

VENDOR VOICE

Inside Thomson Reuters's Innovation Hub

The company's Center for Cognitive Computing is focused on finding ways technology can help the legal industry operate more effectively and efficiently.

Artificial intelligence (AI) has become a buzzword in recent years; however, business information services provider Thomson Reuters has actually been incorporating the technology—along with machine-learning capabilities—into its products for more than two decades.

In 1993, the company integrated machine learning into its WIN (Westlaw Is Natural) search engine and also formed an internal research and development team that began to integrate natural language processing into products and content publishing systems.

In 2016, the company launched the Thomson Reuters Center for AI and Cognitive Computing—which team members refer to as C3—in Toronto to complement its research and development (R&D) team's work. In 2018, the C3 and R&D teams were merged to form the Center for Cognitive Computing—a group of scientists,

engineers, and designers who focus on developing smart applications that utilize machine learning, information retrieval, natural language processing, and analytics.

AALL Spectrum recently spoke with Khalid Al-Kofahi, head of research at Thomson Reuters, about the center's work and how it's helping legal industry members take advantage of AI and other emerging technologies.

How would you describe the Center for Cognitive Computing's mission?

Our long-term vision is to simplify how knowledge work gets done. We translate it into three main activities. First, we work with business and technology colleagues to deliver AI-enabled products and services to our customers. Second, we conduct research projects that focus on exploring new technologies and adapting them to our data and problem space. The outcome of these projects includes scientific papers and patents,

What would you like to do today?

- Check your work**
 - Examine an early draft of a brief or memo that you're still working on to finish your research faster
 - Double-check a memo that you've already thoroughly researched to see if you missed anything important
 - Update an older brief that may cite outdated law or require newer authority
 - Evaluate a colleague's work product
- Analyze an opponent's work**
 - Review KeyCite information to identify potential weaknesses in opponent's authority
 - See the most relevant law that the opponent chose not to cite (there could be a reason)

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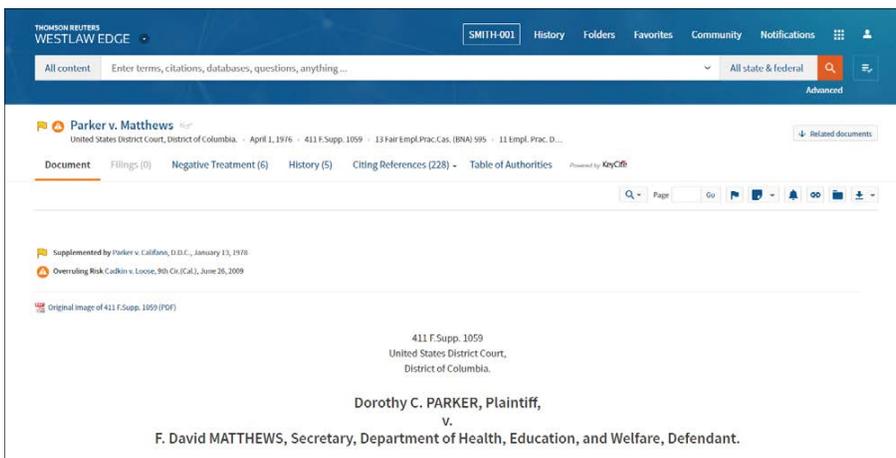
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The security and privacy of your data is important to us. We employ multiple layers of security to keep it safe.

Westlaw Edge's Quick Check feature will examine a brief's text, citations, and structure to detect relevant recommendations that haven't been cited.

The KeyCite Overruling Risk feature detects when a point of law in their case has been implicitly undermined based on its reliance on an overruled or otherwise invalid prior decision.

especially around products for legal research, they are the experts. Some attorneys within the design teams used to be librarians at law firms. In that sense, they are involved in the hands-on work with some of these projects with my team. But in addition to that, our design partner firms sometimes include librarians in these projects as well.



The screenshot shows the Westlaw Edge interface for the case *Parker v. Matthews*. The document is from the United States District Court, District of Columbia, dated April 1, 1976. The interface includes a search bar, navigation tabs (Document, Filings, Negative Treatment, History, Citing References, Table of Authorities), and a list of related documents. The main content area shows the original image of the document, which is a court opinion from 411 F.Supp. 1059. The parties are Dorothy C. PARKER, Plaintiff, and F. David MATTHEWS, Secretary, Department of Health, Education, and Welfare, Defendant.

What products has the Center for Cognitive Computing helped create?

For the legal space, the most recent product we worked on was Westlaw Edge. We developed the AI that powers the Westlaw Answers, Quick Check intelligent document analysis, Overruling Risk, and Litigation Analytics features. Prior to that, we developed the AI powering West Search. Outside of Westlaw, we worked on products such as West km, Drafting Assistant, and CLEAR, to name just a few.

as well as prototypes. These projects are also meant to develop the company's technological skills and capabilities in anticipation of future business needs.

Third, we also do exploration and innovation projects to explore what an AI-enabled experience for a particular task may look like. We then use that to influence our research directions.

How are new products and technologies tested?

Our AI is designed by scientists, engineers, and subject-matter experts—attorneys, accountants, and journalists. For example, in the legal space, you need attorneys who understand the nuances of the law, the data, and the legal language—not only to train and validate a solution, but also to help scientists capture these nuances and incorporate them into the machine-learning models.

