Arbinet's transactions used IP telephony rather than traditional circuit-switched connections. To address interoperability issues, Arbinet has deployed IP telephony gateways from six different manufacturers in its network. Instead of limiting its system to one type of equipment, Arbinet automatically routes traffic so that IP telephony calls originating through one type of gateway will also terminate on the same vendor's equipment.

As a pioneer of new business models and new technologies in a large tradition-bound industry, Arbinet has had to be nimble. Mashinsky admits that he's been "humbled several times by a 500-pound hammer hitting me on the head." The company has gone through several business models and one wrenching boardroom battle detailed in a recent Industry Standard article. But Mashinsky has plowed ahead, and last year Arbinet generated record revenues and profits. Mashinsky concludes that, "as long as we can create the most efficient model in the industry, I think we will be able to attract customers and provide them value. As long as we can do that, our market will be the best place to transact in telecommunications."

Blue Martini (D)

Blue Martini ceo Monte Zweben began his professional career as an artificial intelligence scientist. While co-managing NASA's Ames Research Center AI lab, he developed a system that was deployed as the main planning and scheduling tool for space-shuttle maintenance. It turned out that the underlying technology had much broader applicability for supply chain optimization, so Zweben formed a spinoff called Red Pepper Software to commercialize it. Red Pepper was ultimately sold to PeopleSoft. Zweben stayed on board for a year and a half, but eventually "had the itch to do something technologically new and different." He signed on with Institutional Venture Partners and Matrix Partners as an entrepreneur in residence. As a series of e-commerce start-ups came through the door, he would ask them what they were using as a back-end system for their online stores. In every case, the companies said they were building it themselves; there just wasn't any packaged solution that met their needs. Zweben sensed an opportunity... and Blue Martini was born.
Blue Martini focuses on large branded retailers and manufacturers who are moving online. Although virtual retailers such as Amazon.com have garnered most of the attention, Zweben believes established players in the physical world have the greatest opportunity to succeed in e-commerce. He points out that few of the virtual providers are profitable and attributes this to two factors: They have to build brands from scratch, and they maintain large staffs of technical employees to build and maintain custom e-commerce systems. Instead, Zweben says, “the real core competency of these players should be merchandising.”

Zweben says the company’s goal is to enhance its customers’ brand equity, because “the brand equities of these companies are their most strategic asset.” Established companies need to move online, but they can’t do so at the expense of their hard-won brands. The Web provides an opportunity to either enhance or squander a vendor’s reputation. Users spend an average of 15 minutes on an e-commerce site, enough time for a beneficial dialogue with consumers... but also enough time for a terrible experience that could ruin the customer’s impression of the company.

According to Zweben, Blue Martini offers “a full transactional system” for e-commerce sites, “coupled with decision analysis to be able to merchandise effectively with targeted selling.” The system has three goals: to increase conversion of shoppers to buyers; to raise the value of products in the average online shopping basket; and to bring customers back to sites more frequently. In the brick-and-mortar world, retailers typically change their inventory on at least a seasonable basis. Zweben argues that online merchants will have to do the same thing, “but in Web time.” For large retailers, adapting the product mix is not just a matter of updating a catalogue; it involves a range of employees including marketers, copy editors, designers, merchandisers, divisional managers and more. Blue Martini includes a workflow engine that allows these constituencies to work together in one system.

The Net allows merchants to go far beyond what they can do in the physical world. By tracking customers’ buying habits, vendors can offer a “tuned assortment” that more closely matches their interests. Blue Martini’s decision-support technology allows merchants to engage in more effective market segmentation and co-selling. Existing products don’t provide sufficient richness in product description to support this degree of flexibility. Blue Martini allows merchants to organize product attributes into multiple overlapping hierarchies, which makes it possible to assemble targeted assortments aimed at precise micro-segments of customers. Companies with a physical presence can even feed the customer understanding they gain online back into their physical stores.

Blue Martini goes beyond the personalization features of other e-commerce systems. Zweben acknowledges that personalization is a component of effective merchandising, but explains that “no one has something that tells them how to personalize.” Blue Martini supports the RFM (recency, frequency, monetary value) methodology that is well-established in brick-and-mortar merchandising systems. Extracting rules from the data involves artificial intelligence techniques, but Zweben says the key isn’t the rocket science. “What we found,” he says, “is the real need is making this rocket science actionable. There’s a real chasm between the people who do these kinds of analyses and the people who make the actual business deci-
sions. These people don't talk to each other today." Blue Martini aims to bridge that gap by making decision support technologies accessible to business-level decision-makers.

So where did the snappy name come from? Zweben declines to offer any lurid stories, saying that it's all part of the company's focus on brand equity. "We wanted to make sure people don't forget our name," he explains.

Centraal

Centraal is the company that provides RealNames - the ability to go to a Website using its RealName rather than a domain name, or a traditional search which usually gets you a list of more sites than you may want to pick from. The revenue model is that the customer is the person or company who pays $100 per year to register each RealName - in essence, for the service of letting the nameholder be found by people typing in that name. It's not exactly an ad; indeed, Centraal is punctilious about not registering generic words, but only specific brands, trademarks and other identifiers. Furthermore, it checks that the nameholder is indeed "appropriate," both legally and in terms of what a user might expect. No Whitehouse.com here. Nor can Juan register Alice's Restaurant in order to sell the name to her later at a huge markup.

The company was founded in 1997 by Keith Teare, a former student radical who had also built and sold the UK's third-largest ISP, EasyNet, from 1994 to 1996. He still retains a lot of the idealism of his early days, mingled with a salesman's charm. He considers "the namespace" to be public property, and is trying to figure out how to keep it from commercialization even as he considers overtures from big industry players. He has already sold 10 percent of the company to domain-name registration company Network Solutions, Inc., in what he bluntly calls self-defense. "We'd like Centraal to be 'accountable' to the Internet community in some way for the administration of RealNames," he says. "We don't want to control them, but we don't want anyone else to either."

The RealNames concept is interesting because it takes us beyond domain names, but it doesn't necessarily obsolete them. First of all, RealNames are orthogonal to domain names. You still need a domain name for your site and for e-mail. A RealName can point to a particular page: a sign-up screen, for example, or the specific URL for a product rather than the homepage of the vendor. Multiple RealNames can point to the same Website or even a specific page, moreover; for example, an author could point to her page at Amazon.com.

