

Creating a Cognitive Audit

While it's unlikely that auditors will be automated out of existence, cognitive technologies can bring value to the audit.

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It's likely that over the next several years, substantial portions of public and private company audits will be augmented by cognitive technologies. In fact, much of the audit profession is exploring, experimenting, and moving forward with efforts to use various cognitive technologies in the audit.

To be clear, it's unlikely that the profession will arrive at a fully automated audit with no human intervention on the horizon, and it continues to hire more auditors each year. But there is a consensus within our organization, at least, that cognitive technologies can bring substantial value to the audit process for auditors, clients, and the investing public.

Three key factors characterize a sound approach to a cognitive-enabled audit. One is a global approach to sensing and delivering audit innovation. The second is a "best of breed," componentby-component approach to development of technology solutions. The third is to employ a well-defined, five-step process for getting from the current state of audit processes to a cognitive-enabled approach. We'll also describe some of the key roles we envision auditors playing when machines are doing many of the traditional manual auditing tasks.

A Global Approach

This approach involves the formation of a global audit innovation team with members across the global organization. One of the team's tasks is to constantly sense and evaluate new technologies to pursue a variety of coordinated projects that are expected to ultimately facilitate agile, cognitive-enabled audits anywhere in the world.

Further, the global approach involves

internal development of data, analytic and visualization tools, workflow automation and cognitive applications, and robotic process automation, or "bots." This requires a great deal of organization and thought to constantly evaluate whether technologies are responsive to facilitating both consistent global audit quality and addressing variations in local auditing, financial, and regulatory reporting requirements.

Best of Breed Components

While there is already much investment within the audit profession to build and leverage proprietary automation, and cognitive and analytics capabilities internally, there are two basic approaches to implementing external advanced technologies. One is to embrace a single developer's approach, employing multiple capabilities from that one provider. The other is a "best-of-breed" approach employing components from multiple developers. Advancements in cognitive technologies increasingly favor the latter approach, given that even the largest developers typically offer a componentbased architecture using a set of application program interfaces (APIs).

We've found that the best fit with our firm's audit Innovation initiatives is a best-of-breed approach, which includes constant sensing of new technology start-ups around the world. Given the



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dynamic and rapidly advancing state of play of the technology marketplace, building a platform that allows for easy "snap-in/snap-out" of best-of-breed technology features is critical.

This approach enables us to take advantage of the large and growing ecosystem of cognitive technology startups, many of which offer impressive functionality with the ability to implement and adapt the technologies for their customer's needs. This accelerates agile development while also significantly enhancing the speed to deploy and scale applications and solutions.

Startup vendors also sometimes offer specific technology solutions that are well-suited to audit process requirements. Kira Systems, for example, is a Toronto-based firm with a focus on extracting contract terms from legal documents. This is a very useful capability in the document review process within audits. Auditors have historically had to read through many contracts to extract key terms, but now natural language processing technology can digest and comprehend key concepts in contracts. Natural language

processing is then augmented with machine learning, allowing for training the system on a set of sample contracts so that it can improve its ability to identify and extract key terms.

Deloitte is currently using cognitive technology in audits to review contract terms and electronic documents. The rapid reviews enabled by cognitive technology allow auditors to review and assess larger samples — or get to the point where auditors can review 100% of the contracts. The reviews can also incorporate segmentation of documents — for example, separating contracts that include escalation clauses from those that do not. Visualization capabilities can then be added to easily show, as an example, which documents differ from a standard baseline.

A Process for Cognitive Audit Development

One key lesson that can be derived from working with cognitive technologies across the audit is that a task or activity often isn't ready for cognitive transformation. An audit task might, for example, currently be executed in different ways throughout the world to accomplish the same objective. Or it might be performed without benefit of any technology, suggesting that there may not be enough digital data for a cognitive approach.

Cognitive technologies run across a spectrum including robotic process automation, smart automation, natural language processing, natural language generation, and machine learning. The more complex the audit task, the more likely it is that multiple technologies would be required to complete the task. To achieve this, we employ a five-step process to work towards transforming a task with cognitive technology. Each of the five steps is described below:

 Simplify and standardize. Step one is to create a common, simplified process or procedure for performing the task. At this point, no new technologies are introduced— there is simply the creation of process flows and procedure documentation. This step isn't necessarily easy, because even though audits may be conducted under a common audit methodology to facilitate consistent global audit quality, auditors may perform individual sub-tasks or routines in different ways around the world – dependent, in part, on how information is received (or extracted) from an individual client (or client system). This fact makes it significantly more difficult to adopt a single, technology-enabled approach.

- Digitize and structure. Digitization

 supporting a task with some form of information technology that can collect data and monitor performance
 is a prerequisite to cognitive technologies that learn from data. Digitization is also the next step in structuring the task. The technology employed typically specifies the order in which activities are performed.
- 3. Automate. Once the task has been digitized and structured, it is usually a straightforward process to automate its performance, typically with some sort of proprietary workflow or even robotic process automation tool. This step reduces the need for manual labor and generally improves cycle time and consistency. For example, Deloitte uses workflow technology to fully automate the confirmation process within an audit. We have built an integrated digital platform to prepare, authorize, distribute, collect, manage, and evaluate the results of the confirmation process.
- 4. Advanced analytics and analysis. Automated processes can be monitored with descriptive analytics, and may be better tested with predictive or prescriptive analytics. Also, client data can be supplemented with external data to further improve the risk assessment process or to identify substantive testing outliers.
- 5. Cognitive. The final step in the transformation to a cognitive-enabled task is to actually implement cognitive technologies to make the task more intelligent, thereby learning from auditor interaction with the underlying data (e.g., machine learning). Cognitive technologies might learn to perform the task better over time, or might apply intelligent decisions to an aspect of the task (such as extracting and analyzing contract provisions).

Each of these steps can individually enhance audit quality and provide more timely and meaningful insights. Together these steps are truly transforming the audit process and making it a more value-added process for the investing public, clients, and auditors. Looking forward, we see many opportunities to innovate and advance the profession with cognitive technologies to continue to enhance investors' trust, elevate audit quality, and drive insights.

The Future Role of Auditors

One might think that cognitive technologies would reduce the need for, or possibly even eliminate, auditors. It is true that cognitive technologies enable the automation of tasks that have been conducted manually for decades, such as counting inventories or drafting communications. However, this can liberate the auditor's time to focus more on risk areas and less on rote tasks. Yet the potential of cognitive technologies doesn't just automate routine tasks — it can also enhance an auditor's professional judgment by modeling thought processes that can be contrasted with initial conclusions.

The end result is an enhanced role for auditors. Freed of performing repetitive manual tasks, they can enhance audit quality by monitoring the outcomes of automated tasks, reviewing advanced analytics, and assessing the implications of findings. By allowing auditors to spend more time exercising their professional judgment, and enabling them to better understand their client's business, we are confident that futurestate cognitively-transformed audit processes will also enhance the skills and satisfaction of the auditor. Although new skills will be required, we see plenty of demand for well-trained auditors for decades to come.

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