

The Economic Club of New York

473<sup>rd</sup> meeting  
110<sup>th</sup> Year

---

Ginni Rometty  
Chairman, President, and Chief Executive Officer  
IBM

---

November 15, 2017  
New York City

Interviewer: Terry J. Lundgren  
Chairman, Economic Club of New York  
Executive Chairman, Macy's Inc.



## Introduction

Chairman Terry J. Lundgren

Thanks very much. And welcome to the 473<sup>rd</sup> meeting of the Economic Club of New York. I'm Terry Lundgren, Chairman of the Economic Club and Executive Chairman of Macy's, Inc. The Economic Club is the nation's leading nonpartisan forum for speeches on economic, social and political issues. More than 1,000 prominent speakers have presented in front of our Club members over the last century with a very strong tradition of excellence. I would like to take a moment this morning to recognize our 252 members of the Centennial Society who are seated in the front tables here today. And each of these individuals has made a contribution of at least \$10,000 to the Club and that's the financial backbone that allows us to do so many of these events throughout the year. We were talking about today, we're going to have 36 events this year. So, when you think about the actual active weeks that we have to do these events, it's practically one per active week. So, this team works very hard to accomplish all that we do here – Barbara and her team. We're grateful for all the great work that you do.

I want to give a welcome to our students who are here today. They're joining us from Barnard College, from the University of Bridgeport, and from Columbia University. Welcome to you. I'm also pleased to welcome members of the 2017 pilot program. This again was funded by the Centennial Society, and these are these mid-career executives that have been selected by board members of the Economic Club. And we believe that these are the future members of the

Economic Club and so we're glad to have them participate in events such as this.

And a warm welcome also to our reciprocity groups from the Economic Club of Chicago as well as the Economic Club of Washington, D.C., who are here in New York City today taking advantage of our members' benefits by attending our events.

It is a great pleasure for me today to introduce a good friend and our guest speaker, Ginni Rometty, who is the Chairman, President, and CEO of IBM. As many of you know, IBM is a cognitive solutions and Cloud platform company that leverages the power of innovation, data, and expertise to improve business and communities.

Ginni began her career with IBM in 1981 in Detroit. Since then, she's held a number of leadership positions, including Senior Vice President and Group Executive of IBM Sales, Marketing, and Strategy. And earlier she served as Senior Vice President, IBM Global Business Services, where she led the very successful integration of PricewaterhouseCoopers Consulting. And that acquisition was the largest in the professional services history and it created a global team of more than 100,000 business consultants and service expertise, which really began the transformation of IBM.

Ginni serves on the Council on Foreign Relations, the Board of Trustees of Northwestern University, and the Board of Overseers and the Board of Managers at Memorial Sloan Kettering.

She holds a bachelor's degree of science with honors in computer science and electrical engineering from Northwestern University. And Ginni has agreed to have a conversation with me today, and this conversation will be on the record, and I'm looking forward to that conversation. Ginni, come on up. (Applause)

GINNI ROMETTY: Terry, my buddy. How are you?

TERRY J. LUNDGREN: Great. Thank you. Thanks for joining us. And I think it's a great time for you to join us because there's a lot going on in your company. And, for sure, IBM is going through one of the largest transformations in business today. And so let's start off by just talking about what you're doing and how's it going?

GINNI ROMETTY: Well, I would be the first to say it is clearly the most extensive transformation, even in IBM's history right now. But I probably look a little bit like a lot of other companies, to be honest with you. Maybe they're just a little bit behind us. And I was telling Terry before when we were meeting outside, I said, well, maybe I'll just start with – when people say, well, what is IBM today? I noticed you were trying to describe it up there.

TERRY J. LUNDGREN: How did I do?

GINNI ROMETTY: You did good, but you're our customer, you're our client. So, I guess, you

know, it seems no matter where I'm at with clients – like Terry's company, Macy's – if I ask people, everyone will tell you they're trying to become a digital company. Is that fair? Anybody who runs a company in here? They are digital? Raise your hand if you think you're a digital company of some kind, or being, or becoming. Okay, all right, good number, right? Okay, that's the good news or bad news? My view, it's necessary, but not sufficient in this day. So, if I had to pick one word to describe to a group like this how has IBM reinvented itself, it would be around the one word, "data." It would be around data. And this belief that, and can I unpack it a second, a belief that to compete in the future, that data is going to be the basis of competitive advantage. Now, I would bet everyone is thinking I got tons of data, I get no value for it. I would ask you, though, a second question...and I agree with that, by the way – up to date, you probably don't. People's second thought they believe is that all the great data belongs to some of the new companies, belongs to these platform companies. But if I asked you what percentage of the world's data is searchable, what do you think, Terry?

