THE ENDLESS OPPORTUNITY OF INNOVATION AND MACHINE LEARNING

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INTRODUCTION

Rob Alexander joined Capital One in 1998, three years after the bank was founded. He served in a number of leadership roles in the company's credit card and banking businesses. In 2007, after directing the effort to overhaul the systems and infrastructure underlying Capital One's credit card business, he became chief information officer.

WHAT ROLE IS MACHINE LEARNING PLAYING IN YOUR BUSINESS MODEL?

Central to our AI strategy — and what motivates us — is the recognition that technology is driving a revolution in just about every industry around us. You don't have to look far to see evidence of that. The winners in banking are going to be organizations that are really great at technology — building software, creating digital experiences, leveraging data and analytics, making machine learning and AI deliver a great customer experience.

HOW DOES SUCH A BIG SHIFT TO AUTOMATION START?

It starts with some of the obvious things you hear folks talking about when it comes to machine learning — fraud detection, credit risk and cybersecurity. You want to be able to approve as many transactions as you can by making sure you only identify fraud when it's really very likely to happen. You want to get better at distinguishing credit risk and lending the right amount of money to the right people at the right time. Cybersecurity is a place where there is an enormous opportunity to apply machine learning and AI. The threats are constantly evolving and very sophisticated. AI increases your ability to protect customer data and to enhance the security-related experiences of your customers.

Many of those decisions are being made by opaque, black-box neural networks that don't explain how an output was reached. Is managing this hidden quality a factor in your approach to AI?

We're focused on building capabilities around what we call explainable AI. We think it's important to have models that aren't just black-box models but ones that enable us to understand why deep learning and neural net models are making the decisions they're making. We're also very conscious of the ethical issues associated with the application of machine learning. Financial services can help people achieve their dreams, but when it's done poorly, an institution can get in the way of someone's dreams. We take that responsibility very seriously.

HOW IS MACHINE LEARNING HELPING YOU DEEPEN THE CUSTOMER EXPERIENCE?

We're able to see things that look unusual and send a customer a notification in the moment. For example, we built a first-of-its-kind spending tool called Second Look, which uses machine learning to alert customers about unusual spending patterns — double charges, a repeating charge that is higher than last month, or a tip higher than a customer's norm. Second Look has saved customers millions of dollars in unwanted charges. This is AI that tells our customers we're looking out for them, we've got their back. We believe banking should be more integrated into customers' lives and meet them in a way that is accurate, relevant and timely. Our goal is to bring greater humanity and simplicity to banking. Toward that end, we launched Eno and our Alexa skill on Amazon Echo — our text-based intelligent assistant and our voice experience, respectively.

WHAT ROLE DOES THE CLOUD PLAY IN INNOVATION AT THE COMPANY?

As early as 2012 we had developers who were using the cloud and evangelizing its use. In 2015, we declared ourselves a cloud-first organization, meaning all new development will be built on the cloud and our legacy applications will migrate to the cloud. The move has been resoundingly embraced by our organization; it's the key to our ability to move quickly and attract great talent — and it has differentiated us from what other financial services institutions are doing. We control our environment better; we move with speed and agility and flexibility. As the cloud infrastructure evolves, we can evolve with it, and we think that's really powerful.

AGILE IS A KEY INGREDIENT. HOW DID YOU BECOME AGILE?

We realized in 2010 that we needed a technology delivery model that was suited to how the world and consumers were changing — a faster cycle time on developing new products and capabilities that fit with the digital age. We accomplished that by having people around the table working together, physically present, with the business customer embedded in that process. You get very granular connections of technology to the business when you have an agile team that might consist of several engineers, a scrum master and a product owner who is a businessperson. You can see the power of iterating rapidly, through two-week sprints with deliverables, and human-centered design incorporated into the process. All of this leads to better, faster customer innovation.

SPEAKING OF TALENT, WHAT DREW YOU TO CAPITAL ONE?

I was drawn to the people and the culture, with its core strategy around data and analytics — the scientific method of testing and learning as a way to build a better business model. After school, I spent four years in the Air Force, where I worked on the development of missile systems. One project was upgrading our command-and-control platforms for our nation's ICBM force. You had to understand the requirements and how to upgrade what was 1960s technology. Then I went back to business school and worked as a consultant. But I really wanted to join an organization where I could be part of a team and have an impact.

WHAT IS THE KEY ELEMENT FOR A BUSINESS AIMING TO MOVE FIRMLY INTO THE DIGITAL AND MACHINE LEARNING AGE?

There's an almost endless opportunity to leverage more data and to make more-informed decisions, with better context, and give each customer a differentiated experience. In many cases, you can even rethink and redesign the experience based on intelligence in ways that were not anticipated. The biggest challenge for any institution trying to drive digital transformation is getting to the point where you have a critical mass of digital and engineering talent that allows you to attract more of that talent. To do that you need to think about your technology operating model — the way you build technology that's inclusive of the platforms you build, the technologies you use, the processes involved, the speed at which you work, the productivity tools you allow associates to use. All of these things wrap around creating an attractive place where talented people want to work. You also need to think about your underlying data ecosystem. You can hire data scientists, and they can come up with a cool model, but unless you have a whole data ecosystem upon which you can work, you can't really take advantage of the talent and technology. We are very much about building that data foundation that will support that leap into the kind of next era of machine learning and AI.