JOHN PATRICK: OK, thank you, Irving. Good afternoon. Nice to meet you all. We're going to break this in two parts, a part about management-oriented things, idea-oriented things, the internet history, so to speak, at IBM and how that all got going. And then the second part about where I see the internet headed. So I don't know if that's going to be 50/50 or 30/70 or 70/30. We'll play that by ear.

I wasn't sure what to call this. I named it Launching Potentially Big Ideas. I don't want to be too presumptuous about the impact. History will assess that for us. But these are the topics that I've organized this into to speak about. And I'll start with the idea-- and I guess the most important thing, as you go out back into the business, or academic, or government, or public service jobs, wherever you end up, you're going to have a big impact. I know you will. And it starts with an idea.

And where do you get ideas? And I think it's mostly by looking to the outside. There certainly are a lot of good ideas at MIT and in IBM and any organization, but somewhere along the line, a person I worked with said, the most important thing you can do is go to a lot of conferences and see what other people think.

And for me, at least for my 40 years since I joined IBM-- I retired six years ago from IBM. But in my career, the conferences would be the thing, I would say, is where most of my ideas came from. And this one particular conference had to do with the internet. It was a conference called PC forum. And there was a guy there named John Gage from Sun Microsystems, and he showed a demonstration of the web.

And this was in-- I guess it was the fall of '92. And I think it's fair to say that 99-point-something percent of the people in the audience had never seen the web before, including me. That's probably hard for you to imagine, that there were people who have never seen the web. But at that time, it was really new. And it really just blew my mind to see this guy on a stage with a laptop showing some things in a classroom in Japan.

And so I came back to IBM, and I said, how do we get hooked to the internet? And nobody knew.

IRVING WLADAWSKY-BERGER: John, was that pre-browser?

JOHN PATRICK: No, it was not pre-browser, but it was the very early browsers. It was back in the days when a browser was very complicated to get it going. And not only did you have to have a browser, but you had to have what back then was called Trumpet, or if some of you were technical, it was called Winsock. And this was a software networking interface that allowed your computer to be connected to a network-- TCP/IP, if you want to use a technical term.

And of course, today, every computer has that. My iPhone has that. It's pretty much ubiquitous. But then it wasn't. And of course, we didn't have many PCs at that time in people's offices, either. And they were primarily used to connect to the mainframe applications. So there was an internal network, but there wasn't much beyond that. Well, I said, there has to be a way to do this.

And I kept asking, and eventually somebody said, oh, there's a guy named Matt Ganis. He knows how to do this. And he was a member of IBM Research, and he had been involved in supercomputing project down in-- where was that? Down the Hutch there, where they started the early high-performance computing center, I think it was called. So Matt knew how to do it.

So he came and showed me and hooked it up, and it was a really exception to be able to do this. And there was really no GUI. This was on a black-and-white screen. And the first application of the internet I ever used was something called Gopher.

And Gopher pretty much is a dead thing these days, but it was a big thing here at MIT and at all the universities. And it was developed, I believe, at the University of Wisconsin. And with Gopher, you could connect to the internet, and you'd get a little menu. And this was all text. And you could connect to another computer, and then when you connected to that computer, there were lists of folders, directories of files. And you could click on a file, and you could see what was in the file.

This blew my mind, that you could connect somehow, sitting in an office in Armonk, New York, and I could be looking at a file on some computer at the University of Delaware or somewhere. This was a mind-blowing concept. So I concluded that this was going to change the world.

And then this point here about formulating the concept-- I didn't know, really, beans about the web, but I could see that this was all about getting connected, connecting people and communications. That was the concept I had in mind. E-business? Nobody had thought of that at this point. Encryption, credit card transactions, e-commerce, eBay-- I mean, there was none of that. All I could foresee was, this is going to be able to change the way we communicate with our people, our employees and our customers. So I wrote a paper called "Get Connected." I'll come back to that in a minute.

So you've got to formulate the concept, have a vision. And you don't have to be a visionary to have a vision. Find other visionaries and listen to them. And we'll get into that in a minute. So the next thing about having an idea-- and I think this is universally applicable. This is just not an internet thing-- is, find out who knows about this idea.

It's pretty unlikely, unless you're a Nobel Prize-thinking person, that you're going to come up with something that nobody's ever heard of before. Chances are, other people have thought about this. So I organized a lunch in Armonk. And through my assistant at the time, we put out some mails and phone calls, and we said, anybody that knows anything about the internet, please come to this lunch.

And much to our surprise, about 25 people came. A few of them were of the mind that the internet is a really stupid idea. It's going nowhere. And what we already have is better than the internet. So there were a few that were very negative. But most of them thought, yeah, oh, god-- I was like a messiah, that somebody from the executive ranks had called a meeting and could actually spell TCP/IP.

So this was the initial breakthrough was finding out who these people were. And then we created a grassroots movement. And this was part of the next step, I would say, in creating something big. And that is communications.

And I would say, again, from my experience, if you only have one skill, that one really strong skill, make it this one, because without communications, good ideas don't matter much. And Irving knows this very well. We've seen so many brilliant people at IBM that had an idea but couldn't explain it and got frustrated and left the company or became a real problem because they were so frustrated that other people weren't smart enough to see the brilliance of their idea.

Well, the way people see the brilliance of your idea is to be able to communicate it. So all people that have had a successful career always get asked, well, what's the key to success? What are the three things? And I always say, well, there's really one thing. It's communications.

So what do I mean by that is first developing a simple theme, not a complex theme. And being here at MIT, it reminds me about the Semantic Web, which we'll talk about in the second half. But I would say, if there's one thing that has held the Semantic Web back has been the inability of the fairly small number of people who understand it to be able to explain it. And it doesn't have--

IRVING WLADAWSKY-BERGER: [INAUDIBLE] if any of them know. Any of you know about the Semantic Web?

AUDIENCE: [INAUDIBLE]

JOHN PATRICK: Yeah, one visitor. Yeah, well, we're going to talk about it. It's a big thing. It's the next big turn of the crank of the web. It's extremely important. So I think I just proved my point. Irving just proved the point by asking how many are familiar with this. Very few people are familiar with it because there's only a few people who know about it, and the ones who know about it, generally speaking, can't explain it.

So step one is to have a simple theme. The theme we used around getting the internet going at IBM was this idea, get connected, which later became, GetCo. Everything has a nickname. And GetCo became a grassroots movement. And so we energized those people who had come to that lunch, and it turned out they knew some people who knew about the internet.

It turned out, eventually we learned that most of the patents associated with the internet were developed by IBM, but they didn't go anywhere because IBM didn't believe in the internet. And IBM didn't believe in the internet because it was a threat to IBM's fundamental networking business. I'll come back to that in a minute.

So you develop this simple theme. And Get Connected was a-- you can see the paper on my website. I'm not saying it's seminal. Some people said it was. To me, it was just a very simple thing. It was communicating, what's the internet all about? And I had 10 steps. Here's what you should do as a company. And they were very simple things. One of them was to print a URL on anything that you print.

Well, that sounds pretty simple. But back then, the idea of putting http:// and a whole bunch of stuff on a business card was very offensive to the people responsible for the format of business cards at IBM. They didn't allow you to put an email address on a business card. It didn't fit the template. It was bad.

And you can just imagine, perhaps, the chief marketing officer of IBM, when I went to her and said, every ad should have a URL on it. And she was like, these URL things, whatever they are, they're really ugly. And they take a lot of real estate, and nobody's going to know what they are. Why would we put that in *The Wall Street Journal* or in *Fortune* magazine? Why would we do that?

So these were simple ideas-- use email, answer email. Most companies still don't answer their email. So simple concepts. And then, of course, tell the story. You've got to be out there. Irving was a model for this at IBM, and it's a tremendous loss that he's not there full-time now because he spent-- what percentage of your time outside telling the story? A big percentage.

And so you tell it, and you tell it to everybody, but you keep it simple. If the approach is to show how sophisticated your idea is and reveal the complexities of the idea, you're feeding your own ego, but you're not accomplishing the mission because the mission is to communicate and make it simple. And of course, you can't do it all yourself, so you have to have a team of people who are going to help you evangelize. And you have to teach them how to tell the story and give them the idea of keeping it simple, which leads to this last point about, here, you can be the evangelist, but don't protect the content.

And this was something I was not familiar with in the first 30 years of my career was the idea of how proprietary some people view their speeches and their materials. And my first public speech about the internet was in December 1994, in Washington, DC, at Internet World. And I got a lot of calls came into my office asking for, how do we get a copy of John's slides? Or, would he be willing to share a copy of his slides?

Well, it immediately dawned on me, why don't I create a website and put the slides on a website? And again, this is 1994, so it was a kind of a unique idea back then. And when I would say to my assistant, anybody that calls that wants slides, tell them to go to ibm.com/patrick, and they'll find the slides.

And people would still call-- are you sure he doesn't mind us-- can we use the slides? Can we copy the slides? Of course. See, this is such a subtle but important point. If you protect it, you defeat the purpose of spreading the word. And people would say to me, well, how about if somebody copies your presentation? I'd say, great. Then there's another copy of it out there.

Well, how about if somebody in IBM that's not a very good speaker takes your presentation, and they make a fool of themselves? Well, if somebody doesn't get the points of the presentation, they'll call. They can go to the website. They'll pursue it. There's no downside, in other words. And what are you protecting?

The key is to keep your slides simple and allow flexibility so that people-- the worst thing you can do is fill a slide with words. I learned a cardinal rule from a guy named Leonard [? Lew, ?] who was the inventor of Systems Network Architecture. Remember Leonard? Brilliant, brilliant man. He said, never have more than five bullets on a slide. He would cut your fingers off if you had more than five bullets on a slide. And I've kept that to this day, and it's served me well. Yeah, sure?

AUDIENCE: How you're telling the story part, when you talk about how you do that to different groups-- because I was in a situation this summer, talking about some new technologies, and maybe the IT group is willing to listen, but then when you go to the marketing people, they really don't want to talk about URLs or whatever. So how do you change your story?

JOHN PATRICK: Well, it's a very good point. How do you tailor your message to the audience? And step one is to recognize that you really do have to tailor the message to the audience. If you're speaking to a board of directors or if you're speaking to a group of programmers, you can use the same material. You can even use the same charts and the same bullets. But the words you use have to be a lot different.

And you have to-- especially to executive audiences, you have to commit yourself to never use a buzzword, never. Don't put abbreviations on charts, which most of us who are interested in technical things, we like to use abbreviations. We like to be able to recite DHCP and TCP/IP and 50,000-- there's thousands, literally, of things that you know that are-- but the audience doesn't. So you assume they don't know. If it's a technical audience, of course, you can be a little more technical.

IRVING WLADAWSKY-BERGER: Let me make a point, and then I have a question. In my experience, the only way to learn to communicate, whether it's to a technical audience, to clients, to senior executives, is to do it. There is no substitute. And if somebody said, well, but then you won't do it well, well, OK, but the first time, you won't do it well. The 15th time, you'll do it much better.

But it's a very important thing that it is really a critical exercise to sell your ideas by selling your ideas, by talking to people and, of course, listening to them. And when you talk to people, and if they don't understand what you're telling them, the feedback is critical, wouldn't you say?

JOHN PATRICK: Definitely.

IRVING WLADAWSKY-BERGER: The only way to be able to tell whether the concepts that are obvious in your mind are getting across to different audiences is to do it. And you will quickly be able to tell if you're getting blank stares or if they are resonating with you. But I honestly don't know any other approach than to just do it and do it and do it. And wouldn't you say, generally people get much better at it through practice?

JOHN PATRICK: It takes a lot of practice. And it's a very perceptive question because, if you buy into this, and you want to follow this idea of building communications as a strength, you can't just decide, and it's done. I mean, it takes a lot of work. And part of it is tailoring the message, which was your question. You tailor it based on the level of the person, the audience.

You also tailor it based on horizontally, in other words, to the different vertical segments. If you're speaking to a group of hospital administrators, it's different than engineering or government. You have to know your audience and make your example, whatever examples you use, orient them toward their particular industry or their concerns. And the more you know about your audience, the better you are.

And part of it also is delivery. And this takes a lot of practice. It literally takes a focus on what words you're going to use. And don't say "uh." How many speeches have you been to where 40% of the speech was "uh, uh, uh"? And that takes away from your message. It diverts people. But it's not easy to do. It takes a lot of practice. Yeah?

AUDIENCE: I wanted to ask you a question--

JOHN PATRICK: Sure.

AUDIENCE: --about the pace of widening the audience that you tell the story to. So I obviously have never done anything at this scale, but promoting an idea for a new product, for example, [INAUDIBLE]. One of the things I've noticed is, if you haven't fully developed the idea, and you start to share it, one of the toughest things to deal with is, everyone you tell it to takes the idea and tries to pull it in this direction, or that direction, or that direction.

To some degree, it seems like a good thing because you want to be managing all of those tensions, but you want as much input. But to some degree, it seems like there's a certain kind of careful engineering of, when do you tell which people so that the idea development doesn't get diverted too early on from the [INAUDIBLE]? Do you have any perspective on that?

JOHN PATRICK: Well, it's an extremely important point because half of communications, at least half of it, is listening. And I've seen so many cases where a person has a product or technology, an idea. They have a certain purpose for it. It's going to solve a certain set of problems. The questions keep coming in from a different perspective.

And what that should say to the person is, maybe there's a better use for this product, even, than I thought. Or, even if it isn't better, maybe it's one somebody will actually buy. The one I had in mind, may be ultimately better, but you go where the market is.

This is one of the great things about a company I really don't like called Microsoft. They listen. Sometimes they're a little slow, but Bill Gates made a lot of speeches around the time I was making speeches about the internet. He was making speeches saying, the internet will never be used for business. It's too slow. It's insecure.

But once he listened to Brad Chase and others at Microsoft, whew, they changed on a dime. So it's really, really important. Your idea may be as good as you thought it was, but for a different purpose. And you learn that from the questions that people ask. Yeah?

AUDIENCE: How long had you been at IBM when all this started? Because it seems to me, depending on where you are in your career, if you find yourself butting heads or banging your head against a stone wall, if you're new to a company, I would imagine you would just say, well, let me take my idea somewhere else. But if you've been here a long time, and you're vetted, then maybe that's different, because reading your article, I mean, I was thinking to myself, boy, why is this guy putting himself through all this?

[LAUGHTER]

Find somebody who's going to really empower you and go with you. But yeah.

