

The E-Biz surprise

It wasn't all hype. For companies as well as consumers, e-commerce is hotter than ever

Since mid-2000, when the stock market slump began turning dot-coms into dot-goners, the popular perception of the Internet has spiraled ever downward. By last year, Internet bankers and analysts, those onetime masters of the business universe, were targets of government investigations. A book titled dot.con, deriding the Net as "the greatest story ever sold," became a best-seller. One academic even claimed that porn, gambling, drug-dealing, and the like comprised more than 70% of e-commerce. The bold and transforming vision of the Net, it seemed, had dissolved into a digital dud.

Now, though, the Internet crowd may well have a response to the critics: a loud Bronx cheer. To the surprise of many, the Net is actually delivering on many of its supposedly discredited promises. Granted, they didn't all pan out as fast as the hypesters predicted. Public online exchanges, for example, withered as quickly as they sprouted up.

Still, it's now apparent the Internet is connecting farflung people and businesses more tightly than ever. It is helping companies slash costs. It is speeding the pace of innovation and jacking up productivity. And even some of those seemingly harebrained business models are working. Says Andrew S. Grove, chairman of chipmaker Intel Corp. (INTC): "Everything we ever said about the Internet is happening."

And more. Remember those starry-eyed projections in 1999 that had U.S. e-commerce between businesses reaching a staggering \$1.3 trillion by 2003? Turns out they were too low. Networked business-to-business transactions now stand at \$2.4 trillion, says Forrester Research Inc (FORR) . That means that just as investors were reeling from the collapse of Internet stocks, the technology was taking off. And Forrester's bold 1999 prediction that U.S. consumer e-commerce would reach \$108 billion by 2003 wasn't so far off. Despite recession, terrorism, and war, the number is expected to come close, at a projected \$95 billion this year. Says Gartner Inc. analyst Avivah Litan: "The hype is gone, but the numbers are in."

And how about those Brookings Institution claims a couple of years ago that productivity gains from e-commerce would pump as much as \$250 billion a year into the economy by 2005? Again, too low. With overall productivity running higher than expected last year, gains from businesses using the Net to sharpen forecasting, keep inventories lean, and communicate instantaneously with suppliers could reach \$450 billion a year by 2005. Spread across the economy in lower prices, that would add \$4,500 annually to the average U.S. household's income -- more than three times the amount of President Bush's 2001 tax cut. Says former Federal Reserve Vice-Chair Alice M. Rivlin, now a senior fellow at Brookings: "We know it's a real business transformation because it survived the economic downturn."

Even Internet companies themselves -- poster children for business excess during the boom -- are finally turning the corner. Of the publicly held Net companies that survived the shakeout, some 40% were profitable in the fourth quarter of 2002, the latest for which consolidated figures are available. Meanwhile, online advertising is staging a comeback, boosting the fortunes of everyone from Web pioneer Yahoo! Inc. (YHOO) to search startup Google Inc. If Wall Street forecasts hold, fully half of the publicly held Internet companies will be profitable by the end of this year. That's spawning a new rush on Net stocks -- along with fears that a second bubble is taking shape.

How the heck did all this happen? As it turns out, many consumers and businesses never mistook the overinflated Internet stocks for the underlying value of the Internet. They kept going online, and didn't pull back just because Amazon.com's (AMZN) shares dropped or the fallen highflier Webvan Group Inc. stopped delivering groceries. "E-commerce continues to broaden its appeal,"

says Margaret C. Whitman, chief executive of online auction juggernaut eBay Inc. "More consumers are coming online every day."

That's not to say that a lot didn't go wrong. Eager venture capitalists poured more than \$100 billion into nearly 6,000 high-tech and Net startups over the past decade. Of those, 2,000 have gone under or merged with other companies. Investors' wild ride with the 450 Internet companies that went public ended with more pain, as many saw their stocks fall by 90% or more. And about a third of the economy -- including agriculture, construction, and health care -- has barely been touched by the Net-driven productivity boom, says New York Federal Reserve Bank economist Kevin J. Stiroh.

Still, in the eight years since the Web went commercial, it already has shaken up many industries. Music fans sharing 35 billion song files annually are battering the recording industry. Predation by dot-coms such as Expedia Inc. (EXPE) -- now the top leisure-travel agency, online or off -- helped shutter 13% of traditional travel-agency locations last year. Powerhouse Dell Computer Corp. has muscled its way to industry dominance by building its sales and manufacturing around the Internet. The choice facing Dell's rivals, from Gateway Inc. (GTW) to Hewlett-Packard Co. (HPQ) , is simple: adopt many of Dell's Net-efficient methods or exit the business.