The RealNames folks have learned a lot about what not to do from watching the controversies over the Domain Name System. Unlike the DNS, with its murky intellectual property disputes, Centraal is focused on trademarks and proud of it, but it takes a proactive stance on IP issues. It operates an extensive team of "namespace analysts" whose job it is to make sure the names registered are appropriate. This is in direct contrast to,

Disclosure: Esther Dyson is interim chairman of the Internet Corporation for Assigned Names and Numbers (ICANN), charged with setting policy for the DNS, among other things.
say, GoTo.com, which licenses words to the highest bidder and discloses the price; people get - and know - what they’re paying for. Centraal’s newest initiative is ActiveNames. Call them derivative namespaces. The first three, announced earlier this month, are for the Securities & Exchange Commission, the US Patent Office, and the Internal Revenue Service. You can type in the organization and further data and download, variously, SEC filings on any company, any US patent, or any US tax form (without the data!). These are all government operations, interestingly. We could imagine further commercial implementations: the universe of all FedEx packages, for example, all students of Johnson Elementary, or even all Lufthansa flights and the passengers on them (when we have real connectivity in the sky). Of course, that raises interesting privacy questions. Although Centraal has an interesting business model, it also has an interesting future as a lightening rod for some of the industry’s most challenging political controversies. Who owns your name? Who owns your data?

Cha! / 1ClickCharge (D)

Micropayments are among the biggest flops in the short history of e-commerce, yet that could change quickly if someone develops the right solution. Several companies such as CyberCash and DigiCash built their businesses on the notion that consumers wouldn’t start buying online unless the payment system supported smaller transactions than credit cards. It turned out that credit cards were just fine for getting e-commerce off the ground, and most of the online payments companies have struggled. So why does Cha!, a start-up based in New York, think its 1ClickCharge service can do better? (The company is in the midst of a name change; some of the Forum materials refer to Cha! and some to ClickCharge.)

Vp of marketing Brian Smiga argues that market requirements have changed in ways that are more favorable to micropayments. In the early days of the Web, factors such as consumer confidence, infrastructure and security were serious constraints. Consumers were uncomfortable about any kind of online transaction, let alone one that replaced trusted credit cards with some new and exotic system. Moreover, the Web was far smaller. There wasn’t a critical mass of merchants to support new payment systems.

Beyond these structural issues, Smiga says, the first wave of companies made crucial mistakes. “All of the micropayment systems were over-designed,” he explains. They were heavyweight for both the merchant and the client, requiring expensive systems integration on one side and cumbersome software downloads on the other. “Not only was there overdesign;” Smiga continues, “there was greed.” The original micropayments providers were trying to “subvert money” by cutting out the credit card processors... all to get a bigger cut of transactions. “Every company that wanted to get into the e-money business wanted to change the way the credit-card market worked,” Smiga says. “They didn’t want to work with the existing infrastructure,” which made adoption much more difficult.

1ClickCharge uses a different approach. The company’s two co-founding technologists worked for Mirabilis, makers of the wildly-popular ICQ instant messaging platform, and in developing 1ClickCharge they tested the system on ICQ. 1ClickCharge securely authenticates the two parties to a transaction, just as ICQ identifies users so they can chat with one an-
other. “Once you authenticate two parties, you can assure them of a secure exchange,” Smiga explains. “The goal,” he continues, “is to enable a cash-like transaction, ensuring security, privacy and convenience.”

1ClickCharge is an outsourced single-click payment service. Merchants can deploy 1ClickCharge without installing any software, because 1ClickCharge handles all the payment processing through its own servers. Customers download client software (less than 100K in size) that puts the 1ClickCharge icon in the Windows system tray (a Mac version is under consideration). Similar to the MetroCards used for mass transit in New York City, users pre-deposit money into an account which they then use to make purchases through any 1ClickCharge-enabled site. Prepayment is preferred, though not required, in the early days, because the company isn’t big enough to manage the float and fraud risk to aggregate all the micro-charges. Smiga says 1ClickCharge will address this hurdle eventually by profiling customers to reduce credit risk and by partnering with larger financial institutions. In the meantime, the company will offer incentives to get consumers to prepay, such as additional credit when an account is opened and a selection free content and free subscription passes that vendors are willing to offer as “loss-leaders.”

“We don’t think micropayments is the key issue,” argues Smiga. “We think one-click convenience is the key issue.” 1ClickCharge is designed to make it as easy as possible for customers to engage in cash-like transactions online. The system offers a server-side wallet that allows one-click purchasing, and also makes it possible for consumers to check their account status in real time over the Web. Suppliers, such as photographers that provide content to online stock photo agencies, can use the same system to keep track of royalty payments.

In the US consumer economy, $2 trillion or 12 percent of transactions are less than $20, but credit-card transaction fees make that mechanism inefficient for small purchases. People use cash for most of these transactions in the physical world, and Smiga claims that “the Web, which is frictionless, will foster a cash-like payment method.” Today, two-thirds of all shopping carts on the Web are abandoned prior to completion. The return and refusal rates for digital goods ranges as high as 40 percent. Smiga believes that by making it easier for users to buy online and by authenticating users on both ends, 1ClickCharge will address both issues.

Other new online payment systems are focusing initially on higher-priced business content, but Smiga sees 1ClickCharge starting at the business-to-consumer level and eventually migrating down to consumer-to-consumer transactions. 1ClickCharge-enabled merchants so far include Institutional Investor, Miller Freeman, News Corp. and WorkingSolo.com.

Frictionless Commerce (D)

President Alex Kleiner says Frictionless Commerce is interested in “unlocking the electronic commerce of complex goods and services.” Today’s price-centric online world holds back the growth of transactions. If e-commerce is nothing but a race to the bottom - the bottom being defined as free - vendors will hesitate to make their products available online.

“Electronic commerce will really flourish,” Kleiner argues, “when shopping
online can match the way people shop in the physical world. On the con-
sumer side, that means making it easier for people to find the products they
are looking for. For merchants that means differentiation, to avoid the
death spiral of single-minded price competition. The problem, as Kleiner
sees it, is that "the decision-support mechanism of the Web as it stands is
very utilitarian and price-centric."