TERRY J. LUNDGREN: It seems to me like 90%.

GINNI ROMETTY: It's 20%.

TERRY J. LUNDGREN: 90% of my data...

GINNI ROMETTY: Not unless you have a cyber problem.

TERRY J. LUNDGREN: You would know...

GINNI ROMETTY: I know. I watch this stuff. So, 20% of the world's data is searchable. That's it. The other 80 belongs to you guys. And that's where there is value. So, if you could take that 80, really get value, the 20 that's out there, and really be able to convert the expertise in your company, you could make way better decisions. I tell you the story because I believe kind of Phase 1 of disruption is ending. Disruptors disrupted a lot of companies. Phase 2 is going to favor – I'm going to be bold – it will favor the incumbent companies, because you have all that data should you choose to use these weapons. You become the disruptor. And, as I've said, it may just turn out that having a past may actually be quite valuable as you go forward. And so that's what we built IBM around, reinvented it around, because there's a lot of things you need if you believe in that world. And so, on one hand, we help you build the technology platform, which I use the word platform on purpose, the IBM Cloud and Watson – we'll talk a little bit about both. That's a \$16 billion big Cloud business. The second thing, though, all this technology means nothing if you do not know industry and how a company's processes work. We talk about that all the time with you. So, the second part we reinvented is a big piece around business consulting and business architecture for industry. And the third part is, you know what, the first two mean nothing if you can't transition from where you are today. And we're one of the few companies that helped your past, can help you to the future, and the bridge to them. So, that's IBM. One more point, Terry asked me earlier outside about our own transformation. So it meant, IBM is a business-to-business company, \$80 billion in its size, and today 45% of our

products and services are new, growing at double digit for that part of the world we described – double digit, 45%. Those of you that do math, that's \$35 billion. And the others are very important businesses that, you know, we run the banks, the retail, the airlines, the credit cards of the world. So that's IBM in a nutshell.

TERRY J. LUNDGREN: Okay, so let's go deeper on that. So, the pieces of your business that you see as growth opportunities. You said it's 35%. So, let's talk about those businesses. You see, you're able to grow and accelerate, and then we'll go into those businesses that you have in the transformation of IBM, moved away from or become de-emphasized.

GINNI ROMETTY: So, because we were talking about, together, about how do you transform a company? And that's really what we're both getting at. Glenn and I, we were talking about managing businesses as you reinvent some. And maybe a top line, remember for IBM, is we're a high value company. So this has never been about top line growth for us. Growth is important, so don't get me wrong, but this has been about how do you continue to move to the next best neighborhood. It's the only way you can be 100 years old or 106, or be 200 and in the public eye continue to reinvent yourself. You reinvest in yourself, you return to shareholders, and at the same time, last year we did \$16 billion of R&D and capital and acquisitions so that you can go to the next space. So, to Terry's point, we always have to reinvent what we do. And therefore, the re-invention has been around Cloud, around AI, around data, security – we're the largest security enterprise company. We'll talk a little bit about that, I hope. And then the other pieces are really



important. They run the systems of the world. They just may not be in growth areas, but they're all highly valuable. So, to Terry's point, part of our transformation, done it with the long-term in mind. We've acquired 57 companies in the last couple of years. We've divested \$10 billion. Of course, we've done that in the face of currency headwind – unprecedented I must add – as the most international company out there. And so, all that is to manage both the re-invention...

TERRY J. LUNDGREN: By, the way, that's somewhat behind us at the moment anyway...

GINNI ROMETTY: Fourth quarter, we're looking for a nice little tailwind hopefully. The first time in my position in time I will have ever seen that, right, unprecedented. So, you manage both, so you reinvest for the future, always moving, though, to a higher value business.

TERRY J. LUNDGREN: So, you've now already touched on how data is a competitive advantage, but you've also said...you have some views about how to...

