

# **Not All AI is Created Equal — What to Consider in AI-Powered Solutions**

Artificial intelligence is in the news, but it isn't new



White Paper



Artificial intelligence isn't new at all — it's all around us and built into technology and devices we use every day.

With all the recent media coverage of self-driving cars, virtual assistants such as Amazon Alexa, and algorithmically targeted web content, it might seem like artificial intelligence technology, or AI, just leapt fully formed from the pages of science fiction into reality in the past couple years.

The truth is that artificial intelligence isn't new at all — it's all around us and built into technology and devices we use every day. One of the reasons AI is in the news and on our minds is because the technology is now reaching critical and exciting milestones that were once imagined as dreams of futurism.

Whenever we arrive at these technological milestones, we collectively assess our progress and predict how the technology will disrupt industries and workers. But now the technology has advanced to the point that it has worried tax professionals, who once considered themselves safe from the threat of being replaced by artificial intelligence and automation.

Before tax professionals start updating their resumes in anticipation of being replaced by machines in the near future, they should consider the realistic assessment provided by Khalid Al-Kofahi who leads Thomson Reuters Center for AI and Cognitive Computing:

**“General AI is not here and will not be here for a while. But within the confinement of carefully crafted vertical experiences, AI is here, has been here for a while and is already creating significant value for professional knowledge workers.”**

### AI's role in tax

Just as AI technology has quietly become part of our everyday personal lives, it has become part of our daily work lives in the accounting practice. Sometimes artificial intelligence drives subtle, intuitive features that make our work incrementally more efficient. Sometimes AI is the engine at the core of our most powerful software, making it possible to overcome previously impossible tasks with ease.

But it is always intended to support and empower human tax professionals, to help them be more efficient, and minimize tedious and time-consuming tasks so they can work on more strategic, higher value tasks.

AI technology can help tax professionals conduct research, analyze large data sets, monitor for risks and compliance obligations, and find answers in mountains of data. In short, it can help tax professionals do the work they already do, just faster and more efficiently.

The role AI technology plays in the tax and accounting function is the same role other technologies such as word processing and email have played — it helps practitioners be more efficient and do better work faster.



The amount of data we generate in our ordinary personal and business processes is astounding.

### Why AI is the inevitable response to Big Data

**“Big Data” is still growing.**

When the term “Big Data” was coined, we were talking about gigabytes of data. Now, we're talking about terabytes, petabytes, and even zettabytes of data.

The amount of data we generate in our ordinary personal and business processes is astounding. Researchers have estimated that we create 2.5 quintillion bytes of data every day,<sup>1</sup> and that more data has been created in the past two years than in the previous entirety of the human history.<sup>2</sup>

The answer to meeting the demands of ever-increasing volumes of data is advanced technology that's capable of processing the data to help tax professionals find answers quickly. By its nature, tax work involves reviewing and processing hundreds or thousands of documents, providing analysis on high-volume data sets, or finding connections and answers in disparate documents across various sources.

Just as online tax research has become standard in the industry, the AI technologies powering those solutions are here to stay.

An estimated **163 zettabytes** of data will be created each year by 2025.<sup>4</sup> That's enough to fill 32.3 trillion DVDs – a stack that would reach the moon 100 times.\*

\*One DVD is 1.2mm thick multiplied by 32,299,059,502,605 DVDs = 38,758,871,403,126 mm / 38,758,871 km. The distance to the moon is 384,000 kilometers.



Using AI to do better work faster is now the baseline expectation for tax professionals.

### Changing business needs change tax departments' practices.

It's in a tax professional's nature to be cautious and risk-averse, to place high value on historical precedent, tradition, and order. So, it's understandable when tax professionals are slow to adopt the latest technology that's pitched to them — especially when outsiders are doing the pitching.

Software startups, running on shoestring budgets and bravado, are not going to find tax professionals eager to hear how they can completely revolutionize how a successful company does business.

That's not to say that tax professionals can't change to adopt technology, just that they will do it when it makes sense and will clearly benefit their business. Economic changes, more competitive global and local markets, and several other factors have altered the market for tax work. CFOs are demanding more for less — and getting it.

Artificial intelligence is inevitable as a part of long-term technology. The tax professionals that leverage AI in their workflows to meet their business needs will survive and prosper over those that cling to the mantra, "If it isn't broke, don't fix it."

