Digitising Australian
financial services with AI

AI

Contents

Why AI?
Why now?

Australia's financial services industry is facing unprecedented challenges from changing technology, regulation and consumer expectations. Companies now operate in a highly digitised, 24/7 and global environment. They face threats from new tech-savvy competitors and more empowered criminals. Many are working hard to remediate legacy systems and rebuild trust with customers, regulators and other stakeholders. Some are even being asked to play new roles as community protectors, capable of keeping the nation safe from financial and cyberthreats.

AI is one of the transformational technologies driving the re-invention of the financial services industry in Australia and around the world.
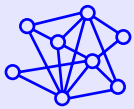
All this change is also presenting many new opportunities. Innovations such as the introduction of open banking in early 2020 and the ongoing transformation of the payments environment are transforming the industry landscape in Australia for incumbents and new entrants alike. The only sustainable way forward for banks, insurers, wealth managers and others is to increase their technology intensity. This means re-inventing systems, processes and ways of working to ensure these are all modern, competitive, compliant and secure. Legacy infrastructure, business models and ways of working – and thinking – will need to be re-evaluated and adapted for the future.

Artificial intelligence (AI) is a critical part of this evolution, as a transformative technology for enhancing human capabilities, maximising the value of data and protecting data and systems. But what is AI, where is it being used and how can you explore its potential? Just as importantly, what's involved in using AI in a way that's ethical, transparent and inclusive, such that it improves the competitiveness and sustainability of your business rather than creating risks?

This paper discusses these issues for the benefit of business leaders and technologists working within financial services organisations, and those creating new solutions for the industry.

What is artificial intelligence?

AI is one of the transformational technologies driving the re-invention of the financial services industry in Australia and around the world.

Learn more at: microsoft.com/en-au /ai/ai-platform

With its ability to ingest and analyse vast amounts of data, AI has the power to transform critical business functions. It also empowers employees in the financial sector to increase their productivity by surfacing insights, accelerating data analysis and automating routine processes.

"Artificial intelligence is the ability for a computer to replicate or perform a task that a human can, either at an equivalent quality or a higher quality," says Jesse Arundell, Executive Manager of Emerging Technology & Innovation Ecosystems at the Commonwealth Bank of Australia (CBA). "To us, it is general purpose – it can be applied in so many different ways."

Broadly speaking, AI is when machines or computer systems behave in a way that simulates human intelligence. In computer science, AI comprises several fields of study, most notably machine learning.

Machine learning enables computers to accumulate knowledge, so they can learn without being explicitly programmed. Advances in this field, particularly in deep learning, have led to the recent proliferation of AI. Meanwhile, cloud computing services such as Microsoft Azure are making AI accessible to businesses and individuals around the world.

Machine learning works by training computer systems to use algorithms – lines of code – to spot patterns in data and then behave in a predictive way. Speech recognition, natural language processing, computer vision, search recommendations and email filtering are all examples of AI that use machine learning.

Deep learning is a type of machine learning inspired by how neural networks in the human brain process information. In these systems, each layer in the neural network transforms the data it receives into a slightly more composite representation of that information.