JOHN PATRICK: Well, it's a good question. Actually, I'm going to come to that in just, I think, in two slides. If I don't answer it, say something further about that. Yeah, sure?

AUDIENCE: [? Exemplifying ?] the question that he asked, how did you manage to convince the marketing person at that URL? Because I can see that, at a company like IBM, at that time, it should be very tough to get that across to them.

JOHN PATRICK: I guess one way to say it is, you have to really be a pain in the ass. And Lou Gerstner said that once to the senior management team. He said, I think more of you should be a pain in the ass, like John Patrick. Be a pain in the-- like him.

IRVING WLADAWSKY-BERGER: Is it fair to say you convinced Lou, and he convinced the marketing people? Is that a fair statement?

JOHN PATRICK: Yeah, I think a lot of things can converge. Irving was involved. We began to build support around the idea. The advertising agency at the time was-- they listened. What was the guy's name?

IRVING WLADAWSKY-BERGER: Chris Wall.

JOHN PATRICK: Chris Wall.

IRVING WLADAWSKY-BERGER: He's going to be a guest lecturer in about a month.

JOHN PATRICK: Right.

IRVING WLADAWSKY-BERGER: He was the senior guy from Ogilvy and Mather.

JOHN PATRICK: It was the other guy, though, the guy that did the Apple ad with the hammer. What was his name?

IRVING WLADAWSKY-BERGER: [INAUDIBLE]

JOHN PATRICK: I'll think of it in a minute. But there was a senior guy in the advertising agency-- and it wasn't like we would be the first to have a URL. We weren't the first. But we were the first-- IBM had a lot of firsts when it came to that type of thing. We were the first to take online job applications. We were the first to put our annual report. When I say the first, the first out of, say, the Fortune 500.

We were the first to have a podcast. We didn't call it that back then. We called it-- it was an audio file. It had a picture of Lou Gerstner on the homepage, which was maybe lucky, but that didn't hurt any. We took a mock up of our first ibm.com page and showed it to Lou and had his-- most of the page was his picture. And you clicked on it, and he said, "Hi. This is Lou Gerstner. Welcome to our home page."

So that actually had a lot of leverage. We showed that at a senior management meeting on May 24, 1994. And there were 300 people in the room. Lou was the only one-- probably Irving. There was just a few of us that had seen this. There were no approvals. There was no budget. There were no legal sign-offs. All the normals, we bypassed all that.

And they just thought, oh, John's going to give a demo. He's been demoing the ThinkPad for a long time. He's going to give a demo. So I showed this home page. And I clicked on Lou's picture, and "Hi. This is Lou Gerstner. Welcome to our home page" booming out to all these people. And then at the end of the demo, and I said, well, if no one has any objection, we're going to turn this on live to the public tomorrow morning. Who's going to object, after they just heard Lou Gerstner say, welcome to our home page?

And people were in a panic because there was nothing behind it. It was a little server under my desk in Armonk, and there were no approvals. There was no department. There was no webmaster. There was nothing. So I guess another way to answer the question about, How do you get people motivated? is, you have some air cover. And I'll get to that in a minute.

Now, you have to have a team to take your idea forward. And you have to look around and find, who are the visionaries? Maybe you're one yourself, but there's a lot of visionaries. Find out who they are, and listen hard to ask them what they think. And then you have to it out because some visionaries are off in la-la land. They're not a little bit ahead of their time. They're 50 years ahead of their time, some of them. So you have to use your filters.

But listen to the visionaries. And I was very fortunate. There were people-- a guy named Dave Grossman was a-- actually, he was a phys ed major, and I think he had a master's in-- maybe he had a master's in education or computer science, possibly. He was at Cornell at the Theory Center. They had a supercomputer, and they were paying attention to what's going on the internet.

And Dave's also a sports guy, and he was following the Olympics, the Lillehammer Olympics. And Lillehammer Olympics was being automated. All the data services were provided by IBM, the collection of the data and all the applications at the Olympics.

There was nothing on the internet, nothing, If you can imagine, until Sun Microsystems found a way to get into this feed of data that IBM was collecting and putting online. But it wasn't on the web, but you could get to it. They got to it, and they put it on the web on sun.com.

And this David Grossman discovered this. And he was just beside himself. He drove down-- Irving and I were in a task force, at the time, looking at the strategy of the company. And remember, he came and showed you and I and Abby? He said, do you guys realize what's happening, that Sun is using IBM's data and putting it on the internet? And nobody knew.

So there are a lot of things like that that I learned from Dave Grossman. He was not a strong communicator. He was not a guy that goes out and gives speeches. But he's a very visionary guy. He was the first person that I know of that recognized that the web had something to do with IT.

Back then, the web was viewed as a document thing. I mean, the web started in 1989, the text version of it, when Tim Berners-Lee was basically a librarian at CERN in Geneva. And he was trying to figure out how to provide data about the particle physics research and make that same data available to people that had lots of different kinds of computers all over the world. He was trying to find, how could we have a common way to make these documents accessible?

And he devised this idea called HTML, hypertext, where a document was independent of the operating system. It was independent of the network. It was independent. And so that's where that came from. But it was not thought to be anything to do with IT.

And so I listened really hard to Dave. And there were other people like him. David Singer in [? Almaden ?] was the cultural spirit of the internet. He knew what the underlying feelings were, how people that used the internet, how they thought, how they worked, how they operated, kind of the grassroots orientation of the internet.

And so you go find those people. And it doesn't matter what level they are. You can't let hierarchy get in your way. It might be somebody above you. It might be somebody way below you. It doesn't matter.

IRVING WLADAWSKY-BERGER: But I think, if I can repeat what you're saying, for incremental innovations, usually there is a well-established organization that's been doing that, and you go talk to them, and that's how you do it better. For things that are brand new and disruptive, you have to search for the guerrilla warfare people. And they are almost always there. Wouldn't you say that?

JOHN PATRICK: Definitely.

IRVING WLADAWSKY-BERGER: Almost any idea, there are going to be people out there, but you don't know that. And especially-- and this is a job that John played very well-- when you find them, if you are a senior person, you are empowering them because they thought, oh, my god, I'm doing something on my own. What if somebody finds out I like the internet or Linux or something? And all of a sudden, somebody, a vice president shows up, and you just made their day, right?

Wouldn't you say that? I mean, these were the orphans of the internet, and all of a sudden, they are part of a Get Connected team that Lou Gerstner is talking about. And they will-- I mean, they will love you. I mean, now they'll follow you anywhere. But you need to go out there and find these people and empower them. It's part of the leadership that you need to do.

JOHN PATRICK: That's a very good point that I had not rendered specific, and that is about the grassroots. When we were starting this GetCo thing, we had probably-- initially, there were a handful, and then it grew to several hundred. And they didn't report to me. They didn't report to Irving. They were in all different organizational entities around the company, but they all felt like they were part of this GetCo thing.

And I remember talking to Jim Cannavino one day. He was the number two guy in the company at the time. And he said, this GetCo thing is really important. He said, we could create an organization and have you be the head of that organization, but then you wouldn't have 300 people.

You'd have some-- I don't know how many people. You'd have some number of people. But the way it is, you've got the whole company. You've got all these people feel like they work for you. And especially in the early stages, that's much more important than creating an organization.

Now, later, we did create an organization, which Irving had called the Internet Division and which eventually we didn't need anymore because the whole company was an internet company. But in the early stages, it's really important to find these people that are the visionaries. And by the way, it might be finding people who are the communicators. You might have the idea and be the person behind all this, but maybe you don't want to be the communicator. That's OK. You don't have to be. Just make sure you have somebody that is.

I was at a meeting somewhere the other day, and this person who was responsible for a particular-- he was the executive-- wasn't a very good speaker. He stood up. He was to have an hour. And he made a few introductory comments, and he said, I hope you don't mind, but I brought Bill along because he can really explain to you what we're doing. And then he turned it over to Bill. So he empowered Bill.

So he was credible. This guy was the leader. But he put someone on the stage, so to speak, that the audience got more from. And obviously, the person in charge was familiar with the content. So you build this team, and then you trust them to the hilt and pay them well.

And when you have somebody that's really critical to what you're trying to move forward, you might have to break the rules because, in the grand scheme of something, if you've got something big going on, if you lose a key person, that costs a lot more than paying them more than maybe you're supposed to.

And the last concept here on the team idea is when you have things going, and it's going well, people are going to come after that team, and they're going to try to lure them away, either outside of the company or inside of the company. Outside of the company, of course, you want to do whatever you can to protect your team, to keep them in the company.

But when it comes to having them go to another part of the company-- this is one of the things that's always admirable about Irving is he never held anybody back. A lot of people do. They hold their people back because they want to keep the strength of their team.

The way I always felt about that was, if somebody comes after a key person, we're not losing that person. We're gaining the department they go to. Another way to say it is, we're infecting another part of the company with the spirit, the attitude, the internet feeling, the internet spirit. That proved to be very successful for us. Yeah?

AUDIENCE: Say you're the innovator, and you're the one that has some of great idea, and you need some higher corporate sponsorship. I mean, do you have any recommendations in terms of finding the right people to convince and get on your side? And then, how do you go about getting them as excited about this idea as you are?

JOHN PATRICK: Well, what I did was I went to see every executive, just about all of them. And some of them were receptive, and some of them weren't. And the ones that are receptive, go see them again. Thank them profusely. Keep them up to date.

And it might not be the logical department. It might be much more logical that this executive be the one to really support your idea. But if they're not interested, it doesn't matter. If this one is interested, even though they're in some totally unrelated-- make them your buddy.

AUDIENCE: How do you press their buttons? How do you get them excited about what-- I mean, is it budget? Is it money? Is it opportunity?

JOHN PATRICK: It's enthusiasm for the idea. It's contagious. Enthusiasm is contagious.

IRVING WLADAWSKY-BERGER: Remember, you are selling to them, or imagine you're talking to a VC, something similar. And the more you can put the idea in the context of a problem you know they care about, the easier it is to sell. So that's where the [? homework ?] comes in.

Now, sometimes you may do an incredible job, and they still don't want it. So you go to the next one and the next one. But generally, if you just talk about an abstract idea, they won't get it. But if you know that they're trying to figure out how to reach the sales force, and they don't know how to do that, and you have now a technology that lets them reach sales force worldwide, that might be a better way.

But this gets back to the fact that, in order to get a new innovation accepted, you have to do serious selling of the idea. And I don't know any other term.

JOHN PATRICK: Yes, that's exactly right.

IRVING WLADAWSKY-BERGER: [? Selling-- ?] can you say that?

JOHN PATRICK: You have to sell it.

IRVING WLADAWSKY-BERGER: And what I also find-- and we talked about it before because I think one of you said, well, isn't that the job of the marketing people, and the engineers are in the lab? When something is new, the passion and the selling is critical. And I think the only people who can communicate the passion are people who really feel it, and they are often the people who have been involved with the idea in the first place. Wouldn't you say [INAUDIBLE]?

JOHN PATRICK: Yeah, exactly right. And if it's not you personally, then you have this person that, wherever you go, you bring them with you, and you just-- you don't give up. I remember trying to convince the head of the PC company back in '94 or '95 that we should be selling PCs on the internet. And I had had lunch with Michael--

IRVING WLADAWSKY-BERGER: Dell hadn't started yet?

JOHN PATRICK: Dell was starting it. And I had lunch with Michael Dell, and he was selling PCs over the phone. And I was at this conference. And I sat next to him, and he said, I understand you're the internet guy at IBM. What do you think about selling PCs on the internet? I said, yeah, absolutely.

Well, of course, it was an easy decision for him because all he had was phones, and he would be supplementing or later replacing most of that with the web. IBM, the guy running the PC business had just spent $100 million fortifying the dealers. Nobody liked the dealers.

I remember one of the top executives saying, have you ever had lunch with a dealer? You wouldn't even want to have lunch with them, let alone do business with them. And our customers didn't particularly like the dealers. But that was IBM's channel was the dealers. So to start selling direct over the internet was viewed as a big threat to the channel, the dealer channel.

So basically, I gave up on him and worked on somebody else that I thought would care about it. So you can't bang your head against the wall too long. In a big company, there's a lot of places where you can find allies. If it's a little company, then there's even more because you tend to be looking on the outside.

You also want to leverage the organization. We had some lucky things that we did that were not really part of a grand plan, but that served us really well. One of them was called alphaWorks, and they just had their 10th reunion, their 10th-year celebration.

Irving went to visit Research one Friday. I was somewhere else giving a speech at the time. And he called me that weekend and he said, I was just at Research. You ought to see all the clever research projects they have that are built around the internet. This was in 1995.

And he said, we've got to do something to get those ideas-- get them out of the laboratory. And so Irving's challenge-- solve this problem. So I thought about it all weekend, and I came up with this idea of, why don't we take these technologies that are going nowhere-- there's some researcher who is enthusiastic about it, but there's no clear market for the idea. Let's put them on the internet for free and let people evaluate them.

We'll get feedback from those-- I mean, this is so obvious in today's world, of course, but this was not obvious in 1995, a dozen years ago. In fact, people thought this was really stupid. You had people-- you're paying these PhDs to develop these great ideas, and then you're going to give their idea away? I said, no, we're not really giving it away. We're just going to open it, put it out there for the world to see. They can download it for free. They can't go sell it, but they can use it. They can do almost whatever they want with it.

So we decided this was a good idea, and I decided we needed a good name for it. And beta software was a common name. Alpha software-- a lot of people thought that's got a bad connotation. That's not even ready for beta yet, but I kind of liked the idea.

Normally you would go through a trademark search and pay lawyers lots of money, and I just went to, at the time-- there was no Google then. I forget what the search-- it might have been Yahoo. I'm not even sure Yahoo was there at the time. But one of the early search engines, and I did a search on alphaWorks. And I got no hits, so I said, OK, we can use it. And I announced it again at a senior management meeting.

And I remember Lou Gerstner was-- I was sitting behind him, and he hands me a little slip of paper. He says, how do we get paid for this? And I put back, I don't know. And then he put another question on. He said, how about if people steal it? And [? I ?] think it's going nowhere as it is, and we have it protected, so they can't sell it. They can just evaluate it and give us feedback. He says, oh, OK.

Well this is what turned out to be a very big, big success because it made IBM relevant to the technical community. And it allowed IBM Research projects to become visible where, otherwise, nobody would know about it. And of course, today, it's obvious. But back then, it wasn't.

