Smart Talks with IBM and Malcom Gladwell – March 2021
Using AI to Rethink the Way Work Gets Done

Intro:

Malcolm Gladwell: Hello everyone, this is *Smart Talks with IBM*, a podcast from Pushkin Industries, iHeartMedia and IBM about what it means to look at today's most challenging problems in a new way. I'm Malcolm Gladwell.

Today I'm chatting with Rob Thomas, Senior Vice President of IBM Cloud and Data where his responsibility is bringing new ideas to life. But despite being on the cutting edge of these technologies, he still has an appreciation for age old problems.

Rob Thomas: There's a rabbit and a beaver, and they're staring at the Hoover Dam and the beaver says to the rabbit, "No, I didn't build it, but it's based on an idea of mine." And the point of that story is, you know, ideas are a dime a dozen.

Malcolm Gladwell: Yeah. That's sort of a great story.

Rob Thomas: Everybody's got a bunch of ideas.

Malcolm Gladwell: Yeah. By the way, we're too quick to dismiss the beaver. He's right. Have you seen beaver dams? I mean.

Rob Thomas: I know – he is right. It was his idea, but he had nothing to do with the giant cement Hoover Dam.

Malcolm Gladwell: That's right.

Malcolm Gladwell: In my interview with Rob, we'll touch on the importance of the cloud during the pandemic, and how IBM has been playing a part in vaccine distribution. Stay tuned.

Episode:

Malcolm Gladwell: I, for one, had no idea about what it means to be the Senior Vice President of IBM Cloud and Data, so I asked Rob to break it down for me in layman's terms.

Rob Thomas: We build software and software is the lingua franca of our time. Anything that will get done in businesses, and even interaction with consumers, is going to be done with software. It's really the language of everything that's happening in the world. That's what we build. We are focused on doing that for businesses.

Malcolm Gladwell: So how, how long have you been at IBM?

Rob Thomas: Twenty years, or twenty-one I guess, to be precise. And I started in consulting and then I moved into our semiconductor business and I was doing consulting. And the moment that really changed my whole career was doing work with Nintendo, where we were designing the microprocessor for the Nintendo Wii and I realized - we're going to do this one time, but then they're going to be building software that will get copied billions of times and used by people all over the world. Maybe I'm not in the right business. And that really piqued my curiosity around software, which then led me to move into the IBM software business where I've been for most of my career at this point. So, I've been in software a total of 12, 13 years.

Malcolm Gladwell: But you have seen, I'm guessing...so, 12 years in software. Am I right in thinking that more has happened in those 12 years of software than happened in the entire history of software before that? Is that a fair statement? Close?

Rob Thomas: I'd say close. It certainly - the rate and pace of innovation has increased. Now, has actually something, has there been an outcome? Maybe that's a different question. But if you think about, you know, software dates, way back to even the first mainframe that we ever built in the ‘50s. So, a lot of good things have been happening in software for a long time. But the rate and pace is a level that we've never seen. And that certainly has been what has accelerated in the last decade.

Malcolm Gladwell: Yeah. I mean, I remember, my dad was a mathematician at the University of Waterloo. I remember coming home as a kid, going into his office and seeing stacks of computer cards. So, in my lifetime, I have gone from looking at stacks of computer cards to something far more. So, I mean, I am aware of just how fast this, uh, this, this pace has gone.

Rob Thomas: And it'll be different a year from now, right? That's how fast this is moving.

Malcolm Gladwell: Let's zero in on that a little bit. Um, what's, what's shifting right now? Imagine I'm a client and I come to you and I say, you know, “I want to be prepared for next year and the year after next. What should be at the top of my mind?”

Rob Thomas: Let me give you a quick story if you don’t mind. There was a time in the U.S. where you could not easily get from one city to another. And at that point, back in the 1950s, there was a decision that said, “Let's actually build the infrastructure to connect every city in America.” And the result was 50 plus years of work, $400 billion, and we now have 48,000 miles of highways that connects all these cities. But the real impact is more profound than that, because you were able to eliminate traffic at intersections by building overpasses. There are all these second-order businesses that

were built - hotels, gas stations, the salty snacks that you buy in a gas station, fast food, rest areas. So, an entire economy was built around the idea that the first step was just to connect all the cities in the U.S. And that's what's happening right now with software. It is connecting businesses and individuals in a way that we've never been connected before. And we are just at the beginning of all the second-order effects that will come as a result of that. And the biggest problem in software is data. Just like you had all these disparate cities, and you were building highways to connect those cities; every company has all these different data sets all over the place. And it's a really hard problem. But AI is not going to be a reality for businesses until the data problem is solved. That's one thing that I spend a lot of time on right now.

