IBM Taking Cognitive Computing Mainstream

CIMdata Commentary

Key takeaways:

- *IBM has bet their company on cognitive computing which includes Watson technology, the Internet of Things (IoT), analytics and professional services, and the cloud*
- *Based on attendance at the recent World of Watson event, the market is listening and responding*
- *Companies in a range of industries are starting to see real benefits from applying IBM's technology stack to their business problems*

In 2011, Watson, a cognitive solution developed by IBM researchers, shocked many people by winning a Jeopardy competition against top human challengers. Industry veterans were also surprised in 2014 when IBM announced the creation of an IBM Watson business unit, backed with a $1 billion commitment.[1] The company then doubled down on their investments in cloud and the Internet of Things (IoT) by forming an IoT business unit in 2015.[2] The company has transformed itself twice in the last thirty years, from a hardware company to a software and services company. Now, according to Ms. Ginni Rometty, IBM's CEO, "IBM is a cognitive solutions and cloud platform company, and everything we do is focused on that." The sessions at October's event were designed to make just that case.

On October 23-27, 2016 IBM convened the World of Watson event in Las Vegas, NV, drawing over 17,000 attendees from IBM, partners, customers, prospects, press and analysts. If the year-on-year attendee growth is any indication (last year's event drew 1,000, by comparison), many are joining IBM on their cognitive computing journey.

Over the last several years, the IT market has focused on broad trends like social, mobile, big data and analytics, and cloud, often abbreviated SMAC. Other IT companies add IoT to this SMAC mix. Today the term digitalization (or "digital transformation") is used to describe how businesses must transform to leverage SMAC and IoT to better engage with their customers, leverage their supply chains, and reach their business objectives. While big data and analytics are part of this vision, and IBM has great traditional strengths there, the company is now going beyond just analytics to support transformations to cognitive businesses, uniting digital business with digital intelligence—creating knowledge from data—to expand everyone's expertise, continuously learning and adapting to, hopefully, outthink the needs of the market. The core of that digital intelligence is Watson, an information omnivore that can digest huge volumes of text, audio, video, and other structured and unstructured data to become an expert on a given topic.

Business can access this expertise using APIs, and increasingly through IBM-formulated applications. A major one is Watson Virtual Agent, a new capability announced during the event.[3] This technology could replace those annoying bots that cannot understand simple queries with something like Otto, a live customer service application developed by Autodesk using Watson. According to Mr. Gregg Spratto, VP of Operations for Autodesk, they are handling more than a million customer cases per year (and growing), and cannot scale using their current approached. Otto, based on IBM's Watson Conversation service, helps

[1] https://www-03.ibm.com/press/us/en/pressrelease/42867.wss
[2] http://www.zdnet.com/article/ibm-forms-internet-of-things-unit-names-general-manager/
[3] http://www-03.ibm.com/press/us/en/pressrelease/50841.wss

supplement their human team and will not be positioned as a human. Today Otto with Watson is handling over 50% of the inquiries on it's own without interaction from a human. Mr. Spratto maintained that people do not need to talk to a human; they need to be understood in a way that minimizes their "total time to get an answer." Anyone who has spent time navigating phone trees and listening to hold music can vouch for the sensibility of this user satisfaction measure. Watson's conversational capabilities are highlighted in recent TV ads and it will be interesting to see how these adapt to handle sometimes-irate software customer queries. Watson has been trained to support Autodesk's plans for Otto, and is continuing to be refined as they continue to expand their focus and use cases. CIMdata looks forward to learning more about this innovative application.

A common thread across many of the presentations was an emphasis on how Watson will not replace humans, per se, but will augment them and their capabilities. For example, a recent *60 Minutes* segment was cited that highlighted Watson as applied to oncology, one of its earliest targets. Watson ingested about 1,000 patient histories. Watson agreed with the actions previously taken by the attending physicians 99% of the time, which is encouraging. Interestingly, in another 30% of cases, Watson suggested useful actions not identified by the human physicians.[4] It is this promise that companies see and want to apply to their businesses.

IBM is responding with role-based Watson applications in marketing, commerce, supply chain, and chief technical officer (CTO). One demonstration showed how Watson helped select and deploy Web-based commerce content. In the presentation, the analyst had a conversation with Watson, asking for images for cycling accessories and suggestions of appropriate taglines for use online. The conversation then turned to special offers for regions likely to face bad weather in the coming months. Watson queried Weather.com data (an IBM company) in real-time, presenting a map of the regions that would face bad weather, and offered images and taglines of rain gear and other accessories appropriate for those conditions.