Then a real breakthrough for this overall project came also in 1995, when IBM was preparing for the sponsorship of the Summer Olympics in Atlanta. And Dave Grossman, that I mentioned earlier, went down to Atlanta to see what they were doing. He was very interested in the project.

And he came back, and he was a wreck. He was just beside himself. He says, you're not going to believe what they're doing. They've let a contract to an advertising company to build a website for the Olympics. He said, we can't let them do that. And this was the very first time that I'm aware of that anybody related information technology to the web. As I said earlier, it was viewed as a document thing.

And so obviously, there should be some web pages about the Olympics. But Dave saw the potential to gather all this data from Swatch timing devices, build it into a database, and show that database on the web. So it made sense to me. And I really listened hard to him and agreed-- I said, well, who's going to do it? If we get this contract canceled, who's going to build the-- he said, well, we have to do it.

And of course, we didn't have the people to do it, but we said, well, we'll do it. So we started working on it, and then we got really scared of what we-- we realized now that we're going to create this global website, and it's got to work. And it's got to be scalable.

And back then, we used to say, with regard to the web, you don't know how many people are going to come, you don't know when they're going to come, and you don't know what they're going to do when they get there. So we really got into a panic. And so I went around and visited the heads of all the different product divisions, and I said, I need two or three of your very best people. Irving was a big supporter of this.

And we assembled a group of 54 of the best technical talent in the company, and we begged, borrowed, and [? stealed ?] all kinds of resources in Southbury, Connecticut. We got some space, and we got the equipment, the best and the latest of all the equipment. Irving dug up an old SP1 supercomputer, and we built this website. And at the time, it was the largest website in the world.

And one of the guys got the idea that we could build a ticket server. So we built this little experimental-- it was a little HTTP daemon, just a simple, little thing where you could buy a ticket with a credit card. This was unheard of in 1995. Again, there was no eBay. There was no Amazon. There was no e-commerce.

This turned out to be the largest e-commerce site in the world. It sold $5 million worth of tickets to the Olympics. And it was a completely unstable, rudimentary system. But that system went on to become a technology called WebSphere. And it was quite successful. L.L. Bean was the first commercial user of it, and it was--

IRVING WLADAWSKY-BERGER: Their CEO has come to talk [? to me-- ?]

JOHN PATRICK: Terrific.

IRVING WLADAWSKY-BERGER: --Chris McCormick, who was our partner in developing their e-commerce.

JOHN PATRICK: Oh, well, he'll hopefully validate that story. So the Olympics became a really important thing for us to learn. We tried a lot of experiments. We had the first streaming audio. Do you remember there-- some of you may remember. There was a bombing that occurred at the Atlanta Olympics.

And we were thinking, it would really be-- there were a lot of people, ex-pats, Americans working in Japan and other places that really care about this. But how do you get the news? There were no news sites on the web at the time. So we said, let's get the Atlanta radio station, and let's stream it through this audio streaming technology and make it available on the internet. This was a huge, big hit. This is, again, before there was any internet streaming radio stations, et cetera.

So when the Olympics were over, the Summer Games, we had these 54 people. We had this room full of millions of dollars worth of equipment. And now what do we do? Well, I went to see the head of strategy of the company and convinced him that we should come up with this notion of Web Ahead. And Irving-- I don't remember-- I guess I worked for you at that time.

IRVING WLADAWSKY-BERGER: Yeah, [INAUDIBLE].

JOHN PATRICK: It must have been, yeah, the Internet Division. So we said, let's keep that group, and let's keep it in the Internet Division, and let's work on internal problems. Let's web-ify IBM. And that's what we did. We used the people and the resources, and we built websites, and we created applications that were quite advanced. So this was a way to leverage--

IRVING WLADAWSKY-BERGER: JOHN, all these things you're talking about are a very good example of something that I think has been a very big change in the last, let me say, 10 years, that, in the past, when you develop a major new technology, you did your experimentation in the lab, and then you threw it over. With these technologies that almost, by definition, are market-facing technologies, you have to do the experimentation in the marketplace. Wouldn't you say that?

JOHN PATRICK: Absolutely.

IRVING WLADAWSKY-BERGER: And there is no substitute. I mean, there is no doing it in the lab. You can do that, but then you still have to do it in the marketplace. And that gets, also, part to why I've been so insisting that the technical people, the engineers, the people who understand all this, have to have such good market-facing skills because that's what will enable identifying what kinds of experiments.

I mean, you had to have a pretty good idea that this Olympics website was going to work because, if it didn't work, it would be such a horrendous black eye. But you assembled brilliant people, but they were doing the marketplace experiment directly. And I think that was not the case 10, 15 years ago, would you say? This [INAUDIBLE]--

JOHN PATRICK: No, definitely no.

IRVING WLADAWSKY-BERGER: --post-internet that all these much more market-facing experimentation has happened. I don't know if you all see it this way. Any comments or questions on that? But just, it's been just a really big shift in the view of technology, from just the lab to almost the lab is a necessary, but the real innovation is when you start taking--

JOHN PATRICK: It's outside.

IRVING WLADAWSKY-BERGER: --the stuff out--

JOHN PATRICK: The world becomes the lab.

IRVING WLADAWSKY-BERGER: The world becomes the lab. Exactly.

JOHN PATRICK: Yeah. One way to think-- go ahead. Yeah, go ahead.

AUDIENCE: Yeah, I think it's interesting. I think the internet, in particular, is like that. But it seems to me like you would set people up, sort of, by promising things that they didn't really understand what they were promising. And then when they realized the commitment-- that's how you seem to band [? together ?] a bunch of resources that normally you wouldn't have got.

JOHN PATRICK: No, that's true. Yeah, I didn't think of it as a setup, but I guess, retroactively, you could think of it that way. We didn't know what we were getting into, at first.

IRVING WLADAWSKY-BERGER: I think of it as, you commit to jump out of the plane, and you think you have a parachute strapped to your back, but you're not totally sure. And you hope that, when you pull the string, it opens. And it's been packed by good people, but you don't know. And the problem is, if you wait, then your competitor will have done it. And now this is worse, that your competitor did something while you were thinking about, should you jump off the plane?

AUDIENCE: Yeah, you seem to get yourself in a lot of sink-or-swim situations, where you either make it, or you're you are a goner.

IRVING WLADAWSKY-BERGER: Yeah, well, remember--

JOHN PATRICK: It was a high risk.

IRVING WLADAWSKY-BERGER: --we're talking about disruptive innovation. No, no, I think this is the nature of disruptive innovation. Wouldn't you say entrepreneurs, in general, behave that way, forgetting big companies?

JOHN PATRICK: Yeah, risk-takers.

IRVING WLADAWSKY-BERGER: Risk-takers. That's why entrepreneur-- you cannot be an entrepreneur and not almost get off in the risk. You get a high from, oh, my god, am I going to crash, and it's all over? I mean, obviously, if you're a really good project manager, as well, which is why good management and organizational skills are good, you will assemble brilliant people.

JOHN PATRICK: Yeah, go ahead.

AUDIENCE: So we're talking about risk-taking [INAUDIBLE], but what do you think is the difference between taking risks at IBM versus taking risks outside in your own startup?

JOHN PATRICK: Well, actually, there are a lot of parallels. In a big company, if this project had really gone bust, it wouldn't have made a blip in the annual report. So in that respect, they're different.

But in terms of being willing to take risks and putting all your eggs in one basket with a team of people, it's the same thing. Yeah, I don't think it's-- we were fortunate to have the resources. I think it's a fair comment. We never would have gotten the resources if we had, from the outset, made a proposal to say, here's what we're going to need.

IRVING WLADAWSKY-BERGER: But it's interesting, also--

JOHN PATRICK: I'm not sure we could have sold it.

IRVING WLADAWSKY-BERGER: --that the number of resources, when all is said and done, were infinitesimal for the comp-- 50 people for IBM is not a large number or, let's say, even 100 people, which gets back to, because you were able to do it not with a large group, but with a small number of Black Belts, that kept the cost way down, whereas if you had had to do it the classic, hierarchical organization, I bet you the number would have been 10 times higher.

And now you-- the more you spend, the more the accountants are on your back, whereas if you spend as little as John was spending, you're under the radar. Who gives a shit about that? [INAUDIBLE]. No, no, I'm serious. And there is a time when you want the accountants to say that about you, that you don't matter. You're not ready to take on the accountants yet.

JOHN PATRICK: Yeah, a lot of resources went into it, when I think about it. From a hardware point of view, we went to the guy that ran the Disk Drive Division, for example, and said, the whole world's going to be watching this site. We really wouldn't want to have a disk drive crash. Oh, no, you're right. We better get some of the very latest-- we'll give you two of them. So there was definitely that element.

I think, in the end, it all revolves around people. And when this phase was over, we started thinking ahead about, how do we continue to bring really good people into the organization? And one of the people in the organization had this idea called Extreme Blue, where we would set up in Cambridge a group, and we would recruit the absolute best students we could find around the country from the top schools in computer science and set them up in a very unique program and give them really important projects.

And that's evolved into quite a large program now. Hundreds of people come through that program. So it's all about people, people and skills. And the other thing I would mention about these things, and as you're putting your concept together and launching a company or an idea in a company, names really matter what you call something, whether it's alphaWorks, or Web Ahead, or Extreme Blue, or new product.

One of the rules that we established on alphaWorks was that, in order to put a technology up there, the researcher had to come up with a name. And it couldn't be a technical name. It had to be a simple name that may be related to it, but not a generic description with 10 words of five syllables each. No, it had to have a name.

This was very offensive to some of the researchers, to marketize their brilliant idea. But we hung very tough with that, that it has to have a simple, memorable name. And I believe, to this day, the ThinkPad-- when the ThinkPad came out in April 1, 1992, there was a huge debate about the name ThinkPad.

And the original ThinkPad was actually a pad. It was a stylus-based computer. It was about that thick. It weighed about 10 pounds. UPS was going to be the first customer of it. It used an operating system called Go-- some of you may have heard of, which ultimately got bought by AT&T, and then it folded.

And this first product-- it was a breakthrough product at the time, and it needed to have a name. We got a consultant to research this. We said we needed a name in a hurry because the proposed name the IBM 486 SLC 2-1. That was the name of this product. And I had just come in as the new VP of marketing, and I said, over my dead body. We need a better name than that. There isn't time. I said, then we're going to delay the product.

And we got a consultant to come in, and the consultant said, ThinkPad. And he was focusing on the little physical pad that Tom Watson developed back at NCR many, many years ago. And you can't imagine the look on people's face when he said ThinkPad. It was a really, really strange name.

We launched it because we didn't have time to do much else. And there were debates about, it doesn't translate, and it means a dirty word in this country, and all these problems with it. So we got the product out the door. The product was a miserable failure. But then it was time to come along with the first laptop.

Toshiba was kicking IBM's butt at the time. The salesmen were begging for a product. The first product was ready to be launched, and there's a discussion about, well, what are we going to call it? Well, to me, we have a name, ThinkPad. Yeah, but this one has a keyboard on it. See, now there's the engineering mentality.

[LAUGHTER]

This one, you can't call it a ThinkPad. It doesn't have a pad. I said, OK, we're going to do a little exercise. I'm going to say a word, and think about what comes to mind. Ready? Apple. Everybody that thought of a fruit, raise your hand.

See? So that's the point. So now ThinkPads-- I think there's 35 million of them. And when Lenovo bought the laptop business from IBM, what do you think was one of the most important assets that was part of that deal? The name ThinkPad. So now they're Lenovo ThinkPads.

So names are really, really important. And a lot of companies underestimate that. And I see it in IBM. IBM still, frankly, in the software area, they tend to like big, long, generic names for the firewall software. It was-- I can't remember. It was, like, 10 words long, and the competitor was Fire Point or something simple. So names are a really big deal.

A couple ideas for you when it comes to development, technical development-- small teams. Big teams are death. When you have a big team, then subteams form. And a subteam needs an assistant, and the assistant starts talking to the other assistant. And then you need-- you know what happens, and it's exponential. And so small teams are really important. Yeah, please.

AUDIENCE: So what do you think about focusing on co-located teams versus distributed teams? There's a whole set of discussion you can have about that. But in the context of what you just said here, is it important to have teams [INAUDIBLE]?

JOHN PATRICK: I would say it's debatable. Physically, you have reach a certain point where everybody doesn't fit on the same floor, and you have to spill over onto the floor upstairs or downstairs. Once you're not on the same floor, you might as well be in a different country because people don't go to that floor. Microsoft has this big campus. The idea is, everybody's in the same place. Well, they might as well be in a different continent.

IRVING WLADAWSKY-BERGER: Wouldn't you say, John-- I would say, it honestly depends on the person. If somebody is really good, they could be in Tajikistan, for all you care. I mean, obviously, as long as we get IT, they are connected, and so on. If somebody is new and is not a member of the team, you need them to become a member of the team.

So I find the most important thing is flexibility and adjust to individual people. And again, that's a huge change in the last 10 years. And given, as John has said over and over again-- remember, we're talking about disruptive innovations, and how do you now start bringing them to market?

The number one thing of a really, really capable team, and the quality of the people is far more important than whether they're physically together. Is it better to have them together? Sure. But in today's world, the probability that you can do that is very small, wouldn't you say?

JOHN PATRICK: Yeah.

IRVING WLADAWSKY-BERGER: So it's the flexibility that is more critical than anything else, I think.

JOHN PATRICK: I mean, technically, with all the various web tools and the low cost of voice and video over the internet, you could argue that everybody could be totally distributed. I think there's value in getting people together on some frequency. Whether it's social or for a meeting or whatever, there's definitely-- I think that's required.

But once people know each other, every time you have a meeting, you don't have to be in person because you know what they look like, you know what they sound like, and it works. The key thing is to have freedom of action and not to have too many people trying to solve a particular problem. Five people can do a lot more than 50 people because the 50 people can bring a lot of overhead, unless you can break it down into subsets. Yeah?

AUDIENCE: So I managed a development team for the last seven years, and I never met, face to face, some of my development guys in that time. And it worked out really well. It was a software development team.

IRVING WLADAWSKY-BERGER: In what company?

AUDIENCE: Global Crossing. And so it worked well up until the point that we had to persuade on something, some big product where we had to push it out to the rest of the corporation. We developed tools in-house. And so I found that, when we needed to do that, I needed to go somewhere and sit in front of people and talk to them and try to persuade them that way. Otherwise, it was exponentially harder, it seemed, to try to do that from Michigan, when trying to do that-- persuade people down in Phoenix, for instance.

