

TRANSCRIPT FROM THE PRESENTATION:

AI at Work: From Programming to Learning



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It's great to be here. I'm very honored to have an opportunity; it's tough to follow Danny, though. Really impressive stuff they're doing. But my presentation, actually, I think will be a very good compliment to his piece because I'm going to approach it more from the business aspect. And to that point, super excited to be here. I just spent three weeks in Japan, Hong Kong, Taiwan,

Beijing, and last week in Sao Paulo, Brazil. And I've spent a lot of time with companies. I'm in the field, so it's less theorizing. It's all about action and what we're seeing, and I was just blown away by what we've seen just in the last three weeks, how much they've advanced in the different cultures and the different environments. Very impressive. And to that point, I started back in Watson in 2014, when we first started the Watson Group. And since then, I've worked in 31 countries; I've been with hundreds of organizations, government agencies; and we started with the art of the possible, but if there was one thing I left you with today, it's the art of the doable. I've been personally involved in well over 100 implementations of AI in all different aspects across many industries, and if I look at it, absolutely, there's great opportunities for more opportunities for the long term, but there's a lot of

opportunities for today. And again, if there's one thing I'd leave you with, it's the art of the doable. It's happening. There're thousands of real examples. You saw some great ones in the gaming, but across all the different industries, so very, very excited.

But here's the context of what I wanted to share with you today in terms of the historical perspective: over the last 60 years, there's only been two times where the technology has changed in a way that has allowed businesses to improve on an exponential curve. The first was Moore's law, as we all know, processing doubles every 18 months. Then came Metcalfe's law, where, without getting to the finer parts of the formula, it said that the value of the network is equal to the square of the nodes. And that gave rise to platform companies, think Google. And there's no doubt that this has had a profound impact on business and society, but there's more to the story. And to that point, I want to talk to you today about three areas: the first is we believe at IBM -- this is another one of those rare, rare moments where we're going to have that exponential impact. And we're referring this as the learning era. It's all this knowledge, some of the stuff Danny talked about, some of the prior presentations. I mean, the technology's amazing, all these exponential technologies. But the point is, these are going to be learning systems. You even heard Danny refer to how they were training and how many days they trained. But these are knowledge

systems. These are expert systems, and that's going to be key as we move forward in this area. So, we then look at some real examples. Again, I'm in the field; I want to talk about real examples. So, I've got a couple examples of some industries as well as some social good, so to speak, opportunities. Again, a big part of our role is to make sure that we're not only using this technology for business, but also helping tackle some of society's biggest challenges. And then lastly, again with my experiences, I just wanted to share, I don't have all the answers, but I have a lot of experiences just with these compendiums of lessons learned best practices, and I'm going to share some of that as I go through my presentation.

So, let's start with AI, right? AI is everywhere. We can debate how fast it's being adopted, but it's not a question of whether or not it's here. It's here. And I think there's a lot of discussion about how do you take advantage of it, but just fundamentally, you can't wake up without seeing lots of articles every day on your phone about what's the new trend today. And so, as I look at it from just being at home every day, you know, listening to music, Siri, Alexa, interacting with your bank, looking for a job, you're an employee, reviewing candidates, right, filing tax returns. AI is inevitable going to be part of a lot of the interaction. There was a recent survey published that asked Americans how much of their time was impacted by AI, and a third of the responds said "yes," we interact with AI. The answer, it was closer to 85%. So, it's here, and it's permeating all aspects, and you're going to continue to see it grow and we all have a responsibility, which I'll get to a little later, but it's exciting. There's so much opportunity that's going to be driven by the advent in the acceleration of AI as we move forward, because it does have a very enabling capability.

The next part is just around what I'll called the greying between the consumer and the enterprise markets. And I say that because we all have this hyper-personalization at home; we've had these experiences with all these technologies. You act a certain way and your expectations are through the sky because to me it's like this hyper-personalization. And now you go to work, or if you're a consumer or customer, you've got a certain level of expectation. So, the point for the businesses, you've got a really call for action here. Are you going to let it be done to you by your competitors in terms of how you service your customers, because customers are going to have more and more choices, and it's not just the traditional competitors? There's a lot of competitors that we've seen time and time again, they're going to penetrate the market. So, there's a real call for action. If you're a company, do you want to be a first mover or a fast follower, and if you're too far behind, I would worry, because I think this is, again, so many proved points in these different industries of how this technology is making a difference.