According to a recent **Deloitte survey**, **83%** of the most aggressive adopters of AI and cognitive technologies said their companies have already achieved either moderate (53%) or substantial (30%) benefits.<sup>3</sup>



<sup>1</sup> <https://public.dhe.ibm.com/common/ssi/ecm/wr/en/wrl12345usen/watson-customer-engagement-watson-marketing-wr-other-papers-and-reports-wrl12345usen-20170719.pdf>

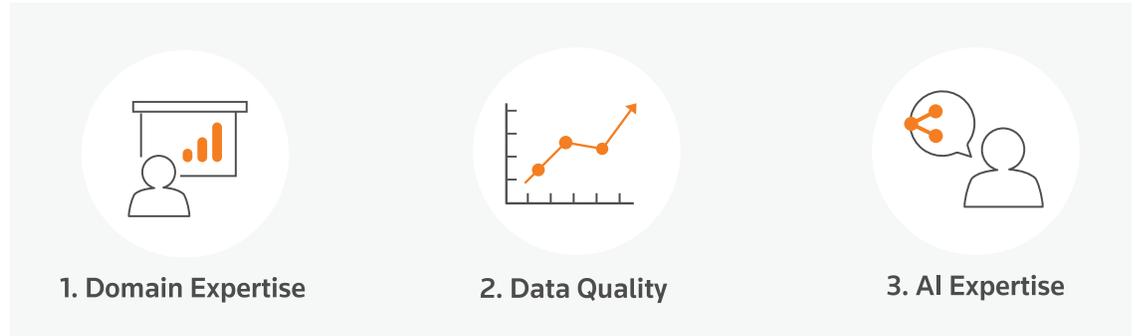
<sup>2</sup> <https://analyticsweek.com/content/big-data-facts/>

<sup>3</sup> <https://www2.deloitte.com/us/en/pages/deloitte-analytics/articles/cognitive-technology-adoption-survey.html>

<sup>4</sup> <https://www.seagate.com/files/www-content/our-story/trends/files/Seagate-WP-DataAge2025-March-2017.pdf>

## What to look for in AI technology

The three essential components of a successful AI solution are like three legs of a tripod:



**Domain expertise** refers to the specialized knowledge, experience, and input of people in a particular industry, subject matter, or domain. These domain experts know what data is important and why, and how people in this industry work.

**Quality data** includes vetted and relevant substantive data from trusted sources, metadata provided by experienced tax-editors, and data on how users interact with the data. Anyone can provide a large quantity of data, but quality is what matters most.

**AI expertise** refers to the technical expertise and experience of working with AI and its many principles and techniques. This requires robust technology stacks, expertise in relevant and emerging cognitive technologies, and the practical abilities to apply the technology and AI techniques to quality data and domain expertise.



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### Why domain expertise matters.

Specialization and accumulated experience are just as important to AI technology and software development as it is to practice area specialization in tax and medical fields. Using a general one-size-fits-all solution for specific, complex matters often results in generally bad outcomes.

Domain expertise ensures that an AI solution is built with the right end users in mind. In the tax world, this domain expertise comes from tax professionals imparting real-world subject matter experience and nuanced, peer-reviewed perspectives into the software, as well as human-created metadata, tags, editorial markup, and additional data that provides context and connections.

That's why it's important to consider who contributed to the creation of an AI solution. If you're doing specialized work, you should expect the tools you use to do that work to be informed, made, and tested by your fellow specialists.

But tax experts are not data scientists, AI scientists, software developers, or designers. It takes broader teams of multiple disciplines collaborating to transform data, find connections, and deliver the answers end users need. That's where AI expertise comes into play.

**“AI is sensing, sensitizing, and coaching humans to improve the customer experience and deliver personalization. People will expect AI-plus-human execution.”**

– Wendy Steinle  
Head of Digital Experience Web Strategy, Adobe

### Collaboration creates well-rounded solutions.

The people and organizations that play a part in educating the AI solution are critically important. One of the biggest advantages Thomson Reuters brings to its AI technology is the depth of knowledge and experience in critical disciplines that make it work.

Tax editors and subject matter experts might know what data is most relevant to certain practice areas or tax issues, and what complete and thorough tax research looks like upon completion. But they might not know how different end users start their research or the different paths they'll take to complete their research.

End users and customers can provide insight on the strategies they're considering as they conduct their research, or the practical realities and personal preferences that affect their research. But they might not know of faster methods or more recent and relevant data.

Data scientists will be able to identify and manage the data that best suits the application and individual end users. But they might not know how best to present that information to users.

Designers and developers might know how to serve relevant data and ensure the user experience is streamlined and intuitive, but not know what data is most relevant.

Only by bringing all of the stakeholders to the table is it possible to truly understand and create a holistic research solution that works in the real world.



Sloppy and incorrect data inputs will result in sloppy and incorrect data outputs.