Frictionless Commerce emerged from the intersection of the business and sci-
ence programs at MIT. Kleiner, then an MIT business school student, joined
up with Rob Guttman, Alexandros Moukas and Daniel Dreilinger at the MIT
Media Lab to participate in the school’s annual $50,000 business plan compe-
tition. Building on Guttman’s thesis work in Patti Maes’ agent technology
group, a project called Títet Títet, they outlined a system for multi-dimen-
sional online comparison shopping. The plan reached the semi-finals in the
competition. Being good proto-entrepreneurs, the partners incorporated
Frictionless Commerce last July and licensed the technology from MIT to
develop a commercial product.

According to Kleiner, Títet Títet provides a “very distributed, scalable,
multi-agent marketplace, where buyers and sellers negotiate among multiple
dimensions.” The market clearly isn’t yet ready for such a dynamic, auto-
mated transactional environment, which is why Frictionless is starting by
tackling the more-limited challenge of comparison shopping.

Existing comparison-shopping bots such as Jango (now owned by Excite) and
Junglee (now owned by Amazon.com) reduce goods to the single metric of
price. Yet, as Kleiner points out, “different people have different values,
even for the same physical product.” One consumer might care more about
immediate delivery; another might want a longer warranty. If the negotia-
tion protocol supports trade-offs among many variables, there is room for
“win-win” transactions.

Frictionless Commerce offers a novel user interface that allows users to
express their preferences along many dimensions. What's your preferred
price range? Features? Shipping method? Privacy policy? And, more to the
point, how would you rank those factors in making buying decisions?
Traditional database lookups won't show you an $18,200 car that fits per-
fectly into all your other criteria if you ask for a price range of $15,000
to $18,000. The Frictionless Commerce engine is fuzzy enough to show you
that option. The system also works well for intangible goods such as finan-
cial products, where price comparison is even less useful than for physical
goods.

"Commerce doesn’t have to be adversarial," Kleiner says, pointing out that
both parties can benefit if the system facilitates transactions that would-
nt otherwise take place. “Revenues are increasing in electronic commerce,”
he says, “but that has a tendency to produce myopic thinking.” As big as
e-commerce has become, it could be far bigger, and Kleiner believes
Frictionless Commerce can help the market get there. As the service gains a
critical mass of buyers and sellers, it can move towards the more automated
environment envisioned in Guttman’s original work. For example, a vendor
could automatically offer an extended warranty as an inducement to a cus-
tomer who ranks that criteria highly.
The company's business model is to offer private-label comparison-shopping capability to portals, vertical portals and other interested sites. Frictionless Commerce will share some portion of advertising and/or transaction revenues thus derived, depending on the nature of the deal.

InterTrust

Rights management for digital transactions is one of the most difficult challenges in the world of e-commerce... yet it's critically important for the development of the digital economy. As we've discussed in the past (see Release 1.0, 1-96) the Net undermines many of the foundations of traditional intellectual property regimes. The flexibility of digital distribution also threatens the traditional business models of the publishing, music, software and video industries. This constrains digital transactions and the growth of e-commerce. As InterTrust svp of marketing Joe Jennings explains, "Right now a lot of companies won't put their valuable content on the Web because it will get stolen."

On the other hand, there's tremendous upside if the thorny issues can be resolved. The Net not only gives content providers new channels for digital goods, it vastly reduces distribution costs, opens up new markets and makes possible a range of flexible business models. It all comes down to trust: Do consumers trust that the system is secure, and do vendors trust that the system protects their assets?

InterTrust Technologies was founded in 1990 to tackle these problems, although it didn't release its first product until the middle of last year. Its ceo Victor Shear previously founded Personal Library Software. Investors include Amerindo Investment Advisors, Reuters, Mitsubishi, Softbank and Bank Euromobiliare.

The company, which now has 125 employees, has developed a secure, interoperable platform that persistently protects digital content. To use the system, vendors assign business rules and then package content and rules in cryptographically-secure containers called DigiBoxes. Consumers download the DigiBoxes and InterRights Points client software to use the content subject to the pricing rules.

Consumers may be offered a choice of payment and use options, such as unlimited use, time-limited rental or single-use. Through relationships with InterTrust partners Mitsubishi Corporation, National Westminster Bank and Reciprocal (formerly Rights Exchange), vendors receive the appropriate payment for the content.

The InterTrust system supports any kind of digital content, but the biggest interest area today is music. Anyone with a reasonably powerful machine can pull music off a CD and compress it into an MP3 file. The popular MP3 format offers near-CD quality sound, but with no built-in rights management. This gets the music industry worried. Although the industry's first reaction was to ignore the situation, recognition is dawning that MP3 isn't going away. "There's always someone with lots of brains and fast processors thinking up new ways to pirate digital content," Jennings points out. "One of the interesting impacts of the Internet is..."
that it forces you to rethink your distribution side, whether you want to or not."

Major record labels have launched the Secure Digital Music Initiative (SDMI) to add rights management to the MP3 compression format; the question is what technology choices they will make. Several companies, including Liquid Audio, AT&T spin-off a2b and IBM have proposed alternatives. Jennings believes InterTrust's peer-to-peer architecture sets it apart. Because the InterTrust system incorporates a rights-management architecture on the client side, transactions can occur efficiently whether the user is connected or not.

Thanks to MP3, things are moving very fast on the music front. A year ago the Internet was a "blip on the screen" for record labels, Jennings says, but by the fourth quarter of this year he expects many of the elements for an effective commercial rights management system to be in the marketplace. Drawing an analogy to the commercialization of the software industry, Jennings muses that "we're going to go really quickly from the West Coast Computer Faire to Comdex." Some people today are proclaiming that MP3 will usher in a new era of free music. Jennings begs to differ. He says consumers will want to know that they are getting exactly what artists intended, and that secure online distribution will facilitate attractive new offerings. For example, InterTrust's multimedia viewer can integrate video and text content with the audio stream.

After music, Jennings sees online games and, on the business-to-business side, supply-chain integration as the most immediate opportunities for InterTrust. But he recognizes that these things are hard to predict. The fact that InterTrust can protect and manage any type of digital content over any digital media is an advantage, he says: "General-purpose platforms that can morph to meet market needs usually win."

MarketSoft (D)

Leads are the lifeblood of the sales process. Yet on average only 40 percent of leads get into the right person's hands, and in many companies the ratio is far lower. Often leads must pass between manufacturers, resellers and distributors, but most companies have no way to track and measure the process. If leads get lost or don't get acted upon, companies lose opportunities to close deals. MarketSoft wants to address this problem.

