

CHECK AGAINST DELIVERY

Beyond Digital: How Cognitive, Blockchain, and FinTechs are Transforming Banking – Dino Trevisani, President, IBM Canada June 1, 2017

Good evening! Thanks for the introduction, Michael. It is great to be here with you today to talk about the profound transformation that is happening in financial services here in Canada and around the world.

I have been watching this industry closely throughout my 30-year career with IBM where I spent the majority of my career leading IBM's banking industry, working with financial institutions from regional banks to the largest of the international banks. I worked with Citigroup after the financial crisis for six years working closely with their management team to help transform the bank to a competitive digital global bank.

I have experienced the consolidation, contraction and financial crisis of 2007/8. All of which had technology as the core to the transformation and revitalization of the banking sector. IBM Canada is the largest technology company in Canada [and I'm proud to say we're the oldest too – celebrating 100 years this year!] with a dominant share of the market mostly due to our valued business relationships in the Canadian banking sector.

Yet, while I've experienced a huge amount of change within the financial services industry in North America over the years, it's unlike anything that's before us right now.

Today, the financial services industry is being pressured by historic changes in the market:

- The pressure and cost of compliance and new regulation
- The disruptive impact of technology, which enables agile, focused new entrants to innovate more freely without the constraints of legacy process and systems
- The changing demands of new generations of consumers who want experiences and instant fulfillment from their banks as they've become accustomed to uber-type service
- And, of course, there is the growing threat and impact of cyber security.

Here in Canada the banks are also pressured by their legacy technology and their constant drive to improve the efficiency of their back-office operations. Cost efficiency ratios are continually being challenged as new entrants and aggressive institutions redefine cost structures to operate.

At the same time, banks are confronted with an ever-expanding deluge of data that might help address these challenges. However, given the constraints of traditional algorithm-based analytics and the antiquated data structures from multiple lines of business, banks have been generally unable to exploit maximum value from data.

There are hundreds of billions of transactions in the world each year. Despite the explosive growth of information across all industries, **less than 1% of the world's data is currently analyzed.**

All of this paints a pretty daunting reality. But rather than create anxiety, I believe this is a moment of unprecedented hope and opportunity – if we seize it.

Many describe that opportunity as “becoming digital” – but that’s just not sufficient.

Think about it. When every bank is a digital bank, with highly automated processes and expanded channels... that engages their customers “mobile first” ...who wins?

The fact is, “digital” is not the destination. Rather, it is the foundation for something much more profound. We stand at the dawn of a new era, in which digital *business* meets a new form of digital *intelligence*. **This is what we call cognitive business – and its most well-known avatar is IBM’s cognitive system: Watson.**

Cognitive is the most disruptive trend ... it will go on for decades ... and it’s all in front of you. It will be about both technology choices and business model choices – both at the same time.

There are 3 reasons why I am so optimistic about this new era...

1. The digital foundation you are building is about to become even more powerful
2. The future of competitive advantage will be cognitive
3. The financial services industry will lead the world into the cognitive era

First, let’s talk about why your digital foundation is about to become even more powerful.

Today, every financial services company – in fact, every company in every industry – is building a digital foundation for their business. IBM has thousands of these engagements underway – including many in Canada – shaped by these realities of business today:

1. **The most powerful, differentiated applications that businesses want to build will be data-rich, analytically-powered and, inevitably, cognitive.**
2. **Another reality: Hybrid is not a choice. It’s a necessary part of the process of moving business to the cloud.** It’s a reality due to: business complexities... regulatory requirements... privacy and security... investment priorities.
 - Industry clouds by vertical are inevitable, and we are building them at IBM. And of course there are cross-industry applications. The processes, workflows, ecosystems, regulatory environment – if you don’t understand those realities, then your cloud will have limited value. This requires deep process knowledge, deep expertise and trust. And clouds must be built on open standards.
3. **The third reality: Security is a Big Data problem.** Enterprises can no longer protect themselves with moats and walls. You need a range of sophisticated analytics – more and more including Artificial Intelligence – to help detect and protect against cyber threats, which are only growing in severity and frequency. And then there’s the future threat that the power of quantum computing will hold for our classical platforms.