Malcolm Gladwell: Dig, dig in for a moment that, into the meaning of that phrase, “the data problem.”

Rob Thomas: I think every individual wants any company they interact with - whether it's their local bank or a restaurant, or the local cleaners, whatever it may be - they want that business to know them. It's the whole idea of when you had towns, where there was just one general store, and the owner knew you; they knew what you wanted. I think everybody wants that level of engagement, and that is what software enables, and the basis of that is data. And the biggest problem every business faces today is, “How do I understand my data, what it tells me about my customers, what it tells me about my products?” So, this is fundamentally about, how do we live in a better way?

Malcolm Gladwell: You’re talking about that, I'm a big company and I have different sets of data and they're all in different places and they don't speak to each other and I can't combine them and make sense of, is that what you mean by the data problem.

Rob Thomas: Correct. And even if I can combine them and connect them, the data is not in a usable form. You know, one, one data says M. Gladwell. The other one says, Malcolm G. Is that the same person? Maybe, maybe not. It's really hard because these systems have been built up over time. We do work with a company called Wunderman Thompson. Story that they shared with me just this month was doing work with Peloton. So, Peloton collects a lot of data, what you call first-party data, from a bike or the tread - I think you're a runner, if I recall. And WPP Wunderman Thompson has all this third-party data, which is, what do they know about consumers? So just to connect those two data sets, build predictive models, and then to turn that into an advertising campaign - the AI part is actually relatively easy. It's actually connecting the data, rationalizing the data, cleaning the data. That's the really hard part that nobody talks about because all we ever see is, you know, the outcome.

Malcolm Gladwell: Yeah. Wait, just so I understand this, this is super interesting. So, let's imagine you, Rob, are a Peloton user. And so, we have a data stream that comes from the bike, which says that you bike - let's just say for the, I'm going to flatter you - an hour and a half a day at some insane pace.

Rob Thomas: Neither of which are true but keep going. I did do a half hour today, but it was a very slow pace, I gotta tell you.

Malcolm Gladwell: But so, and I'm looking at your – whatever it is I'm collecting - I'm assuming Peloton collects a lot of, sort of physiological and use data from the bike. And from that, we can generate a rough sense of who you are, what your athletic interests are, how fit you are, all those kinds of things. And Wunderman's old shop wants to know: how can I use that picture of the kind of athlete you are to help bring you the kinds of ad messages that you'll respond to? Is that a fair...Is that the problem?

Rob Thomas: It could be bringing it to me, but it's more likely – 'cause obviously they de-anonymize all this data - it's more of, "Alright, so how do we find somebody else that's like Rob? What are the attributes of that person? And then how do we relate to them in a way that makes it feel like we're talking to them as opposed to talking to a cohort or a group?" The number one prediction that most companies want to make is, what's going to happen to my sales next month or the month after or the month after? And what we found is that tends to be a product of as many as 50 or 100 different inputs. How many people are visiting the website? How many people are calling the call center? How many sales calls - if I have a face-to-face sales force - are they making? How many marketing campaigns am I running? If you take all of these different data points, which is often 50 or 100, you feed those into a model. Then the first month you see, how close was the model? Then you adjust. The second month; you see, how close was the model? And these models get really good over time. And we think we can help companies predict their financial performance in a month, in a quarter, in a year, based on all these different data sources, all these different inputs. That's pretty valuable to, I'd say, every company.

Malcolm Gladwell: So, IBM, what's IBM's role in that? You've described that problem to me. You guys come in and you say, we'll do what?

Rob Thomas: A couple of years ago, I was trying to think about, what is the right metaphor so that I can educate our customers on this and built this concept that I call "The AI Ladder." So, think of it as steps that you take up a ladder towards AI. The bottom rung is "collect" data. So, you have to be able to collect all your data. I'll use a library analogy. This is just, you have to get books. You have to get books into the

library. That's collecting. Next is, you have to organize that data. And the, now back to the library analogy, that's the card catalog. So where are all the different data sets? I might have five copies of the same data. How do I know that's the same copy? Maybe one's checked out. Maybe one's on microfilm. These are actually all problems that exist in businesses.