MarketSoft ceo Greg Erman was a vp of sales and marketing before starting business-to-business e-commerce software vendor Waypoint, which he later sold. As he was thinking about what to do next, marketing automation was heating up as an emerging software category. Riding this wave of interest, Erman started MarketSoft to focus on lead-flow optimization across the extended enterprise. Before developing a solution, MarketSoft conducted over 60 interviews with sales and marketing executives at blue-chip companies to understand their needs. The interview results become the roadmap for MarketSoft's product.

Erman sums up MarketSoft as follows: "We capture leads from a multitude of sources within the enterprise. We then make sure those leads get to the right people at the right time and are enriched so they are usable and get
acted upon. We track and measure what happens to the leads in order to determine the ROI of all the marketing expenditures within a company." He estimates that the system can generate a 15-percent increase in revenue for a typical company.

MarketSoft automatically routes leads into Outlook or sales-force automation software based on customized business rules. In addition to generating incremental revenue as more leads turn into sales, MarketSoft's system also supports what Erman calls a "corporate memory of what works and what doesn't work." The system includes a flexible rules engine so that, for example, a company can check that a reseller's contract hasn't expired before sending leads to that reseller.

MarketSoft's system is entirely Internet-based, which provides important architectural advantages. Erman says that most companies try to build rules for lead distribution centrally. In real life, however, leads are subject to a hierarchy of routing decisions from headquarters to field offices and partners. MarketSoft allows corporate users to build local rules at different levels in an organization that are applied in a cascading fashion. The leads can be enriched with objects such as order forms and training materials, all in standard Internet formats. Activity can be synchronized across an extended web of resellers and distributors, because the system doesn't require special client software at any point.

Erman doesn't believe that larger sales-force automation (SFA) vendors such as Siebel will steal MarketSoft's thunder. The SFA companies simply aren't focused on this particular problem, he argues, and they are more concerned about encroachment from back-office enterprise resource planning vendors. From a technology standpoint, the SFA programs don't offer MarketSoft's sophisticated rules engine and can't support the distributed server-to-server interactions needed for field representatives and partners to be part of the same system.

MarketSoft is currently testing its software with paying pilot customers including Compaq, Tech Data and Andersen Consulting. Eventually, Erman sees lead management as a platform for building a suite of front-office applications for the extended enterprise.

Maxager Technology's CEO Michael Rothschild (a 1991 PC Forum speaker) is best known for the concept of bionomics, which looks at economies as ecosystems. So we asked him how his earlier work relates to his new company. "I never get asked that particular question," he responded with some surprise. Bionomics is a set of concepts, whereas Maxager offers a product to help manufacturing businesses increase their profitability. But the connection does exist. Organizations are like organisms, Rothschild begins. The team in an organization is like the cell in an organism. Rothschild became interested in how to accelerate the learning process in corporations by energizing all teams to align themselves with the overall goal of the company, i.e. profitability.

The trouble is that relevant information often isn't available. "When you actually stop and look carefully at the kinds of information flowing to..."
people on a team-by-team level, particularly in large organizations, what you find is a tremendous amount of disinformation or radically distorted feedback flowing to these teams. The problem lies in the interaction between many uncoordinated local decisions. "When you understand how costs are calculated under traditional methods, you actually are not providing accurate real-time feedback to the team. If a particular team tries to optimize its performance it may lead to sub-optimal performance for the organization as a whole." Rothschild believes the answer is to create a "bionomic feedback system" using client-server and Web-based tools to provide employees with real-time information about the effects of decisions on profitability.

Maxager, which grew out of a consulting project Rothschild did for National Semiconductor, was founded in 1996. Verifone and CyberCash founder William Melton is the company's chairman and lead investor. The Maxager System is built on the concept of Total Available Profit, what a firm could capture if it ran its factories 24-hours per day at perfect efficiency. Based on this benchmark, Maxager tracks "lost profits" (opportunity costs to an economist) when, for example, a machine breaks down or a product mix is sub-optimal.

A key insight of Maxager's approach is to consider profit potential by time rather than by unit. Traditional cost accounting looks at the profit margin on each unit created, but doesn't factor in the velocity at which products move through the production process. Rothschild says per-unit costing is "necessary but insufficient information for the question of profit maximization, which is really what management should be there for." All factories have bottleneck points that constrain output. Maxager deploys touch screens and bar-code scanners to measure throughput at such "strategic control points." A company may generate greater profits building more of a lower-margin product rather than tying up that bottleneck with a higher-margin but slower product. Rather than allocating overheads equally across all products, Maxager takes into account the amount of time that a particular product ties up at the strategic control point.

The Maxager System offers over 150 reports and provides feedback and various levels of granularity. For example, managers can see how particular products that seemingly generate high unit profit margins are actually dragging down total profits. A mechanic could see how much profit potential is being burned every minute a specific machine is out of service, and could, therefore, prioritize maintenance tasks. All of this requires significant number-crunching power. The system runs under NT on an Oracle database, and has built-in online analytical processing (OLAP) capabilities to allow customers to slice and dice data however they wish.

The biggest challenge Maxager faces is cultural. The company is trying to create a new market segment, advanced profit analysis, based on a novel analytical approach. Customers are sometimes surprised at the results. "It is a cultural shock to these organizations to realize that they are only making a third of their total available profit," Rothschild notes. "The good news is that the companies who really want to make a lot more money can generate very radical improvements in profitability." The Maxager approach works for virtually any industry, but the company is initially focused on discrete manufacturing. Factories have massive fixed
Asset bases, along with well-defined products and processes. Often simple changes based on Maxager's analysis can drive vast increases in profits.

Rothschild concludes, "We're not doing magic, we're stopping the disinformation. We're simply giving people a real-time look at their true physical economics; one that can dramatically accelerate profitability."

Narus

Ori Cohen, founder and CEO of Narus, previously worked at streaming video software developer VDONet. While running video-on-demand trials with major cable and telephone companies, he noticed a problem: customers loved the services and used them heavily... so heavily that the service providers' networks couldn't handle the demand. Cohen realized that "something needs to change on the business side" for companies to offer such value-added services. "People need to understand that sending an e-mail is not equivalent to 25 minutes of video-on-demand at TV quality," he says, explaining that customers need to pay for what they use or the services won't be made available. Even if providers don't charge more for new services, they need to understand customer usage patterns to configure their networks appropriately.

