Artificial intelligence, real results
Cognitive computing capabilities can help member firm clients make smarter, faster choices

It's no longer a question of *when* computers will be able to learn, "think," and provide reasoned responses.

They already can.

The question now—from Deloitte's perspective—is, "How can cognitive computing be used to benefit member firm clients and our network?" A software application developed by the Deloitte US Innovation group, in close collaboration with the Audit and Consulting M&A practices of Deloitte US, already is helping organizations save time and money. Yet, to those who dream the future, it may be but an early step in a long journey.

"We're at the beginning of a true paradigm shift. Instead of merely querying structured data, we are demanding insights from unstructured data that will inform decision making," says Forrest Danson, Deloitte US Principal and Analytics Integrated Market Offering Leader. "Deloitte US is among the vanguard in this arena because we understand how artificial intelligence (AI) and human know-how can combine to achieve better outcomes for clients. With our deep industry understanding and experience integrating across our businesses, we are well-suited to harness the power of cognitive computing."

Understanding unstructured data
Unlike traditional computer systems that are programmed by people to perform certain tasks, cognitive systems can learn from experience and instruction. The power of cognitive computing is its ability to digest both structured and unstructured data and draw conclusions from it, mimicking the human brain and performing tasks that traditionally only people have been able to do. Feed the typical computer spreadsheets and database files—structured data—and, depending on how it's programmed, it can provide valuable insights. The challenge is, only about 20 percent of available data are structured. The other 80 percent lives in word processing files, emails, social posts, blogs, images, video, and other "unstructured" sources that, until recently, could only be consumed and understood by humans.

Cognitive systems can process information far beyond human capabilities, identifying patterns and providing potential solutions that humans might never recognize through traditional analysis. "Cognitive computing holds the potential to reshape how work gets done, how businesses grow, and how markets and industries evolve," Danson says. "By learning through interactions, they deliver automated, evidence-based responses that drive better outcomes."
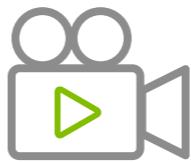
[Watch](#) Cindy Hook, Deloitte Australia CEO, talk about why disruption matters to leaders in the digital era.

Deloitte named the [leader in Analytics IT Consulting](#) by Kennedy.
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Mining data from contracts
One AI-enabled document-review platform developed by the Deloitte US Innovation group, which went live in October 2014, automates the process of reading and extracting critical information from contracts. By combining a third-party machine-learning algorithm with "training" provided by Deloitte US domain specialists, the technology typically helps reduce time spent reviewing documents by 50 percent or more, allowing users to focus on value-added analysis and interpretation activities.

"Teams review thousands of documents a year, so the time savings has a multiplicative effect, driving an orders-of-magnitude improvement in efficiency," says Craig Muraskin, Deloitte US Innovation managing director. "Also, the application's analytics and visualization features make it possible to analyze data extracted across the entire population of contracts and documents, enabling users to quickly home in on elements of potential risk and gain deeper insights." What's more, Muraskin adds, the combination of machine and human reviewer tends to deliver higher consistency and quality compared to a reviewer alone reading through numerous documents.

Many Deloitte US audit clients have been impressed with the application's ability to quickly identify differences between contracts based on key terms, as well as its ability to search for specific clauses across a population of contracts—typically leading to more meaningful insights throughout the audit process.

"The contract-review application is now firmly established as a transformative capability with applications across audit, consulting, and advisory services. We've also found it is equally useful for reviewing a variety of document types, including invoices, financial statements, and board meeting minutes," Muraskin says. "I'm confident we will soon expand this platform to tackle other opportunities. There are multiple ways our clients can benefit from this technology."

The cognitive technology underpinning the platform was provided by one of many third parties—large and small—that are developing cognitive computing or AI solutions. Deloitte US is working with several of these developers, including IBM. Its cognitive system, Watson, currently provides a comprehensive cognitive computing platform—one that is specifically designed to support the development of a broad range of enterprise solutions.

Deloitte joins Watson's Ecosystem

Many people's first exposure to IBM Watson came in 2011 through the US quiz show, Jeopardy! Thanks to four years of software engineering enhancements and the massive amount of new information that has become available since the shows aired, Watson is now at work in thousands of organizations in dozens of countries and industries.