AI in Australian
financial services
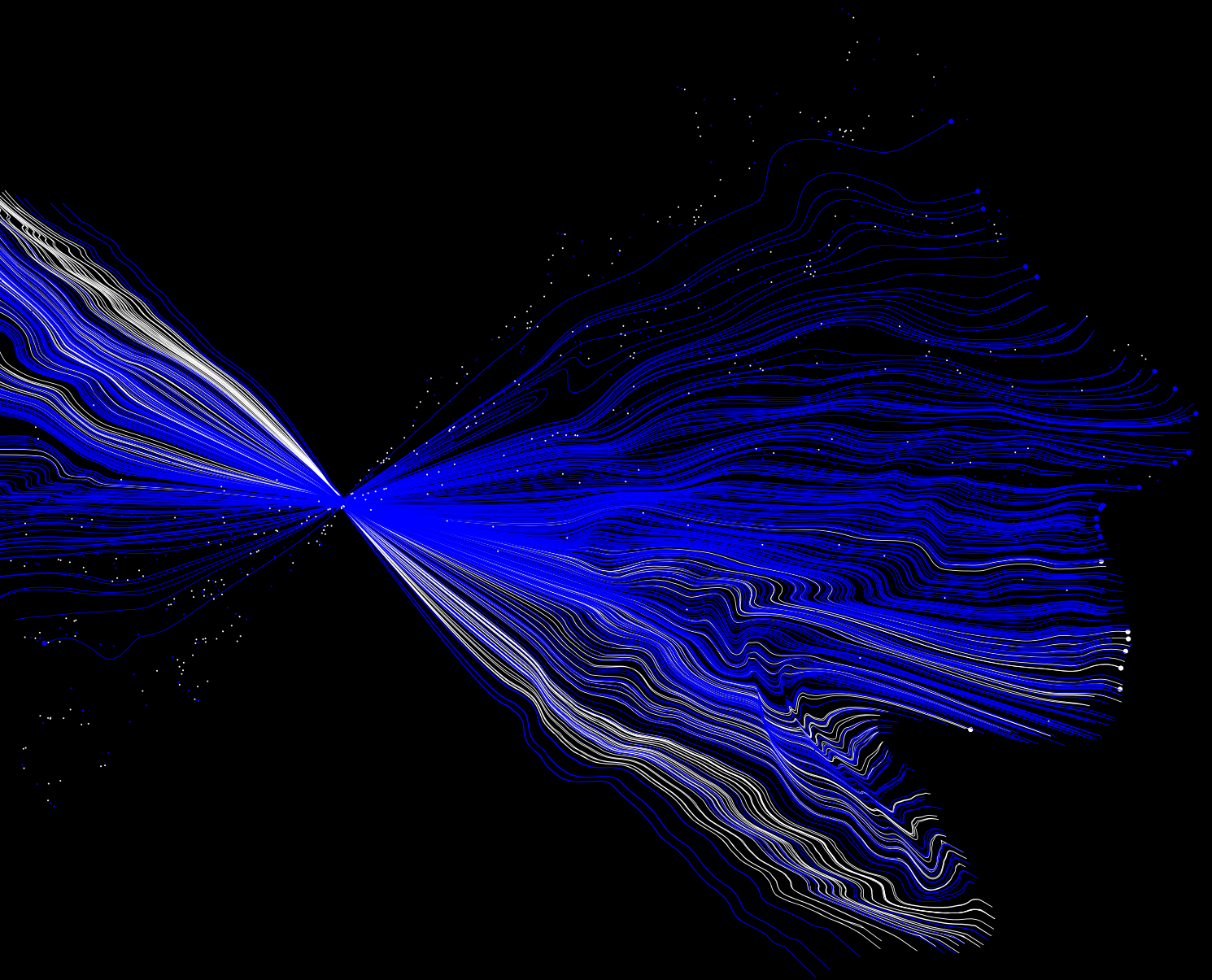
AI is already widely used in Australia's financial services industry. One major bank has counted more than 30 systems that use AI in some way, including types that have been around for decades such as optical character recognition (OCR). Another major bank is running more than 200 machine learning models to help it understand customer behaviours and needs. Numerous institutions have also rolled out AI-powered virtual assistants, and many use AI in fraud prevention and cybersecurity.

25%

The use of AI in standard business processes increased by almost 25 per cent from 2018 to 2019.

"Even though we've been on this journey for quite a few years, in the last 18 months we've seen a lot of the AI-powered solutions that we've always wanted within the bank actually come to life," CBA's Jesse Arundell says. "And what we are finding time and time again is that artificial intelligence is helping us build and create better customer risk and compliance outcomes in every application that we use it for."