Data. Data, data, data. We've been talking about data for years, but as you know, the absolute explosion of data, there's more data and information than we know what to do with for the first time. And it's not just the volume of the data; we have amazing -- you know, some of the infrastructure and cloud, back to the point of Moore's, Metcalfe's laws, there's so much we can do today with the volume, but it's also the source and types of data that's become a big challenge for us in how you make sense of that data. And I look at it through two perspectives on some of my experiences. The data supply chain, nothing new, but when you look at collecting the data, organizing the data, analyzing, curating, annotating the data, and then on the demand side, you look at how it's being utilized,

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consumed, and leveraged, and a lot of this is from a business process perspective. As cool as the technology is, from a business perspective, supply chain, finance, HR, it's how are you going to help me reimagine my work process? So that's the other aspect that's very important from the data side. But it's not like we've been sitting around for the last several years; there's a lot of great advancing, analytics, and other capabilities, data, product software from all different types of companies. But the point is with all this collection of data, especially at IoT, it's just cranking out lots of data. How do you make sense of it? And to the second point, I think even a bigger challenge is just how you access the data. I mean, we could talk about the different statistics. Data is doubling every 12 months, 18 months, but one of the important parts of that is looking at how much of that data is accessible. They say over 88% of the data is dark data, invisible data, data that's going to waste because you can't access it. It's data that humanity has encoded in language and unstructured information. And the problem is programable systems can't access it. You have to think like people to be able to access, and that's where AI comes in. Natural language processing, machine learning so you can finally access that data to gain the insight and ultimately the knowledge, because back to my point about this learning error in knowledge, this is all about curating the data and using it so you can understand the patterns and how you can use that in very tangible ways, whether it be business or for social good purposes. So, there's a lot of continued opportunity here. So, if we believe that AI is the engine, data is the rocket fuel to that, now let's talk about AI.

At IBM, we view AI as augmented intelligence. It's this new partnership between man and machine to help you enhance, scale, and accelerate human expertise. If we look fundamentally at the field of AI, it uses neural networks and other techniques to learn from the data in real time, right? It allows machines to draw inferences much like humans do. It can do deductive reasoning, inductive reasoning, and at some point, maybe abductive reasoning in the future. And then you look at these

reasoning engines, and really, fundamentally, at the core of it, it understands the data; it applies reasoning logic to the data to help make conclusions; it learns from the data; systems like Watson, they never forget, so they get smarter and smarter; and then you interact and help you interact in natural language ways. So, there's a lot of power of how we can go from one end of the spectrum to the other. So, in terms of practical uses, you've heard some yesterday, you'll hear some over the next couple days, but we look at language translation; we look at image detection, facial recognition. We consider this narrow AI, because it's a single task and it's in a single domain. Now, if you look in the middle around broad AI, and I have a little comment there. We're here because to now expand AI, we're going to have to look at it differently, and the AI community has several challenges. Some Danny alluded to. The presenter before Danny talked about small datasets and learning from large datasets, and that's one of the challenges. But let me share three other challenges.

The first is explainability of AI, and that's been a hot topic as of late. So, these neural networks are amazing what you can do. But there's more and more need to say, "what happens in these neural networks? How do you collect the data? Where does it come from?" Analyzing, curating the data, pumping it through the algorithms, and then coming up with these decisions. So, part of it's this explainability, so their solutions on the market, at IBM, we released AI Open Sphere, which basically gives you an opportunity to log, and track, and audit what happens in that neural network.

And then you look at other parts of what we're looking at in terms of these neural networks, and the next part is AI is fragile in that if you look at AI, you can, again, amazing what we can do, but you can introduce noise. You could introduce noise in the form of you could fool the system to think the giraffe is a bus. You could fool it to think a stop sign's a different shape of sign that's not stop sign; it could be yield or something else. So, there's a lot of focus on that it's fragile, and then you take it up a level, and you look at these networks themselves, and you have intrusion

in those networks, it's at a much bigger scale. So, security to the core will remain to be a focus for everybody as it should, but that's a big challenge that we'll continue to work on and evolve over time.

And then the last is AI in ethics. And a big part of that discussion is around bias. You heard earlier everyone has a natural bias, right? And when you start to train these systems, it's no different than every day life without some of these AI systems, you have a natural bias. So, when you approve a loan, maybe someone applying to a college or for a job, and maybe the interview is always predisposed to a certain college, but maybe they don't have the right skills. So, there's this whole bias. So we want to be able to have an explainability path to make sure as you make the decisions, understand the decisions, how you reach the explanation, scan for bias, and then detect are there some worrisome outcomes and if so, can we adjust some of the modelling so that we mitigate if not remove the bias. So that's going to continue to be a big focus as we move forward. And then lastly, if you look off to the right, you'll see the 2015 beyond, and that's more the general AI, and we feel we're years away from that, because without getting too much into the details, when you think of understanding and having this knowledge, we're very good at that. These AI systems are great at knowledge. When you start applying the advanced reasoning, that become a little more difficult, to be able to pick up models and go from a single task or single domain into multiple.

