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Lou Gerstner's keynote: Next generation e-business

Lou Gerstner delivered the keynote address at the eBusiness Conference and Expo in New York City on December 12, 2000. The focus of Lou's address was the major business and technical trends emerging in the next generation of e-business.

Transcript of Lou Gerstner's remarks:

The last time that I was on this stage was exactly four years ago today delivering the keynote at Internet World in December of 1996. And I'm tempted to say it's been an interesting four years, but why skip back to the primordial days of the Internet? The events of this year alone have been plenty interesting all by themselves.

Of course, 2000 will be remembered for the dot-com shakeout and with it, the overturning of the belief in the media and in the boardrooms that if you weren't "dot-com" you were "dot-toast."

We also saw the brief fascination with B2B marketplaces -- e-marketplaces -- many of them still alive only in press releases. And just the other week, *The New York Times* was wondering if there really was something called the "New Economy."

So, lots of twists and turns, fortunes made and lost -- the kind of high business drama that used to play out over years and decades has been compressed into months and quarters. How exhilarating! What sport!

But I suspect that many of you who don't work inside the information technology industry -- and even some of you who do -- are asking: "Excuse me? Was this all just fools gold?" Is e-business and the Internet just a digitally remastered version of client/server? Another paperless office? The checkless society revisited? A collusion between the I/T industry, which wants to sell boxes, and the media, which wants to sell papers?

All of this was running through my mind as I prepared for this talk. And I feel I owe you, if not an explanation, at least a perspective. After all, I was one of the first to say the Net was going to take its place alongside all the other great, world-altering technologies like electricity and manned flight.

I think what's happened with e-business parallels what's happened with those other transformational technologies. First, there's a period of wild enthusiasm -- intoxicating optimism that the new technology is going to rewrite the laws of competition and economics, going to create whole new wealth, wipe out old industries, create new ones.

Predictably that fever passes -- only to be replaced by significant disillusionment. People open their eyes. They don't see new industries. They don't see radically new business life forms. And they say: "Bah, forget it."

That passes too, and the world finally gets down to the important work of taking the technology and integrating it into the structure and fabric of society and business.

And that's where we are today with e-business. In its first phase -- you all remember well -- a lot of confusion about what the Net would be.

Remember all the commotion about "content"? "Content is king. I've got to own content. I've got to partner to get content." Why? Because people thought the Net was all about online magazines, online sports scores, digital artwork. Then the first real killer app arrived: consumer e-commerce. The race to sell books, groceries, airline tickets, toys, videos, pet food -- you name it -- over the Net.

And then, after we all got tipsy on Internet retailing, we lurched over to the next drunken binge -- B2B e-commerce.

And once again, something important, something real, got obscured by simplistic schemes: competitors commingling their supply chains or even taking the supply chains public, divorced from their basic company.

And what was the driving force behind much of this frenzy? It was the desperate, aching desire to be seen as leaders in building "The New Economy." The New Economy. That's a very interesting concept. What would constitute a New Economy? It might have new currencies. We could call them e-bills or e-bucks. Instead of musty old metrics like revenue and profit, we'd measure things on the basis of "eyeballs" and "stickiness." Instead of bona fide customers and genuine loyalty, we'd have hits, clicks, page views and downloads.

What a wonderful world! And some people really believed in it. But I think most people now realize that the business world doesn't work that way. Too many people failed to remember that the Internet is a technology. It is a tool. Yes, a very powerful one, but it didn't change the fundamental behavior of consumers: such as their desire for choice; like wanting to inspect the product and possibly return the product.

Despite the fact that a lot of Internet retailers burst upon the scene proclaiming whole new business models, in reality, their business was built on a centuries-old value proposition -- lower price. The trouble was they didn't have a business and economic model that could sustain these lower prices while generating returns. And when they couldn't subsidize those models with easy access to capital -- welcome back to earth.

So where are we? Today, e-business is just business -- real business. And real business is serious work. After the hype, after the IPO alchemists have had their 15 minutes, it's time to understand that we've come to the hard part. And the winners -- the people who stick with it and do the work -- understand that this next phase of e-business is going to be all about two things: Integration and Infrastructure. And that's what I want to talk about this morning.

First, integration. IBM has believed from the very beginning that the Net was going to be about the transformation of every important transaction and relationship. Not just one -- not just e-commerce -- otherwise, we wouldn't have invested $1 billion building this category we call e-business.