According to McKinsey & Company's Global AI Survey (2019), the use of AI in standard business processes increased by almost 25 per cent from 2018 to 2019. Moreover, a majority of executives in companies that had adopted AI had increased revenue while 44 per cent had cut costs.[1]

The financial services industry was middle of the pack in adoption rates (after the high tech; automotive and assembly; telecoms; and travel, transport and logistics sectors), said McKinsey. However, banks and others were making extensive and growing use of robotic process automation, computer vision, machine learning, natural language text understanding, and virtual agents or conversational interfaces.[1]

Even so, most institutions have only scratched the surface when it comes to using AI within their most critical areas, such as automating work processes, understanding customers as individuals, making risk-based decisions, avoiding compliance breaches and controlling financial crime. They have been hamstrung by their legacy technology systems, the way their data is organised and regulatory concerns, not to mention an internal lack of awareness of what AI can do and the expertise needed to leverage it.

In this section, we provide examples of how a selection of Australian and international financial services organisations are using AI. We also provide insights from industry experts who are leading its adoption and development. These leaders are improving their operations and preparing for larger industry shifts, such as the:

arrival of open banking

modernisation of payments systems

greater pressure to comply with regulations and achieve zero failure rates

growth of specialised and competitive financial technology (fintech) groups

potential entry of global technology companies into financial services

challenge to attract the talent needed to transform their operations.

[1] *Global AI Survey: AI proves its worth, but few scale impact.* McKinsey & Company, November 2019.

Making complex decisions faster

As humans, we make complex decisions by considering current facts and history, organisational policies, and myriad other factors such as principles and ethics. AI-powered computing systems are now able to support these processes – and can do so very quickly, in a way that improves over time as humans review the results and make adjustments.

"What's important will be using the right piece of technology for the right use case. This is what will enable organisations to achieve their business outcomes."

**Richard McCarthy,
Perpetual Corporate Trust**

Perpetual Corporate Trust analyses mortgage data and streamlines compliance

Organises Australia's mortgage data in cloud for advanced analysis

Sees AI as part of a new technology mix for institutions

AI is part of an exciting mix of emerging technologies that will transform the financial services sector, according to Richard McCarthy, Group Executive of Perpetual Corporate Trust (PCT).

"There are myriad new technologies coming forward – including blockchain, Internet of Things, machine learning, AI, cloud computing, data warehousing and analytics – that are available for businesses to use," McCarthy says. "What's important will be using the right piece of technology for the right use case. This is what will enable organisations to achieve their business outcomes."

PCT is the leading provider of corporate trustee services to the Australian managed funds industry and debt markets. Since 1997, the company has run the Australian Data Warehouse for the financial services industry. In that time, it has collected data on more than 180 million mortgages from more than 50 lenders. PCT is also developing technology to support institutions' digital agendas and their management of regulatory processes.

In partnership with Microsoft, PCT has developed a portfolio of technology solutions focused on digitising and automating elements of regulatory risk and compliance reporting for the financial services industry. These include the Perpetual Business Intelligence platform, which uses machine learning to analyse the performance of lenders' mortgage portfolios and benchmark them against the entire Australian mortgage market. The platform also offers a Credit Stress Testing module that streamlines Australian Prudential Regulation Authority (APRA) reporting for financial services providers.

"We have set up a RegTech [regulatory technology] business in Data and Analytics Solutions," says McCarthy. "We're using technology to support our clients' digital transformation strategies so they can become more effective and efficient. But the difference is that more than 130 years old, and are a trusted brand with a strong balance sheet and very deep client relationships."

Other current projects at PCT include work on a predictive model that will enable treasury teams to optimise funding for their lending portfolios. It is also developing a proof of concept where PCT will do the heavy lifting of processing clients' unstructured data, so it can be standardised and used to meet their business reporting requirements.