So, there's a lot more to be done; we're excited, but we view that as being a little way off. So, let me walk through two quick examples.

The first is Autodesk. I think everyone's familiar with Autodesk, leading software company focused on CAD. And their business challenge was they wanted to accelerate their business model shift to software as

service. So, they now needed to buy 24 by 7 support; they anticipated a significant spike in interest; and they also just had some basic things they wanted to improve like customer service. They've always been top rated in the customer service, but as anybody, they want to continue to evolve and transform. So, we work with them on virtual again; we call it Ava; it's using Watson. And we've been able to draw incredible benefits from this effort. In particular, one of the key things for them was resolution time. We've improved resolution time by 99% to free up their agents to spend more time on the more strategic and other types of problems, and strip away some of the more menial frequently asked questions. They've seen a 10-point improvement in their customer scores. Again, the 99% improvement on response times or resolution times. And as you would expect, they drove down cost.

The next is Woodside. I've had the good the fortune of working with Woodside for over four years now. And we started with their CEO, Peter Coleman, and we were thinking about all the different use cases of AI. And they're a very sophisticated company. They're one the biggest in Australia, based in Perth. And although we came up with all the use cases, their first use case was around lessons learned. Sounds interesting but might not be the one you would think at the top of the list. But the point there is they're in an industry that spends billions if not tens of billion dollars on programs that span potentially decades. They have incredible amounts of data. Thirty years of data, institutional knowledge, and they also have a set of engineers who have an incredible knowledge in their heads, and they want to make sure they tap into that. And so, we, using Watson, built a system, this knowledge management system. It was agile, designed thinking, MVP from ideation to production in four months, and now their engineers have at their fingertips, they can ask it any frequently asked questions. Maybe they're building off-shore platform and

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they have some security or engineering concerns around safety. So, anyone can, at their fingertips, ask any series of questions whether they be frequently asked or longtail type questions. And one of their big business drivers was to produce safety incidents, and they've reduced it by 25%. So, I'd love to have more time; I'm here for the next several hours. I'm happy talk to you offline, but again, it's the art of the doable. This is here today.

For those baseball fans, the Red Sox won this year. There's a lot of singles and doubles. We all want the homerun, but you can do a lot with singles and doubles. And there's a good combination out in the market, but you hear so much about it, some of the points we mentioned. Is there much more to do? Absolutely. But we've accomplished a great deal and I think we've learned a great deal as well. Shifting gears, business is a top priority, but at IBM, we're also, like many other companies, very focused on our social stewardship and our responsibility. And so we've worked on several initiatives. We spend six billion dollars a year on research and development, and we're hyper-focused, whether it be education, providing better healthcare opportunities, or many of the examples you see up here. We all feel we have that responsibility, and we'll continue to do that.

So, there were two quick programs I wanted to just share with you. One was the healer, and that was born out of our IBM research and development facility, and the point of the healer was we had some data scientists; as we always do, we're always thinking about the next thing. And they wanted to figure out how we could better access very difficult communities that are hard to reach via social network, so we kind of built a social network and we wanted to communicate, let's say, homeless youth. They turned out to be a very difficult population to reach. And maybe there's some awareness and education, HIV. So how can we use this technology to reach that community with timely information for their wellbeing?

Another was in Australia, what we call the Australian crisis tracker, and a little different flavor, but the focus there

was the Australian government wanted a better way to dispatch their critical resources after a natural emergency or any emergency. So, they looked at different corpus of information, like Twitter streams, and better analyzed it, understood the patterns so they could better deploy those emergency resources to where it's most needed in the country. And though they just started, they've had some great success. They piloted it on the brush fires in 2013 and '14.

So, I wanted to close with three thoughts for you. The first is we believe we're at another one of those very special moments. Again, this era of learning, this knowledge systems. And with that, we think we all have a tremendous opportunity, each of us, to influence and have an impact not just on business, but society. And then you look at just AI in general. It is not a question of is it going to happen; it's here. It's just how fast is it going to happen. And my experiences, I look at it through three lenses.