So, you've got to collect data, you've got to organize data, then you have to analyze the data. So, you're actually starting to do data science, machine learning. In the library metaphor, that's where you're displaying your bestseller list, or you're displaying, you know, popular magazine titles. And then the top of the ladder is what I call “infuse.” So then, how do you take those models and infuse them into a business process? So, it's those four steps of the ladder: you have to collect, organize, analyze, infuse. We build software that helps customers with each of the rungs of that ladder; helps them do the collection. We actually build what we call a data catalog to help you organize your data. So, we help them with all rungs of that ladder, because ultimately then, you've probably heard of IBM Watson. That is our AI platform. Once you’ve done those things, you can use AI and get really great outcomes.

Malcolm Gladwell: Imagine if someone from the White House came to you and said, “We're about to do something we've never done in this, or haven't done in this country for 70 years, which is try and vaccinate everybody in the shortest possible time. We have multiple sets of three, and eventually probably four or five different kinds of vaccines, being administered by tens of thousands of local municipalities, to people who have a wide-ranging set of risk factors, urgency, pre-existing conditions, go on and on and on and on and on. Can you help us do this as efficiently and cost effectively and socially consciously as possible?” Is that a kind of task that you're talking about?

Rob Thomas: Now that is, in part, as much a logistics problem as it is a data problem. Let me describe to you one of the data problems though that exist around this because we're doing the work with CVS on the COVID vaccine rollout.

Malcolm Gladwell: Oh, you're in the middle of this.

Rob Thomas: Yes. And so, if you're CVS where you're actually administering, their biggest problem is, everybody has a question. CVS can't hire enough people to answer the 10 questions you have, the 10 questions I have, the 20 questions your cousin has. They came to us and said, “Can we use AI to respond to all the inquiries we're getting and actually help route people to where they can figure out if they can get the vaccine, when they're eligible?” So, we built an AI agent for them that is now dealing with the vaccine rollout every day. That starts with data. They have a place that they store data about different questions. We've got models that we have trained on language,

meaning, we can understand different types of questions - what's really inferred versus implied, versus what is stated. That's a real data problem. That's where we've spent the majority of our time looking at this current situation.

Malcolm Gladwell: Yeah. So, you would, when you say it's a data problem, meaning that you started by trying to anticipate, by looking at the data and using that - to try and anticipate all the possible questions that someone might ask. Is that what you mean?

Rob Thomas: Correct. Yes. And then training a machine learning model based on those inputs, so that when the question was asked, we had a high probability of giving the right answer.

Malcolm Gladwell: Yeah. How long did it take you to build that system?

Rob Thomas: Now, this is the wonders of modern software, to your question on acceleration. We did this in 45 days.

Malcolm Gladwell: Are you serious?

Rob Thomas: Yeah.

Malcolm Gladwell: That's insane. How, how many people worked on it?

Rob Thomas: 25, 30, somewhere in that realm. It's not a huge group.

Malcolm Gladwell: Wow.

Rob Thomas: The other thing about systems like this is, you hope it's really good on day one, but you know for sure it's going to be better on day 10. It's going to be better again on day 20. These are learning systems. They do get better over time.

And the thing is with, with the really difficult problems, and this is, this is why I like to talk about AI as giving humans superpowers. Most people want to say it replaces humans; I actually think it gives them superpowers, ‘cause in these cases, you start to move the harder problems to the humans. And so therefore your, your customer satisfaction goes up because people are getting their problems resolved. Would you ever get to a 100%? Probably not, because there's always going to be something that's too difficult for the AI to handle, but I think you can keep moving it up for sure.

Malcolm Gladwell: Yeah. Or maybe given what you've just said, would it be more fair to say you don't want to get to a hundred, that you want to reserve a certain category of problem for a human-to-human interaction, because that might be ultimately more satisfying to the questioner?

Rob Thomas: We have that discussion a lot. And certainly, in the ones that I've worked on, that's, that's typically the case, because let's not forget - these are businesses. And the goal of most businesses is to sell something. So sometimes the best way to sell something is to really help somebody with their problem and then show them how your other product can make their life even easier.

Malcolm Gladwell: When you think back in the cases that you have, kind of problems that, that your group has been asked to solve at IBM over the last couple of years, what was the hardest?

