

# Artificial Intelligence

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# Banking on AI in financial services







In recent years it has become clear that the applications and potential uses of artificial intelligence are an increasing consideration for CMS clients across all sectors, and popular opinion holds that the businesses that manage to capture the potential of AI are the ones that will thrive in the economy of the future.

For that reason, lawyers from across the firm have been working to understand and help shape the uses and regulation of AI, with CMS partners participating in the All-Party Parliamentary Group on AI, and working with clients to help commercialise the benefits of AI in compliant and ethical ways.

The twin factors of a highly regulated environment along with enormous amounts of complex customer data make the banking sector ripe for the application of AI and the technology is clearly making its way into the mechanics of the industry. For that reason, in March 2019 we assembled a group of industry participants at a roundtable dinner to assess the current impact and limitations of these technologies. This report captures the themes that were discussed during that event.



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# Finding the perfect fusion between man and machine

Our roundtable attendees recognised that financial institutions are becoming increasingly clinical in exploiting technology. They see value in automating simpler tasks and the analytical speed and accuracy that AI can provide, but they acknowledge that technology can currently only go so far. Successful decision making in the banking industry often depends on experience, an understanding of key trends and the wider context that wraps around them. The banker's gut, still a key arbiter of whether a transaction gets the green light, is still not capable of being synthesised.

Machines can absorb and learn from data sources, but the brain's ability to grasp experiences and apply them laterally continues to be a tall order for even the most powerful AI technologies. One roundtable participant highlights the complex nature of loan terms, where even the minor movement of a comma could manifestly change the meaning of the document. So, should we be moved by the AI phenomenon?

Patrick Henry Winston, a professor at the Massachusetts Institute of Technology (MIT) and a former director of its AI laboratory, told the Financial Times last year that technology was still a long way from matching the human mind. He suggested that AI systems are 'more perpetual' than cognitive and he was unsure when the technology could be capable of genuine perceptive thinking. Rachel Free, a patent attorney at CMS, who holds an MSc in Artificial Intelligence from Edinburgh University, says that regulators and industry are still struggling to define AI, with the result that blanket regulation of AI is difficult to achieve with certainty.

But this hasn't stopped banks from making bold plays in AI. JP Morgan Chase & Co has introduced a Contract Intelligence (COIN) platform that analyses legal documents and extracts key data points and clauses. The machine learning technology can review 12,000 annual commercial loan agreements in seconds when manual review would take some 360,000 hours. It is also much less prone to error than its human counterparts.

Jamie Dimon, JP Morgan's highly celebrated CEO has routinely described the bank as a technology business. In his annual letter to shareholders in 2015, he opened up about his views on tech start-ups, particularly those in the fintech space, and how they were posing serious competition to traditional banking models: "They are very good at reducing the 'pain points' in that they can make loans in minutes, which might take banks weeks," Mr Dimon added in his letter. "We are going to work hard to make our services as seamless and competitive as theirs. And we also are completely comfortable with partnering where it makes sense."



# USD 11.5bn

JP Morgan spends USD 11.5bn  
a year on technology

Mr Dimon has talked frequently about investing in AI and machine learning to improve underwriting and reduce risk. Reuters recently reported that the bank spends some USD 11.5bn a year on technology and it employs more than 50,000 technologists. This year it is beginning the development of a fintech campus in Silicon Valley, housing over 1,000 employees at Stanford Research Park.