I look at it from a geography -- some nations that I've worked with, some countries, they have aging populations. They need to continue to differentiate through innovation and productivity improvements through innovation. So, they have a different purpose. Some industries, if you look at financial services and my experiences, Telco Industrial, like auto companies, they're already very digitally enabled, and there's a lot of opportunities to use this technology today. And then I look back the point about the social good. I think there's a lot of opportunities that continue to work together

Second point, I believe AI will have this transformational impact as the internet did 20 years ago. I think every company, small, medium, large should have an AI strategy. And please, I've seen it too many times, it's not an IT-only exercise; it's a company's exercise, and strategy, and responsibility. If you listen to what you heard yesterday, today, and you'll hear later on, it comes back to this is going to be that transformational. It's not just AI. It's advanced analytics; it's all the pieces; it's data. But if you believe that this AI is making that difference, that data is creating insight, insight's creating knowledge, and that knowledge

ultimately is going to be your IP. Twenty percent of the world's data is searchable via the web. Eighty percent is not. That's your data. If you're a company out here, right, government agencies, businesses, the secret sauce is how do you take the 20% and the 80%, because again, all that data is going to create knowledge. You can monetize it, and that should be viewed as IP. And that's a very different paradigm than you might have been accustomed to in the past. Maybe some you're way ahead of it.

And then lastly, and most importantly for me, is everyone has a role. Everyone has a seat at the table. Again, I've been to the 31 countries, talked to a lot of government agencies, and it's incredible. Everyone does have that general stewardship view that we need to make this world better. And there's a couple different aspects. One is the education and skills. You hear a lot of debate about man versus machine. At IBM, we're very much in the man and machine. We've got lots of examples. And that's important because we want to make sure we, as any company should, our competitors included, we want to make sure that everyone is equipping -- that people today, with the right skills and capabilities to be successful moving forward, and we want to make sure, like others, no one's left behind. The second is when

you look at everything we just talked about the trust and transparency. We want to make sure that we understand how these systems are being trained. We have that responsibility. And related to that, I talked earlier about the bias. We want to make sure that we continue to look at how these systems are not only trained, but what is our responsibility around the ethics of how these systems all come together. So, with that, again, we're all at the table. We all have a responsibility, and our job should be to pave the way for generations to come.

So, my final point behind me, you see the Tom Watson, Jr. quote; he was the son of the founder. He made that statement back in 1960, so well over 50 years ago. And I think those words ring true today as they did back then, and the reason being is, again, it's this partnership between man and machine, where we're maximizing each other for the benefit of society, and I think there's a tremendous way to go, but I think we already have those proof points. Again, the art of the doable, and I think it's just on all of us to continue to pave the way. Because I look at AI as just the next stop. We've had a rich history of evolution of technology over the last several years and decades, and this is just an extra part of the journey. So, with that, thank you very much. 

About the Speaker



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Jay Bellissimo is the Global Managing Partner of IBM Services Cognitive Process Transformation Growth Platform, leading the service lines of Cognitive Process Re-engineering, Cognitive Process Services, and Cognitive Business Decision Support. The Practices he oversees include Watson AI & Data Platform, Advance Analytics, Blockchain, Watson Internet of Things, Watson Health, Talent & Engagement, Process Automation, among others. His primary mission is to fuel growth by deploying competitive market offerings and building a diverse and differentiated talent pool and to continue to amaze and delight our customers. Previously, he was the General Manager and Chief Revenue Officer of the Watson & Cloud Platform. He was responsible for the go-to-market strategy across IBM's core cognitive and cloud-based technologies, including large transformation

engagements, ecosystem/channels, business partners, and major client engagements. Jay's mission was to ensure that both Watson & Cloud Platform offerings resonate with customers and the overall market as they significantly grew market share. Jay has held multiple executive positions, such as General Manager, IBM Cognitive & Watson Solutions, leading the customer engagement and product strategy for IBM's portfolio of cognitive-based solution technologies across 18 industries; General Manager, Customer Experience for IBM Watson, initiating the first wave of cognitive computing commercialization in key industries - healthcare, public sector, financial services - adopted by 36 countries in 5 different languages; Leader of IBM's Global SAP Consulting Business, managing the strategy, sales, client relationships, and operations; Leader

IBM's Global and North America Business Services Communications sector, which included the Media and Entertainment, Telco, and Energy/Utilities industries; and lastly Leader of IBM's Global Business Services in Latin America based in Sao Paulo, Brazil. Jay joined IBM in 1991 from PwC, holding numerous industry management and practice leadership positions, including industry leadership roles in Chemicals & Petroleum, Industrial Products and Aerospace & Defense. Jay is a member of IBM's Performance Team and Acceleration Team, both of which focus on the company's short- and long-term strategies for growth. Jay holds a B.A. in Political Science from St. Michael's College. Jay serves as a member of Board of Trustees at St. Michael's College and on Advisory Board of the Center of Innovation & Entrepreneurship at Claremont McKenna College.