GINNI ROMETTY: I have some views about how...yes, can I...for those, not that you want advice, but I will humbly offer a couple of points about this, because I think this is a very easy topic to say. And here's what I mean about you can make better decisions. Many studies have been done – and I know there's a lot of universities in the audience – that humans, all of us, a third of our decisions are super, a third are average, and a third are, well, let's say, could be improved, not good. And so, if you sum that up in business terms, that's a \$2 trillion market for

better decisions. So we've kind of framed out there's a \$2 trillion market to help people make better decisions. And I'm going to say, I would do three things pragmatically, and I want to do a "but" on what we've learned on each one of these. I was thinking about this on the way over. So, if you believe what I've said so far, you become the disruptor again. This data is going to be the foundation of it. And remember, this data is videos, pictures, sensors, numbers, history. It is hard so far until now to deal with it. So, you do three things, but I would tell you to kind of learn a lesson on each of the three. So, the first thing I would do is, well, the truth is you'll never make sense out of that data without some hard work in artificial intelligence, and the Cloud will be part of that. You will have to embrace that. Here's my first but...but there is a huge difference between consumer artificial intelligence, which you might put as a gadget on your end table at home and enterprise artificial intelligence. And I would sum it up this way. In companies, if you're going to make artificial intelligence decisions, now I'm talking about underwriters, merchandisers, fulfillment people, procurement specialists, a regulator compliance person, you name it, these are professionals. So, now the AI actually has to know a profession. That's way different than what's the top song in 1970. So, first, you have to have vertical. So then you think, well, how does AI get trained? A big difference again on this kind of AI. There's not a million conversations – well, maybe there is about the tax code – but I mean there's not a million conversations about, you know, your pricing methodology, in your company or outside. So this AI has to learn on little bits of data very fast – different. And the third and, I think, most powerful thing I'd tell you to watch on this is the value in AI isn't your data, it's the recipe, the algorithm that got smarter because of all that 80% you owned. You need to be sure whatever AI

you work with – a footnote, apparently this is a commercial for me at some level – we built it such that all that insight stays with you. It does not train and go to your competitor. That’s not true about almost everything else out there. So, that’s why I say, there’s a big difference between consumer and enterprise in the world of AI. So, my first thing, though, you’re going to have to have it. My second big learning is if you’re going to get any use in a company, you have to start to change how people actually do their job. We’ve watched company after company do experiments with AI and never change a workflow of how a doctor does his job or how, you’ll get no value out of it basically. And so in that case, I mean things like, there’s great examples in, I mean, in this room and in this city, so if it’s to make better decisions, I mean JP Morgan Chase using AI for trade surveillance, right? If it’s to improve a product, H&R Block, some people might say sleepy H&R Block, who has always fought Turbo Tax, used AI – ours happens to have a name called Watson – taught it all the tax code of the U.S., all the tax code of every state, which you might not be surprised they’re in conflict in many ways. We’ve learned that out of that. But, 11 million tax returns, they had 70 million in their history so that they could say, Terry, people like you did these things. In this year, they gained share, higher profit. They gained share, first time. So, you can change a product and service. You can change how you operate. We were talking about how we use it in every part of our HR process to remove bias as an example. So, anyways, you change a workflow. My big caution and but...I don’t mean to be this long...is, but, man, you better have changed management or you won’t get value. And my third point, which I hope we’ll talk more about, I feel very strongly when you enter this world, you have to enter it with some principles – principle behavior. These technologies do need to be guided safely into

the world and they can be taught good and they can be taught bad. And so, to a company, I'd say, my but is be transparent about who has trained your AI...tell your customer, tell them they're using it. Tell them how it got trained. Tell them the data, the people. It's the only way that you can actually, I think, build a trustful relationship. So, a long question, sorry, a long answer, but those were on my mind, to share those.

TERRY J. LUNDGREN: But it's a good answer, and I think something you just pointed out, which I think was very relevant to all of us is that you have the ability to use AI, but to keep it, you know, uniquely yours, if you will, as opposed to making it...

GINNI ROMETTY: Be careful. I guarantee you, most people have stuff flying out of their company and they don't even know it right now. And that 80% is where the value is, so I give you my...

TERRY J. LUNDGREN: So that's why we don't have Watson, Echos inside the homes...

GINNI ROMETTY: We, look, this is an interesting thing I feel. Most AI was built off of being a search engine out there. We didn't have the legacy of being a search engine. We've also been a business company. We're quite comfortable in understanding that companies have privacy rules, data, security rules. They want to protect their IP. That's the world we built enterprise AI for. That's why they're very different.

TERRY J. LUNDGREN: So, several members you met upstairs are from the financial services industry, and tell us how cognitive is transforming these FSIs..

GINNI ROMETTY: You like that question there? You like that one, okay? Okay, so, who is from financial services? (Laughter)

TERRY J. LUNDGREN: Who is not from financial services?