JOHN PATRICK: And how often did you find it necessary to do that?

AUDIENCE: Well, product releases sometimes for in house tools sometimes maybe as frequently as every six months.

JOHN PATRICK: Yeah. Yeah.

IRVING WLADAWSKY-BERGER: Every six months, even once a quarter, seems quite manageable.

AUDIENCE: So Global Crossing, of course, is in the telecommunications industry. And that means we're-- that industry is completely competitive, and so that means that there's tight margins. And so I even had to, on occasion, buy my own plane ticket to do it. But I found that--

IRVING WLADAWSKY-BERGER: Really?

AUDIENCE: Yeah, because when I'd tell them that I wanted to come down there and try to persuade them-- OK, we're not going to pay for that. And sometimes you have to do it out of your own pocket. But the persuasion, like you were saying, is very, very important, it seems.

JOHN PATRICK: But the development effort, you were able to coordinate electronically?

AUDIENCE: What I've learned from this whole thing is that you can do development engineering remotely. But when you're trying to, let's say, persuade people or move up the ladder, even, you need to be there.

IRVING WLADAWSKY-BERGER: Very good point.

JOHN PATRICK: Yeah. Yeah, sure.

AUDIENCE: What was unique about IBM's culture that enabled you to have all this success with energizing the rest of IBM and moving them in the direction of the internet? I mean, I think a lot of us here worked with companies that just don't change. I mean, they don't work with disruptive innovation, I mean. So what is it about IBM that you think enable you to have such success?

IRVING WLADAWSKY-BERGER: And John, as you answer that, think of a question that has come up in the other classes. If IBM hadn't just been through a near-death experience a few years before that, would it have been as open to this kind of innovation as it was then? See, is that a reasonable--

AUDIENCE: Is that what it was?

IRVING WLADAWSKY-BERGER: Well, I don't know-- I [INAUDIBLE].

JOHN PATRICK: I don't know. Irving And I were talking about that earlier. It's hard to say because we never really presented the internet as a money-maker, that this was going to solve a $9 billion profit problem.

AUDIENCE: So how do you get resources?

JOHN PATRICK: Well, I think, in the end, it's all about people. It's a matter of persistence. It's a matter of people believing in you and you believing in people. And you have an idea that's exciting. And you can make it exciting for people, and you just don't give up.

IRVING WLADAWSKY-BERGER: Did you read Lou Gerstner's chapter? Because he talks quite a bit about that. And I think Lou Gerstner was convinced in '95-- remember, first, he had people like John and quite a few others doing these things inside. Then there was the Netscape IPO, which just got everybody saying, what the hell is going on?

And then Lou himself talked to clients a lot. And I bet you-- in fact, when did Lou start taking you to see CEOs?

JOHN PATRICK: May of '90--

IRVING WLADAWSKY-BERGER: [? '95?. ?] Yeah, it was--

JOHN PATRICK: Was it '94 or '95?

IRVING WLADAWSKY-BERGER: --before the Internet Division because--

JOHN PATRICK: I believe it was May of '94.

IRVING WLADAWSKY-BERGER: May of '94?

JOHN PATRICK: No, no, it had to be '95, May '95.

IRVING WLADAWSKY-BERGER: Because it was before the Internet Division because you continued to do that even afterwards.

JOHN PATRICK: Right.

IRVING WLADAWSKY-BERGER: So now, if Lou Gerstner hadn't been as open-minded and forward-thinking, could we still have done it? It would have been much harder, wouldn't you say?

JOHN PATRICK: Yeah, no doubt about that.

AUDIENCE: I'm just amazed at the amount of resources that they were willing to throw at stuff like the Olympics website and whatnot when there wasn't a demonstrated revenue stream for them.

JOHN PATRICK: Well, let me put that in perspective. The internet part of the Olympics was actually the small part. IBM had been sponsoring the Olympics for many, many years and doing all the dirty work behind the scenes, capturing all the data from every person who crosses every finish line and capturing that data, providing the billing services in the cafeteria and the press support and the ticketing and all that.

And in fact, that's why IBM eventually dropped support of the Olympics because it wasn't justified. We had 50 people and a big data center that built this website. There were over a thousand people, a thousand IBMers working on the Olympics. So we were a very small part of it.

And I would say, with regard to the internet changing IBM, there's no doubt that it did, but I don't think it was viewed as prescriptive initially. I mean, it was a fairly small investment, and it seemed like a pretty cool thing. And then later, when the company was ready to change the strategy to more of a networking-oriented strategy, it melded very nicely.

The revenue from the internet was very small. We did a study in 1995 and estimated that the total revenue of the entire industry was $100 million. That included Cisco. But we projected it would be a billion. And IBM's share of it was very small. So we did eventually prove out a business model.

IRVING WLADAWSKY-BERGER: Yeah. Next week, we'll talk about a very important part of this, also, which is-- remember, John's made the point that, I would say, around '95 and before, people thought, OK, here is IT, and here is the web, and the twain do not meet. And if you want to publish a brochure where you called it [INAUDIBLE] the web, but here is IT.

In '96, when we started putting together what became, in business, a major breakthrough that, in all honesty, we discovered from our customers-- they were already doing it. And then we said, oh, my god, that's what they're doing. Let's do that-- was that IT was becoming IT web-enabled. Think of Federal Express or [? APN. ?]

And that was critical to convince everybody in IBM that the web with IT was the direction of IT. So if you wanted to be the leader of IT, this is the way you have to go. When you say, once that connection was made, web plus IT and business, then it became clear this was the direction for IT. And if you wanted to still be a leader in IT, you had to go there.

JOHN PATRICK: Yeah. I would say, in the early days, I mean, there were a handful of companies where the web just fit naturally, like Federal Express, the idea of looking up a tracking number. And it was viewed to be a low-risk application. There was really no security issue of putting in a tracking number. You can't get any information about what's in the box. You can't get any information about the person. It's just, where's the box? So it was a very low-risk thing.

And I can tell you in '95, '96, even later, when I would be out giving talks about the future of the internet for customers, and I'd meet with a group of bankers and a banker-- more than one CEO of a big bank said to me, that's interesting, John. We will never put this bank on the internet. And they meant it. And that wasn't in '95. That was much later.

And even today-- I'm going to get into this a little bit later-- but the commitment is not as deep as you might think for a lot of companies. There are still companies that are-- every company has a website, and they do something. But in terms of fundamental things, there's a long, long way to go.

And IBM took a much different approach than any of the other IT companies. Lou Gerstner made a speech at Internet World in December of-- it must have been '96. And he said, the web is not about surfing. The web is about transactions. And this was at a time when Microsoft was still poo-pooing the internet.

And even Sun and HP, which were really very early pioneers, they weren't pushing the deep infrastructure. And that's where IBM focused is to build it from the guts, from the inside, all the way out and not so much on the outside, not browser stuff, but deep integration software that tied all the subsystems for transactions and database processing directly to the web. That's what's still unique about IBM.

IRVING WLADAWSKY-BERGER: This gets back to a question maybe you asked, which is, how do you sell it to the very senior management? In this case, we convinced them that this was the direction IT was taking. So all hardware, all software, all services needed to become web-enabled.

And we have now lots of examples of early pioneers that were already doing it. Some IBM customers, quite a few-- the Amazons and so on were starting. And universities and the research community, they were way ahead.

But remember, we had to sell them on that in the terms-- and again, we'll talk about it either next time or the one after-- where you put the fear of God in them that, if this is the direction IT is taking, and if you want to remain the leader in IT, you better get board the ride, or else you are toast. And [INAUDIBLE]. John, at some point, we should switch, and you should take a 5, 10-minute break and then switch to the future section in the next 10 minutes or so. Is that OK?

JOHN PATRICK: Yep, that's fine. Yep. Let me just wrap up a couple of points here on development. Failure is something nobody likes. But if you make it so clear that failure is really, really bad, then you're not going to get any really good ideas. So you have to get that balance of allowing failure-- and not just one failure. Less failures than successes, but failures are OK. It's OK to experiment. It's OK to have something that doesn't work.

And of course, the one size fits all mentality is a problem when you're trying to innovate and get something new out there. If you're trying to be horizontal, I think it's a problem. I see this in companies where I'm a director, where a person has a vision. They have this idea. And I say, well, what's the target market? Everybody.

If your target market is everybody, it might work, but your odds of success are dramatically lower. I'm sure you all know the book crossing the chasm. Segment the market as narrowly as you can. Identify a segment that you can dominate. Dominate that segment, and then go to the next segment and the next segment. I find, in the companies I'm involved in, that's still the biggest challenge because everybody wants to have their product be used on every PC and every possible user.

Making things easy-- this sounds so simple, but I think it's profound. How many times have you gone to a website where you put in the date, and you get an error message that says, you forgot the dash, or you put the dash, and then you run out of space, and the date won't fit because you used dashes? And you think about the power of JavaScript to be able to interact on a page, and you say, after all these years-- I wrote a book about this six years ago and made a point of this.

And I really didn't think that, six years later, we would still find such dumb websites that you can't enter a date. Or they print an account number on a statement, and they'll tell you, you can renew this online. And you go to online, it says, enter the account number. And you enter right from the statement, but it's different. It has a dash or doesn't have a dash-- simple stuff.

So every company is in the middle of a site redesign, and I always tell them, forget your site redesign. Fix all the things that are dumb. Find all the things on the website that you can't do, and make them really simple. People will love you.

And lastly, of course, think, [? integrate, ?] and make things work together. I mean, you would think that would go without saying, but we're nowhere near having achieved that today. When you think of either B2B or B2C, your ability to buy it online, return it at the store, or buy it online and get the return information or parts or notices or-- things are not integrated.

So let me go to the next to the last one here. There will be detractors and ambushers of your idea. That you can be sure of. And the way I think about this is, find out what their issue is, and if you can solve it, solve it. If you can't, ignore it, and go around them.

And we had this big time at IBM because IBM had two businesses that were very negatively impacted by the internet. One was a networking software business called Systems Network Architecture. It was a billion dollars in revenue and $850 million in profit. And I had proposed that we create a separate group for TCP/IP and put the very best people in that group and give it the mission to destroy that billion dollars because everything was going to be TCP/IP.

And today, everything is TCP/IP. But in 1995, the person that was responsible for that billion dollars-- there was no way of convincing him, no way. And they viewed me as a virus running around, talking about the internet. So if you can change it, change it. But I knew I wasn't going to be able to change that.

So find other allies. And it doesn't have to be the right fit. That's what I mean here by form versus substance. It might be the wrong department, in a theoretical sense. But if it's somebody that you can gain the support of, then it's OK.

A couple of other organizational factors-- we touched on this-- air cover. Lou had a meeting with some customers, and he asked to have somebody come in and give a presentation about the ThinkPad. Well, I was the ThinkPad guy, so I came in and gave a presentation on the ThinkPad about the internet.

This is not what they expected, but Lou was intrigued by it. I wouldn't say he liked it, but he was intrigued by the delivery. So he invited me to present it to the board of directors of the company, which I did. And then he invited me to go to the CEO conference.

And this was a turning point in this overall process because he wasn't immediately convinced, but Lou Gerstner is a very quick study. He's incredibly intuitive. He gets to the punch line in a hurry. When we showed him the first web page, his reaction was, where's the Buy button? And again, this is before there was any e-commerce, and here's the guy who says, where's the Buy button?

So he began to invite me to come present at these CEO conferences. Now, the rest of the people in the company didn't know what I was presenting, but they knew I was presenting at these CEO meetings that Lou was having. That's what you might call air cover. And you cannot underestimate it. When people say, oh, well, you changed this, or Irving changed that. OK, well, we did a lot of things, but without Lou and that air cover support, it wouldn't have happened.

The other thing is, you need a taskmaster. If you're the visionary or you've got an innovation project underway you're trying to get to market, don't lose sight of the details about expenses and taxes and budgets and all the stuff that can get you in trouble. Especially if you're a public company, you've got all kinds of SarbOx issues. You don't have to understand all that stuff, but you have to have somebody who does. I was blessed with a woman named Jane Harper who was my right-hand person, and she made everything work.

And then lastly, I have to throw in a key organizational factor is luck. I remember years ago, the chairman of the board of IBM was a guy named Vin Learson. And he was interviewed, and he was on the cover of *Fortune* magazine. And they asked him, to what do you attribute your great success as the chairman of IBM? He said, luck.

And I never forgot that. And really, I mean-- so I was invited to come give a talk about the ThinkPad. I talked about the internet. Lou Gerstner was there. That was luck, you could say. The Olympics and a lot of these things were luck. Now, you might say, well, you can make your own luck, to some degree. And that's true, and you have to execute. But I think it would be a mistake to think that it was perfectly planned. It certainly wasn't.

I'm going to finish now with just a few guiding principles. These are things that I learned from the team, the people who were my inner circle. I used to call them the dirty dozen. And we would get together every summer, the 12 of us, and drink a lot of wine and water ski and spend two or three days in the woods at a place I have in the mountains.

And I would learn from them, and these are the things I learned from them. Think big, start simple, iterate quickly. That's the model. That's not a typical business model. Yeah, everybody wants to think big, but starting simple-- so many companies-- remember Webvan?

People loved Webvan. They thought big, but they didn't start simple. They borrowed billions of dollars, and they were going to put warehouses every-- they started too big. They didn't start simple and iterate quickly. I've seen many projects at IBM fail because they were too big.

Just enough is good enough is one that I learned from Dave Grossman. Things don't have to be perfect on the internet. The internet is an imperfect network. They call it a probabilistic network, compared to the old systems network architecture, which was a deterministic network.

Cynics like to say it isn't probabilistic, that what that means is that the packets probably won't arrive. It is an imperfect network, but it works. You ever notice, when you click on something, and nothing happens? You say, I know I clicked on that. I know I clicked on that. And you click again, and it works. Well, what happened is a disk drive broke, or a server failed in between, or some packets got hung up in a router somewhere. It is an imperfect network.

Trial by fire-- Irving was making this point. You got to be out there. You can't keep it in the lab until it's perfect and then launch it and expect people to see the wisdom of it. You've got to trial by fire.

And this is the key way I think of it here is, plan, build, deliver. That's the old model. You plan your new product, you build it, and then you deliver it, 18 months. Sense and respond is the internet model. It's 18 minutes.

eBay refreshes their whole site every couple of weeks. They don't use a six-month update cycle or an 18-month update cycle. And the technology is now available to do continuous development. So your site-- you can literally, every hour, be making changes, and it's propagated, published, updated, not just data, but the systems themselves.