There are other innovative directions Watson is heading to improve collaborative business processes. Ricoh will soon offer a 4K touchscreen display with the IBM Watson IoT platform built in to transcribe meeting conversations, capture drawn content, and track action items, among other skills. IBM also has a partnership with Cisco that will leverage Watson in Cisco real-time collaboration and meeting technologies in a combined solution with IBM Verse and Social.

The star-studded agenda included Ms. Mary Barra, GM's CEO; Mr. Stewart Butterfield, CEO of Slack (a hot workplace collaboration company who announced a partnership with IBM at the event[5]); Mr. John B. King Jr., U.S. Secretary of Education; and authors Mr. Geoffrey Moore and Mr. Thomas Friedman. Mr. Friedman's talk drew heavily from his new book, *Thank You for Being Late*.

Mr. Friedman claims that 2007 will go down in history as a major inflection point due to three exponential changes: the Market (globalization), Mother Nature (climate change and biodiversity loss), and Moore's Law (technology). According to his book, digital globalization started to take off around that year; humanity's effects on the planet, and hence Mother Nature's impact, accelerated in that year; and finally, many significant technological events happened in 2007. 2007 marked the introductions of Hadoop, the iPhone, Android, Airbnb,

[4] http://www.cbsnews.com/news/artificial-intelligence-making-a-difference-in-cancer-care/

[5] http://www-03.ibm.com/press/us/en/pressrelease/50844.wss

and Watson. Also of note, Twitter arrived in 2006 and Facebook expanded beyond universities in the same year. He also included Google buying YouTube in that list, making 2007, in his estimation, the largest inflection point since Gutenberg—that, also according to Mr. Friedman, will probably be missed because of the 2008 financial crisis.

One can argue about the specifics, but Mr. Friedman rightfully believes we will have to reimagine politics, geopolitics, the workplace, notions of community, and ethics in light of the changes we face, which is where Watson could fit in. Given recent events, we can see many examples in politics to support these beliefs, both here and aboard. If Watson and other augmenting technologies continue to evolve and get deployed, just the few examples shown at the conference illustrate how much work might change, with big data and analytics at your fingertips and Watson guiding you about how to best interpret them and react.

What about applications in product development and manufacturing? For a number of years CIMdata has tracked the parts of IBM that fit within our definition of the PLM market, including Global Business Services (implementing and supporting PLM-enabling solutions), IBM Rational (requirements management and software development), Maximo (enterprise asset management), and FileNet (enterprise content management). With IBM's new focus on cloud, IoT, and cognitive applications, it can be difficult to find these applications at such events as World of Watson. CIMdata can report they are alive and well, and continuing with their previous missions, while also supporting the new cognitive vision. IBM is investigating applying Watson to product development, and are using IBM Watson IoT for predictive maintenance applications at a few clients.[6] If Watson can triage maintenance actions using existing content, video, and other knowledge, it could be a powerful adjunct to existing operations. The IBM Rational team is still focused on their continuous engineering mission, and will soon announce some moves in that regard to support product development use cases more typical of those offered by broad-based PLM solution providers.

In conclusion, IBM is making significant progress in their third evolution from a software and services company to a cognitive solutions and cloud company. They are folding their many cloud acquisitions under their Bluemix banner, and making inroads on re-architecting their Bluemix offerings for the cloud. The main stage sessions were more about the intent of leading companies to evolve their cognitive operations versus results, but there were some great early successes. During the sessions, one IBM executive commented that perhaps IBM got "too far out over their skis" with their leap into Watson. For ski jumpers this can be catastrophic, but IBM seems to have compensated for their early entry by doing what they do well: building ecosystems, supporting open source and key standards, and driving interest and usage of their solutions through academia, Hackathons, and other means. Based on the attendance, results, and excitement at the World of Watson, this work is starting to pay off. These early applications will be key. If they can reach their promise, they will be just the first wave to transform to a "World with Watson," as Ms. Rometty described. If she is correct, it will not just be IBM transforming again, it will be the rest of us adjusting to living in a World with Watson.

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[6] IBM Watson Analytics for Chemicals and Petroleum, http://tinyurl.com/zs44m3c

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