GINNI ROMETTY: Okay, who is from retail? Anybody else? Terry's table. Okay, all right. Okay, well, I can't help...Glenn and I were starting to talk, well, we'll talk about AI in financial services, but maybe about blockchain too, if I can give you my layman's, some of my views about this, because we were just talking about bitcoin and the like. So, first, financial services, wonderful opportunity for all these technologies. I don't think I have to tell everybody here. And, if I might, on the AI cognitive side, what I see around the world, the number one spot everybody starts is customer service. It is so clear that, again back to that third, a third, a third. All of you have call centers. All of you have interaction with consumers, that if you can improve that, you're a big step ahead. And so, the application of these to teach your financial products to these systems, even to work with. And, by the way, the reason I hate the word AI, and why we called it cognitive, which just rolls right off of Terry's tongue, I can see, it's because AI had such a negative connotation. And it was, there's a robotic apocalypse and all of these things. And we don't believe that world. Maybe, again, we'll talk a little bit about jobs and the like. I would have

preferred to call it augmented intelligence. And we believe its purpose is to make man better.

Make man do what man is, or woman, is meant to do and help you do what you do, which takes me back into a bank. So, I see it in customer service. I see that with whether, I was just yesterday with Bradesco, the biggest commercial consumer bank in Brazil. And they have deployed this in all branches, all agents. They're handling, what, 350,000 questions a day. And they're helping their agents be 99% correct. For those of you that think yours are already 99% correct, that's not true, if you really go in and measure it. I mean your products are too many, too complex, etc. So, I see that. The second place I see it is for compliance, regulatory compliance, whether it be AML, KYC, whether it be for trade surveillance. It's those kinds of usages. But, the one I thought I would talk more about, if I might, to introduce a technology, my layman's term is blockchain for financial services. Anybody know and love blockchain?

TERRY J. LUNDGREN: Well, just so you know, we had our fellows have a debate just a couple of weeks ago on a couple of subjects. AI was one and blockchain was another. And they took sides, they had to take sides. We divided them into pros of each and the negatives of each. And, of course, there's lots of pros in terms of, you know, advanced technology and usage and competitiveness and all of that. And there are some negatives too. You're aware of some of the negatives that people are worried about – largely jobs and the social impact. But, talk to us about...

GINNI ROMETTY: Well, I'm going to come back to jobs. So, how many people feel they know

what blockchain is? Might be using it? Oh, the same number. Well, then this will be a very short conversation.

TERRY J. LUNDGREN: No, it won't...

GINNI ROMETTY: The whole crowd. So...why do I even want to bring that up in a group like this? Look, this time of technology, when I talked about IBM, the IBM Cloud, AI, data, this is going to continue, it's blockchain, it's quantum. They're going to keep building on each other. So, this is why you feel this frenzy pace of change. Normally there's one technology on top of each other. These are one after another after another. They have a good chance to lead us to an era where people will, if you can learn faster, like I said data, you'll be the winner. You've got to learn faster out of all this. So, back to blockchain. It'll be one of these next. And I happen to feel very strongly that this one will be, it's much easier to do and will have a profound impact on the supply chains of the world. I will be very aggressive about my statement on this. Now, why? When everybody thinks of using the internet, there was some set of rules written up and so information could be exchanged between people that knew each other. What I think blockchain does – simply put – it allows transactions, trusted transactions to be exchanged between people who, not only don't know each other, may hate each other, but they can trust that there's been no tampering in that transaction between each other. That's simply what a blockchain does. I do not mean bitcoin. That's a different discussion. This is a technology underneath it, which by the way, is open-source. Well, I don't even sell it. I would make a footnote, for those of you that are, this

won't be technical, but it is, whatever one you go out there and use, call it a fabric that you're going to build on, like a railroad track – you're going to build whatever you do on it – I am a strong supporter of something out in the open-source world, which means you can get it for free called Hyperledger. I think it will be the one that businesses end up building on top of because it has a couple of characteristics. (A) It can do high volume. You live in worlds of 10, 20, 30,000, credit cards go at, you know, 30,000 a second through. It can do volume. But two more really important reasons. It's immutable – the kind of cryptography in it – you can't tamper. But even the more important reason – governance. Glenn, we were talking about bitcoin. This is why you watched bitcoin do some of this. There were two people fighting over should we separate this? This is governed by at least 150 companies already. That is how the internet got started. You have to have governance on these open things, that not one party can decide how to rule the world here. They're not a major shareholder to it. So, anyways, I did a diversion. Back to the blockchain and financial services, your industry too, by the way, we should talk about it. What it'll do is networks. So, think of this. Northern Trust has already put up lending big networks. Eight European banks came together, put together a blockchain to do lending to small/medium businesses. The six big banks in Canada have come together and they said, look, we've got to have secure identify for all consumers in the country. We can share that. They can't see what each other is doing, but they can see the data, so they can decide...and that a central bank can see certain things. That's the beauty of this. Or even an individual company – if I am, let's say, I said Northern Trust, private equity, you guys, some of you, very cumbersome paperwork to place. They put this up with a firm in Switzerland, maybe it was only \$20 billion of private equity