And much more change is coming. Winning Net strategies have sent a warning to companies around the world. Businesses are responding by focusing their diminished tech budgets on the Internet. Even as spending on technology has fallen 6.2% since 2001, management consultant A.T. Kearney Inc. says e-business budgets rose 11% in 2002. They comprise 27% of total tech spending. And though the growth in e-business spending has slipped to 4% this year amid war tensions, that's still double the growth of overall estimated tech spending. Dan Starta, a Kearney (EDS) principal, thinks e-business will continue to outpace tech outlays for at least two years.

So what lies ahead? For the next year, don't expect to see many of the big, brassy e-business schemes of old. These have been flushed away, along with the other excesses of the dot-com boom. Instead, companies have spent the last three years figuring out what really works and what delivers a return -- quickly. Now, they're breaking up e-business tasks into bite-size pieces. Kinko's Inc., for example, is boosting spending this year, but focusing it on targeted projects that pay off in six months or less. One deal with Microsoft Corp. (MSFT) will let people send documents from Microsoft programs over the Web to Kinko's for professional-quality printing. Says venture capitalist Vinod Khosla of Silicon Valley's Kleiner Perkins Caufield & Byers: "Runaway tech projects don't work. You need the revolution by 1,000 small cuts, not one big dramatic change."

Further out, bold new projects will unfold, providing a glimpse of the next generation of e-business. The range is every bit as vast as the Internet itself. It extends from drug researchers collaborating in virtual labs to computers monitoring thousands of diagnostic machines on three continents. It features gobs of wireless systems for tracking inventory, reading electric meters, and connecting with customers. And on the far fringes of this next Net are tiny silicon chips, so-called "smart dust," that may well be built right into roads and bridges, ready to send Web alerts if the wind blows hard or a pylon pries loose.

Plenty of obstacles, though, could darken this dazzling vision. Government policies on the use of broadcast spectrum could well stifle innovations such as the wireless networking technology known as Wi-Fi. Court decisions on music-file sharing could squelch the growth of online entertainment. Differing views on privacy and free speech threaten to interfere with cross-border business. French courts, for instance, briefly threatened to take action against Yahoo two years ago after Nazi memorabilia appeared on the company's auction site. As the Net takes root in conservative societies in Asia and the Middle East, such conflicts could grow.

The biggest challenge, though, is cultural. Corporations learned in the early days of e-business that costly new systems by themselves accomplish little. They can sow confusion and resentment among employees who figure they did just fine the old way. To get a true e-bang for the buck, companies must redesign their business processes -- a fancy way to describe teaching old dogs new tricks -- to take advantage of the new capabilities.

General Motors Corp. (GM) learned this lesson in 1999 when the auto maker briefly set out to follow Dell Computer's lead, offering tire-kickers custom-made cars. It was a captivating vision, with shoppers clicking the mouse on suede upholstery and V8 motor options. But when the executives realized that they had to drag parts makers into this new networked world and retrain dealers across the nation, they put the project in deep freeze.

In the intervening years, pharmaceutical giant Eli Lilly & Co. (LLY) has figured out how to break through old habits and hidebound routines. Two years ago, Lilly had 7,500 employees in its research and development wing. Today, it has nearly triple that number -- except they don't show up on the payroll. How's that? Lilly created an online scientific forum in mid-2001 called InnoCentive Inc., where the company posts thorny chemical problems, such as the best way to come up with a specific molecule, and offers cash to anyone who can solve them. By making the site open to anyone and available in numerous languages, it spurs solutions to problems that have stumped its own researchers. And Lilly pays for their time and effort only if they get the right answer. These purses run up to \$100,000, although most carry rewards of \$2,000 or so. To date, engineers from New Jersey to Russia have solved problems and been awarded \$420,000. Now Procter & Gamble Co. (PG) and Dow Chemical Co. (DOW) are using InnoCentive to cut down R&D costs and charm more people onto their own Web sites.

It's not always so easy. Adjusting to e-business is often a wrenching process, and we're still in the early days. Dell President Kevin B. Rollins calculates that his company, the leader in Web-powered business, is merely halfway to using the Net's potential. And the rest of the pack? Rollins estimates that they're barely a fifth of the way.

For now, businesses are focusing on gains in productivity. The heartening message from industry leaders such as Dell (DELL) and Cisco Systems Inc. (CSCO) is that productivity gains speed up with the years, as companies adjust their processes to new technology. Cisco Systems CEO John T. Chambers says that productivity payoffs accelerate fully four to six years after installing new systems. "It shocked us," he says. "But we're one of the few companies that is beyond year three of the process." Chambers, the Net's leading cheerleader before and after the crash, predicts that as the U.S. progresses toward e-business, productivity will rise from the current 1% to 3% annually, to as high as 5% -- potentially doubling the U.S. standard of living within 14 years.