# The slow train to AI utopia

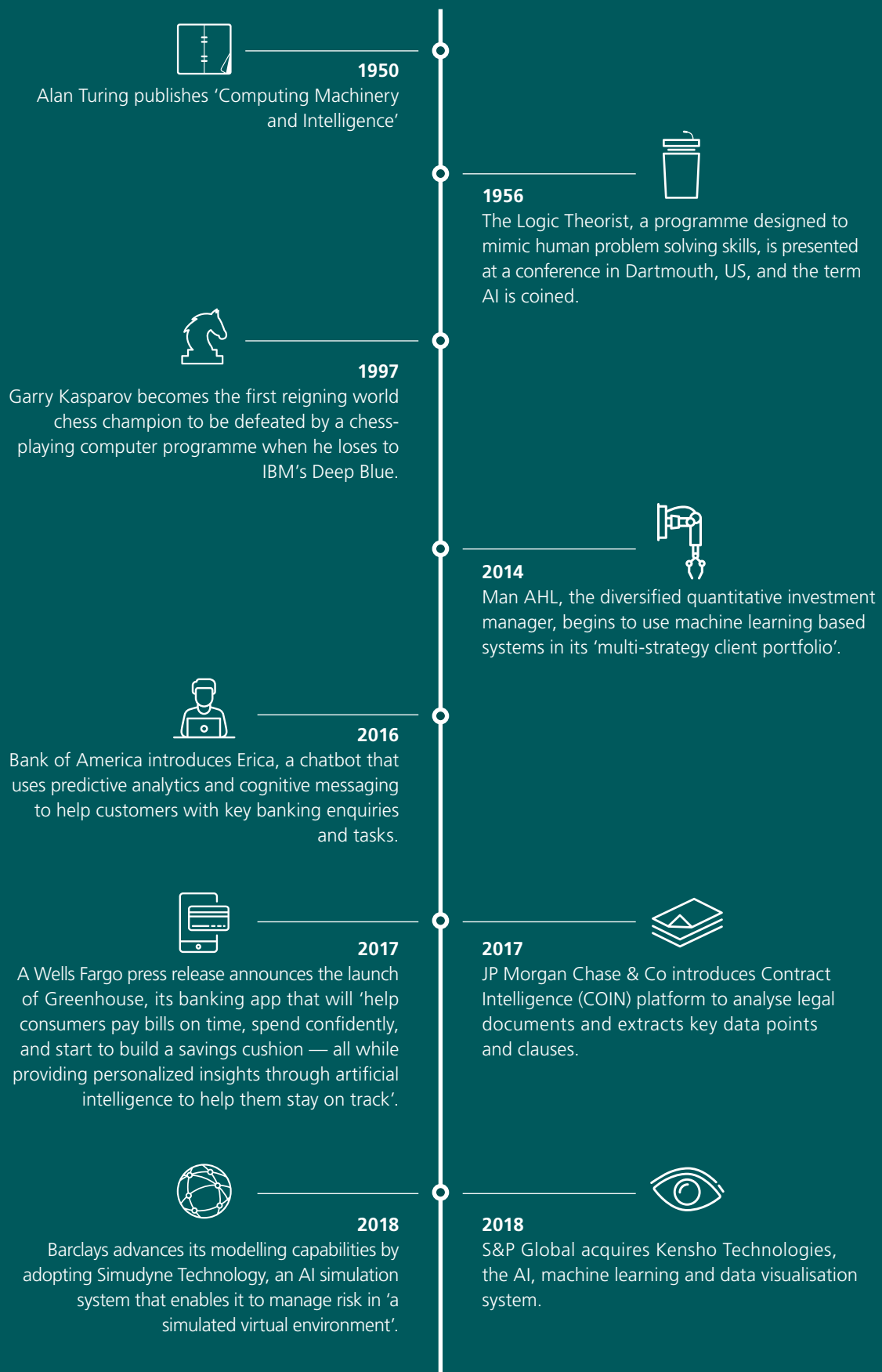
The English mathematician Alan Turing proposed a test in 1950 to determine whether a machine could think, suggesting that if the observer could not distinguish the machine's answers from human responses, then it did indeed show the characteristics of AI.

He predicted that a computer would be so powerful by the year 2000 that "an interrogator will not have more than a 70% chance of making the right identification [machine or human] after five minutes of questioning." We are now witnessing his prophecy. Products such as Google's Duplex, a digital assistant, can now make appointments over the phone without humans recognising that they are indeed interacting with AI. Even the robotic voice is gone.

AI has taken nearly 70 years from Turing's initial revelation to be part of the lexicon in day-to-day business. Yet over the last decade in particular, technology has become so powerful and data volumes so vast that AI has a much more effective platform to work from.



## A brief history of AI and its impact on financial services









# Transforming the terrain

In 2016, KPMG posed the concept of an Invisible Bank that could be in place by 2030. It is based on the idea of an Enlightened Virtual Assistant (EVA), a platform through which consumers connect with the bank.