Digital platforms will continue to foster and incorporate innovations. One in particular is now front and centre across the financial industry.

These days, we're talking to clients more and more about **blockchain**. And with good reason. This is a technology that, when widely adopted, enables a vastly more efficient and trusted exchange of goods, services and information. It removes duplication while increasing security and efficiency.

Although most people first heard about blockchain through Bitcoin, we all now understand that its impact goes far beyond just an anonymous cyber currency. Indeed, it's even broader than financial services. In any sphere of business or society where transactions occur – from supply chains, to government, to retail, to real estate and beyond – **blockchain will change the way the world works**.

The benefits can be immense. **We estimate that the application of blockchain to global supply chains alone would result in more than \$100 billion in efficiencies.** Add improvements in provenance and traceability of pharmaceuticals and food... as well as greater efficiencies in trade finance, continuous tracking of goods, equipment and assets, anti-money laundering...and the list goes on.

The value that can be created with blockchain runs into the *hundreds* of billions. And its potential goes far beyond – **building trust globally at a time when we really need trust**.

In fact, I believe that **blockchain will do for trusted transactions what the Internet did for information...**but only with some key principles in place:

- Just as with the Internet, we must have clear governance and transparency on standards and the underlying fabric.
- The “blocks” – that is, the transactions – must be immutable. They can never be deleted or changed, and they must allow for provenance. Some have disagreed – but immutability is core to blockchain's ability to deepen trust.
- Only “permissioned” parties can transact on the blockchain.

And this is why we are...

1. Working to ensure blockchain technology is open, secure and scalable. This is why we endorse the approach that the Linux Foundation is taking with the Hyperledger Fabric, of which we are a founder and leading contributor. The project started with our commitment of 44k lines of code and 17 founding members and it continues to grow. Just as TCP/IP and HTML emerged from the efforts of international consortia, we expect the underlying fabrics for blockchain will emerge from Hyperledger.

2. We're building a complete Blockchain platform: It includes DevOps, identity, consensus and smart contract services built on the Hyperledger Fabric. We've engineered this to run on multiple platforms, and we've optimized it for scale, security and resilience on both the mainframe and the IBM Cloud.

3. We're offering solution building blocks plus expertise to accelerate adoption: For our large enterprise clients we are helping them discover how to connect enterprise apps to blockchain. We've stood up six blockchain garages around the world to bring deep technical and industry expertise to help them build blockchains internally and externally. **In our Toronto garage, we've partnered with the DMZ at Ryerson where we bring together start-ups and large enterprise to deliver innovation with our clients using a design thinking framework.**

We have worked with 300+ clients to pioneer blockchain for business, and have completed some significant milestones. Here are a few...

- **FX Settlement:** CLS [which is owned by the world's leading FX banks] is working with IBM to implement a distributed ledger in support of CLSnet. This standardized, automated, bilateral payment netting service is a major step forward to deliver efficiencies, manage risk and improve liquidity in the world's currency markets. Enabling access via distributed ledger is a transformational change that will have far reaching impact to ensure the safety, soundness and resilience of the world's currency markets – where CLS already settles \$5 trillion USD daily.
- **Smart Contracts:** Bank of Tokyo Mitsubishi UFJ, the largest bank in Japan, created a prototype for using smart contracts via blockchain to manage service level agreements and automate multi-party business transactions, including contract management, invoicing and payment processing, and will begin using it to do business with IBM next year.
- **Identity Management:** Perhaps the most intriguing of blockchain announcements to date is **IBM's partnership with SecureKey and seven Canadian Banks** to deliver a digital identity network based on IBM Blockchain. This Canadian digital identity ecosystem - which also includes telcos and government agencies - will tackle some of the toughest issues around identity. This will change the way consumers verify who they are while doing so in a secure, private and efficient way.

And it does not stop here. Trade finance, global trade, supply chains, perishable goods, loyalty programs, digital currency settlement – I could go on – where we are actively working with large global firms looking for competitive advantages through blockchain.

So it's clear: Blockchain will become an important capability in every digital platform [while revolutionizing the world economy and transforming business, government, and society in profound ways!] But if every company and institution is investing in similar capabilities, how will they differentiate?