Moula accelerates loan applications

🕐 Cuts time to assess loans from two weeks to 48 hours

✓ Uses machine learning to assess creditworthiness

The new Australian online lender Moula is using AI to accelerate the process it uses to decide whether to lend to customers. It uses machine learning to assess online loan applications, applying AI models to examine opportunities and risk, and overall creditworthiness. It can rapidly process the vast amount of data attached to online loan applications, so the lender can form a view within 48 hours rather than the two weeks it took before deploying AI.

Understanding customer needs and personalising offers

Today's consumers expect suppliers to know who they are – no matter what physical or digital channel they're using – and even to know what they want. This is a high bar to clear but one that will be increasingly important for any group competing in the open banking environment, where well-informed, data-driven service will be key.

AI can also enable finance organisations to position new offers to customers as they build out new ecosystems in the open banking environment. It can also help track consents relating to customer data, and maintain compliance.

"We like the convergence of platforms, whether it's Office 365 or Dynamics 365, as you're in the Power Platform. We really saw it as an optimal opportunity to improve, digitise and automate a number of these intimate processes."

Anthony Ingeri, Program Manager for BOQ's Customer Engagement Program

Bank of Queensland enhances customer feedback process

Improves customer service by better organising data

Moves to the cloud to prepare for AI

The Bank of Queensland (BOQ) is using AI to respond to this demand for personalised service and improve its customer service capabilities. The bank has replaced a manual customer feedback system with an automated solution that primes it to respond rapidly to customer concerns, and to make more informed product and service development decisions.

The platform enables around 1,000 BOQ personnel to load customer feedback directly in a Microsoft Dynamics 365 system hosted on Microsoft's Azure cloud platform. Over time, the bank plans to leverage AI capabilities to further build on the effectiveness of its new digital feedback loop.

"We see a seamless transition from analytics to advanced analytics, to what most people would call artificial intelligence. To us, artificial intelligence is when you reach a level where algorithms are creating insights without direct human involvement."

James Twiss, Westpac

Westpac corrals data for fast and autonomous service

Creates a new foundation for data analytics

Prepares for personalised, intelligent and autonomous customer interactions

Westpac is one of Australia's four largest banks and serves more than 14 million customers. It recently announced the launch of its Data Driven Experience Platform (DDEP), a Microsoft Azure–based data hub that draws on data sources from across the Westpac Group.

The DDEP will act as the foundation for real-time data analytics across the bank, and increasingly use machine learning and other Azure cognitive services to support decision-making and enhance customer interactions, with the goal of delivering more personalised services based on greater understanding of customer behaviours and preferences. This will enable the bank to engage digitally and in real time with customers in a way that's personalised, intelligent and autonomous.

According to Westpac's Chief Data and Strategy Officer, James Twiss, the bank sees AI as sitting at the peak of its already large data analytics pyramid.

"The way that we think about this is that there's essentially a pyramid of what you do with your data. At the very bottom level, it is simply about recording and retrieving that data and then doing very simple manipulations on it, like adding up.

"As you get more [data] as you move up the pyramid, you start to do more and more sophisticated things to it, where you're actually starting to look at correlations between different data sets, you're looking at distributions and looking at outliers, and trying to work out what's the likelihood that that's caused by randomness or there's meaning.

"You think about signal-to-noise ratio as you get more and more [data], and as you move up the pyramid, your analytics get more and more sophisticated. And then we see a seamless transition from analytics to advanced analytics, to what most people would call artificial intelligence. To us, artificial intelligence is when you reach a level where algorithms are creating insights without direct human involvement."

On open banking, Twiss adds: "I think it's a great step forward for the industry because it recognises that we're moving into a data sharing economy, and how we're going to do that in a way that is based on a solid foundation of privacy and security.

