# Auditing in the 21st Century: Is There a Robot in Your Future?

**By C. William (Bill) Thomas, CPA, Ph.D.**

No doubt we live in an electronic age. Devices like smart phones, self-driving cars, drones and the "Internet of things" – wherein just about everything is interconnected – surround us. So what does this portend for the future of auditing? Will auditors be replaced by robots? Is human auditor an endangered species? Read on for some speculative thoughts.

### Can R2D2 Do That?

The use of information technology (IT) in auditing is not a new thing. Auditors have been using the computer as an audit tool to perform repetitive and mechanical processes for many years. Such tasks as footing, sorting, calculation of sample sizes and selection, and comparisons of data across different data files are common.

In recent years, however, IT has evolved to the point that it can actually be programmed to learn and make complex decisions. Software now exists that can execute tasks that would previously have required both a human and a computer. This software is called Robotic Process Automation (RPA). RPA tools do not infiltrate the IT system, but rather sit at the presentation layer, following instructions to perform highly standardized and repeatable administrative activities like accounts payable transaction processing or order entry. For those of us who remember, RPA works like a player piano, doing effectively what a human is trained to do, within well-defined parameters.

Beyond RPA, another higher-order class of software is being developed called Cognitive Technology, which is designed to interact, reason and learn in a way that is similar to humans. For example, IBM's Watson, a supercomputer in the cognitive class, has demonstrated the ability to "think" (to discern a probabilistic answer from a question posed in the form of a pun, riddle or metaphor). Watson has demonstrated that it can parse a complex question, recognize its true meaning, analyze volumes of data, form a correct hypothesis and solve the problem as fast as a human can.

RPA and cognitive technologies are now being converged to develop a process called Cognitive Automation, or "smart robotics," that can potentially automate new classes of knowledge work. Thus, robots are becoming "smarter and more intuitive" and more useful in a wide range of business and government applications. For example, data mining is being used in law enforcement to extract knowledge from a vast array of sources to determine crime patterns, target profiles and assess threats. Is it much of a stretch to speculate that a similar technology might be used in auditing to extract knowledge from "big data" files (financial as well as nonfinancial), determine patterns and target financial statement accounts that possess high risk of misstatement? As an extension, isn't it also conceivable that technology might be used to assess internal controls, assign risk factors to various management assertions, and design and implement a substantive test audit of an entire database, without the use of sampling?

In recent years, large firms have made extensive use of offshoring and outsourcing menial audit work to processing centers in developing countries. There were obvious advantages of this kind of activity, because of the low cost per hour and the fact that these centers were halfway around the world, so they could work while auditors here slept, and the completed work would be available the

> ## "SOFTWARE NOW EXISTS THAT CAN EXECUTE TASKS THAT WOULD PREVIOUSLY HAVE REQUIRED BOTH A HUMAN AND A COMPUTER."

next morning. Cognitive automation is largely replacing this kind of audit-related activity. When you think of the number of tasks on a typical audit that involve rather menial work, it is not much of a stretch to conceive of a way to leverage technology to create effective and efficient solutions for these types of tasks.

### What Can't R2D2 Do?

So will all auditors eventually be replaced by robots? Most experts don't think so. The human brain is an amazing organ, possessing the capability to make judgments and, moreover, to express emotions. The judgment process involves recognition of issues, consideration of alternatives, researching authoritative literature, choosing among alternatives and communicating choices among decision makers. Although some of these steps can be automated, there will always be some audit-related activities for which there is no substitute for the human touch. Imagine sitting down to a cup of coffee with a robot, discussing your business strategy, taking the robot on a plant tour, having the robot meet with the audit committee to discuss important business problems and brainstorming potential fraud issues. Most experts feel that the use of IT on the audit can only elevate humans to new heights of critical thinking, not replace them. ∎

**C. William Thomas, CPA, Ph.D.** is the J.E. Bush professor of accounting in the Hankamer School of Business at Baylor University in Waco. Thomas can be reached at Bill_Thomas@baylor.edu.