Of course, thinking globally and act locally-- you can't impose something globally. You need to be aware of the global markets, but there, obviously, are differences. And then thinking inside out-- and I guess the punchline on that is the call center. And I use that as the example of the difference between inside out and outside in.

So the call center is, press 1 for English, 2 for Spanish. And you want to change your postal code, so you press 1 or 2. And then it says, press 1 for the location of our nearest branch offices. Press 2 for our service and support functions. By the way, we have a website at http:-- and [SNORTS].

I'm just trying to change my postal code. And so you press 0-- I want to talk to somebody. I don't really want to talk to somebody. I just want to change my postal code. And you press 0, and it says, welcome to ABC Company. Press 1 for English, 2 for Spanish. Please pay attention because our menus have recently changed.

How could it be that every menu of every system, every company int he world, they all just changed? And then, please note that this conversation is recorded for quality and training purposes. And you just want to change your postal code. And you press 0, and it says, you have pressed an invalid key.

[LAUGHTER]

Now, how could you more slap a customer in the face, when they press 0, the operator key, and it says, you idiot, you pressed an invalid key. So then you press 9, and it says, thanks for calling. Goodbye.

[LAUGHTER]

Well, then it says, enter your 16-digit account number. And you enter your 16-digit account number, and then Mary comes on the line and says, this is Mary. How can I help you? Please enter, first of all, your 16-digit account number. Have you experienced that? Every time.

So that's inside out. That's a command-and-control, military, tops-down, 1950s-style bureaucratic approach. Does it still exist in the 21st century? It's everywhere. So I'm not saying get rid of call centers. But can call centers be integrated with your iPhone? Of course they can be integrated with the web. So questions, comments? And we'll move on to the future of the internet. Yeah, sure.

AUDIENCE: How did you motivate yourself at times of failure?

IRVING WLADAWSKY-BERGER: I'm sorry?

AUDIENCE: At times of failure, how did you motivate yourself to [? experiment? ?]

JOHN PATRICK: Oh.

AUDIENCE: What was motivating factor?

JOHN PATRICK: Survival, I guess. There were times when-- during the Olympics, Irving would call every Saturday morning. Is everything working? Sure. Everything's fine. And we didn't always know it was fine. There were certainly a lot of risks going to the internet.

But it all comes back to having confidence in the people. I had tremendous confidence in this dirty dozen, and I knew, whatever might happen, they could fix it. And obviously, we had problems and issues. But if you have good people, they can fix them. Was there something different that you were looking for? Yeah.

IRVING WLADAWSKY-BERGER: Yeah, I honestly think it gets back to people. And obviously, there is a culture of [INAUDIBLE] solve problems. But if you have good people with the right culture, then you can take risks that you wouldn't take if you don't have the people. That's really what it comes down to, I think.

And we also-- I mean, like with the Olympics, everybody knew this was an experiment. So we never overhyped that [? it's-- ?] it's the most exciting experiment in the world. We marketed it a lot, but we made sure people knew it wasn't the Federal Reserve production system. It was an experiment. And I think that made people feel more comfortable. Wouldn't you say that?

JOHN PATRICK: Yeah. It was high risk. I mean, if it had blown up, and the press had gotten hold of it, and--

IRVING WLADAWSKY-BERGER: Well, in fact, I know--

JOHN PATRICK: --it would have been ugly.

IRVING WLADAWSKY-BERGER: --I'm going into your future of the internet, and we still have to take five minutes. The fascinating thing that happened-- this was an experiment. And of course, IBM's whole management of the back office of the Olympics was the production system. As it turned out, IBM made some bad mistakes in the Atlanta Olympics that delayed getting the results to the press.

If you're going to screw somebody, don't pick the press because then we got horrific articles about how IBM-- really, it was just pretty bad. And all of a sudden, IBM was getting a very black eye with the production systems for the Olympics. And the thing that was working the best was the website.

And so the Olympics is about two and a half weeks. After the first week, and we were getting all these bad eyes, people from IBM were now begging us, make sure the website works. And in fact, what we did is we had a series of additional experiments we wanted to make, and we shut those off. I don't know if you remember. We really brought the risk down so that we concentrated on the core website, and new ideas that we had planned to introduce the second week, we didn't do because all of a sudden, the damn thing had to work. So we were more--

JOHN PATRICK: Yeah, that was my introduction to PR was a new senior executive that Lou had brought along who was in charge of communications. And when this press application that Irving described failed, which had nothing to do with the website at all, they were really on the defense, of course, trying to-- they were in damage control.

And meanwhile, we were doing all this neat stuff on the internet, and I wanted to have a press day, invite the press to come to Southbury so they could see the world's largest website, the world's largest database, the first streaming audio. We had a lot of really innovative things. The guy said no.

And I said, no, but you don't understand. He said, no, you don't understand. He says, that's the worst thing in the world we could possibly do is invite the press in because you're going to tell them about their big server, and they're going to say, well, what about this other problem in Atlanta with the press feed? So needless to say, he won out on that, and it was a shame. But nevertheless, it was the website, we learned a lot from.

IRVING WLADAWSKY-BERGER: Shall we take five minutes? And then, when we come back, John will talk about what he usually talks about, which is, where is this all heading in the future?

[SIDE CONVERSATIONS]

JOHN PATRICK: --opinion, at least, about what's going on with the internet. And I would say, for starters, that we're about 5% of the way there. I used to say 2%. Now [INAUDIBLE] 5%. And one of my former colleagues at IBM, Mike Nelson, he says, now you really should say 10%. Oh, [INAUDIBLE] turn this back in?

IRVING WLADAWSKY-BERGER: Yeah, thanks.

JOHN PATRICK: But I still believe we're at 5%. And at a recent conference where I spoke, a person said, I highly object to 5%. It's really not even 2%. And so what do I mean by that? There are a lot of metrics that you could look at-- how many cell phones are connected to the internet, how many people use broadband, what percentage of the world's population-- there are a lot of metrics, and you can get different numbers from all of those.

But the way I think about it is very simple. Of all the things that could be done on the internet in a way that would simplify our life and make us happy, how much of that do we have? 5%. That's what I believe. And clearly, this is about power to the people. I am not talking about Tiananmen Square or anarchy.

I'm talking about the power of the click on an iPhone or a mouse or a personal digital assistant where people can express what they want, and how they want it, and the terms of business by which they want to operate. And some people object to, oh, you're talking about consumers. No, I'm talking about people. "Consumer" is a troublesome word.

I don't know what a consumer is, but I know what a person is. And some people work in big companies. Some people work at home for themselves. They're all people. They all use the web. They all have very similar expectations, and those expectations are skyrocketing.

Every day, we see new things that we can do on the web that we weren't aware of before. And then the next day, we find we have to drive to the bank to get something notarized, like we did a thousand years ago. And we have to fax this form, but we can only do it 9:00 to 5:00, Monday to Friday. And we have these things that just don't make any sense.

So those are the reasons I say 5%. It really is an attitudinal issue, at the core, my belief*Net Attitude*-- that's the name of my book. That's the way I think. It's what I believe. It's not a technology issue. There are technology issues, but anything you can imagine you want to do, the technology, most likely, is available.

Of course, the internet is evolving very rapidly-- millions of businesses, billions of people, trillions of things, everything connected to everything. This is a horrifying thought to many people. But I think it's really a terrific thing, as long as we can have the security and privacy at all levels that we expect. And I believe that we can. I'm one of the, perhaps, small number of optimists about this.

But let me first drill down a little bit on this notion of the power of the click. What is it people expect from the internet? And I believe it's-- I call it end-to-end solutions. You might call it beginning to end. It's a holistic thought for your hospital, or your government, or your business, or your university.

And I think eBay is a good way to think about this. eBay isn't, click here to buy, or click here to sell. eBay is also about escrow, about insurance, about shipping, about warranties, about marketing, about collaborations, about educational programs for how to sell. They have-- I would guess it's close to a million people now whose primary income comes from doing things on eBay.

And they have the world's largest reputation database, and it's growing very rapidly. So they've really tried to think the whole thing through. That, I believe, is what people expect. Unfortunately, what we get is different.

IRVING WLADAWSKY-BERGER: So wouldn't you say-- what you're saying is something very profound, that those businesses that are doing a good job have stepped back and thought through, what's the business experience they want to provide you over the web? And they put themselves in the position of the client. They thought all the things--

JOHN PATRICK: All the things.

IRVING WLADAWSKY-BERGER: --that should happen. So they've almost applied, I would say, almost the engineering thinking to the problem. What are all the pieces? Like, if you're building a bridge, that you don't want to forget cables or something like that. So this notion of looking at the whole business problem-- why don't most businesses do it? What do you think is in the way of them doing that?

JOHN PATRICK: Partly vision, partly having the team, the skills to be able to do it, partly an aversion to risk. Public companies now have to report everything that doesn't go right. The audit committee in companies now is responsible for every possible failure of any kind. They're worried about getting sued.

So there are quite a few inhibitors. Notice I didn't say technology. And it's even broader than the customers. It's all constituents. So it's the suppliers. It's the partners. It's the employees, of course.

Now, I'm going to use a few slides to illustrate why I say we're only 5% of the way there. I recently got an email from a large, multi-billion dollar company that introduced to me their new security feature. Now, you've all seen these, where you pick your question, and you pick your answer, and it's not really security. It's really to offload the administrative help desk functions to the customer. But it's OK. It's a good thing.

So this one, I picked, what is the name of a childhood pet? And my answer was Leo. And I clicked the Continue button, and I got the following error message-- the secret answer you entered is not valid. It must be at least five characters. OK, I'll try my favorite color. 38 years at IBM-- guess what the color would be?

AUDIENCE: Blue.

JOHN PATRICK: Blue doesn't work. Red doesn't work. Pink doesn't work. Gray doesn't work. What in the hell were they thinking? Is this a technology problem? They create an expectation. You can pick your question. You would think you could pick your answer.

Now, a one-character or two-character answer, OK, there's an issue there. But has to be more than five? I don't think so. And then we have another issue going on out there. Verizon Wireless-- we never stop working for you.

[LAUGHTER]

Now, unfortunately, I could probably find a page like this at IBM or GE or any company, so I'm not beating up on Verizon, although they deserve it. What's the issue? The issue is that we do systems maintenance. When do we do systems maintenance? We do it at 3:00 in the morning when nobody's using the system, except for a couple million expats who are in Japan, where it's 4:00 PM, or kids who do their are online banking at 4:00 in the morning after they get home from partying. You can't be 9:00 to 5:00.

So what are they thinking? They're thinking the old way. They're not thinking about the global, ubiquitous, anytime, anywhere network. And then I sent an email to my friend Gary, who is the CEO of the bank. Gary, I said, are we still on for lunch tomorrow? Here's his answer.

[LAUGHTER]

So all these years, I thought Gary ran the bank. And now I have learned that the compliance department runs the bank. What is all this? Does that have to be on every email? Who are we protecting? From what? The email is not authenticated, anyway. It's not encrypted, anyway. Why do we need all this?

Do you see this on emails? Maybe MIT uses it. A lot of universities do. It's ridiculous, and in my opinion, it's totally like not in touch with what's going on.

And then, of course, there's kids. I was in Europe. I had some snail mail with me in my briefcase. One of the snail mails said, you have to get back to us by X date. Oh, that's today. It's too early to call the US. I'll send them an email.

This was a trivial administrative matter. This was not buying or selling millions of dollars' worth of securities. This was a simple administrative matter. So I sent them an email, and there's their answer. We can't do that by email. You have to talk to us at a 1-800 number, which you can't call from most parts of the world, Monday to Friday, 9:00 to 5:00 EST. What does this mean in Bled, Slovenia, EST? What's EST? This is a global network. If you have any other questions, just send us an email.

Now, the big deal here is kids. The Pew Foundation in Philadelphia does these marvelous studies on the cultural aspects of the internet. And one of their studies revealed-- big surprise-- that 98% of teenagers use email or SMS, chat, texting as their primary way to communicate.

So here's this multibillion dollar financial services company saying, come to us. Come to us when we're open. And the kids say, we're not going to go to your branch bank. We don't even know what-- what is a branch bank? We don't get what you're saying here.

Now, are there technical issues with regard to secure email? Of course. Is it possible to have secure email with existing technology? Of course it is. Encryption has been around-- IBM invented encryption in 1965, gave it to the Air Force in '67, put it in the public domain in 1969. This is not a technology problem. This is an attitude problem.

And then in health care-- 5% would be extraordinarily generous for health care. And there are so many examples. The e-pharmacies-- I call it e-pharmacy.not, where you fill out the online registration form, you put all your data in, you click Submit. It says, "Thanks. We have your data. Click here to continue." You click here to continue. It says, "Print this form and fax it to us." And on the form is none of the data you just entered. You have to fill it out again with a pen.

And then, of course, in health care, blood is probably the best example I can think of to make the very simple point that's going to be a revolution. I keep telling the CEO of a hospital where I'm a member of the board that there is a tsunami coming, and the tsunami is for consumer expectations about data about their health.

If you make a deposit or take money out of an ATM, 15 minutes later, it's in Quicken, and you have a complete record of every penny you ever spent and every dime you own. And wherever it is, you have a complete audit trail. What do you have about your blood?

Blood comes out of your arm and goes into a computer, and all the chemistry is determined. It's digital. You call the doctor's office for the result of your blood test. The doctor is not in yet. He's in, but he hasn't seen it yet. He saw it, but he doesn't have time to talk to you.

You call again. We're closed from 12:00 to 2:00. He saw it, but he'll call you later. He calls you at 7:00 PM. You're OK. Oh, great. I'm OK. Could I have the data about my blood? Yeah, let me get the nurse to get your fax number so we can convert digital information back to analog again before we give it to you. Contrast that with Quicken.

So that's the tsunami that's coming. Healthcare data-- it's our data. It's our body. It's our health. We want to take responsibility for it. Health inquiries is the fastest growing part of the web, but you can't get the data. So these are the reasons I say it's just 5%. And then, of course, in government--

IRVING WLADAWSKY-BERGER: John?

JOHN PATRICK: Yeah, please.

AUDIENCE: To the health care example, it seems you were kind of implying that the health care institution that adopted those kinds of practices, took learning from financial industry, would have competitive advantage over the ones that didn't.

JOHN PATRICK: You would think.

AUDIENCE: Well, you would think, but is it because, in health care, the core asset is the actual health care? So I would never pick a doctor because they had a better IT system than the other doctor. Is that-- speculating on, is that why it hasn't happened in health care as it has in [INAUDIBLE]?