"As you move into more of a data sharing economy, customers will – with informed consent – have much easier access to their data across a wide variety of different industries. My expectation is a lot of different service providers will look to help them by using that data in different ways. You'd expect that artificial intelligence will have a large role to play in actually taking all that information and turning it into something useful for the customer."
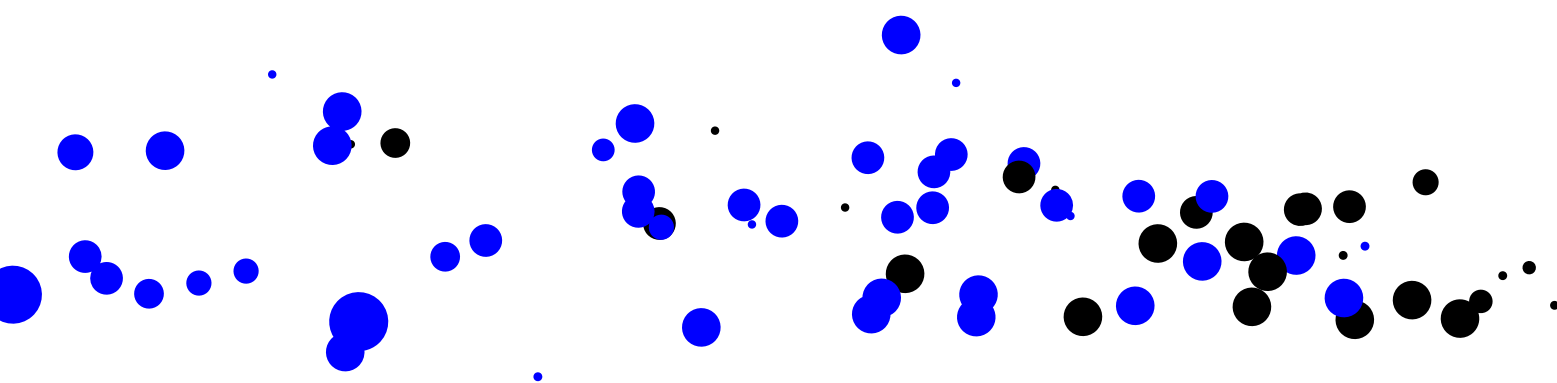
Resonate Solutions puts the customer at the centre

Captures customer voices and creates insights for frontline staff to the C-suite

Used by multiple financial institutions

Sydney-based Resonate Solutions is focused on helping large enterprises place their customers at the centre of their operations and strategy. The company uses Microsoft Azure to develop and deliver customer experience management solutions to a number of Australian financial institutions – solutions that capture and analyse the voice of the customer and then turn that into actionable insights.

Resonate's multichannel approach collects customer feedback and commentary provided via SMS, customer complaints, online feedback, social media and other listening channels. The resulting insights enable frontline staff to improve customer experiences. For example, the system can analyse an interaction or complaint, identify a root cause that needs action, or an emerging customer need, then alert senior management to compel action or change.

Quantium

Australian company Quantium helps financial institutions meet customers' growing expectations for personalised and responsive services, and primes them for opportunities arising out of new regulations such as open banking.

The company uses 'Q' – a cloud-based data science and AI platform – to inform its solutions. Q.Refinery, for instance, unlocks value in raw bank-customer transaction data by making it ready for analytics. These refined data sets are the foundation for deeper personalisation and predictive modelling at scale.

In addition to cleansing, classifying and enriching transactional data to create meaningful insights, Q.Refinery can also open up more than 800 predictive customer attributes covering behaviour, lifestyle and other dimensions, enabling banks to make use of what they know about their customers.

Quantium's solutions also support product, pricing and risk decisions.

Tackling financial crime

Financial institutions are effectively becoming national policing and security organisations, charged with detecting and preventing increasingly global financial crimes such as money laundering, terrorism financing and identity theft. This is adding a further dimension to their already acute desire to understand who they are doing business with, and to minimise the misuse of their systems.

AI is offering institutions a way to achieve these objectives while delivering services at the near-instant speed customers now expect.