Sound like gilded promises from the late '90s? No doubt. But in 2003, business and consumers alike are far better positioned than they were a half-decade ago to profit from the Internet. Why? The Net is far more powerful, thanks largely to broadband -- the Internet on steroids. In the past year, broadband usage in the U.S. has shot up to 19 million households, doubling since 2001, and is expected to reach 40 million by the end of 2004, predicts Forrester. Rates are even higher in Canada, Japan, and Korea, and growing fast. Already, speedy connections are transforming behavior, as consumers treat the Web like phone service or electric power -- always there. Broadband subscribers spend 58% more time online, according to a Forrester survey, and spend 37% more on e-commerce.

While broadband speeds up the Net, the wireless radio-based networks known as Wi-Fi untether it. For corporations and e-merchants alike, Wi-Fi carries broadband nearly everywhere a laptop can go, from meeting rooms to the factory floor.

The payoff is productivity. GM may have fallen flat with its Internet effort to customize cars. But the auto maker is faring much better with a Wi-Fi project. In more than 90 GM plants, Wi-Fi

devices are mounted on forklifts and placed in the hands of employees, who use them to track engine parts and car seats, helping to speed production. And some execs, including GM CEO G. Richard "Rick" Wagoner, keep tabs on operations in Asia and Europe by logging on to the corporate network from secure Wi-Fi connections at home. "It helps us compete in a world where everything is moving faster," says GM Chief Technology Officer Anthony E. Scott.

At the other extreme are machine-to-machine systems. That's the Internet on automatic pilot. The idea is to give machines the smarts to tell each other what to do -- while humans, presumably, are free to carry out more important work. Some companies, such as Ford Motor Co. (F) and Italy's Prada, are using the Web to allow machines to monitor each other, track products as they move through warehouses, and even make decisions without human intervention.

Beckman Coulter Inc. (BEC), of Fullerton, Calif., which makes blood analyzers and other medical equipment, links the machines it sells to a computer back in its factory. The computer, unlike humans, works every minute of the week to monitor that everything is running smoothly. When a problem crops up, the computer alerts a Beckman technician, who can often make repairs before the machine breaks down. Beckman expects this system to save it as much as \$1 million annually. But the far larger benefit is customer satisfaction for a company that fixes the machines it sells before they show signs of malfunctioning.

Computer scientists envision a day when there are vast networks of smart machines, each one no bigger than a grain of rice. Researchers at the University of California at Berkeley and Palo Alto Research Center Inc. are developing tiny chips, equipped with microscopic antennas, called smart dust. The flecks of silicon could be embedded in materials or products to sense problems or relay data wirelessly to a computer network. For now, the first practical hints of this vision are surfacing in a project sponsored by Wal-Mart Stores (WMT), Gillette (G) , Procter & Gamble, and 84 other companies that could dramatically change supply chains. These are next-generation bar codes, which communicate to the network with every move.

Now in the pilot stage, the Auto-ID Center project involves slapping chips with identification numbers on individual packages of razors and bottles of shampoo. As the merchandise winds its way from warehouse loading docks to stores, electronic readers automatically track its progress and pass the data to a network. Everyone in the chain, from the manufacturer to the store, can see where each shipment is. The payoff should be just-in-time efficiencies and stocked shelves. The challenge? The radio tags are pricey. But in the past four years they've gone down from \$2 to 10 cents -- and they're heading to a fraction of a penny within three years, says Gillette.

These are the visions drawing companies toward the next generation of e-business. It's already starting to turn into a different scene, one where the Web connections are fast, untethered, on automatic pilot, everywhere. For many, the temptation will be to hold back. But while tight budgets call for restraint, a withering race for productivity will push them to take the leap. "It will take visionary leadership to keep investing in this environment," says Krishna Kolluri, CEO of networking-equipment startup Neoteris Inc. "But if you're standing still, you're losing a step every day."

Many will find themselves plunked, Oz-like, into new markets and businesses. The journey, after all, is just beginning. At eight years, the Web is the same age color TV was when it turned profitable in 1962. And when color sets really got TV rolling, we all know what happened: New industries sprouted from it that were a complete and utter surprise. BusinessWeek's 1962 story telling readers "Why Color TV Makes Money Now" contains nary a word about cable, pro sports, or Presidential campaigns, and not much about advertising. No doubt e-business has many more surprises in store.

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