That brings me to my second proposition to you:

The future of competitive advantage will be cognitive

Competitive advantage in the future, as in the past, will go to those who are best able to extract insight from the key natural resource of their age. **In our time, that resource is data.**

We all know about “Big Data” – but this is about much more than volume. It is most importantly about variety and velocity. **More than 80 percent of the world's data is “unstructured”:** video, audio, sensor outputs and everything we encode in language, from tweets to instruction manuals to the log files of your computers.

This unstructured data is where the deepest insights lie. The problem is that it is “dark” to traditional computer systems. They can capture, move and store it, but they cannot tell you what it means. Fortunately, however, we now have something that can.

The technologies usually referred to as artificial intelligence have made exponential advances in recent years. In fact, this category is broader than AI. It includes deep learning, neural nets, natural language processing, human-computer interaction and more. These technologies have made as much progress in the past five years as programmable technologies have in the past half-century.

Cognitive systems can ingest all data – both structured and unstructured. They can understand it. They can absorb domain expertise, from any field or profession or industry. They can reason over it and form hypotheses. **And importantly, they are not just programmed – they learn. In fact, they never stop learning.**

The emergence of cognitive systems is happening not a minute too soon. The fact is, we desperately need systems that learn.

Think of the challenges and issues we face today: anticipating consumer behaviour... ensuring public safety... managing traffic... optimizing global supply chains... treating chronic diseases... preventing pandemics.

And, of course, trying to understand economies and global financial markets in all their complexity and volatility.

Our world today is a system of complex systems. All are increasingly digitized. All are interconnected. And the reality is that we cannot create protocols, algorithms or software code that could successfully anticipate all their permutations, trajectories and interactions.

The result is that we face much more than “information overload.” It’s *cognitive overload* – an exponential increase in the complexity and speed of decision making.

Fortunately, we now have the first technology in human history that actually improves with use. It learns from training by experts, from every interaction, from continually ingesting data and from its own successes and failures.

That’s exciting enough. But now consider that thanks to the “API economy,” any kind of product, process or function can be infused with cognitive capabilities – which can be easily accessed and combined in new ways on the cloud.

This means we can literally build a kind of thinking into every digital application, product and system. And because we can, we will. *If it’s digital today, it will be cognitive tomorrow.* And this will not be a distant tomorrow. **It is estimated that more than 50 percent of apps developed will embed some kind of cognition by 2018, versus 1 percent today.**

Within the next two years, it is expected that half of all consumers will interact with cognitive technology on a regular basis.

Every profession in every industry in every part of the world will be impacted.

We now have access to a wealth of new data, knowledge, insights and tools....that can help make our world healthier, safer, more productive, more creative and fairer.

With Watson:

- Doctors anywhere can know the latest advances everywhere
- Veterinarians can now be an expert on every breed - Lifelearn
- Pipeline engineers can anticipate failures before they happen
- Lawyers spend less time on research and more time with clients - Ross
- Tax preparers can find hidden credits – H&R Block
- Educators can adapt to every student's learning style and need – Sesame Street

- **In Canada, Watson is learning to think like a geologist** – helping Goldcorp make more informed exploration decisions to improve the probability of discovery. First in the world.
- And here in Toronto, **we're working with the Raptors to help them transform their talent evaluation processes** via a comprehensive platform to view, organize and surface relevant data important in evaluating individual and team performance. Included in this is a **tone analyzer** that evaluates an athlete's social presence to better understand the person behind the tweets.

The basis of competition is being reset. In fact, I will assert that **in the next five years, every major decision you make will be underpinned by cognitive.**

Uncovering the deep value in your data will be the only way to differentiate – to be the disruptor, not disrupted.

And no industry is riper for cognitive transformation than financial services.

Which brings me to my third proposition to you – my belief that...

Financial Services will lead the world into the cognitive era

It's exactly because of the intensity of pressure on the financial services industry that the deepest transformation is possible here. We are already seeing it:

- **Bradesco** – one of the largest banks in Brazil - uses Watson in its internal call centre to answer questions – in Brazilian Portuguese – on 59 core products. Watson has learned 300,000 words in the language – more than twice the number necessary for a human being to be fluent.
- **Alpha Modus Research** uses Watson to find predictive patterns in market behaviour. They predicted the price direction of U.S. equities into the close of trading well enough to improve forecasting by more than 500%.
- **Royal Bank of Scotland** piloted a Watson digital adviser to help with frequently asked questions and even created a warm, human-like personality for the system to make it easier for employees to interact with it. It recognizes emotion – for example, if someone is becoming frustrated – and reacts accordingly.