being placed, and take all of that middle stuff out of here. I run IBM Global Credit, actually does \$40 billion of lending a year. All disputes up on a blockchain, well, there's no dispute anymore. We know that invoice went to Singapore, and we know where that stuff was. So, a simple one, a DTCC, you guys know, all of the derivative trading settlements, \$11 trillion, all going up on a blockchain. So, anything you can think of that's got a lot of paperwork and handoff in it, I think has a wonderful opportunity to both be streamlined better, shorter, new businesses will come up. Bank of Tokyo, Mitsubishi, they're doing inter-company, inter-country, inter-company transfers with it, which will come in handy depending on how the tax code ends up – that you prove where, what's going where on payments. So, this is why I'm such a strong supporter of it, and I think for financial services and I think your industry, it's a big one. Does that make sense, how I described it?

TERRY J. LUNDGREN: Yes, I think it makes sense.

GINNI ROMETTY: Don't say no, because I'll go on for...

TERRY J. LUNDGREN: What I didn't understand before you described it was that there's really one market leader here in the blockchain, in your opinion...

GINNI ROMETTY: I think it is because of that governance, it's a big, big, big...

TERRY J. LUNDGREN: It makes total sense. So, let's move to another industry.

GINNI ROMETTY: Yours?

TERRY J. LUNDGREN: Yes, mine – for the other 10% of the audience.

GINNI ROMETTY: Let me talk to them.

TERRY J. LUNDGREN: Talk to this group about...

GINNI ROMETTY: Yours is the biggest industry that I think the disrupted can become the disruptor, right?

TERRY J. LUNDGREN: Me too, by the way.

GINNI ROMETTY: I know you do, and you're making some good progress, right? And I think this idea that if Terry took his data – I won't call it small, he's got a lot – and combined it with that 20% out there, he de-averages the world. Today, so much is done on averages of all this stuff. You de-average the world. And so, I want to give these guys some credit, if you don't mind, as I was thinking about this in retail. So, how would you use these new technologies? So, one, just one for shopping, that's so clear, right? Terry's team did something called Macy's On

Call. So, in certain stores now they're piloting, testing, rolling out – I should say artificial intelligence means you can speak to it, natural language, no programming, it learns. That's the essence of artificial intelligence. And a consumer can come in and talk to what it is they're looking for, get suggestions, and this can just, and get connected into inventory and to sales associates. All sorts of ways to make it easier to shop. That's a very simple one. Another one, Watson's been taught fashion, okay, like Terry could teach better this, and taught by fashion experts. You know, what do you call this kind of fabric?

TERRY J. LUNDGREN: Tweed.

GINNI ROMETTY: Yeah? Okay, I thought he was going to say like...well, tweed sounds cheap, doesn't it?

TERRY J. LUNDGREN: No, no. Chanel is tweed.

GINNI ROMETTY: I want a refund.

TERRY J. LUNDGREN: Chanel is tweed. It's not cheap. In fact, several tables for one jacket.

GINNI ROMETTY: Okay, so, it's not what he thinks. Okay, so let's say knit, tweed, boucle, I mean all these terms that mean something in a fashion world, right, has been taught all this. So, if

you've ever gone on your mobile phone and said, you know, show me a tweed, blue sweater. As Terry knows, it's attribution, right? You can't do that very much, or take a picture of his suit and say, give me all the suits just like that one.

TERRY J. LUNDGREN: And we talked about it, when we went out to see you...about how do we have someone walk up to a Watson and say, what would you suggest for me based on what I'm wearing? What would actually be another...complementary handbag to wear with the outfit I'm wearing? And with all these attributes, you know, aligned with Watson, could we do that?

GINNI ROMETTY: Yes, so shopping will change. I think fashion recommendations will change. The other thing, somebody like Unilever for assortment. Hyper-local, like this store, knowing that these physical activities are happening. The weather is like this. By the way, for those of you who didn't know, IBM does own the weather company, so every mobile phone, that's us. I should put IBM on there, by the way, so you would know that. You don't have to have me tell you that. But, anyways, weather combined with all that together, Unilever, hyper-local. And the difference of what you sell is quite extravagant, and what they do with it.

TERRY J. LUNDGREN: Absolutely, yes.

GINNI ROMETTY: And the supply chain, if I might, back to blockchain, some ideas here, Walmart – you're going to have Doug McMillon I saw coming up.