The IBM Watson Ecosystem is composed of tens of thousands of developers, entrepreneurs, and other enthusiasts who have created thousands of apps via the Watson Zone on Bluemix—IBM's Platform as a Service (PaaS). Bluemix lets any user tap into more than 100 development tools, which include Watson services, to efficiently build, deploy, and manage apps across any cloud environment.

Deloitte was the only professional services organization selected for the inaugural IBM Watson Ecosystem Board of Advisors, which shapes the direction and strategy of the Ecosystem by offering external views on the marketplace and potential opportunities for Ecosystem partners. "We chose Deloitte because of its experience at the intersection of business and technology, its knowledge of the Watson product, and the value we've realized from our strategic and longstanding relationship," says Mike Rhodin, SVP, IBM Watson Group. Deloitte currently serves IBM as a client in 45 countries.

"Our participation in the Watson Ecosystem is part of a much broader Deloitte-IBM relationship, which has been thriving for more than a decade," says Bob Dalton, Consulting principal, Deloitte US and Global LCSP for IBM. "Our cooperation unites the depth and breadth of IBM's technology portfolio with Deloitte's leading business and technology consulting experience and industry knowledge. Through our 'smarter teaming' approach, Deloitte and IBM are committed to extending Deloitte's advanced analytics capabilities by using cognitive computing to help bring solutions to member firm clients."

Dalton acknowledges Deloitte and IBM are market rivals in certain services, and that competition will continue. However, "the opportunities here are bigger than both of our organizations. We recognize there's a virtue in coming together because, as pre-eminent leaders in our professions, we can make a bigger impact working together," he says.

Leveraging cognitive for member firm clients

Deloitte is focused on using cognitive computing as a positive disruptor. Member firms are working with several vendors with niche capabilities that complement and extend new cognitive abilities. "Our goal is to provide holistic cognitive and advanced analytics solutions to help our clients make smarter decisions," says Paul Roma, Deloitte US Innovation leader and principal.

A tangible sign of the Deloitte US's commitment is a recently established US$20 million fund set up specifically to finance a new cognitive platform and develop solutions each Deloitte US business can take to market. "This is a game changer for us," Roma says. "We are going to build our own platform, powered by cognitive computing vendors and, using that platform, we will create and deploy new products for clients. The fund will be a real catalyst for innovation."

Among Deloitte US's highest priorities in this arena is exploring ways that cognitive technologies could transform health care. Deloitte US is currently working with a broad group of vendors and startups that are developing specific solutions based on cognitive technologies.

Early applications being piloted among select US clients include an app that uses machine learning to identify patients at risk of developing diabetes and offer insights tailored to specific individuals. "This app goes beyond risk-group generalizations and generic suggestions. Instead, it uses targeted insights to serve a party of one," explains Rajeev Ronanki, lead for Deloitte US's Cognitive Computing practice. "Based on people's medical histories and behaviors, it even can predict who will likely respond to intervention and who may need more convincing."

Another offering, recognizing a general shift toward a consumer-centric model in health care in the US, is using cognitive capabilities to help a large health plan provider retain customers and reduce turnover. And still another solution is using natural-language processing, probability models, and machine learning to help revolutionize what today is typically a very manual—and often frustrating—prescription preauthorization process.

As cognitive computing technology matures and Deloitte's experience grows, the way member firms explore and deliver cognitive-related services will likely continue to evolve. "We expect the market to grow dramatically as capabilities develop and people find practical ways to apply cognitive computing to address business problems," says Nitin Mittal, Principal and Advanced Analytics Technology Leader, Deloitte US. "As a global network of firms with deep industry knowledge, Deloitte is optimistic about the remarkable capabilities cognitive computing can offer. But, Deloitte needs to weave such technologies into our existing competencies to provide innovative cognitive solutions to member firm clients."

Cognitive technologies extend the power of information technology to tasks traditionally performed by humans. To learn more, read, "Cognitive technologies: The real opportunities for business," published by Deloitte University Press.

Artificial Intelligence is increasingly real and critical to the success of the Internet of Things. To learn more, read, "Demystifying artificial intelligence," published by Deloitte University Press.

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