And Canadian banks are also taking advantage of cognitive technology...

1. We're working with the **Wealth Management division of one of the banks** where we collaborated with Domain Experts, Academia, and Data Scientists to train Watson, demonstrating the ability to automatically and accurately scan thousands of research documents and regulatory filings - improving the efficiency and effectiveness of finding relevant facts while reducing the risk of missing important information, serving as a source of augmented intelligence for investment research analysts. Investment Advisors can also use this technology to stay up to date on the latest relevant information on companies in their clients' portfolios.

2. We have also created a Cognitive Virtual Assistant for advisors in a bank's **Small Business Banking division**. We trained Watson to provide virtual assistance to Small Business Advisors when it comes to banking related questions. This service enables greater efficiency in client service, and scalability of expertise among employees in the organization, driving client loyalty and revenue, and increasing employee engagement.

And the possibilities for this technology are much broader, as some of our clients start to integrate Watson technology into both on- and off-line experiences. **Hilton Hotels** recently introduced their newest employee to their guests. **Connie is a Nao robot** [developed by Aldebaran Robotics] and is working in the lobby of one of their US hotels. Connie uses the APIs behind Watson Virtual Agent to answer any questions that a guest may have about hotel services and amenities such as "where is the gym?" and can also make local restaurant recommendations and more. She's not meant to replace the reception desk employees, but is able to manage the frequently asked questions simply, efficiently and customers are love engaging with her.

3. We've also helped small business advisors more accurately identify **cross sell opportunities and predict the likelihood of a client leaving the bank**.

And in several pilots with leading institutions around the world, Watson has shown great promise in risk and compliance...

- **Including in regulation management**

Back in the fall, IBM bought Promontory Financial Group, a Washington-based consulting firm that specializes in regulatory compliance, in part to leverage the highly skilled staff to help teach Watson about banking regulations.

- **For anti-money laundering:** In a pilot, more than 10 million transactions were analyzed for a tier 1 bank, which is working with IBM on advanced analytics capabilities to enhance transaction monitoring and link analysis.
- **For payments fraud:** 4.7 billion transactions, 75% of an entire nation's annual card transactions, were fed real-time into IBM Safer Payments, a powerhouse cognitive system that learns from past experience and halts fraud within milliseconds. The year it came live, card fraud rate in France fell for the first time in a decade.

This is real and is happening today. And it's just the beginning!

I'm particularly excited about the impact this technology will have in Canada.

The Canadian banks have embraced digital transformation – they have committed significant resources and continue to invest.

This isn't surprising as they have long been leaders in the development of new technologies and innovations. As many of you know, Canada's largest banks rank among the top globally for their mobile banking capabilities.

Canadian banks are also forward-thinking - seeking out and partnering with fintechs to accelerate innovation and gain access to some great new talent. The banks know that they provide new approaches to the use of technology, unencumbered by legacy systems – together they have an opportunity to build a more efficient and effective banking system while also creating a deeper understanding of customers and a more compelling way to engage them.

This is part of a wider ecosystem that is forming with the banks at the centre...that also includes incubators, universities, government, and others. This kind of collaboration really sets us apart here in Canada.

Canadian banks have also proven remarkably resilient to significant disruption. They have deep relationships and trust, honed capabilities, and the capital that positions them well to adapt to the disruption in the sector – as long as they move fast. And that's the key.

The evolving needs of customers are driving a push for innovation and an acceleration of the development of new technologies like never before.

And banks finally have the technology to uncover the deep value in their data to meaningfully engage with customers in a highly personal way.

This is the unprecedented opportunity that we have in front of us.

As a Canadian, I am so excited to be leading IBM and helping our banks transform and position themselves as leaders not just here – but globally.

Let's seize this opportunity and lead this new era of banking right here in Canada!