Now, what transactions and what relationships are important to businesses and institutions? There are many.

Interactions on the front end, yes, with customers, but also with people who want to invest with you and people who want to work for you.

Interactions at the back end: across the supply chain, transactions that connect an enterprise to markets and to industries.

There are vital internal transactions: order processing, fulfillment, logistics, manufacturing and employee processes.

And finally, all those relationships companies want to have with their products: appliances, industrial machinery, consumer electronics -- so the company can provide after-sale service and also understand how these products are performing in the marketplace and then make them better.

Now, five years ago we asserted that every one of these processes and relationships would be transformed by the Net. But if you think about it, we've actually only seen transformation of one business process so far: business-to-consumer commerce. That's okay, because if nothing else, it ignited everyone's interest.

But now a lot of companies have discovered that taking orders over a Web site is only a very tiny piece of what's needed to complete a successful sale. e-commerce triggers a chain reaction throughout the rest of the enterprise: across pricing systems, inventory, logistics, credit, and distribution and on out to the supply chain.

So now, the e-business leaders understand that the e-business transformation must sweep across all of these core business processes. This is driving huge investments today in applications for supply chain management, e-procurement, customer relationship management, knowledge management.

And while all of these processes are being transformed, something else is going on. They're being connected. They're being fused together. They're being integrated within the enterprise. This is a very important, difficult and significant issue for CEOs. The fundamental organization and governance models of corporations is being challenged.

Historically, in many institutions, every one of these business processes was a standalone operation. But to get the real benefits of e-business -- the speed, the cycle time, the customer responsiveness -- these internal processes and applications must be integrated. Without that integration, the lifeblood of e-business -- customer data, pricing information, inventory levels, supply management -- cannot flow throughout the business.

The integrating technology, by the way, is the easy part. The middleware software to do that is available today. The hard part is for the business leaders to make the commitment to reconceptualize their management systems and organization models. And I can assure you that is hard, hard work.

So, in this next phase of e-business, the goal now for CEOs and other business leaders is to go beyond e-commerce. The goal is to build a fully integrated enterprise -- a fully realized e-business, the integrated e-business. Let me give you an example: Whirlpool.

The core processes: They have consolidated 45 different fulfillment and financial systems and then e-enabled their workforce.

On the back end, a supply chain portal to connect trading partners, sellers, distributors and back office operations. On the front end, the same portal is available to individual consumers that use it to order small appliances and accessories.

And finally, transforming their relationships with their products: refrigerators, washers and dryers all being outfitted with a little intelligence and a Web connection. The first of these products comes to the market next year.

That's what I mean by an integrated e-business: end to end, every relationship and interaction. And as I said, this model represents a full frontal assault on the prevailing mantra of organizational theory: decentralization is good; centralization is evil. Now, I happen to believe in decision making being pushed to the lowest possible level. But I will say this categorically: In a networked world you cannot operate in a fully decentralized mode. The Net is an integrating medium. It makes it possible -- it makes it imperative -- to unify processes and information that in most institutions were splintered in the rush to decentralization over the last few decades.

That leads to the second important development in this next generation of e-business: infrastructure. This is about where and how the work of computing gets done. Today, we all know that in a networked world the heavy lifting of computing isn't going to be done by PCs or game consoles or, for that matter, your washing machine. e-business workloads are going to be managed and processed on transaction and Web servers, on middleware, on storage devices. And interestingly, workloads will be managed in the network itself -- somewhere between the end user that initiates a transaction and all the gear in the traditional data center.

That's why, somewhat amazingly, "infrastructure," -- a term that's been associated for 50 years with roadway and pipes and concrete -- has suddenly become trendy. Look how many technology companies claim to be an "Internet infrastructure" company these days. But I'm not sure everyone agrees on what an e-business infrastructure should look like, how it should be built and what the requirements are.

So, let me share with you three aspects of e-business infrastructure that we think are going to be very important.

First, e-business infrastructure is "end-to-end" infrastructure. Until now, "end-to-end computing" meant the desktops at one end and the servers at the other -- all within the same enterprise. But think about what "end to end" means in the e-business world that's coming toward us.

At one end, you've got every supplier, every distributor, regulatory agencies; licensing boards, tax authorities, all outside your firewalls.