JOHN PATRICK: Well, there are a number of reasons. Part of it is vision. Part of it is that the payers and the providers don't trust each other. Part of it is that the benefits of integrating electronic medical information are shared benefits. So between the patient, the provider, and the payer, they each benefit, but none of them benefits enough to pay the bill. So there's a cost issue.

There also are some standards issues which have moved forward fairly well now. There's a new concept called a Regional Health Information Organization, the RHIO, which is going to allow community doctors and regional medical centers to be able to share data based on standards. So there's progress being made.

But fundamentally, it's just for the same reasons that we talked about earlier. They're old systems. Most hospitals have systems from the '60s. They're silo systems. They're incompatible with each other. And it takes a really gutsy, strong leader and funding to be able to move forward.

There are some that have done it. Denmark is paperless in health care. The Mayo Clinic has done some amazing things in health care with electronic medical records, including physician notes that have been scanned, semantically analyzed, and put into an ability to not have anecdotal medicine, but to have, really, predictive medicine unique to the individual. So there's some great things happening. But overall, it's about 3% to 5% of health care systems that have moved forward with this.

IRVING WLADAWSKY-BERGER: John, and I wonder, through your examples, and given also the nature of this course, my hypothesis is that to do the kinds of things you're talking about, while it's not technology, you need people in leadership positions that can think of problems as a system, that is, that know, oh, if you just link A to B to C, magic will happen.

And linking A to B to C is usually not a big deal. But to know that when you link A to B to C, magic happens, that's a big deal, and that we don't have enough people comfortable with complex system thinking out there in the business world in positions of leadership. Do you agree, [? John? ?]

JOHN PATRICK: Yeah, that's true. And in health care, doctors, many of them don't want to change. They've been scribbling out a prescription for a long time, and they don't want to learn how to go into a system. In some cases, the system actually does take longer to e-prescribe than it does to just scribble something.

But of course, when you scribble something, 35% of the time, it's unreadable. Pharmacies guess. 10% of the guesses are wrong. 1% of those people die. About 195,000 people will die this year from medical errors, not judgmental errors, because the doctor did this instead of that, but information-related errors, where they amputated the wrong foot. Infections happened because--

IRVING WLADAWSKY-BERGER: [INAUDIBLE]

JOHN PATRICK: Well, 60% of it's because they don't wash their hands. But improper medications are administered. There are just frightening errors that occur.

IRVING WLADAWSKY-BERGER: But this is very important. Other people will think about it-- we'll fire people. We'll do this and that and whatever. When I hear what John is saying, I say, well, shit. If we were in the automotive industry, and we had that kind of error rate coming out of the plant floor--

JOHN PATRICK: Yeah, we'd be broke.

IRVING WLADAWSKY-BERGER: Well, we'll be broke, but also, there are a whole set of procedures-- defect analysis. You know how to look at errors and then backtrack and figure it out. And in fact, Toyota and others have said, as soon as an error occurs, stop the whole production because-- remember, you were in St. Petersburg, and you heard the chairman-- he was talking to us about that because it's so much easier to find the error then that later.

But I don't think we can underestimate estimate that it takes a certain level of confidence that these are systems problems, that if you apply system thinking, the kind that hopefully you're all learning in [? ACM ?] and [? LSM ?] and other places where you're doing things here, this will solve the problems. But I don't think that's percolated through the business world, including health care.

JOHN PATRICK: Well, especially in health care. Yeah. It's beginning to. I mean, Six Sigma is occurring in some hospitals. Where I'm a director in Connecticut, all the surgical heads and all the department chiefs have all been through Six Sigma training. We have Team Leaders, Black Belts. It's beginning to happen.

But still, sponges get left inside of people every day. Now we have RFID sponges. So there's an LCD panel in the OR, and it shows how many sponges there are and where they are, and it's 100% accurate. The technology is available, but it takes the leadership, the vision, and, of course, the skills, the people.

There are many excuses that get used. I would say one of the overarching issues on the point that Irving is making is that the system includes things that are outside of the control of the organization. So in health care, for example, you have a hospital, maybe even a regional hospital, but then most of the doctors are community doctors. They're not employed by the hospital.

And so whose EMR, Electronic Medical Record, whose do you use, and how do you make them compatible? And is who's going to pay for the community doctor to have electronic medical record? You have computerized physician order entry in a lot of hospitals now, which allows them to enter a prescription and ensures that that prescription is checked against all known allergies and other medications. But as soon as the person leaves the hospital and goes back to the community doctor, the community doctor doesn't have access to that information.

So the point I'm making is that some feel, if I can't do everything, then I don't do anything. This is a classic case of systems and impediments that I've seen. If we can't fix everything, then we don't do anything. We're going to wait until there's a single agreed-upon electronic medical. Then we'll implement it. Yeah?

AUDIENCE: How much of this is really because of legal entanglements? Because what I'm noticing in a lot of things where they force you to fax things is some lawyer came in and said, this won't stand up in court. Or when the doctor doesn't give out information, it's probably because he or she is protecting [? themselves. ?] How much of it is because of that versus bad engineering or bad marketing?

JOHN PATRICK: It's a very good question. And if you didn't hear it in the back, the question was, how much legal impediment exists, and is it real or not? And what can you do about it? And my experience has been that there are some real legal impediments, first of all. There are some states that say, a prescription must be on a piece of paper. I mean, they're very specific. It's almost like, caution-- do not use a computer.

I recently bought a wine cooler, a Uline. I'm writing a story for my blog about this, so I'm going to call it Old-line. And Uline, you click to buy, and this big pop-up that says, "Caution-- we do not sell our products on the internet. And if anybody sells you one over the internet, be advised that we don't provide any warranty service."

So there are dinosaurs out there. But to get right to your question, my experience has been most of the legal impediments are imagined. And I ran into this at IBM all the time. Somebody would come in and say, well, we can't do this application because there's a security problem.

I said, well, what's the security problem? Well, I don't know exactly, but I talked to corporate security, and they said we can't do that. I said, well, who did you talk to? Well, I don't know his name. Well, get me the name. I want to talk to them. And I would call the person and say, I understand we have a security problem.

Well, actually, I was just cautioning them about the importance-- well, can we do this, or can't we do it? Well, if you do it right, you can do it. OK, thank you. So then I get back to-- OK, we can do it. And a lot of it is that way, where it's perceived to be illegal. Show me the law. I want to see-- bring it. I'm serious. I want to see--

IRVING WLADAWSKY-BERGER: You're illustrating--

JOHN PATRICK: Show me the statute. Where does it say it's illegal?

IRVING WLADAWSKY-BERGER: You're illustrating a very important principle that John always used, which is, it's much easier to ask for forgiveness than to ask for permission. So go ahead and do it, and then if it turns out to be the 1% of the time you should have asked beforehand, you'll ask for forgiveness. Am I not correct?

JOHN PATRICK: Yeah, right.

IRVING WLADAWSKY-BERGER: And especially for smart people in good positions, like you all are and you will have, almost always, the probability that somebody will stop you from doing something important is very small. So you just do it. And then there will be a small probability, and then you ask for forgiveness. And would you say that you operated on that principle?

JOHN PATRICK: Yeah. I mean, since I've been chairman of the audit committee of a public company, I've learned a lot more about this with Sarbanes-Oxley. And you do have to be compliant. So I'm not suggesting, ignore the law or ignore compliance. What I am suggesting is, when somebody tells you you can't do it, ask them why. And if they say it's illegal, then show me the law. If it's a security problem, who says so, and what is the security problem, and what are the workarounds?

And if you go back and running a company or an innovation project, and the compliance person says you can't do that, then the CEO should get the compliance person and a marketing person in the room and say to the marketing person, I want you to be market-driven. I want you to do the 95% of the things we're not doing. And compliance person, your job is to make sure we're compliant. But the burden of proof is on compliance, not on marketing because if you put the burden of proof on marketing, most people will wimp out, and nothing gets done. There's no progress.

So I'll skip over this stuff here about government and education. I would just say, overall, that government is not the impediment here. Government tends to get blamed for things. We've been very fortunate. Al Gore didn't invent the internet, but he was supportive about it. And generally speaking, politicians, fortunately, don't know much about technology, don't know much about the internet. And they know something big has happened to the economy because of the internet, and they've resisted the temptation to regulate it.

The bottom line here on this 5% thing is, the opportunity is enormous. The possibility of making people really happy-- it exists. Things can be done. I mean, there are great websites that are really fun and easy to use.

AUDIENCE: There's an interesting-- so my bank allows-- I always had a local bank because my bank is in Texas somewhere. But anyway, they switched over, and they allow you to deposit from home. So if you get a check, a random check, or whatever it is, you just scan it in, and it goes right into your bank account that day. And so I was mentioning it to a friend of mine, and he said, well, geez, that's the only reason why I have a local bank, too. So he switched totally over.

So I happened to tell my sister-in-law, who works for the bank. And she asked me to send her an email explaining it all because the CEO of the company, I guess, at the bank, they knew it was kind of a thing, but they don't have any metric to say if it's [INAUDIBLE] or worthwhile. It was just some idea that the IT guys just kind of did.

But they really-- it's not part of their metrics for success for the company is always investing, whatever it is. That's really nothing to do-- I mean, they can't tell how many people stopped going to other banks just because they added this feature. So it was really interesting. They had no way to measure it. That's why they thought it was really cool that somebody said something.

JOHN PATRICK: Yeah, exactly. A lot of you used Quicken, probably. Quicken was started by a guy named Scott Cook I've known for many years. He's a brilliant guy. He's not a technology guy. He was from Procter & Gamble. He's a consumer guy.

And he had the idea, he and his wife, that paying bills could be fun. And people actually have said that, that I love to use-- I love to pay my bills. It's fun with Quicken. How about iTunes? Anybody use iTunes? I mean, it's an easy-to-use, intuitive application. So again, it's not a technical problem. It's an attitudinal problem. The opportunity is huge.

I think the big issue is, are you going to accommodate the internet, or are you going to provide on-demand service? Those are the two alternatives. Accommodation is where, I think, many companies still are. Oh, yeah, we have a website. We have some of our products available. Part of our catalog is actually on the internet. But it's not a total commitment.

On-demand is a different idea. On-demand means that all of the processes and all of the data for all of the constituencies are available for those that are authorized, wherever they are, whenever they want, on whatever kind of device they may be using to connect to the internet. That's my definition of on-demand.

Now, that's easy to say. It's hard to do, but it is doable. It just takes a commitment. If you have that commitment, that the internet is your primary relationship mechanism for all constituencies, you're on the way to becoming an on-demand business. And that's where the bar is, in my opinion.

I want to make a comment about the bubble, and then I'm going to move into where I see the internet going. There definitely was a bubble. Some of you may have been part of it. We all were affected one way or another. A lot of people lost jobs and money and so on.

So it's typically called the internet bubble. This is '99, 2000, 2001. And my point is that internet had nothing to do with it. The internet gave people a lot of enthusiasm for new ideas, but their ideas got out of control.

They had ideas to make water run uphill. They had application service provider applications to solve problems that weren't problems, or they had ideas that they were going to integrate all the supply chains, but the individual pieces were not automated, so how are they going to integrate the whole thing? A lot of problems that weren't problems or couldn't be solved.

So what we're left with is the same economy we've always had. The internet is the new tool. And are we on the way to bubble number two? A lot of people think we are. I'm an investor in a number of startups through a group called First-Round Capital and some other things. And so I see quarterly investment reviews of a lot of small companies. And there is a lot of enthusiasm. Frankly, it does feel like 1999 in many respects.

But the difference is that investors are smarter, and entrepreneurs are smarter. And they know they need to have a business model. Back in '99, people would say, oh, revenue is great. We have $50 million. You got $50 million of revenue from customers? Oh, no, not from customers. It's venture capital. They thought of it as revenue.

[LAUGHTER]

That was the name of the game was to get the investment capital. They don't think that way anymore. I mean, it's still trying to get that, but they know they have to get real revenue.

IRVING WLADAWSKY-BERGER: [? ABCs ?] won't let them now. Isn't that correct?

JOHN PATRICK: Right.

IRVING WLADAWSKY-BERGER: For some reason, then, they did.

JOHN PATRICK: They did. Yeah. It was la-la land. It was magic. So let's go on to the internet. Years ago, my team and I came up with this little structure here of these seven things. This is arbitrary. It's a way to parse the opportunity of what's happening in the internet, and it's just a way to talk about it. So some of the things I'll discuss could be in any of these buckets.

Let's start with speed, bandwidth. Some people worry about this. Are we going to run out of bandwidth? The first thing that may surprise you-- how do you think America, where we are at the moment, ranks in the world in terms of the availability of bandwidth? Anybody know? Four? I wish it was that good.

15, most people say, 15th. You go to Scandinavia or to Korea, or to many parts of Asia and Europe, Brazil, it's better. Why is it better? They don't have as many lawyers is my short answer. The lobbying efforts to protect market positions is huge.

And while they argue competition, they really want protection, most of the operators. Some people feel the operators are going to disappear, that Google is going to lead the way, and others will move into this new spectrum and that Verizon, Comcast, and AT&T, and T-Mobile, they'll go belly-up. I'm not so sure of that, myself. But I do know that we're going to have dramatic changes because the way we are right now is not good for America.

There is some hope in the area of the power line grid. The power line grid can deliver broadband into the home or business. It's called BPL, Broadband Power Line. You can buy BPL modems today. Linksys makes them, and others do. So it's an alternative.

But unfortunately, the electric companies are not very good at marketing. And even though they've separated distribution from production and, in theory, could really go after this market, they haven't had the will and the experience to be able to do it. Now, assuming we get everybody hooked up with lots of bandwidth, can the backbone handle it?

My good friend Bob Metcalf predicted about eight years ago that the internet was going to collapse, and a lot of people were watching the packets flying around the internet and measuring impact on routers. And there was a belief that, at the current growth rate, it would fall apart. But people at Global Crossings and other telcos know very well that there's still a lot of dark fiber out there. And you see things coming out from some of the operators making accusations that voiceover internet is going to ruin the internet. It's going to bring it down.

A friend of mine made a calculation that if every phone in the world, every phone-- every cell phone, every landline phone, every phone of any kind-- was online, talking, everybody that had a phone was talking at once over the internet, that it wouldn't-- it's not even a fraction of a percentage of the available fiber. So it's a smokescreen. There's plenty of capacity.

