MAR 22, 2018 @ 03:12 PM 4,274

IBM Bets Company On Exponential Innovation In AI, Blockchain, And Quantum Computing

Jason Bloomberg, CONTRIBUTOR

I write and consult on digital transformation in the enterprise. **FULL BIO**

Opinions expressed by Forbes Contributors are their own.

Under CEO Ginni Rometty's leadership, IBM has been undergoing its riskiest transformation since the Gerstner era. With massive bets on artificial intelligence, blockchain, and quantum computing, Big Blue is essentially using its massive inertia and deep pockets as the bluest chip in tech to drive innovation forward.

After a few years questioning IBM's ability to execute on this world-changing vision, I trekked to the IBM Think 2018 conference – the company's largest conference ever, now that it has rolled its InterConnect, Edge, World of Watson, and PartnerWorld conferences into one massive Las Vegas shindig.

The central lesson of the show: while IBM's bets are both massive and risky, it has chosen its bets wisely – hoping to get into the ground floor of world-changing trends that each promise to follow Moore's Law patterns of exponential growth.

True, IBM still carries the baggage of legacy products and business models, and the Big Blue battleship is slow to turn, but if any of its bets pay off, IBM will once again be at the top of its game.

Jason Bloomberg

Ginni Rometty, Chairman, President, and CEO of IBM

Riding the Exponential Wave

According to Ginni Rometty, the business and technology worlds are both at inflection points. “It happens every 25 years,” she says. “It has the potential to change everything.”

The greatest challenge at such times: whether a company will be disrupted or become the disruptor. As a large company, IBM realizes that being on the disrupted side of this equation is par for the course – a pattern it cannot afford to follow.

Rometty’s strategy, therefore, is to reshape IBM into what she calls “the incumbent disruptor.”

This catchphrase is more than simple marketing hype – it's a challenge, for IBM personnel as well as its customers. After all, 'incumbent' and 'disruptor' are often at odds, as new, smaller firms disrupt the older, larger incumbents.

IBM seeks to change this equation – and the key is AI, in the form of IBM Watson. "In this era, many can win. If you ask why, the answer is the data," Rometty explains. "When you learn exponentially, you become the disruptor, instead of the disrupted."

Watson Turns a Corner

Data, of course, infuse every aspect of IBM's business as well as the businesses of its customers – and thus, IBM's goal for Watson is nothing short of ubiquity.

Over the last several years, IBM has struggled to deliver value with Watson, but with this year's Think conference, the offering has visibly passed a critical tipping point.

As my article on Watson from last year pointed out, the technology's greatest challenge has long been the vast amount of time and expertise necessary to prepare data for processing by the AI platform.

By leveraging deep learning technologies as well as increasingly mature, pre-trained industry 'assistants,' Watson has largely overcome these challenges.

The result: today, Watson is finding its way into a broad swath of IBM's product line, as customers use AI-enhanced technologies for an increasingly wide range of business problems. AI has also

infused the IBM Cloud, which is shaping up to be a general purpose 'cognition platform.'

In other words, Watson has hit the 'hockey stick' part of its exponential growth curve as it transitions from an innovative but immature technology to a transformative source of disruption for IBM and its customers.

Rometty realizes that such AI-driven disruption has its downside. "AI will impact all jobs," she points out. "With every era of technology, there are some new jobs created and others lost."

Overall, however, she is sanguine about the impact AI will have on the workplace, as people retrain and reposition themselves for AI-augmented work. Rometty has a term for this new workforce: "New collar," she says, "the ability to work with technology in everything you do."

Pushing the Blockchain Boulder Up the Metcalfe's Law Hill

Blockchain has a PR problem, largely due to the crazy world of cryptocurrencies. However, Bitcoin and its brethren depend upon permissionless blockchain, while IBM's blockchain efforts are all permissioned.

As a result, the focus of Big Blue's blockchain efforts are all business. "We're focusing on permissioned blockchain with modular components," explains Marie Wieck, General Manager of IBM's blockchain division. "The goal is enterprise-grade productivity."

Because a blockchain is an inherently decentralized shared ledger, neither IBM – nor anyone else – can be a central clearinghouse for the technology. "The most important thing about blockchain is that it's a team sport," Wieck adds.

To get an enterprise-class blockchain implementation off the ground, therefore, IBM has been investing its resources into two industry ecosystems, by partnering with Walmart on a food safety initiative and Maersk on a global logistics effort.

For each company, blockchain promises to solve difficult problems that other approaches have not been able to resolve. "We're not chasing blockchain as the new fad, we're solving problems of the business," explains Frank Yiannas, Vice President of Food Safety for Walmart.

Complex multi-party transactions like those in the food and international logistics supply chains are permissioned blockchain's sweet spot – but for any blockchain-based effort, the key to success is passing Metcalfe's Law's tipping point.

In other words, there must be enough participants in each network for other participants to have a business reason to join. "It's Metcalfe's Law in action," Wieck adds.

In conjunction with its partners, IBM is essentially using brute force behind its industry relationships – along with plenty of investment – to push such ecosystems past their respective tipping points. Success is far from guaranteed, but once such efforts are on the downhill side of Metcalfe's Law, we can expect to see the same kind of hockey-stick exponential growth that AI is now experiencing.

Quantum Computing: No Longer Science Fiction

Leveraging the quantum properties of matter to conduct entirely new types of computing has largely been in the realm of science fiction. Over the last few years, that realm has shifted more to science – but practical quantum computers have been out of reach.

At Think, IBM proudly showed of IBM Q, a family of working quantum computers up and running in the IBM Cloud for anyone to program.

Practical uses of the technology are still in the future, but putting the technology in the hands of developers is an important milestone, not just for IBM, but for the nascent quantum computing industry as a whole.

Perhaps the high point of the IBM Q demonstration was a glimpse into how to program such systems – an entirely different skillset than programming a classical computer. “The algorithms are completely different,” explains Robert Sutor, VP of IBM Q Strategy and Ecosystem, IBM Research. “The best classical computing engineer is likely to be a really bad quantum programmer.”

Programming quantum computers is predictably in its very early days, analogous to the assembler language phase of programming classical computers.

Nevertheless, IBM has a clear idea of the direction it’s heading. “We now have a sense what we want to do on the quantum computing side,” Sutor continues. “In the early 2020s, we expect to see examples of ‘quantum advantage’ – for real problems the business cares about, a quantum computer will be able to do

something that was impossible."

On the Right Track

In the final analysis, while IBM clearly has more work to do, it's on the right track. Its investments in cloud and AI are already paying off, while blockchain and quantum computing bets are looking promising.

Furthermore, while IBM's progress overall is clearly a massive team effort, Big Blue's execution is due in large part to Rometty's six years of leadership.

Running a company the size of IBM is no small feat – and reinventing it is even more of an achievement. Rometty has shown the willingness to take the massive risks necessary for IBM to be the incumbent disruptor it needs to be to compete in the dynamic business environment of the 21st century.

Intellyx publishes the Agile Digital Transformation Roadmap *poster, advises companies on their digital transformation initiatives, and helps vendors communicate their agility stories. As of the time of writing, IBM is an Intellyx customer. IBM covered Jason Bloomberg's expenses at Think, a standard industry practice. None of the other organizations mentioned in this article are Intellyx customers. Image credit: Jason Bloomberg.*

Jason Bloomberg is president of industry analyst firm Intellyx. Follow Jason Bloomberg on Twitter or LinkedIn.