At the other end, the explosion of devices. Yes, 700 million personal computers by the year 2003. But they will be dwarfed by other kinds of networked access devices: personal digital assistants, Net-enabled cell phones, game consoles. We've all seen the forecasts. Within the next few years there's going to be a billion wireless appliances connected to the Net. Mobile e-commerce is going to be a $100 billion marketplace by the year 2003.

But what we call "pervasive e-business" won't stop at the integration of new kinds of end user access devices. Coming up right behind all these new end user devices will be a trillion or more connected "things" -- things we'd never think of as "computers" but which will be doing a little computing and maybe a little storage.

This pervasive world is with us already: Whirlpool's smart appliances; Medtronics is working on pacemakers that will have Internet addresses; very soon your car will be a client device on wheels. So, that's what we mean by "end-to-end business infrastructure."

The second aspect of infrastructure that's really important is standards. I'm not going to say very much about standards because if you understand "end to end" and what it really means, the need for standards-based computing is very easy

to understand. The infrastructure must be open, and it must be based on cross-industry standards so you can connect to those millions of people and businesses wherever they are and connect to those billions of devices whatever they are.

That's why the fight for open standards is worth fighting. That's why XML has got to remain open. That's why we're betting a big piece of IBM's future on Linux. We're going to invest nearly $1 billion in Linux next year. Fifteen hundred IBM developers are dedicated to Linux-enabling our products and services -- and not just for applications that run on a wristwatch, which we've built by the way.

We're moving Linux into commercial production environments. Today we announced that we will install a supercomputer-scale Linux cluster -- the largest Linux installation in the world -- at Shell International Exploration and Production. Keio University in Japan is integrating two campus networks supporting 15,000 users with Linux. Last week Telia, the largest telecommunications company in Scandinavia, announced it's going to run its core business applications and consumer Internet services on a mainframe running Linux.

And along with Intel, NEC and HP, we've already announced a huge Open Source Development Lab in Portland, Oregon -- an independent, non-profit resource to give the open source community a place to test enterprise-class Linux software. Why? Because we're convinced that Linux can do for business applications what the Internet did for networking and communications: Deliver on the promise of truly open, interoperable, any-to-any computing.

Linux shipment growth is expected to increase more than any other server operating environment over the next few years. It's growing at twice the rate of NT, and there are some estimates that say Linux will cross over and become more prevalent than NT by 2004.

This is a big issue for every server company. It's going to be interesting to see if three or four years from now, anybody with a proprietary UNIX system will still have a meaningful position in the industry. In fact, the movement to standards-based computing is so inexorable, that I believe Sun -- and for that matter, EMC and Microsoft -- are running the last big proprietary plays we'll see in this industry for a long time to come.

A final point on infrastructure, which some of you are well aware of. The infrastructure technology that exists today isn't ready. Now, I know it's not fashionable in the computer industry to point out limitations of technology, but the fact is, the infrastructure today cannot handle what's coming. I've seen projections of 1,000-fold increases in Internet traffic in the next few years, and that's probably reasonable. Inside IBM, we talk about 10 times more connected people, 100 times more network speed, 1,000 times more devices and a million times more data. Whatever it is, very soon this networked world is going to be several of orders of magnitude bigger and more complicated than anything we know today.

So we're headed for a wall. Customers can't just roll in processors and storage fast enough to avoid meltdowns when usage spikes, or to deal with this cacophony of devices, or fend off viruses or hacker attacks, or handle translations on the fly. People are good, but they're not that good.

All of this -- the load balancing, the traffic management, the security, the transcoding -- all of it has to happen in real time -- naturally, spontaneously -- based on far greater levels of intelligence that are built right into the network.

And by "intelligent" I'm not talking about computers that can write the next Ninth Symphony. I'm talking about intelligence that, for example, we take for granted in our own bodies. We walk up three flights of stairs and our heart rate increases. So does our oxygen intake. When we plop down into a chair, our bodies adjust. It's hot, we perspire. It's cold, we shiver. We don't tell ourselves to do these things. They just happen. We need something similar for e-business. It's a much more natural, spontaneous, almost autonomic kind of computing.