Torrents of bits-- the nature of the traffic is changing dramatically. BitTorrent-- some of you probably use BitTorrent. BitTorrent is now delivering not just games, but also movies, copies of operating systems, browser software, large amounts of code.

It's a very effective way. It's a distributed protocol. A lot of it was developed here at MIT, actually. And it's open, and kids know how to use it. So bottlenecks are moving around, but in the bottom line, when it comes to speed, I would say it's not an issue.

Always on is the second of the seven. Dial is pretty much gone. There's more of it than you would think. There still are millions of people who say, dial up is good enough for me. Maybe YouTube will change them, win them over. But there's always the trailing majority, but dial is pretty much gone.

But the new way of thinking-- I call it IP everything. And IP everything is just what the name implies. And those of us that have been hanging around the internet for a long time have always known that television would be just another thing on the internet. We've always known that telephony would all be on the internet.

You cannot justify a network other than the internet. And at one time, there were 50-some proprietary, very good-- Apple Link and [? DEC ?] Link and IBM's SNA. And there were a large number, maybe 100. But now there's one, TCP/IP, the internet.

And it's not just to connect computers. It's to connect all these things. It's to create an internet inside of your home. So when your phone beeps, and you authenticate through the firewall, which is protecting against unwanted intrusion to your home, then you can unlock the door and let the repairman come in to work on the boiler or whatever it might be.

You can turn on your spa when you're on your way home. You can check your security. If you have a security issue, you can deal with it remotely. And so everything is firewalled to protect against unwanted intrusion, but everything is connected to the internet. Did any of you use Fios, the Verizon fiber optic? Yeah. I would give anything to have it.

In the early days of broadband, people used to say, if you don't have broadband where you live, move. And some people say that now about Fios. You've got to move somewhere that has it because it is so incredibly fast. And so we're living in a slow world right now, but it's going to change. Wi-Fi-- a lot of discussion going on about the future of Wi-Fi. And some people think of it as Starbucks. Yeah, go ahead.

AUDIENCE: So I had a question about IT [? at the time. ?]

JOHN PATRICK: Sure.

AUDIENCE: One of the follies of having everything on the same network is robustness because, if everything is connected there, what do you do if it goes down? Your everything is down by that, right?

JOHN PATRICK: Yeah, yeah. The internet's a very distributed network. And it was devised in the '50s by a guy named Paul Baran who was doing a lot of thinking about the Cold War and what would happen if the Russian missiles hit America. How would we communicate?

And he had this simple idea that we could take messages and break them up into pieces, packets. And the packets could be distributed from point A to point B, not directly, but by going from New York, to Dallas, to Chicago, to Phoenix, to San Francisco. And if one of those points got blown up, the packets would just get rerouted. Maybe you'd lose a packet or two, but you don't lose the whole message.

On 9/11, a lot of routers were blown up in New York. The internet did not shut down. So there's not a single point of failure. It's a very highly distributed network, and there are a lot of subnetworks. So that IP everything chart I showed within your house-- the network might go down inside of your house. That doesn't bring the internet down.

AUDIENCE: No, no, that's not what I mean. I meant from a person's perspective, if all his appliances are on the network, on the same network, and then somehow his connection to the network is gone. He's just gone. He's nowhere connected. But right now, if we have a cell phone network and an internet network and the telephone network and maybe something else, then we are at least connected to the outside world through something.

JOHN PATRICK: Yeah. No, I see your point. So at the point at which you become dependent-- so if you can't have dinner if the internet's down, then that's a problem. So with electricity, a lot of people have generators. With networks, today people say, well, I can wait. Other people say, I can't wait, so they have a backup. And their backup may be cellular, so it's slow.

So I have Verizon EV-DO on this ThinkPad. So if I lose my Comcast high-speed internet, I don't lose the internet because I have this. Now, this doesn't provide networking to the whole house, but I don't really care because I know it's a short-term interruption.

If I did care, then I could share this connection, or I could put a cellular substation in my network closet for backup purposes. I could split my router. I could have multiple switches. I could have-- you can have all the redundancy you want. But today, most people say, it's not worth it. Yeah?

AUDIENCE: Is that even be an issue with wireless mesh networking becoming prevalent? I mean, we have WiMAX and meshes of WiMAX everywhere. I mean, it's not even going to be an issue. I mean, we'll have always-on internet everywhere.

JOHN PATRICK: Well, I think so, but there will be pockets that will take a hit. If a town gets-- if a town loses its electricity, the mesh in that town could go down. I mean, it depends on how important it is. And military and defense security applications-- they're going to have multiple levels of redundancy.

As a person or a business, you can have whatever redundancy you can afford. And I agree. With mesh, it's going to get better and better. And in fact, that's the thing about Wi-Fi. There's a lot more to this.

And a lot of people are asking about WiMAX. Does WiMAX replace Wi-Fi? And the answer is, it depends on what you believe. Intel would like for WiMAX to replace Wi-Fi. They have a big vested interest in it. They've invested a lot of people and money into it. They're working with people like Sprint. Sprint is building out a WiMAX network.

It sounds great, but it's not a sure thing because the business model is not proven. And you've got entrenched giants who do not want advanced wireless networking, people like Verizon, and AT&T, and Comcast, and many others. In Philadelphia, the CIO thought it'd be a really great idea to blanket Philadelphia with Wi-Fi, 85 square miles.

They believe, in Philadelphia, that by having Wi-Fi available everywhere, that education will be improved. Businesses will come to town. There'll never be an issue about, can you get connected if you're in Philadelphia? They really believe it'd be a big shot in the arm for the economy. Guess who opposed it? Verizon. Verizon, says that's our bailiwick. And they've been lobbying intensely to get states to pass laws to make it against the law for a public government to offer Wi-Fi. And I think 17 states have got some form of legislation now. So there are issues in the US.

Meanwhile, what's flabbergasting to me is that, in France-- when I spoke at the World Wide Web Conference in France in 1994, they were like, the internet is not for us. And 20% of all meetings had to be in English, and that included websites. So they sued Georgia Tech that had a campus in Paris because the web server didn't have 20% of its content in French.

Now, fast-forward 10 years, France has partnered with the electric utilities, and they are blanketing France with Wi-Fi in every town of France. And they're offering 100-megabit broadband at less than we pay for rinky-dink-- what Comcast and others call broadband, which really isn't broadband. So the Europeans, who were way behind, are now-- and Germany is doing it. Norway is doing it. They're partnering with the electric companies to blanket their countries with Wi-Fi and very, very high-speed service. Yeah?

AUDIENCE: I was going to ask if-- Cambridge is just-- they're in the process of doing the same thing. It's called the Cambridge Public Internet. I'm just wondering if they've seen that sort of push-back from the big telcos, as well?

JOHN PATRICK: I suspect that they have. But Cambridge has let's say the right-- I don't know what the right word is, but the credibility to do something like that. They've had mesh Wi-Fi in Cambridge for years. They call it Roofnet, I think it's called-- yeah, Roofnet.

And San Francisco has credibility, being near Silicon Valley and being kind of a mini Silicon Valley itself. And they're moving forward, and Google is fueling the flames. So it's beginning to happen. But compared to-- Europe is way ahead of us on this, unfortunately.

Wi-Fi-- I don't know if you know about the Pringles can antenna-- do you know about this?-- where kids have taken a Pringles can, $6.45 worth of parts, and constructed what is called a Yagi antenna, which, when strapped onto the back porch, changes the 300-foot limitation of Wi-Fi to 3 miles. And they just aim it at their employer and borrow a little bandwidth.

And this idea was so popular that a company was formed called Cantenna to capitalize on the students' idea. And Cantenna launched this product. But the students, being undaunted, came back with the Nalley Big Chunk Beef Stew can, the world's record holder for point-to-point Wi-Fi of 75 miles.

[LAUGHTER]

And then, of course, there's the Stratollite over Houston, with an idea to deliver Wi-Fi to everybody. So there are a lot of reasons to be optimistic. Will WiMAX replace Wi-Fi? I have my doubts, personally. I think they can coexist. There's slightly different protocols. WiMAX is an 802.16, if you follow the IEEE protocol work.

Conceptually, WiMAX is just Wi-Fi, except instead of being 300 feet, it's point-to-point, fixed antennas, 75 miles. And so it basically replaces the T1, the old backhaul, they used to call it. It brings high-speed internet into a community and then distributes it through Wi-Fi. So my prediction is that we will see a hybrid of both WiMAX and Wi-Fi. Global Crossing, do you feel that way?

AUDIENCE: I think so.

JOHN PATRICK: Yeah. OK, good. So where is the internet, anyway? And I still marvel when I hear people say, well, I'll go check that on the internet. And I say to myself, where is it you're going to go? And of course, we know the answer. They're going to go to their PC because, for most people still, that's where the internet is, unless you happen to be in India or China or Eastern Europe. And where's the internet for them? It's where they are.

And it's delightful, but, in a way, a shame that we had to wait for Steve Jobs to show us that the internet was available on a phone. He accomplished more with the iPhone, this little beauty here, than companies that focused on this. I was on the board for a long time at Opera Software in Norway. Any of you ever heard of Opera?

Yeah, they make a browser for mobile phones. It's a fantastic technology, Opera Mini. If you go to operamini.com, you can put it on-- whatever kind of phone you have, you can put Opera Mini on it. But in one announcement, Steve Jobs catapulted beyond that to make the simple point that the internet is where you are. It's not where your PC is. And this little iPhone-- there's only one problem with this iPhone. You know what it is? AT&T.

[LAUGHTER]

I cannot believe that they made this exclusive agreement. AT&T is great in a lot of places. But I flew up here this morning and landed at Hanscom Field. Most of the way from Hanscom Field to Cambridge, there's no signal, none. So the theory behind the iPhone, which is not unique-- everybody's going to pick up on this. The theory is very simple, that Wi-Fi is really the network.

So as Wi-Fi becomes ubiquitous, you don't care whether AT&T is any good or not, unless maybe you want to have a phone conversation. But even that-- you know somebody's going to put Skype on the iPhone. One way or another, we're going to have Skype on here. And so then you don't need-- to hell with AT&T. We don't need you anymore, as long as there's Wi-Fi somewhere. And increasingly, for most of us, there will be Wi-Fi.

And it always switches to whichever is faster. So when I'm at home-- I obviously have Wi-Fi at home. Then I can do whatever I want on the back porch with this at very high speed. And they're going to support Web 2.0 applications. We'll come back to that in a minute. Somebody had-- yeah, go ahead.

AUDIENCE: I was just going to say, I mean, just to give a little credit where it's due, also, I mean, Nokia has been doing a lot in that area, and they're actually over in the Student Center today. And their tablet, the N800, actually has Skype already preloaded on there with video capability.

JOHN PATRICK: No, thank you. That's very true. Nokia has definitely been a pioneer. In fact, Opera and Nokia, both being Scandinavian companies, have been very--

IRVING WLADAWSKY-BERGER: Nokia is coming out with an iPhone [INAUDIBLE] and with the same browser. What's the name of the browser that the iPhone uses, which is an open-source one?

JOHN PATRICK: Safari.

IRVING WLADAWSKY-BERGER: That the iPhone uses?

JOHN PATRICK: Yeah, the iPhone uses Safari.

IRVING WLADAWSKY-BERGER: [INAUDIBLE]. Really?

JOHN PATRICK: Yeah.

IRVING WLADAWSKY-BERGER: And it's open-source?

JOHN PATRICK: No.

IRVING WLADAWSKY-BERGER: No, they use Safari on the Apple, but I thought the iPhone--

JOHN PATRICK: Safari.

IRVING WLADAWSKY-BERGER: Really?

JOHN PATRICK: Yep, yep. But there is a KHTML open-source browser that Nokia has been experimenting with, Motorola. A lot of people have. And it's kind of--

IRVING WLADAWSKY-BERGER: What's it called?

JOHN PATRICK: KHTML. In theory, it could be like Firefox. Firefox is doing a lot of work in this area. But as of right now, I can, I think, fairly say that the leader as far as mobile browsing technology is Opera. They invented tab browsing 11 years ago. And they have more users of mobile browsers than anybody does.

The iPhone, other than AT&T, is phenomenal. But it's really a very small number of people that are going to pay that kind of money. Now, it's coming down in price. They're bringing it into Europe. But still, it's low single-digit percentage compared to a billion phones, overall. And the Opera browser will work on any of those phones. Somebody-- yeah?

AUDIENCE: In typical fashion, the incumbents, the Verizons of the world, the [INAUDIBLE] of the world, were actually working on technology in their switches to send Skype traffic and BitTorrent traffic and other traffic that would erode their revenue base and [? block ?] it or go for it.

JOHN PATRICK: Yeah. Does anybody here work for Verizon? Yeah. It's really bad. What you're saying is true, but it's actually even worse than that. Imagine that you're on your PC, and you go to a website, and it says, oh, try this new application. Click here to download.

And up pops a message that says, this message is from your internet service provider, Comcast. We don't support that application. I mean, can you imagine the internet being that-- all of a sudden, it's proprietary. Well, that's what we have in mobile. You can't put an application on a Verizon phone if Verizon doesn't agree.

And even on the iPhone, AT&T decides what can go on this phone because they feel they're going to have to be the support arm. So it's really, really bad. And you can find it in my blog. I've been writing a lot about this. There's a thing called Free the iPhone or something.

It's a big movement where people are trying to say, wait a minute. This is about consumer choice. If I'm connected to the internet, I should be able to go to any website I want to go to, and I should be able to download anything I want to download. And if it blows up my phone, that's my problem. But I should not be controlled by my internet service provider or my mobile operator telling me that I can't download something.

AUDIENCE: There's a guy who broke his [? phone ?] and probably can get on to any other network, as well. There was some 16-year-old guy who did that.

JOHN PATRICK: Well, yeah, but that's a little bit of-- that's getting a lot of PR, but the reality is that the main interface for the iPhone is iTunes. Now, you don't have to use iTunes unless you want to get the latest firmware for your phone, or unless you want to synchronize your music, or unless you want to make sure you've got all the latest bug fixes. So guess what happens when you put this in the cradle and sync to iTunes? It erases that fix that this kid made.

AUDIENCE: Oh, it does?

JOHN PATRICK: Yeah. So Apple is playing this very-- they're brilliant marketers. Steve Jobs is brilliant. I think he's smarter than Bill Gates. He is allowing this controversy to be ignited in the press, and he's basically making it AT&T's problem. And I think that's really brilliant.