The EVA simply draws on existing technologies – advanced data analytics, voice authentication, artificial intelligence, connected devices, application programming interface (API) and cloud technology.

Respected voices in the industry have warned that jobs are on the line. Citigroup chief executive Mike Corbat told the Financial Times in February this year that tens of thousands of call centre jobs are likely to be replaced by machines, indicating that it would be better for the customer experience and cost less to deliver.

Most of the jobs at risk in the industry are at the lower-paid end of the spectrum. The use of chatbots using natural language processing and helping customers with queries and transactions is one such example. Voice and facial recognition could be used instead of traditional security methods.

Bank of America introduced Erica in 2016, a chatbot that uses predictive analytics and cognitive messaging to help customers with money transfers, balance enquiries, payment reminders and warnings about recurring charges, among other key tasks. In March this year, the bank revealed that the system had engaged with more than six million users.

With the inevitable creeping in of these technologies, Richard Brown, a partner in the Employment team at CMS, says that there should be a greater emphasis on reskilling the workforce so that it is both tech and financial services savvy. Financial institutions have an opportunity to empower and reassign current workers with new proficiencies.

# Knowing AI's limits

Despite being portrayed as transformational, AI has its limitations and is not a universal panacea.

Sure it can increase analytical accuracy and speed up routine processes, but it is not yet applicable to all areas of banking business. One roundtable attendee acknowledges that AI has irrefutable value, but it won't yet replace grey hair and rounded thought: "There is a lot in banking that is not logical, but about market behaviours that you are able to understand through experience. AI might make this task smoother, but it can't replace the individual." He points to securitisation structures, where at a granular level technology could work out what terms are eligible, but he questions whether it would understand crucial nuances in a loan document.

In a lending situation, for example, would robotic advice based on an algorithm be sophisticated enough to understand the customer's situation? "If the robo-adviser interplays with a vulnerable customer, would the algorithm be sophisticated enough to pick this up in the same way that that a human might?" asks Billy Bradley, an associate in the Regulatory team at CMS. From an ethical point of view, a bank or institution must be able to articulate how decisions were made and whether they took into account all key factors. On the flipside, AI can be incredibly powerful in fraud prevention, identifying a suspicious looking transaction and alerting the bank and customer to it.

A roundtable participant wonders if experience will always trump technology. "Why can't a computer learn from billions of interactions?" he asks. "Or perhaps this is about the quality versus the quantity of experience?"

For the banking industry, this poses real challenges. Many of the risks in banking are too high to give full control to AI, no matter how sophisticated it is. Charles Kerrigan, a partner in the Finance Team at CMS London, points to Netflix and its use of AI to predict customer preferences, recognising that its only risk is whether it achieves a good or bad customer experience. Unlike in banking, there is no danger of financial Armageddon.



Why can't a computer learn from billions of interactions?

*A roundtable participant*

A roundtable participant believes that regulators will retain deep concerns about universal use of AI in the banking sector, especially if, as an embryonic technology, it has the potential to create systemic risk. Confidence and trust must still be embedded in the market to achieve full approval from regulators.

What might appeal to regulators is that AI technology is capable of ignoring sentiment or indeed excitement and adrenaline. It won't be influenced by the hunger for higher bonuses or to recover recent losses. It can analyse and process without emotion.





Assuming it is fed quality and appropriate data, it can be purely objective. But can it? Just like unconscious bias in humans, an AI algorithm makes jaundiced decisions according to the inherent biases in the data used to train it. If an AI system used for recruitment notices that a high proportion of executives within the business were educated at the University of Oxford, it might deduce that graduates from this institution are to be preferred. In this instance, decisions must be checked and audited manually to ensure that there are no wrinkles in the system.

Another roundtable attendee says that regulators can play an anchor role in stepping in and shaping how AI can empower the banking sector to make better decisions and provide improved services to customers.

# Feeding the machines

The history of humans and machines working in harmony stems back to the industrial revolution and beyond.

Dissenting voices have raised concerns about human roles becoming redundant, but with employment levels in the UK and other developed economies at record highs, it suggests that, for now, the machines are not taking over.

The reality is that AI remains dependent on human thought and skill to create it and decide how it is used and deployed.