Let me give you an example from the ultimate extreme of high-end computing. Last year IBM launched a $100 million project to build a new class of computer: a system 100 times more powerful than today's biggest supercomputer. We call it Blue Gene -- G-E-N-E -- because the first application is going to be to attack the mystery of protein folding in biology. Now, computing on this scale involves millions of linked processors working together, so that at any point in time we know that some of them will be failing. They'll "die" just like at any given moment of any day cells in our bodies are dying, replaced and flushed from the system. The system works around it and doesn't skip a beat. That kind of autonomic, self-healing system is exotic, but within a few years it will be commonplace in all kinds of mainstream commercial applications.

Let me mention one more aspect of infrastructure. We hear a lot about it: scalability. We're building for a day when our e-Servers are virtually impossible to outgrow. We're almost there now. Not just "always on" or available or reliable -- you can get that with today's technology, for example when usage spikes in response to a retailer's holiday promotion, the server automatically shifts resources to handle it. That's important, but it's not enough.

So our e-Servers extend that kind of capability to cooperate with Cisco networks. When the loads increase, the network gear doesn't just indiscriminately spray transactions at the server; it picks the ones the customer wants handled first with the best response and the highest quality. Buyers go first -- browsers wait.

By the way, this illustrates the importance of the network equipment company and the I/T companies coming together more closely than we have to date to build an open standards-based view of this e-business infrastructure.

There's a final aspect of e-business's future I'd like to mention because it's going to be big. I think that five or 10 years from now we're going to look back on this as one of the really game-changing developments.

It's the trend we call e-sourcing. Now, you know what outsourcing is. It helps customers convert fixed cost into variable cost. It lets them focus on their business and lets somebody else focus on the complexities of I/T. e-sourcing is the logical extension of outsourcing. It capitalizes on the intersection of several historical developments: the massive build-out of broadband; the rise of standards-based computing; and the escalating requirements of e-business infrastructure that we've just talked about.

Now, don't get me wrong, there are going to be lots of customers that are going to continue to run their own information technology operations for a long time to come: own the servers, own the middleware, own the applications, own the storage devices and manage all the staffs.

But we know today that an increasing numbers of customers are going to buy I/T as a utility-like service over the Net. They will e-source information technology from a variety of third-party players: today's telcos, traditional I/T providers like IBM Global Services, as well as from some new entrants. These e-sourcing providers are already building the data centers of the future: massive

"server farms" -- mega-plexes with acres of servers and storage with the kind of advanced infrastructure attributes I described a moment ago.

We've seen this kind of shift to service providers before -- for example, in the build-out of the power grid. When electric turbines first came about decades ago, if your business needed electricity you built your own generating plant. There weren't many options. By the same token, for the past 40 years if a business wanted information technology, they bought it, owned it and managed it. Now there will be an alternative.

We're already seeing the early stages of the e-sourcing trend in Web hosting, in storage hosting, in application service provision, in computing-on-demand schemes. That may be where it starts, with companies offering these co-location services -- a kind of kennel for computers. But customers want more than that. They want service providers who can provide sophisticated load balancing, security, storage, network management and application management.

Today, e-sourcing is about a $6 billion business, most of it in simple Web hosting. But by 2003, it's projected it's going to be a $55 billion market. And as it takes off almost all of the growth is going to be in the higher value-added segments.

So e-sourcing is not a simple business. It's more than a fancy control room and raised floors that stretch to the horizon. It will require experience in managing highly complex systems, and it will have high technology content. It is as much the domain of the computing service providers as the network providers.

At IBM, we're building on a traditional outsourcing business that will generate about $14 billion in revenue this year. We already manage 175 data centers worldwide, 25 of them dedicated e-business centers. On top of that, we're going to invest $4 billion over the next three years and open 50 more e-business hosting centers.

But nobody will go it alone -- not in a business this complex. So we're working with network and facilities partners like AT&T, Qwest and NTT. We're working with software and services providers like Akamai, Siebel, i2 and Ariba. And we’re working with the wireless providers like Nokia and Motorola.

I believe that the shift to e-sourcing will fundamentally alter the go-to-market models of the computer industry. Over time, we will sell more and more products to a smaller and smaller number of mega-customers, who will "resell" computing services. By the end of this decade, 20 or 30 of these mega-customers -- including our own Global Services business -- could consume 25 percent of our output. It could happen. If this is the way the industry is moving -- and we think it is -- we really are on the verge of a fundamental restructuring of both the industry's economics and its competitive dynamics.