### Data quality is more important than quantity

The principle of “garbage in, garbage out” dates back to the earliest days of computer science, referring to the fact that sloppy and incorrect data inputs will result in sloppy and incorrect data outputs. Despite our advances, this fact remains true. The most powerful AI-enabled computer will not provide great value if it is loaded with data that is incomplete, limited, irrelevant, inaccurate, or otherwise flawed.

If AI technology is loaded with bad data — incomplete, inaccurate, biased, outdated, etc. — and trained to find answers in bad data, the results can be much worse than not using AI technology.

When end users consider implementing AI technology, they are often pitched by startup companies and tech vendors on the promises of the technology, on the enormous volume of data that went into machine learning, the data points and variables, the simplicity and user-friendliness of the platform, and the cost. But they do not hear enough, nor will they ask enough questions, on the quality of the data and its sources.

#### Quality data comes from quality assurance and input.

Open source data can provide enacted statutes and regulations, but human intelligence and input is what defines quality.

Tax and accounting departments should consider how additional data layers add to the value of the substantive data content. This includes metadata, analysis, tagging, organization, and quality assurance provided by tax professionals and data specialists who serve as stewards of the data. This data makes it possible for an AI solution to find more connections and specific answers. This blend of data quantity and quality is necessary to ensure thorough, efficient tax research.

The quality and breadth of the software's user base should also be considered, as the users will provide continuous training to the AI solution by demonstrating how real-world users work, where they need support, and what they find valuable.

The tax content and data in Checkpoint™ exemplifies how Thomson Reuters improves the quality of volumes of data. Our tax experts add rich editorial content and contextual metadata and ensure consistency and accuracy when it comes to how users' research is organized and presented.

#### What makes Thomson Reuters data better?

Thomson Reuters has been a leading provider of trusted tax content for more than 100 years. Our editors review, organize, and enhance tax content with analysis, primary sources, content markers, and citations that contribute human perspectives and quality.

Editors go through extensive training to ensure consistency and accuracy when it comes to how users' research is organized and presented in Checkpoint. Their knowledge and standards are similarly applied when they collaborate with product developers to create and refine AI enhancements. All of these elements are brought together to create a clean user interface that ensures maximum efficiency for tax researchers using Checkpoint.

**Our tax content and data are:**

- **Curated, not harvested:** Thomson Reuters has thousands of tax professionals who review, annotate, organize, and provide stewardship of our tax content. Because of this careful oversight, users can feel confident that they are relying on the most-up-to-date, accurate, and relevant content.
- **Editorially enhanced:** Our tax-editors add human intelligence to our tax data by incorporating content markers and citations, and more to provide the contextual metadata needed to make machine learning more effective and connect to more relevant tax data.
- **Informed by actual users:** Checkpoint users provide continuous improvement to the data, other users, and themselves by working within the system every day. By collecting documents in Checkpoint folders, the system learns to identify connections between the content. By selecting citations, the system is able to identify and suggest additional supporting content.



Artificial intelligence, like human intelligence, is created and influenced by multiple factors, each of which should be considered when evaluating AI solutions.

**Conclusion**

As you consider how AI can transform your organization's tax work and help you meet the demands of working with larger data sets, it's important to understand that:

- AI technology is only as good as the data and metadata content it has to work with
- Domain expertise and input from data scientists, tax experts, and users is the training the AI technology needs to make the data accessible and effective

**What tax professionals must consider when evaluating artificial intelligence as part of their tax practice.**

Artificial intelligence, like human intelligence, is created and influenced by multiple factors, each of which should be considered when evaluating AI solutions. Ask yourself and your potential AI technology provider the right questions to ensure AI technology is as intelligent as it should be.

**Who created the solution and are they experienced in the field?**

Consider if an AI technology solution is created and influenced by a software developer that might lack tax domain expertise. Are they retrofitting their technology to work for the tax industry, or was it made to excel for very specific tax purposes? An effective AI solution should be built by an organization with extensive history in the domain that has had time to evolve and refine their technology solutions.