AI can support real-time analysis of data for faster threat detection. Banks can use it to review data in real-time sessions – from transactional information, to customer data from internet and app-based banking.

Banks secure their systems

AI is playing a central role in detecting sophisticated threats

Institutions are moving beyond static rules-based approaches

AI can support real-time analysis of data for faster threat detection. Banks can use it to review data in real-time sessions – from transactional information, to customer data from internet and app-based banking. AI can then apply complex logic to pinpoint bad actors, malicious users, illegitimate transactions and anomalies, and alert an employee if it detects criminal behaviour. This process can, for instance, reduce false-positive money laundering alerts, saving employees time.

Gavin Keeley, Chief Executive Officer of the Australian specialist software company Search365, says this issue was famously highlighted by the bombing of the Boston Marathon in 2013. Authorities had concerns about one of the perpetrators of the Boston Marathon bombings and had even entered their name into a travel watchlist. However, due to a misspelling of the name, the exact, rules-driven computer system missed the threat. To work around this sort of issue, Keeley says his company uses AI-powered name-matching technology, originally developed for national security and adapted to assist financial services firms.

"We have a product called Over Watch and it's an example of where we're directly leveraging national-security and military-grade technology into financial services, and using machine learning algorithms in order to do name matching."

Quantexa

Headquartered in London, Quantexa specialises in providing network analytics so organisations can make more accurate, automated, contextual decisions. By connecting internal and external data sources to create a 'connected 360-degree view', Quantexa's platform uses advances in big data and AI to uncover hidden risks or opportunities. The company helps users solve challenges in financial crime, compliance, customer intelligence, risk, fraud and data analytics across sectors including banking, insurance and government.

BioCatch is an Israeli technology company that now has offices around the world, including in Australia. Founded in 2011 by experts in neural science, AI, machine learning and cyberterrorism, its customers include American Express and NatWest.

BioCatch delivers behavioural biometrics analysing human–device interactions to protect users and data. Banks and other enterprises use its services to reduce online fraud and protect against a variety of cyberthreats, by acting as a seamless part of the banks' mobile applications and without compromising the user experience.

The company's customers use its ability to profile genuine and fraudulent user interactions to detect fraudulent users. This is in addition to conventional but forgeable identification techniques, such as ID numbers and passwords.

For example, a new digital bank ran a marketing campaign to attract customers and quickly became the target of a massive online account opening fraud campaign. Fraudsters moved money from a compromised account into a new account that they fully controlled, allowing them to quickly withdraw funds without the legitimate user noticing and creating significant liabilities for the new digital bank. For every 100 good applications, there were 900 bad ones, each generating thousands of dollars in losses when fraudsters withdrew their funds and disappeared. BioCatch analysed user behaviour related to account opening, such as application familiarity, computer proficiency and data familiarity. The system generated real-time alerts that stopped the fraudsters and allowed the bank to resume normal operations.

Fighting fraud and handling cyber risk

As customers use more digital devices to access banking and other services, institutions face threats from a much wider range of sources. The spread of real-time payments and greater interconnection of systems via open application programming interfaces (APIs) is also creating security challenges. In fact, 25 per cent of banks think cyber risk is the top threat in the financial services industry.[2]

Scanning transactions and payments data for fraudulent patterns has been a major risk management challenge in the financial services industry. Rules-based approaches often miss fraudulent entries, and the volume of data needing to be screened is large and growing. Machine learning enables financial services businesses to identify fraudulent patterns accurately and in real time.

83%

93%

NetGuardians claims its solution cuts false positives by 83 per cent and fraud investigation times by 93 per cent.

NetGuardians launches anti-fraud solutions in the cloud

Prevents fraud relating to payments, digital banking and internal theft

Uses AI to prevent existing and new fraud scenarios

Switzerland is not only the home to some of the world's most advanced banking solutions, it's also the source of some of its most sophisticated anti-fraud software.