The problem is that ISPs don't have any tools of this kind. Network monitoring systems can track packets passing through a particular point, but they can't relate that information back to specific customers and applications. And users care more about applications than they do about the number of bytes they transfer. Cohen formed Narus to fill this gap. He explains that the company's semantic traffic analysis technology "enables an ISP to get complete visibility on what users are actually doing on the network." Narus is funded by the Mayfield Fund and Walden Ventures.

ISPs have a strong desire for such data, but they are starting essentially from scratch. "Right now they have absolutely no information about their customers," Cohen says. The issue is more than just usage-sensitive vs. flat-rated pricing. Cohen acknowledges that the basic tier of service will remain unmetered, but says that ISPs will eventually offer various tiers of service with different pricing models. Even if pricing doesn't change, ISPs need to understand how to target their service offerings and customer-retention efforts more effectively, and Narus believes it can address that need as well. The company's first product, Narus Intelligence, provides ISPs with basic information so they can identify, target and segment their customer bases by usage patterns, geography, or other criteria.

Cohen believes many ISPs will need the kind of information Narus provides in order to survive. With over 5000 ISPs in the US today, basic access providers are having trouble staying afloat. Rather than valuing ISPs solely based on number of customers, investors are demanding profitability. Everyone is looking to differentiate with value-added services, Cohen says, and "when you become a service provider and you provide value-added services, your business is your customers." Operating such a business requires an understanding of who your customers are, which ones are heavy users and so forth in order to market and provision effectively. According to Cohen, Narus addresses this need: "We provide information that is relevant for running a service business instead of an access busi-
ness.” A year ago few ISPs even had marketing executives, but increasingly they are staffing up with business analysts and others whose job it is to understand customer needs.

To collect data, Narus deploys non-invasive probes throughout its customers’ networks. The probes sniff every packet in the IP data stream and send information back to a central database. From these data, Narus detects protocols, applications within protocols (such as voice or video) and end-user usage patterns. The biggest challenge is scalability. Cohen says billing and traffic-analysis systems in the telephony world typically process 10,000 to 20,000 events per second for an entire network, while Narus must handle similar volumes from a single probe at one ISP.

Decision support is the first application Narus offers based on its platform. Coming next are what Cohen calls customer information services, which will allow ISPs to package data and offer it back to customers. For example, corporations want to know how their employees are using the office Internet connection, for accounting chargebacks or to monitor specific activities. An ISP bill today can show how much traffic the company generated, but can’t divide that traffic up into different applications and users. Finally, Narus will offer a billing module to export usage data directly into external billing systems. With this system, if an ISP does not fulfill a guaranteed service-level agreement, a user can automatically receive a credit on the next bill.

Neuromedia

Neuromedia makes authoring software that allows companies to create automated “virtual service representatives” (VSRs, more popularly known as bots) for their Internet or intranet sites. Type in a natural-language query, and the VSR comes back with an answer or a clarifying question. The system is smart enough to understand a question from the context of a discussion. For example, knowing how to answer, “How much does it cost?” depends on the questions that came before.

Ceo Walter Tackett says these virtual agents add value to customer support for both companies and their customers. For companies, anything that cuts down on the number of support calls is a big money-saver. Automated agents are much cheaper than humans, and can serve as a first-level filter for customer-service inquiries. If the bot knows the answer to a question, a human never has to get involved. If the bot doesn’t know the answer, it can hand off the customer to a human agent (via e-mail or some form of live Web-based interaction).

On the consumer side, the value of virtual agents is that they are immediately available 24 hours a day. Moreover, they don’t care how stupid a question you ask. Customers may be embarrassed to ask a very basic question of a live agent, but they will feel comfortable doing so to an automated system. Virtual agents also improve the richness of the e-commerce experience. Tackett says mainstream consumers “expect computers to behave like they did in the movies,” and therefore are comfortable with a machine that answers questions in English.

Tackett, a former AI researcher, traces “chatterbots” back to the legendary Eliza program developed in the 1960s, but says that “all those pro-
grams up to the time we started out were created by somebody with a PhD and a lot of free time." Neuromedia's goal was to make intelligent agents easy to develop, so that a customer-service manager rather than a specialized programmer could create them. At Charles Schwab, for example, two high-school interns were all it took to implement an agent called "Virtual Chuck" (because it dispensed investment advice based on Charles Schwab's book) as a pilot on the company intranet. Neuromedia is now talking with the company about rolling out a full version on the Schwab Website.

With content on major e-commerce sites becoming increasingly dynamic, customer-service information needs to be flexible. Neuromedia's software allows departments to quickly update VSRs as information changes, rather than waiting for the central IS department to overhaul the content. The key to rapid turnaround is that the VSRs can be trained by example. When presented with "Tell me about the XL3000" and the corresponding answer, the VSR will automatically recognize similar inputs such as "Could you please describe the XL3000 for me?"

Although VSRs look like examples of artificial intelligence, Tackett says that in reality, "it's a very sophisticated indexing system" that doesn't use any classical AI techniques. The primary reason is speed. "We make the assumption that people are asking questions in a very straightforward way because they are motivated to get answers," Tackett explains. VSRs need not pass the Turing Test in order to address most of the questions users are likely to throw at them. Neuromedia's NeuroServer uses "more of a pattern-matching paradigm than a classical grammar-parsing paradigm," which allows the system to scale logarithmically with the number of topics. A system with 10,000 topics takes only 33 percent longer to run than one with 1,000 topics.

Tackett says one thing that surprised Neuromedia was the value of "chatter." When the company first put a VSR on its own site, it found that people would frequently ask off-the-wall questions about the weather or the bot's gender. The system would recognize that these questions were out of domain and respond that it didn't know the answer. But when Neuromedia tweaked the software to answer common questions of this type, average conversation length went up dramatically. Tackett believes that people use whimsical questions as icebreakers, partly to satisfy themselves of the bot's capabilities. There's no real cost, after all, to wasting a question. When users receive an answer and become comfortable, they then ask the questions they were originally interested in. People also often make side comments to the VSR that can be useful for survey purposes. Oracle developed a VSR for its internal rollout of a new e-mail system and found that employees made all sorts of comments about what features they liked, disliked or wanted added.