TERRY J. LUNDGREN: Yes, next week.

GINNI ROMETTY: You should ask Doug about food safety. So, we've started, these blockchains can be big networks. It's one of the biggest ones because it's Walmart, it's Costco, it's Nestle, it's Unilever, it's Driscoll, it's Kroger, it's Tyson. You keep going...

TERRY J. LUNDGREN: It's international.

GINNI ROMETTY: Twenty of us came together for food safety, \$100 billion a year of food wasted. Many people die. It started because Walmart had some challenges with some pork in China. We got this up on a blockchain. Then we did it with mangoes. So, seven days to trace where your mango came from. We're down to seven seconds for these things. Everybody's coming together and they're willing, even though those are many competitors and the like, right, in retail. It'll help these supply chains. They're doing it for this reason and we could be sure competitors don't see different data.

TERRY J. LUNDGREN: There's also a consumer that wants to know this information.

GINNI ROMETTY: Hey, they want the provenance. They want to know where was that chicken raised.

TERRY J. LUNDGREN: How far away was this chicken raised? What was his name?

GINNI ROMETTY: Who were his parents? And so, there's a funny YouTube on that. And, you know, where do you go to school and all that. So, that chicken, we're doing that kind of work. So, I think food safety is an idea. But, even places, Terry, you have been one of the pioneers in this. And I see it, like with Kohls today, the supply chain work on using your stores, not only as fulfillment, but let's say when you go to return something that they've sent you, that AI in blockchain should say, you know what, don't just sent it to a central place. Send it to the store most likely to sell it. Return it back, you know, the label prints automatically to go to that store.

TERRY J. LUNDGREN: There's so much, and I don't want to get stuck on retail, but the last thing that you guys were working on, we talked about for some time, is that the call center opportunity of, you know, having the incoming caller and identifying the screen for the operator. What is the probability of the problem that this customer is calling with? They're not calling to say, I just want to say what a great experience I had. They rarely ever make that call. So, what is the problem we can anticipate and have the answer to their issue already posted while the phone is still ringing. And so that's where we're headed. I want to move into another category called healthcare, which is a place where, I think, IBM has really been a pioneer in terms of trying to find solutions and quick answers for doctors in remote places. But, you've gone into cancer now and done some major, major work here. Talk to us about breakthroughs...

GINNI ROMETTY: Any healthcare people? I know one.

TERRY J. LUNDGREN: Yes, a couple here.

GINNI ROMETTY: Everybody's a consumer of it, though, right?

TERRY J. LUNDGREN: Sadly.

GINNI ROMETTY: Because really the theme of my time with you this morning is this idea that this data can change and help us do things we couldn't do before. And so in healthcare, what Terry's talking about, we might have started in the hardest area – I have to admit to you – with our AI. And it was, we decided to start in oncology. And the idea that you could help diagnose and treat. I mean I'll be at the Cleveland Clinic tomorrow – not for a problem, but to work with them – and healthcare data is now doubling almost every 60 days. It's impossible for a doctor, truly any professional, to keep up. And how many times have you gone to the doctor and said, are you sure? Or your parent? Are you sure that's the right thing and what's the other options? What's the pros and cons? And, you know, doctors answer from their experience. So, we started on oncology because of all the statistics about, you know, we are privileged to be in the city, whether it's MSK or New York Presbyterian or whatever, we'll go be treated at a cancer center. That is not true for the vast, vast huge percentage of people in the world. They will not be. They will be treated at a local place. And so, that's where we started. We started with Memorial Sloan

Kettering, and it was, AI has been taught. Read everything there is about, been taught every textbook. The doctors have been training five years their world-class protocols. Back to telling people, who trained this stuff? You don't want the internet training on the best solution for, I mean, go up there, every illness you look up, you will die from right now if you Google and see what you get. So, this is, you want this trained by experts. And so, to Terry's point, by the end of this year, we will have trained 80%, what causes 80% of all cancers, which is about 20 cancers. And like AAI, the first one took nine months to learn. We're down to 30 for these new cancers. Getting smarter. Getting smarter. We are now deployed in 100 hospitals around the world. And you'll find it interesting, the largest take-up is China and India. Part of it is doctors willing to say, I know what I don't know. And in a country like India, there's 700 oncologists for 1.4 billion people. And we're to the point, the concordance, the agreement is 99% with what is the right thing to do. So you can reach places. So, I, you know, genomics, we're doing work with the Veterans Administration. I mean you can now read a whole genome, instead of 160 human hours, ten minutes to help them do the diagnosis. So, try to read a medical record. Have you ever seen one? We had a training on all of this. They're like 200 - 400 pages long. Try to make sense out of it. And so, all of that is part of this. And so we'll do our little piece. And I am sticking with it, this is hard work. It's also, like any professional, people don't like to change how they do their work, or would ever want to be told they're wrong. So, how you do that is quite an art. So, we started with oncology, but now we've been doing work on imaging, value-based care, and really it's a platform. We went and acquired a lot of data. We have 300 million lives of data, what's happening. So you could, Pfizer, drug discovery, J&J, healthy knees, Medtronic, we're