Rob Thomas: I don't know that I could name a single thing that's harder than others. The ones that are the most time consuming, things like regulatory compliance. If you're a bank, you've got a lot of different regulations that you have to live up to, and it's easy to help build AI that can make loan decisions - yes or no, good idea, bad idea, eliminate bias from that decision. That's very doable. Am I compliant with the regulations of where that individual is based because they're in a ZIP code or they're in a state, they're in a country - those problems get really difficult, because you're kind of connecting, you know, reams of legality to a day-to-day business process. Those get, those get really difficult.

Malcolm Gladwell: Has any customer ever come to you with a problem that you guys said, “We can't solve that?”

Rob Thomas: We are way too curious to ever give up that easily. It's more of, you know, it's the, it's the cheap, fast and good triangle if you've heard that, you know. You only get two of those. Do you want it cheap and fast? It's probably not good. If you want a good and fast, it's probably not cheap. If you want it cheap and good, it's probably not fast. I think all of these situations come down to that triangle.

Malcolm Gladwell: So, you have a group of people who work on these kinds of problems and I'm curious, what do you look for when you're bringing someone onto that team? Is there a set of skills associated with dealing with this area of the application of AI to these very complicated data fields? Is there a specific set of skills that are crucial and rare, hard to find?

Rob Thomas: The skill that's easy to test for is, do you have the technical ability? Do you understand Python? Do you understand machine learning? You can kind of see from somebody's body of work and what they've studied, do they have that skill. The part where it gets harder is the empathy question. Can you actually understand a situation, understand a user and empathize with what they're trying to do, such that you're not just building a model for a robot, you're actually building this for a human on

some end. That one's hard, harder to test for. And then the third one is, I would just call it curiosity. How widely read is somebody? Do they understand business, business problems? Because those kind of softer skills, those make a huge difference when you're solving these kinds of problems. So, it's easy to test for the first. The other two are a little harder to test for, and the best data scientists in the world have all three of those.

Malcolm Gladwell: Let's, let's talk about, um, the cloud. I see this word “hybrid cloud” and I don't know what it means. So, can you start by telling me what it means and then fit this into the conversation we've been having

Rob Thomas: So, any company that's been around for more than three years, maybe five, they've got somewhere that they keep their data, and they keep the different technology that they have. And in many cases, that's in their office or that's in a data center, right, right near their office. They've also started over time to start to build new data sets or new software in a public cloud, something for, you know, something inside of IBM Cloud or Amazon Web Services or Microsoft Azure. The minute that you have more than one environment, you have a hybrid cloud, whether you know it or not. So, think of it as, I've got data sets in multiple places, to kind of, back to the U.S. highway example, or I've got software applications in multiple places; you have to get that to act like a single technology environment. That is the essence of hybrid cloud, which is, I can manage that as a single environment - the average company now has five different environments, cloud-wise. It acts like one, I can connect the data sets...

Malcolm Gladwell: Wait – five? The average company has - is that by, by design, because they feel it's safer? Or is that just because, the hodgepodge nature in which we grow our IT needs means that we end up being all over the place?

Rob Thomas: It's because there's a lot of people that work in every company, and everybody wants their own thing. That's how it happens. So, this department started in their own data center. This department started on IBM Cloud. This department wanted a CRM system from Salesforce. This department wanted to use Azure. It's human nature. People just go do what they want to do. And you wake up one day and you realize, “Hey, we've got a lot of different cloud environments.” And so, if you're storing your customer data with Salesforce, and you've got these three other environments, how do you get the customer data to inform, you know, what you're doing in the other parts of your business? That's a hybrid cloud problem.

Malcolm Gladwell: Yeah. And how, how hard of a problem is that? I mean, as a total naive outsider, I would have said, “Oh, surely all these cloud businesses would have

made it really easy to share stuff in one place with stuff you've got in other places." Is that not true?

Rob Thomas: Unfortunately, the opposite is true, because for the pure play public cloud providers, the incentive was actually the opposite. It's Hotel California for them - you can bring your stuff in, but you know - you, you can check in, but we'll never let you check out. And they charge actually enormous fees if you want to get your data out. So, it's a bit of a strategy tax for them to make it easy. It's also a hard problem, just because you're trying to connect different data sets. Do you have one card catalog that connects all these different sources? It's actually not easy to do. And what happens when you don't do that, then you end up rebuilding everything. And so suddenly you're storing all the same data five times; that gets very expensive.

Malcolm Gladwell: So, let's imagine we're having this conversation in 2026. Give me your sense of where we'll be. What would we be talking about five years from now?