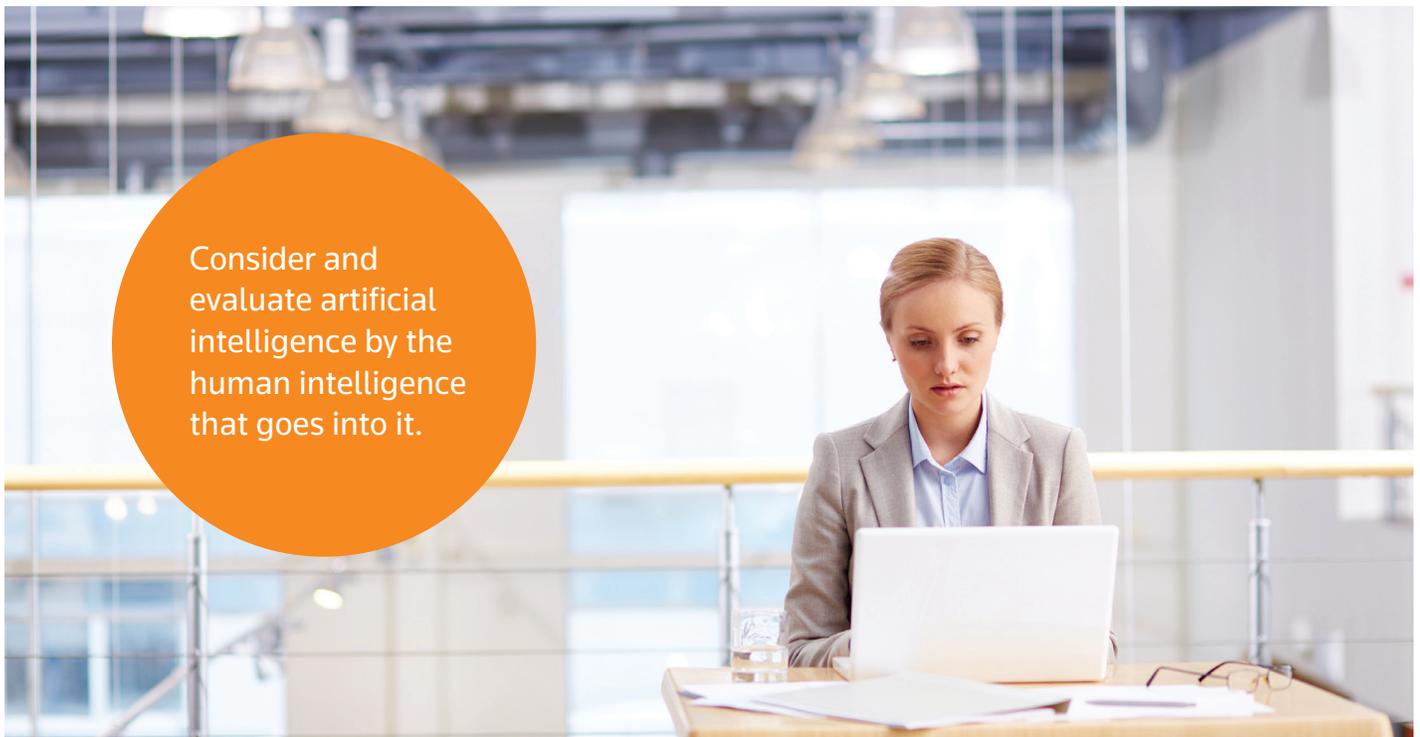
What tax professionals might not know is how often technology solutions are launched as MVPs, which stands for Minimally Viable Products. Tax professionals provide their organizations with the best possible service, expertise, and value — not as little as they can get away with. They should expect the same robustness and quality from their technology solutions. You don't want to serve your business with half-baked solutions or help your technology providers learn as they go.

**Who uses the AI-enabled technology and what value are they adding?**

End users contribute continuously to the machine learning capabilities of an AI-enabled system every time they use it. The more users, the better. And the more qualified the users are, the better. Checkpoint, for example, is the most preferred online tax research service. That means you benefit from the wisdom and practical habits of numerous experienced tax professionals using the system.

**Where does the data come from and how is it improved?**

The data is the foundation of the AI solution. Consider how clean, robust, and relevant the data is, as well as, the specific practice areas and issues for which it will be used. Also, consider how the data is curated and enhanced by human intelligence before it gets to you. That includes the metadata that is added and the connections that are formed and identified between disparate data sets.



Consider and evaluate artificial intelligence by the human intelligence that goes into it.

In summary, consider and evaluate artificial intelligence by the human intelligence that goes into it. Every interaction with AI technology should be considered as a collaboration with the teams of tax experts, AI experts, data scientists, developers, data stewards, and end users who contribute to the creation, training, and maintenance of the AI solution.

Thomson Reuters combines the human intelligence of our staff of thousands of subject matter experts with industry-leading rich data content and the AI technology and expertise of the data scientists, AI experts, and developers working in our in-house Center for AI and Cognitive Computing to provide innovative AI solutions that make tax professionals more effective.

**Checkpoint Edge™** is the next generation of our Checkpoint™ research and guidance tool for tax and accounting professionals. It delivers the latest in artificial intelligence, cognitive computing, and machine learning technologies, combined with the tax and accounting expertise of our editorial staff. It enables you to find fast, accurate answers with a more fluid and intuitive user experience.

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