continuing our work with diabetes. We've had some breakthroughs. So, any client is as well welcome to come and then build on this. I think, I think we are going to solve way more problems than we cause with healthcare.

TERRY J. LUNDGREN: You're talking with a lot of enthusiasm about a lot of the things that you're doing. What's the hardest day of work you've had at IBM, as CEO?

GINNI ROMETTY: My hardest day?

TERRY J. LUNDGREN: Your hardest day.

GINNI ROMETTY: Probably, it's not any one day. My hardest day is ever when we let a client down on something. That is sort of the culture of a company. And I feel strongly about, I mean, our values, our dedication to every client's success, innovation that matters for ourselves and the world, and trust and respect in all relationships and partnerships. So that, to me, it's not any one...and it does, I would love to tell you that it never happens, but in what we do, that can occasionally, and that is a bad day to me.

TERRY J. LUNDGREN: I mentioned that the Fellows Program had this debate on blockchain and AI, and you've talked already about the benefits of both. So, there was concern actually, the negative side in both equations was able to convince many in the audience to change their view.

GINNI ROMETTY: To become negative or to become positive?

TERRY J. LUNDGREN: To become skeptical.

GINNI ROMETTY: Okay, well, let me, I understand that actually. And so, I'm glad you bring me back there, because, especially to a group like this, it thinks about a lot of issues. I do think, and there are a lot of people who have views about AI and data. I think, as much as data is the phenomenon of our time, it will be the issue of our time as well. We will reflect back on this. Privacy, security, what gets done with it. You can see the anger about a lot of this today. So it will be both the phenomenon and it will be both the issue of our time. And so, I want to start with AI in that I feel very strongly, and we do, as a company, that this is about principle behavior. We put out a paper called "AI Principles for this New Era." Things like we believe it's our job, as one of the makers of it in the world, to usher it in with responsibility and integrity. It is there to augment what man does, so purpose. The second thing, you must be transparent, like I've been hawking on all afternoon here. What data trained it? Who trained it? Tell people. There are many dilemmas ahead of us. AI will be used as cyber. I mean, I was telling Terry, we're already seeing this. Someone will infiltrate your training data. Let's say you're a self-driving car, it already happens. It trains the car that that's not a stop sign, that's a yield sign. What happens? I mean you've got to, and so this is with high transparency. And the third thing is the jobs part, if I might, and we'll hop onto jobs for a second. This is a great, both a great city, state on this topic. A lot of people say, so, will AI replace jobs? So, the answer is it will. And, so we just finished a

study with MIT. They say, this study says 10% of jobs will be replaced. Okay, it's like any other technology. 100% changed, 100% changed – man and machine – an era of man and machine. So, do we really have a country – this is true in every country, by the way – a workforce ready for that? And if I can jump to that point, for all of us, I think, as I said, data, the issue of our times, all this boils down to skills as the issue of our times. And if you look at just some pure numbers, the United States, half a million open tech jobs, five million, five, six million open jobs in general. Our high schools only teach 25% computer science. This great country only produced 40,000 computer science people. Hard to believe. These are small numbers. And so I think this is the essence of divide in this...it's Brexit, it's a lot of things. When people think there is no better future in front of them, that is a cause for unrest. That is the seeds of revolution. And so if we don't change people's lifelong learning, and particularly this thing about getting ready for this era, and if you think that the world can be that everybody has to have a university – God bless our university kids here – but that everybody has to have a university or PhD, forget it. This is not a good future. So we started work, and I think a public-private partnership can help solve this. You guys do, many people do, so I'll use as an example, but many people are doing things. Public-private partnership, we coined a word, new collar, which is not blue collar, not white collar – new collar. So nothing negative. We've got some kids here. Actually Rashid, you're here somewhere. He was the very first principal of one of these schools called Pathway to Technology, the very first here in Brooklyn, now 100 schools across the world, 100,000 kids. Four-year high school, two-year community college nearby. In fact, actually did I hear the Community College, New York is with you or no?