So far we've been talking about all the business and the technical possibilities in this next generation of e-business. But I hope as we think about what can be, we understand that what's possible is not predestined. As with the advent of every world-altering technology from the printing press, to nuclear energy, to television, the arrival of the networked world is raising serious public policy issues.

Societies are going to have to establish predictable, trusted approaches to issues like Internet taxation, trade rules and protection of intellectual property. But I will tell you that paramount among all these policy issues is privacy. This one is not going away. And if we do not act responsibly, we run the risk of choking off this amazing but very young and very fragile economic engine.

I go back to the outset of my remarks. One of the hard lessons we've learned over the past year is that the Internet has not rewritten the laws of economics and competition. Well, it also hasn't rewritten the fundamental laws of consumer behavior either. We know that trust is a fundamental element of every positive brand experience. It's fundamental to all consumer behavior, to the willingness to buy and to brand loyalty. All of it is based on trust.

Now, we also know what a lot of consumers do when they go to a Web site and are asked to fill in their name, address, age, income levels and all that. They say they're Albert Einstein with an income of $5 and an e-mail address of E=MC squared. Worthless data.

What are customers really saying when they do that? They're saying they don't trust the security of the site, and they don't trust that the owner of the site is going to respect their privacy and not abuse or sell their personal data. So this is a "confidence" issue. It's not a technical issue.

And while serious -- very serious -- the privacy issues we're dealing with today are trivial compared to what's ahead. What are the implications for individual privacy in a world where millions of people are driving Internet-enabled cars that have their movements monitored at all times? What happens to privacy for millions of people with Internet-enabled pacemakers? And forget about the debate over who has access to medical records. Who has access to real-time data on your heartbeat, blood pressure and cholesterol levels? Your doctor? Your insurance company?

The answer here must begin with a responsible marketplace. Through our policies and our practices, industry has to send an unambiguous message that tells people: "You can trust us. You have choices. They will be respected. And you'll know in advance how any information that you give us will be used."

Getting a workable privacy framework in place is going to require leadership at all levels, including government. It will require thoughtful examination of what kind of public policies -- including legislation -- should be implemented.

Let me ask you to do just one thing when you leave here. Go back to your organization and find out if you've designated a privacy czar -- a senior executive with the clout to drive a real privacy policy through your organization. At IBM, we named ours a few weeks ago. We weren't the first, but we won't be the last. And I think that in itself is important.

We -- all of us -- we've all come a long way in the last four or five years. We've lived through a wild ride of experimentation: meteoric ascents and spontaneous combustion; new models tried, some validated, some tossed onto the slag heap of Internet Chapter 1.

It's my hope that even in those things that didn't work we learned -- so that we proceed to the next phase of e-business with a level of maturity, reason and stability that was absent for much of the period we just passed through. And I hope one of the lessons that we take with us is that the world that we are building is far more important than one of the computer industry's long-standing obsessions.

Simply put, what we're doing here is not about building some utopian world of personal convenience, of perpetual relaxation and leisure. That's not what's important. Carmakers aren't investing billions in telematics just so that you can talk to your steering wheel and ask your intelligent house to fill your intelligent bath -- all so you can have a hot soak four minutes earlier. Applications like that are fun, and I guess they'll improve modern life a little bit. But that's not the

economic imperative for making this historic investment, this historical transition.

There are far, far more meaningful, more profitable and more important aspects of e-business before us. In the commercial world for sure, and we've talked about those, but also to deliver better education to more of the world's people; to create opportunities to close the divide between rich and poor -- the information haves and have-nots; to decode the molecular mysteries of our bodies to develop better life-saving drugs; and, yes, very definitely yes, improve democratic institutions and processes for all people, in all states, for all nations. All of that is within our reach.

When I look back on the past five years I think that, for a lot of people, the omnipresent "e" in e-business came to stand for "easy" more than anything else: easy life, easy money, easy business. But I think we all know better today. I, for one, have never been more excited, and more optimistic about e-business -- and that has everything to do with the wacky period we've just come through, a necessary learning experience in hindsight.

And looking forward, the opportunity is still there to improve business, to improve the lives of people, to make the world a more tolerant, prosperous and secure place and address the most intractable challenges we all care about as businesspeople, as parents and as citizens.

These are the challenges worthy of our time, our investments and our best thinking.