Rob Thomas: We'll probably be having very similar discussions – it's possible. Technology will be more advanced, but a lot of the problems we've talked about, let's be honest - these have been around for, for quite a while. There's a story - this guy, Charles Townes. He was the inventor of the laser. And he tells this story, there's a rabbit and a beaver, and they're staring at the Hoover Dam. And the beaver says to the rabbit, "No, I didn't build it, but it's based on an idea of mind." And the point of that story is, ideas are a dime a dozen.

Malcolm Gladwell: Yeah. That's sort of a great story.

Rob Thomas: Everybody's got a bunch of ideas.

Malcolm Gladwell: Yeah. By the way, we're too quick to dismiss the beaver. He's right! But - have you seen beaver dams? I mean...

Rob Thomas: I know. He is right. It was his idea, but he had nothing to do with the giant cement Hoover Dam.

Malcolm Gladwell: That's right.

Rob Thomas: The reason I share that story is, a lot of people have ideas now about what they can do. But what's going to make a difference five years from now is, what do you go try and do? And I encourage companies that, you've gotta be willing to have a pretty high failure rate, knowing that if you go try a bunch of things, you know, maybe only half of them will work out. I mean, if I look at AI today, so there's five major things I see companies doing generally successfully: it's customer service - we talked about that; it's financial budgeting; it's regulatory compliance - we talked about that, that

one's a little harder; it's employee experience, hiring, that type of thing; and it's using AI to run their IT systems; so, using software to run the systems. Those are the five big things today. I actually think those five things will still be the topic in 2026, but we'll be a lot more advanced on each of those, because today it's a little bit, we're doing it for the first time, whereas we'll be much more advanced. As we get out to 2026, I do think quantum computing will be commercialized at that point. That's pretty revolutionary. So more to come on that one.

Malcolm Gladwell: Let's end on some more case studies. Tell me a couple of examples of people you've worked with, where the outcome is, was really exciting or, or unexpected, or...

Rob Thomas: We've worked with Sprint T-Mobile. They have this classic problem of, they've got to do aftermarket service for all the different telecom equipment that they sell. And the data that they have on those different systems, the warranty, when they were built, how they're running - it's spread across a thousand different data sources. We were able to build an AI system for them that sits across those systems that was able to intelligently route how they do all of their aftermarket service. So, do you and I feel that in our day-to-day life? Well, we'd, we feel it if they don't fix things. Then it's obvious, 'cause there's an outage or something that doesn't work. But it was something that - they had so much data on this, they could have never done this by, I'd say, a typical approach. So, these are the kinds of things that the average consumer doesn't see every day, but they do make a difference in our life.

Malcolm Gladwell: And you're talking about things like - what, like, cell towers, or...

Rob Thomas: Yeah. It could be cell towers, or it could be, you know, the power cable - not the power cable, the power box that's sitting next to the cell tower. It could be any of those things.

Malcolm Gladwell: Oh, I see. So, they have all of these systems that might've been bought at different times, made by different people, installed by different people. And so, what you want to do is to give them a system that allows them to look at them all in real time and figure out where there might be an issue.

Rob Thomas: Yes. We call it predictive maintenance. Right? "Okay, all the signs are that there's about to be a problem on this one." They go out there, they check it out. Yep, lo and behold, there is a problem.

Malcolm Gladwell: Yeah. I have two cars. Can you build one for me? So, I can...

Rob Thomas: We haven't scaled down to that level quite yet but stay tuned. We're open to it.

Malcolm Gladwell: Why not? Why are you neglecting - I'm the ultimate end user. I'm one guy with two cars.

Rob Thomas: It's a good question. We'll bring it to you soon.

Malcolm Gladwell: Wait, have any, um, have any professional sports teams worked with you guys?

Rob Thomas: Toronto Raptors. There was a decent bit of publicity on that a few years ago.

Malcolm Gladwell: You're you're, you're - I'm Canadian! This is - that's my team! You're warming my heart right now. Of course.

Malcolm Gladwell: Um, well this has been really fun. Um, thank you so much.

Rob Thomas: Yeah, Malcolm, appreciate it.

Malcolm Gladwell: I'd love to help out the Toronto Raptors if I had the chance. Thanks again to Rob Thomas for an intriguing conversation about data and the cloud.

Smart Talks with IBM is produced by Emily Rostek with Carly Migliori. Edited by Karen Shakerdge. Engineering by Martin Gonzalez. Mixed and mastered by Jason Gambrell. Music by Gramoscope.

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I'm Malcolm Gladwell. See you next time.