By the way, you can take the SIM card out of an iPhone, which I did the other day, because I can't use this where I live. There's no AT&T signal, even though there's a tower in the Methodist church a mile from my house. For some reason, it's a bad signal. Anyway, I took the chip out and put it in a Palm Treo that I have, and then I took another chip and put it in here. It took me a day and a half to get back to normal.

[LAUGHTER]

This is a very proprietary relationship. And Qualcomm and Verizon have the same-- they sleep together, also. So the mobile industry in the US are highly proprietary, basically anti-competitively oriented. Yeah?

AUDIENCE: What do you think the power of having an attractive, easy-to-use mobile web device like the iPhone-- I mean, do you see that eventually solving stuff, like the, what was it, the medical data record problem? I mean, all of a sudden, if every doctor had an iPhone already, and somebody just wrote the application for--

JOHN PATRICK: Yeah.

AUDIENCE: Some hospital can create a centralized repository of data and make it a web-based application for accessing it.

JOHN PATRICK: Absolutely.

IRVING WLADAWSKY-BERGER: How about your medical records-- they are encrypted in there?

JOHN PATRICK: Absolutely.

IRVING WLADAWSKY-BERGER: Isn't that reasonable?

JOHN PATRICK: Yeah. I mean, you're on a really important point.

IRVING WLADAWSKY-BERGER: That's your point, also.

AUDIENCE: Right. Well, it's just that, eventually, if we have an attractive device that everybody has that you can easily surf the web on, can't you start solving some of these--

JOHN PATRICK: Absolutely.

IRVING WLADAWSKY-BERGER: I think the problem is legislative here because these things are already possible in some European countries. They have a central database where everybody can access this. Over here, they keep lobbying about privacy issues and stuff. That really is not the issue. They just keep lobbying and just confusing people about this.

JOHN PATRICK: Oh, I agree. I mean, if we could get our medical records on the internet, they would be a lot safer than they are in manila folders, where we have no idea who has authorization to look in those folders. The big thing about the point you raise is authentication. The one thing we don't have on the web is authentication. If you can figure out my password and user ID, you're me.

With a mobile device, it's a little different. How do I authenticate? Very simple. I go like this-- this is John. And voice recognition determines that it's me. Or this has an incredible UI with the finger now, so you swipe, boom. So authentication is much easier in mobile than it is on the PC. And I think it will lead to these applications. Did somebody else want to say something here?

AUDIENCE: I think what we're seeing right now is, like you were saying, the core of the internet, there's more than enough bandwidth there.

JOHN PATRICK: Oh, yeah.

AUDIENCE: And what we're seeing now is the everything move out toward the edge. And I think that's where the big play is going to be in the next 20 years. And that's what David Clark said, anyway. I guess he built the TCP/IP stack at IBM or something.

IRVING WLADAWSKY-BERGER: David is here.

JOHN PATRICK: [? No. ?]

AUDIENCE: Yeah, yeah, he's here, and I've talked to him. And he was saying that the edge of the network is where we're going to see a lot of play. And from a policy standpoint, it seems like we haven't-- companies haven't worked out that relationship yet. The core of the network is older, it seems. This was his thinking.

JOHN PATRICK: Yeah, it's true, but the edge-- the only problem with the edge, is if the edge happens to be a place where there's no Wi-Fi and only AT&T, you got a problem.

AUDIENCE: Yeah. He was saying that that is the edge, as well. So you can't deliver traffic from here to San Jose on the edge network, on that network.

JOHN PATRICK: No, it's like the worst possible network. And the reason they did it was because the edge network chip consumes much less electrical power than the third-generation broadband mobile network does. And you can't get at the battery, which is both a feature and a bug, depending on how you look at it. And if they had a high-speed network, this wouldn't last the day. And plus, they're relying on the availability of Wi-Fi. So if you live where there's Wi-Fi, or you live in a big city, it's not a problem. Yeah?

IRVING WLADAWSKY-BERGER: So most of this talk is about business transformations using advances in IT that are going on right now. But there are two other major technology streams that are going on, the biotech and nanotech, that can potentially transform businesses.

JOHN PATRICK: Right.

IRVING WLADAWSKY-BERGER: I mean, even iPhone, I could imagine being created out of nanomaterials and being shaped into anything. I don't know.

JOHN PATRICK: Absolutely.

IRVING WLADAWSKY-BERGER: So do you have any ideas about where that is going, how that's going to play with IT, eventually?

JOHN PATRICK: Well, nanotech is really broad. It's going to affect everything. Specifically to IT, the nearest-term impact is storage. And you may have seen some recent breakthroughs by IBM, where we're going to be walking around with terabytes in our iPhones or whatever phone we have. So that will have huge impact. I think I'd better move on because I want to get to Semantic Web.

IRVING WLADAWSKY-BERGER: We need to stop at 3:00.

JOHN PATRICK: Yeah, so I better hustle here. So long distance is a thing of the past. It costs $0.02 a minute. The operators charge $1.49. Something's wrong with that picture, right? Social networking is so huge, and there's a lot of misconceptions in business. A lot of businesses think social networking is about 11-year-old girls on MySpace.

[LAUGHTER]

They don't realize it's 60-year-old guys on Facebook. When Mark Zuckerberg started that at Harvard, it was just students. Well, those students, a lot of them have graduated. Incoming students at most universities now get a Facebook ID when they check in as a freshman. And now business people are joining networks as alumni.

Most universities have alumni forever. You get an email address. So they use that to establish a subnetwork. So the social networks are merging, not in an organizational sense, but semantically. So you don't have to join all these social networks. There's hundreds of them.

But Facebook, in my opinion, is the gorilla here. They have 40 million users, and they've got this subnetworking ability. And they have an application programming interface that allows people to build these little applets on Facebook. And I see that as the point of integration.

Wikimedia-- a lot of controversy about this. I'm a big advocate of this. I believe, over time, that it will self-regulate. I just read a book called *Killing Che* about Che Guevara, a very interesting book. And I went to Wikipedia to find out something I wasn't quite sure about him. And up at the top there was a banner. It says "Caution-- this topical material is temporarily under review," and so, in other words, disagreement. It'll self-regulate. Blogging is the beginning of the Semantic Web. Yeah?

AUDIENCE: I have a question on social networks. What do you think about the gated social networking sites, gated being very small community, and it's restricted to premium users and [? Diamond Square, ?] [? Diamond House, ?] and a few others.

JOHN PATRICK: There's tons of them, yeah.

AUDIENCE: Do you think it's a good business model? I just want to know [INAUDIBLE].

JOHN PATRICK: Well, I think it's an OK idea for people that just want to be in a gated community. Most people, I think, want to be in a larger community, to be connected more broadly. But it's OK. The only question will be the business model, whether it's going to be subscription-based or if they can get advertising to cover it. But to get advertising to cover it, you need to have more than the gated community. So I think there will be a lot of them, but most of them, I think, will fail, and the big ones will succeed.

Blogging is important because of the tags. So when you write a blog story, there's a subject, there's a date, there's a category or categories, there's an author, and there's content. Those five tags give that kind of a web page a context that most web pages don't have. What I mean by that is, because of the tags, it can be found, it can be archived, it can be sorted, searched, shared, subscribed to without giving your email address.

So blogging is really big. Think of the hospital gurney going down the hall with an RFID tag on it. And as it goes from the ER to the medical unit, a blog story is posted to the primary care physician's folder, his patient's folder. So it's not just people-- it's not a vanity thing about people writing about, here's what I did today. It's partly about that.

But it's a bigger thing. It's warranting notices. It's product recalls. It's press releases. It's health care information. It's any kind of information that has context should be tagged, and blogging is a protocol to do that.

IRVING WLADAWSKY-BERGER: John, does the Semantic Web community accept what you are saying, that the Semantic Web is actually getting built all around those?

JOHN PATRICK: Oh, yeah. Yeah. The challenge of the Semantic Web is that it's very hard to explain. Tim Berners-Lee could give you a short three-hour summary of what it's about. And that's not what the world's looking for.

And the way I think of the Semantic Web is, everything relates to everything. So when you make an entry on your calendar, there's a date. Well, there's other things happening on that date. There's a person you're going to meet with. Well, there's other things about that person. They're in your contact list. That person is related to this other person because they work for the same company.

The subject of this meeting also has other implications. It has emails that are about that subject. It has other meetings that are about that subject. So everything relates to everything. That's the Semantic Web. Now, the reason it's important is because it provides a way for data to get smarter.

So you go to a web page, and you see a story somebody's saying about, well, there's going to be this concert Friday night at Carnegie Hall, and such-and-such is going to be performing at 8 o'clock. Don't miss it. Great. OK. Can you click on it? No, you can't. It's information in a web page.

So you can copy and paste it. OK, so you copy it. Now where are you going to paste it? And if you paste it in your calendar, then you have to parse that into date, person, place, subject, Beethoven, concert. Why couldn't the data actually be smart? So when you read that information, you click on it, and boom, it goes into your calendar, it goes into your categories, it goes into your contact list.

So it's making data smart, everything relating to everything. That's the Semantic Web. And it's going to be billions of dollars. It's going to be evolutionary, like all things with the internet. It's not like, when do we get there? We'll know it when we're there. It's just like the web we have of today.

Intelligence-- AJAX is becoming JAX or better. Web pages-- when you click on a web page, it goes to another page, or it refreshes that page. That's the old way. Look at kayak.com, and you'll see what Web 2.0 is. AJAX-- Asynchronous JavaScript with XML. It's a page that's talking to a server while you're looking at it, and the data gets refreshed and updated in place. That's the next generation.

Everything becomes a service. I've been thinking about this a lot, about, how could I not have to use Windows anymore? And the only thing that's holding me back is Quicken. Everything else I do, I can do with Linux or do on the web. There are some Quicken-like things, but Quicken is a very specialized kind of an application.

IRVING WLADAWSKY-BERGER: Quicken doesn't run on Linux?

JOHN PATRICK: No, no. But it does run on the Mac, so it could run on Linux. Anybody here with Intuit? Open document-- I don't know if you're following this. This is very profound. A simple concept-- when you create a spreadsheet with Excel, why should that spreadsheet forever and a day be married to Microsoft Excel? Wouldn't it be nice if you could create a spreadsheet and know that that spreadsheet, a hundred years from now, could be open with who-knows-what software?

That's an open document. It's separating the format, the document itself, from the application that created it. IBM has been behind this for a long time, and everybody's behind it except Microsoft, of course. This presentation, by the way-- this is not PowerPoint. Can you believe that you don't need PowerPoint?

I haven't used Office for six or seven years. This is OpenOffice. It works. And Microsoft [INAUDIBLE] compatibility. OpenOffice is more compatible with Old Microsoft documents than Microsoft Office is. It's true.

YouTube-- you know all about YouTube, so let me just go to the last one. This is the big one. Will people trust the internet? And there are a lot of issues, and I don't mean to gloss over them. There are deep, important issues.

There are a lot of bad people out there that want to harm us. I'm not talking about terrorists, necessarily, but people who, either for fun or for money, want to invade the integrity of the web. There are people who, just for the hell of it, would like to bring the web down, who would like to crash the internet. So there are some really important issues.

Generally speaking, businesses can be as secure as they want to be if they're willing to spend the money. It's mostly an issue of spending a lot more money than they spend today. It's just like insurance. How much insurance do you do you want to have on your motorcycle, or your health, or whatever? And we all decide how much. Well, whatever businesses are spending, they've got to spend more.

Privacy-- my perspective on this is that privacy policy is kind of a joke. The Congress passed a bill, so everybody sent out a privacy policy. The privacy policies, for the most part, are all the same. We have your information. We're going to do whatever we want with it. If you don't like it, write us a letter, and 12 weeks later, maybe we'll do something.

The issue is to create a framework that allows the company to know whether or not something in a database or a transaction is touching upon data that belongs to a person and being able to say no or notify you or at least be able to have the option to do something about it. The perpetrators here are the banks. They send all the paper mail. There are a lot of financial institutions that don't even offer paperless statements. And they send all these free checks and all this stuff, and thieves go out and rip mailboxes out of the ground and put them in a pickup truck, drill the blocks out, and rifle through, looking for electric bills and things with account numbers to be able to steal your information.

Linkage of the brand and the digital ID-- this is the big opportunity is to be able to take a smart card, put your company brand on it, use it for authentication, and link it to all the applications and provide integrity that customers will trust. This is going to be a home run for the companies that start doing it. And there will be early adopters, and they'll set the bar. Health care and finance were moving very quickly on that. That's actually beginning to happen. I'm optimistic about these.

And lastly, I would say that, with regard to the bad things, a lot of people are asking for laws, and laws don't work. The Do Not Call legislation-- I get calls every day. There are 19 exceptions in that bill. Can you imagine a law against spam? It would be a joke. It would delight the spammers because they would finally would see a definition that they can work around, and there would be even more spam.

So we need to use technology like challenge response. Filtering, unfortunately-- there's some brilliant PhDs all over the world who've been working on filtering for years, but the hackers are ahead of them. I think only authentication or challenge response-- they're really the only ways that we're going to get around this. So I got to the end here. I went a little long on a few things. I won't go through this stuff here.

IRVING WLADAWSKY-BERGER: Any last-minute questions?

AUDIENCE: One of the big things I see in the early '90s and now is that large companies like IBM were involved in innovation then, and now, smaller companies and individuals are involved in innovation. So let's take the example of health care. A lot of people are innovating, but they don't have the support of corporations. They don't have access to servers, technology. Yet they have ideas that they can convert to reality, provided they have the resources. My question is, are companies like IBM venturing into some kind of contracts or agreements or partnerships with individuals, companies, and other entities?

JOHN PATRICK: Absolutely.

IRVING WLADAWSKY-BERGER: [INAUDIBLE] health care. I personally have not been able to [? penetrate ?] IBM for many reasons.

JOHN PATRICK: No, actually, a consortium of IT companies are the leaders with regard to solving these health care problems. Intel, Microsoft, IBM, Cisco and a handful of others have gotten together and they alone have millions of employees, and they are mandating electronic medical records. IBM gives-- not a bonus, but an allowance toward employees that fill out an electronic medical record. They provide a-- I was going to say Webvan. WebMD, excuse me-- WebMD resources, a free subscription for employees. So the IT companies actually are stepping up to the plate on this.

IRVING WLADAWSKY-BERGER: [INAUDIBLE]. John, thank you so much.

JOHN PATRICK: OK, thank you.

[APPLAUSE]