We recognize that our customers rely on us for their critical work, and as such,

we take testing very seriously. We need to make sure the algorithms work for a wide range of use cases. We also work with design partners—law firms who also help us validate the quality and the product experience.

Testing, validation, and fine-tuning takes about 50 percent of our product development time. We try to do microtests for the various use cases—for example, in Westlaw Edge, our AI-enabled legal research platform, we tested and trained the search algorithm using 300,000 question/answer pairs. If you think about the magnitude of that—each pair is a small research task our team of attorneys has to do manually—that's the level of testing we bring to the table.

Have law librarians contributed to the product development process?

Some have been part of the development programs, for sure, because

Have industry members become more familiar with what AI can offer?

I believe so. Our customers, at least the people I talk to, have a pretty good sense of what AI can and can't do and what it's good for—especially given that they're now using AI at home, in their cars, on their phones, etc. The consumer space is full of simple-to-use applications and devices powered by advanced and complex AI. Our customers are demanding equally advanced technology and intuitive experiences on the professional side of the divide. But they also understand a web search for a pair of jeans is not the same as legal research.

Having said this, some of our customers remain concerned about AI in legal applications. For example, one question I often hear in the context of Westlaw is: "How do I know I am getting the right information?" This is a valid question, and this is why we spend significant amounts of time explaining

how the AI works. Not at the level of individual results, but at the solution architecture level and how the various modules and data interact to produce results. But at the end of the day, professionals need to use it, see how it performs, and then they can start to trust it.

The second concern I hear, from law librarians in particular, is that by providing law students with powerful tools, they may not be strong legal researchers when they graduate. I don't agree with that. Legal research is not just about finding things; it's about coming up with different legal hypotheses to apply to a set of facts and producing the desired outcome. It is about finding support for these hypotheses and outcomes in legal authorities, either directly or by analogy. That is not an exercise in finding things; it is much more complex.

Law librarians are expert legal researchers, and some may prefer really complex Boolean queries over natural language queries. But the majority of our customers prefer natural language. They find it more intuitive, and Westlaw has been shown to be very effective at helping our customers find what they are looking for.

Overall, what type of impact has AI had on legal work?

I honestly think AI has already transformed the legal industry; it simplified

how legal tasks are done. Imagine doing legal research without a search engine or a modern citator. Imagine doing document review without discovery tools. Each of these tasks can be done manually—but will be so much more difficult, with determining overruling risk indicators being prohibitively expensive. That is how AI has helped on the efficiency side.

In addition to that, AI has been shown to help attorneys produce a higher-quality work product. Our research has shown, on average, conducting legal research using Westlaw Edge's algorithms is not only faster than research performed using other methods, but it is also more accurate. The Overruling Risk citator feature—which warns users when a point of law has been implicitly undermined based on its reliance on an overruled or otherwise invalid prior decision—is another example of an AI capability that is meant to introduce efficiency and help attorneys produce higher-quality work.

We launched Westlaw Edge in 2018 and then introduced additional capabilities in 2019. The first launch of Westlaw was very focused on legal research; Edge introduced a better search engine that also tries to answer certain types of legal questions—those with short, concrete answers.

Then we added Quick Check, which attorneys use to double-check a brief they just wrote to make sure they did not miss any key authorities they should have cited, or at least should be aware of. Attorneys also use Quick Check to see which authorities the opposing party did not cite in their brief or motion, some of which might be directly applicable but reach a different conclusion.

Litigation Analytics is another example of how AI is changing how the law is practiced. By analyzing docket data—who is suing whom, for what, in front of which judge, what motions they filed, how long it took for the judge to rule on them, and so on—and then deriving a number of analytics, we help attorneys define their legal strategies based on data and analytics, not just intuition or their own experience. Litigation Analytics is also important to

help attorneys manage clients' expectations, especially around time to rule and when responding to the opposing party's strategies.

Are there other challenges you feel AI could alleviate?

I tend to think about the opportunities that could be captured by AI along two dimensions: the practice of law and the business of law.

Most of our AI work in the last 25 years or so has focused on the practice of law—to develop algorithms that help attorneys find what they are looking for faster, to analyze and derive insights from data, and to generate better work products in less time. We will continue to see significant opportunities along these lines.

Going forward, however, I see significant opportunities for AI to introduce simplicity and efficiencies in matter intake and evaluation; in online dispute resolution, including helping with self-representation; and improving access to justice.

On the transactional side, we are seeing significant innovations from a number of players in this space, especially for contract review and contract life cycle management. Having said this, I think we are just starting to go under the surface there, and I expect to see a number of new innovations in the next three-plus years.

One area that remains an elusive target is knowledge management. I'm not sure why, to be honest; maybe because firms have different workflows for getting work done and effective knowledge management solutions need to be able to integrate with these workflows, as well as enable collaboration around matters.

At the end of the day, players in the legal industry have a simple challenge: to determine how to continue to provide bespoke solutions under significant time and price pressures and differentiate themselves from their competitors—not an easy challenge to address. But one thing is for sure: AI has been—and will continue to be—part of the answer.

THOMSON REUTERS CENTER FOR COGNITIVE COMPUTING FAST FACTS

Year founded: 2018

Headquarters: Toronto, Canada

Number of employees: About 35 in Toronto, 25 in Eagan, Minnesota, and a few working remotely.

Team members consist of: Scientists with a PhD in subject areas such as computer science and machine learning; engineers; and user experience and design professionals.

 Research + Analytics

 Information Management