Oblix

Oblix was founded in June 1996 by former employees of Silicon Graphics and Sun who wanted to create enterprise applications for "people-related information." Ceo Sandeep Johri says the founders observed that the Web "exposes a lot of the back-end and information in general all the way down to individuals. At some point that is going to start getting personalized. Having data or information around people would be a powerful thing..."
Oblix's first product was a Web-based white pages for enterprises. The lightweight directory access protocol (LDAP) had just been proposed as a standard for Web directories. When Netscape released the first LDAP directory server, Oblix jumped on the bandwagon as one of the first companies to ship a product taking advantage of it.

Oblix is now on version 3.0 of its Corporate Services Automation suite. "If you think of the directory as a database," Johri explains, "there's an opportunity to create business logic on top of that." Oblix leaves the business of building directories to companies such as Netscape, Novell and Microsoft. It stays agnostic across these providers, keeping on good terms with all sides to serve customer needs. "We very much expect every single environment we go into to have multiple directories," Johri says. Oblix links together these directories, even from multiple providers, so that they appear as one meta-directory from the user perspective.

Companies have all sorts of information tied to employees - phone numbers, benefits plans, org charts, access privileges, office locations, login IDs, application permissions, office equipment serial numbers... and the list goes on. The trouble is that this information is usually spread across many different departments. "Every department has its own little process," Johri says. "The services are often touched upon by multiple departments." Oblix creates "digital personas" to pull together all the information about a person and make it available through a Web-based interface. Authorized employees can search for and modify information in one place rather than go through a multitude of (often manual) systems. Johri notes that "since the information is consolidated in a directory and we manage the logic on top of that, it's an operational improvement on all these processes."

Oblix estimates its system can save a 10,000-person company $5 million a year. With traditional manual processes, every change request imposes a cost in labor and time. Once each system is updated, it needs to be periodically synchronized with others, which adds further cost and delay. Simply publishing a white-pages directory can be the enterprise equivalent of painting the Golden Gate Bridge: as soon as an update is finished the group responsible needs to start on the next one. Johri says the value of corporate-services automation is not limited to internal deployment: "On the extranet there is even more need for a system like this." For example, Oblix is talking with an insurance company interested in giving its agents the ability to update their information in the corporate directory.

Johri says much of the excitement around directories can be traced to the fact that they allow for "horizontalization" of applications. Vertical applications, like PeopleSoft for human resources or Tivoli for network management, are good at managing a particular type of resources. A directory leaves control in the hands of these applications, but creates a central point for managing the profiles and user data that drive them.

Oblix's investors include Kleiner-Perkins, the Java Fund, Netscape, Novell and Patricof & Co. Customers include Kinko's, 3Com, Sun, Nokia, Novartis, Parsons Construction, Knight Ridder and Hitachi.
PrivaSeek (D)

PrivaSeek CEO Larry Lozon says he started thinking about the need for what we now call "infomediaries" about eight years ago when he was working at EDS. "EDS maintained tons of consumer data, but wasn't necessarily a consumer company," he explains. "It occurred to me that at some point we're going to have sufficient access that would in effect allow consumers to become their own direct marketers." He later ran online marketing at General Motors' Cyberworks group, where he became convinced that the growth of the Internet made it possible to turn his concept into a reality.

Lozon says PrivaSeek's mission is to take all the tools marketers use in an online world, "turn them inside out and provide them to consumers." Individuals can use electronic profiles to gain insight about and control over their own preferences, in the same way as companies seek to understand their behavior. PrivaSeek hopes in this way to educate consumers about the value of their personal information. Direct marketing shouldn't be scary, Lozon says, as long as customers have a way to manage their receipt of direct marketing materials and have a concrete mechanism for weighing the value of information.

Persona, the company's product, is a Swiss army knife of protection and data-control services: e-wallet, transaction tracker, surf tracker, e-mail service with spam filtering, cookie spoofing, chat service and ultimately a personal portal. The service will allow consumers to barter with vendors for discounts and other special offers in exchange for controlled use of the consumer's information. (For some thoughts on this kind of approach, see Release 1.0, 2-97.) When a customer goes to a PrivaSeek-enabled site, the client and server modules will interact to determine whether the vendor is willing to meet the customer's constraints, and if so, the transaction can automatically take place. PrivaSeek will store a record of every customer's transactions; if the customer wishes, PrivaSeek will offer to sell the data to participating companies and split the proceeds with the customer. The basic Persona service is free to consumers.

In order to be effective, Lozon says, "the tools that we roll out have to have true teeth." For example, Persona's e-mail service will go beyond traditional spam filtering. If you buy a book and click a box saying that you don't want to receive any e-mail from that merchant, PrivaSeek will filter out messages from the site.

Lozon thinks the Net spells not the disintermediation of the direct marketing industry, but "transintermediation" as new intermediaries emerge between consumers and suppliers. He believes that, "at some point down the road, one could see the inability for marketers to collect the information any other way than to ask the consumer for permission." As technology gives consumers more control over their personal information online, traditional data acquisition channels will become less effective. On the other side of the equation, as more people participate in Persona, PrivaSeek will have increasing leverage to negotiate discounts with vendors. Down the road, Lozon says, PrivaSeek plans to migrate from the online to the physical world, helping "figure out the mechanisms that allow consumers to better control direct mail, telemarketing, and all forms of financial transactions." For example, a Persona-enabled credit card could guarantee anonymous purchases.
Europeans (and their governments) tend to be more concerned than Americans about privacy as a fundamental right that should be protected by comprehensive legal safeguards. Lozon acknowledges that PrivaSeek will have to meet the higher European standards to be taken seriously as a privacy-protection mechanism. Over time, though, he believes the bar will move higher here as customers become frustrated with the current situation.

Responsys.com (D)

As companies build up their e-commerce sites, they need to have ways of dealing with the large numbers of users that visit and purchase from them online. The only way to keep up with increasing usage while providing good service is to automate the process of retaining customers. Acquiring new customers is extremely expensive. As Responsys.com CEO Anand Jagannathan (also founder of Banyan Systems and Reach Software) explains, "customer retention marketing becomes core to the whole strategy." But few such companies have the time to develop or install customer retention applications in house. "The typical e-commerce company is moving 100 miles per hour. The traditional model of packaged applications, with long deployment cycles, would not work," he says.