In return for valuable human interaction, AI becomes a supplementary and important tool in fortifying and expediting existing processes and decisions. One of our roundtable participants acknowledges that humans remain integral: "It still requires someone to identify the type of data that it needs. It will still need human intervention at the start or to fiddle with to ensure that it delivers a competitive advantage."

Another agrees that human partnerships are vital for AI to function: "AI is only as good as what you put into it. If there is an appetite for real estate risk at the moment, I'm not sure that machines would be able to grasp it. If you have two disparate bits of information and you want to correlate them, that currently presents a significant challenge."



20 human lawyers reviewing 5 non-disclosure agreements (NDAs) took on average 92 minutes to review the contracts. LawGeex's AI managed this in just 26 seconds

Kushal Gandhi, a London-based Senior Associate in the Litigation and Arbitration team believes that AI can perform valuable but narrowly defined tasks: "We know that machines are better at doing certain things than humans. We have to look at where technologies can take away the decision-making process and how much it can do."

He sees AI as being transformational in document review in litigation, where it learns which documents are relevant or not relevant. He says that machines massively outperform humans in this regard and that the courts now often demand that technology is used for document review: "Once trust is built in, there is a shift."

In 2018, LawGeex, a prominent AI contract review system, tested its technology against 20 US-trained corporate lawyers in reviewing five non-disclosure agreements (NDAs). In the test, AI achieved an average accuracy rating of 94%, with the lawyers managing 85%. Not a huge difference, but when the test looked at speed, the results showed that lawyers took an average of 92 minutes to review the contracts, while LawGeex's AI managed this in just 26 seconds.

CMS has adopted Kira Systems, the machine learning contract search, review and analysis tool. The technology is taught what to look out for and is hugely impactful in large transactions, where a team of lawyers would take far longer to analyse thousands of contracts. "There is a risk consideration to be made" says Duncan Turner, a partner in the Technology Media and Telecommunications Team at CMS Edinburgh. "But the same is true for humans."







# Building opportunities and competition

As far as the consumer is concerned, AI is only leading to more choice and improved services.

The concept of robo-advice, for example, at a consumer level could be a powerful offering. It could apply strictly defined criteria to a borrower, analyse risk appetite, and then provide appropriate products. From a regulatory or audit perspective, there will be a clear record of interaction with the customer. "It could provide access to services for people that can't afford financial advice," comments Duncan Turner (CMS). He says that AI technologies could develop more bespoke products for customers through a direct analysis of a borrower's financial position. This would be favourable to simply imposing template terms in standard loan documentation.

Leaving aside the negative public sentiments created by the global financial crisis and other financial scandals, banks have the natural advantage of being viewed as trustworthy organisations that are tightly regulated. They have an advantageous platform from which they can sell products and services to consumers and further augment the customer experience. AI has the potential to deliver a more personalised service through customer profiling, where risks can be assessed and offers can be more targeted. Machine learning could conceivably analyse behaviour patterns, recognising specific needs of the consumer.

One roundtable guest is optimistic about the role AI could play in augmenting marketing and business development: "It should be able to look at opportunities and not just fix things. You might be able to wake up in the morning and have a few leads. AI could be incredible in that space if you can spread the message of what you can get if you look for it."



There will be disruption and it will almost certainly be AI-led

*Roundtable attendee*

For traditional banks, though, the impact of technology is in itself a threat to their businesses. Technology, including AI, is proving pivotal in developing greater competition in the market. For decades the banking landscape barely changed, until digital and online banking enabled smaller banks and other disruptors to come into the equation.

A roundtable participant from the finance sector recognises that challenger banks are arguably more nimble and capable of quicker innovation. She believes that established banking brands need to be alive to this.

Like in most industries, there is a risk in being the first mover. Our roundtable attendees acknowledge that there is a lot of expectation in the market, but few are willing to take the lead. Note that Apple was not the inventor of the smartphone and Google was far from the first dominant force in the internet search engine space.

Activity is likely to become frenetic as AI receives greater acceptance and confidence. "The minute one big organisation puts faith in AI, then everyone will follow," one guest says. "There will be disruption and it will almost certainly be AI-led."

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