TERRY J. LUNDGREN: No.

GINNI ROMETTY: So, think of it as a six-year high school. And these kids are now, we've been at it long enough, they're graduating, 2x median income. They can do lots of different kinds of jobs. A very simple promise, a curriculum, give a mentorship, us, 300 companies, and a chance at a job, and that's really it. And so I think this is infinitely solvable, as much as I, but it is a real issue to be addressed. So, it's both the integrity of how you deal with AI and then preparing a world for it. Otherwise, it looks beautiful, but it's a bad road between the two.

TERRY J. LUNDGREN: So last question. It's sort of a three-part question.

GINNI ROMETTY: Oh, oh.

TERRY J. LUNDGREN: Best advice you were ever given, advice you would give to the C-Suite executives in the audience about this transformation of technology in their business, and advice to mid-career executives. So start with best advice...this is your last question. This is your lay-up.  
(Laughter)

GINNI ROMETTY: How about I'll give one altogether. Can I do that? Because I think everybody's hungry, and I'm capable of boring you.

TERRY J. LUNDGREN: Unlikely...

GINNI ROMETTY: Terry and I were a little bit chatting about this, right, and he was kind of remembering a story I had told him, and I've shared in some small groups like this. I said, and I think, well, you're going to not believe it, this advice came from my husband. Well, maybe you would. If you knew him, you probably don't believe it. Terry knows him. So, I was probably maybe ten years into my career or so, 10 or 15, and I had been offered, so I was offered a job. I told a few people the story. I had been, worked for a man, offered me a job. And I said, geez, I don't think I'm ready for this job. I said I would hope, like two more years I needed to be ready for this job. He said, well, you've got to go to the interview tomorrow. I went to the interview and I said to him...the man talked to me, I said, look, can I go home and talk, I'm going to go home and talk to my husband. And I said I just don't think I'm quite ready yet, but let me go home. He said, okay. I went home that night, and my husband, Terry knows I've been married now almost 40 years, so this is back-aways, he said, he'd sit there like always, I'm talking, talking. And he says, do you think a man would have answered the question that way? I said no. He said, and I know you. You'll, six months, you'll be bored. This is wrong, Ginni. And in that moment, well, I went back the next day and I accepted the job. And he looked at me, and it was someone who cared, he looked at me and said, don't do that again. I said, I understand.

(Laughter). And in that, though, the lesson that I have conveyed to everyone who will listen to me, and I think it applies to people, to companies, to countries, is growth and comfort never coexist. And you've got to get really comfortable with being uncomfortable. And that if I ask

you in the moments, when did you learn the most, it will be the moments, you know, you shut your eyes, it will be when you were at risk. I'm pretty confident in that question. And to all my young women in the audience, and I have enough experience after all this time that I would say, and women are the most critical of themselves, more than anyone, and this idea of, hey, it's okay, you can be agitated inside, don't always show it. And that you've got to get confident. I mean, and it has shaped what I've done with our own diversity programs and inclusion, which I don't even like the word diversity. It's inclusion, about everyone being able to contribute. And it's shaped what IBM does about how we welcome people, whether it's today, yesterday, fighting for the Dreamers or the Bathroom Act. This is a democracy. You've got to get things roots-up to happen. Or whether it's about our programs, 20-week parental leave, shipping mother's breast milk, keep women in the workforce. And I'll always remember, even my own sister, who, she got a Northwestern, an MBA, and engineering, she'd taken time out to help her son and she was nervous about going back to work. And I'm like, what are you talking about? And so we've started like re-connections programs to give people confidence to come back into the workforce. It doesn't take much. So, that has shaped a lot of what I am and about the company, you know. And I guess if I extended it to my lessons about the company, and I've had great predecessors, it's been never define yourself as a product. Don't try to protect your past. You know, but you do what's right for the long term so that this company will be here 100 years from now.

TERRY J. LUNDGREN: I think that you actually were successful in answering all three parts of

my question with one answer. Let's hear it for Ginni Rometty. (Applause)

GINNI ROMETTY: Thank you. I'm clapping for myself. Thank you. Thanks Terry.

TERRY J. LUNDGREN: Just a final message before we break for lunch, and that is our coming events. Starting next Wednesday, as Ginni alluded to, we have Doug McMillon, the head of the largest company in the world, Walmart. And right after that, November 29, Randall Stephenson of AT&T, a lot happening in that company. You're reading about it every single day. And December 5, we have dinner with Dr. Henry Kissinger, so we'll all look forward to that. Enjoy your lunch. Thanks everyone.

GINNI ROMETTY: Thank you.