Responsys.com addresses this problem through an outsourced e-mail-based customer-relationship management platform called Responsys Interact. The system automates the process of sending personalized messages to customers, prospects, and partners. For example, let's say a user downloads a trial version of a software application from a vendor's site. The vendor could automatically send a personal e-mail two weeks later inviting the user to purchase the software, and follow up a week later if the person doesn't respond. The vendor can include an order form directly in the message (through HTML e-mail or an attached file). Network Associates' MacAfee.com uses the Responsys.com system for exactly this purpose, eliminating an expensive round of phone calls to coax downloaders into buying a licensed version.

Vp of marketing Atri Chatterjee says Responsys.com's founders looked carefully at Amazon.com's one-click ordering and automated suggestion features. These tools provide significant value, he says, but Amazon.com has to employ hundreds of IT people to build them from scratch. What if companies want to get some of the same benefits without the up-front investment? Mother Nature.com, another Responsys.com customer, is a good example. The company uses the system for retention marketing, running automatic e-mail campaigns to users that come to its Website. "In an e-business you don't have any face-to-face contact," Chatterjee says. "You have to work doubly hard to establish that bond."

Responsys.com has built the system as a flexible platform for personalized messages. Companies can develop their own marketing materials or campaigns such as sweepstakes, and use Responsys.com as the delivery mechanism. Jagannathan says that just as Inktomi provides search technology to many sites, "We offer basic functionality to different companies. Differentiation will be in how creative [departments] use this technology." The system was designed from the ground up to run as a hosted, Internet-based application, requiring no special software at the vendor site. For larger customers Responsys.com can deploy software in the customer's network, but
can still manage that software remotely. Chatterjee says the company has seen significant early interest at pilot customers from departmental or line-of-business managers. These tend to be non-technical employees, who want to communicate effectively with customers but don’t currently have the know-how to do so.

An additional value of Responsys Interact is that it gives greater control to the end-user. The recipient of the personalized communications can go to a profile-management Web page and opt out of receiving personalized e-mails from a company.

Responsys.com has venture funding from Accel Partners and Foundation Capital. Pricing ranges from $2,000 to about $10,000 per month, based on expected capacity needs, plus a one-time set-up fee of $5,000 to $20,000. Chatterjee says this pay-as-you-go pricing model makes it easier for customers to sign off on using the system, especially departmental managers who would otherwise need additional approvals.

The Springfield Project (D)

We mentioned the Springfield Project and its CEO Andrew Beebe briefly this past summer in our issue on the Net and small business (see Release 1.0, 7/8-98). Beebe wasn’t talking much back then, but he’s agreed to take the wraps off the company at PC Forum. Here’s a sneak peek.

The Springfield Project is a service designed to let small businesses become successful Web businesses. “E-business should be everyone’s business,” says Beebe, “right now, it’s not.” Beebe says small companies face a three-step process: establish an online presence, market the new channel to your existing customer base, then expand globally into new markets. Existing small-business e-commerce solutions like iCat (acquired by Intel in December) and Yahoo! Stores (based on the company’s acquisition of Viaweb) focus only on the first piece and charge a monthly fee of tens or hundreds of dollars per month. From the small-business standpoint, these are substantial upfront costs with no guarantees of generating revenue.

“Small businesses don’t need another company that makes them jump through flaming hoops just to build a static Web catalogue,” says Beebe. “The Springfield Project is founded on the belief that for small business, the Internet is all about relationships.” A former Evangelist for NetObjects, Beebe compares his new venture to what NetObjects’ Fusion did in the Web design market. Suddenly a $300 piece of packaged software provided all the tools needed to build a site. The assumptions of the market changed.

Beebe says getting small businesses online should involve more than just uploading a product catalogue and hooking into a credit-card processor. Small businesses want to be plugged into traffic and revenue-building mechanisms such as banner-ad networks or comparison shopping sites. Today they need to go one by one to each of these providers, such as Microsoft’s LinkExchange or C|Net’s Shopper.com, even if they know what all the options are. Beebe wants to put a variety of such tools under one roof through an automated interface. He believes that if the Springfield Project can establish itself as a trusted resource for small-business owners,
they will become long-term partners. "Our number-one partner is the small business," he concludes.

The company conducts 20 interviews per week with small businesses to understand their needs. Surprisingly, Beebe says, the biggest demand is for out-bound e-mail marketing capability. For example, small businesses could out-source an e-mail marketing campaign to The Springfield Project, who could find a list of targets appropriate to the company's business. The Springfield Project could tell a small business that submitting its ad to a banner network generated a 15 percent increase in traffic... or it could say that other companies with similar products saw that response.

Beebe defines small business as zero to 99 employees, and the zero is significant. Many people work from home or have part-time businesses that could benefit from going online. This market is the most under-served by existing resources, but the Web makes it possible to give them the same tools as larger companies.

The Springfield Project will focus on providing a set of integrated services such as site building, site analysis and reporting, marketing and promotion. Large enterprises can afford to deploy platforms such as BroadVision or Vignette (see Release 1.0, 9-98) for personalized e-commerce, but smaller companies tend to settle for boring, static sites. "Very few people have set out and said, 'We want to make this for small businesses'," Beebe notes, which gives the big guys an advantage today.

Beebe believes the best way for small businesses to compete is to leverage the network. In Springfield Project terms, leverage means a combination of aggregated and integrated services. Aggregation delivers economies of scale to small businesses, giving them big-business Website capabilities such as data mining and customer tracking. Integration provides them with a cohesive environment within which to pursue all their Internet needs. The Springfield Project is in discussions with potential partners to help make this vision a reality.

Stamps.com

"Internet postage is a classic example of what happens when what was formerly a product becomes a service," says Stamps.com CEO John Payne. Postage is a $38-billion annual market in the US alone. Since the 1920s, businesses have used postage meters to avoid the inconvenience of purchasing and licking individual stamps, but historically Pitney Bowes has had an exclusive franchise for the postage-meter market. The Net, Payne believes, can make postage more convenient, cut down on fraud and enhance customer service. Electronic postage can even help mail arrive faster, because the address and routing information are automatically embedded in machine-readable form.

Postage is heavily regulated by the US Postal Service (USPS) because it effectively functions as cash. Even so, postal fraud costs $200 million per year. In 1996 the USPS began its Information-Based Indicium Program to make it possible for customers to print postage through their PCs rather than traditional postage meters. The goal was also to open up the market to multiple vendors, while preserving security. The original
A specification called for a hardware device attached to each PC that would store the postage value. Stamps.com (then known as Stampmaster and founded by three UCLA MBAs) approached the USPS with a proposal for a completely Web-based solution requiring no client hardware. The postal service eventually agreed that the Web-based architecture could provide the necessary security, and modified its requirements. Stamps.com is now in the final stages of the required multi-step process to gain USPS approval for commercial launch. It expects to get the go-ahead before the middle of the year.

Competitors such as E-Stamp have also announced Web-based systems, but Payne says Stamps.com has about a year's head start with this approach. It plans to use that advantage to build a strong consumer brand and to build out its systems to support millions of customers. Last month Stamps.com closed a $30-million private equity placement co-led by Vulcan Ventures and Chase Capital Partners, and also announced former US Postmaster General Marvin Runyon, GeoCities Chairman David Bohnett and former USPS chief marketing officer Loren Smith as board members.

The benefit of a Web-based service solution, Payne explains, is that "instead of making you go buy something and make a big commitment up front, you can pay as you go." All customers need is free software on the client side. Stamps.com handles all the necessary processing (including mandatory address correction that otherwise requires a local CD-ROM) through its remote postage servers. Users prepay into an account which can be refilled any time through the Web.

Electronic postage will change the market in two fundamental ways, Payne believes. First, "the pie is getting bigger." Today there are only 1.7 million postage meters in use, with everyone else stuck licking stamps and running to the post office whenever they run out. Payne thinks the number of people using metering services can grow to 15 million in four to five years. Second, postage meters have traditionally been totally closed and proprietary. Stamps.com's open system allows postage to be integrated into common applications such as word processors. Instead of postage adding a step to the process, it can be included as a checkbox in the print dialog box or a macro in the mail-merge function. Stamps.com will provide APIs and a software development kit so others can build additional services and integration points. For example, Galileo International, a United Airlines spin-off, has invested in Stamps.com and will integrate Internet postage to its system for travel agents.

Payne acknowledges that Stamps.com and competitors in the online postage market will have to educate customers used to old-fashioned stamps. Three years ago, surveys showed that only 18 percent of small business users printed envelopes or mailing labels through laser printers. Today, however, that number is over 60 percent, according to Stamps.com's research.

Payne says "there's a strong argument to be made that we're one of the only true methods of electronic commerce. We ship bits up the line and we ship bits down the line." Ninety percent of the US population uses postage on some basis, though, so the potential market is huge. Stamps.com will consider international opportunities after it becomes established in the US, although the USPS processes 55 percent of the world's mail and international posts tend to lag the US by about two years.
RESOURCES AND PHONE NUMBERS

Jeremy Allaire, Allaire, (617) 761-2162; fax, (617) 761-2003; jeremy@allaire.com
Alex Mashinsky, Arbinet, (212) 230-1200; fax, (212) 230-1216; amashinsky@arbinet.com
Jeanette Symons, Ascend, (510) 747-2800; fax, (510) 747-2604; jsymons@ascend.com
Dave Nagel, AT&T, (908) 221-8123; fax, (908) 630-1727; dnagel@att.com
Monte Zweben, Blue Martini, (650) 378-8403; fax, (650) 378-8411; zweben@bluemartini.com
Mark Cuban, broadcast.com, (214) 748-6660; fax, (214) 748-6657; mcuban@broadcast.com
Keith Teare, Centraal, (650) 325-9933; fax, (650) 858-0454; keith@centraal.com
Brian Smiga, Cha!, (212) 358-4025; fax, (212) 358-4099; brian@1clickcharge.com
Jan Hier-King, Charles Schwab, (415) 636-9308; fax, (415) 636-9150; jan.hier-king@schwab.com
Peter Neupert, drugstore.com, (425) 881-5131; fax, (425) 586-2137; Peter@drugstore.com
Alex Kleiner, Frictionless Commerce, (617) 495-0180 x500; fax, (617) 495-0188; afk3@frictionless.com
Les Vadasz, Intel, (408) 765-1367; fax, (408) 765-1398; lvadasz@intel.com
Joe Jennings, InterTrust, (408) 222-6270; fax, (408) 222-6144; jjennings@intertrust.com
John Doerr, Kleiner Perkins Caufield & Byers, (650) 233-3428; fax, (650) 233-9311; jdoerr@kpcb.com
Mary Lou Quinlan, The MacManus Group, (212) 474-5406; fax, (212) 474-5248; mquinlan@nwayer.com
Greg Erman, MarketSoft, (781) 674-0000 x500; fax, (781) 674-0090; erman@marketsoft.com
Michael Rothschild, Maxager, (415) 454-1000; fax, (415) 454-7460; mrothschild@maxager.com
Charles Brewer, MindSpring, (404) 815-0770; fax, (404) 815-8805; charles@mindspring.net
Ori Cohen, Narus, (650) 306-9100; fax, (650) 306-9113; orico@narus.com
Mitchell Kertzman, NCI, (650) 631-4100; fax, (650) 631-4683; mitchell@nc.com
Walter Tackett, Neuromedia, (415) 752-3793; fax, (415) 386-0114; walter@neurostudios.com
Sandeep Johri, Oblix, (650) 526-7800; fax, (650) 526-7811; sandeep@oblix.com
Eric Raymond, Open Source Initiative, (610) 296-5718; esr@thyrsus.com
Geraldine Laybourne, Oxygen Media, (212) 833-6888; fax, (212) 833-4455; glaybourne@oxygen.com
Christina Jones, pcOrder.com, (512) 684-1121; fax, (512) 684-1200; christy.jones@pcorder.com
Jay Walker, priceline.com, (203) 705-3230; fax, (203) 595-8316; jay.walker@priceline.com
Larry Lozon, PrivaSeek, (303) 604-6334 x101; fax, (303) 604-6335; Larry@Lozon.com
Virginia Postrel, Reason, (310) 391-2245; fax, (310) 390-8986; vpostrel@reason.com

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If you have any questions, please contact us at 1 (212) 924-8800; fax 1 (212) 924-0240; e-mail us@edventure.com; www.edventure.com.

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