The Swiss company NetGuardians has recently made its NG|Screener solution available in the cloud by hosting it on Microsoft Azure. The screening solution helps banks and companies spot and stop fraud before money is stolen. It is built around ready-to-run AI risk models designed to catch invoice scams, CEO fraud, employee collusion, fraudulent online banking transactions due to hacking, and other issues.

When a possible fraud is spotted, NG|Screener's transaction-scoring API enables transaction blocking within the organisation's core banking or transaction processing system. By using AI, the service can monitor transactions in real time while presenting fewer false alerts. The company claims its solution cuts false positives by 83 per cent and fraud investigation times by 93 per cent.

[2] *Enabling the digital economy.* Microsoft, 2018.

Managing regulatory compliance

Financial service providers can face enormous fines, not to mention reputational and commercial damage, if they fail to comply with local and international regulations. In response, a regtech industry is quickly emerging to help them align their compliance obligations with fast-moving operations where billions of dollars are moving within millions of daily transactions, with contractual arrangements among numerous parties. Institutions are also automating their business processes and building in compliance measures to reduce manual labour.

"There are so many new regulations coming at regulated organisations. How does everyone stay on top of that? Regtech solutions using technology like AI – and natural language processing and machine learning – are absolutely critical to meeting this challenge."

Deborah Young, Chief Executive Officer of The RegTech Association

Commonwealth Bank gets a handle on regulations

Helps map regulations to the bank's activity

Ensures marketing is compliant

The Commonwealth Bank of Australia (CBA) has been making strong headway into AI. Its AI-powered customer engagement engine (CEE) can automatically suggest 20 million conversation starters a day to employees, helping them have more meaningful discussions with customers. And its digital assistant Ceeba can assist customers with more than 200 actions, such as activating their card or making payments.

At the core of these initiatives has been extensive collaboration between the bank's technology team and business groups, to explore AI-powered solutions and then train more than 200 machine learning models. For example, the bank has developed a set of machine learning models to help it better categorise and understand its customer complaint data, then identify trends and emerging issues. Once known, problems can be directed to relevant product teams or other groups.

"That's really exciting and lets us make better sense of some of the unstructured data we have in the organisation," says CBA's Jesse Arundell. "AI supercharges your ability to make sense of incredibly large volumes of data very quickly, to ensure that you have your people focused on the right things at the right time – as opposed to them spending all their time trying to make sense of all this data."

> **"It's very hard to constantly monitor and review everything that's out there. Having smart machines helping us with that is an area we're actively exploring at the moment."**
>
> **Jasper Poos, CBA**

CBA is also looking to AI to help with cybersecurity, fraud detection and regulatory compliance. Its London innovation lab has already piloted AI software that 'reads' 1.5 million paragraphs of regulations and issues required actions, saving hundreds of hours in manual processing time. In a close partnership with its Emerging Technology team, the bank is exploring more AI-driven solutions across all of its risk focus areas.

"We're looking into a few areas around regulatory mapping," says Jasper Poos, Head of Governance and Assurance at CBA and a Director of The RegTech Association board. The number of regulations that banks need to keep track of is higher than ever, according to Poos. "It's making it almost impossible to keep up with the volume and pace of new legislation," he says. "So having smarter tools to help us do that has proven to potentially be very beneficial."

Specifically, the bank is looking at how AI can help it identify what regulation actually applies in a given scenario and to which part of the business. AI can also provide ongoing oversight to ensure CBA keeps its customers and business sound, secure and safe. The bank is also seeing how AI, such as digital assistants or smart policy platforms, can help make sure everyone knows what needs to be done. "These should make it easier for us to know what our obligations are and to comply with those regulations," says Poos.

The bank is also starting to experiment with how AI can help ensure its marketing is compliant. Using AI, it can locate and monitor the vast amount of messaging it has online and even on third-party websites. The goal is to confirm that it's compliant and to get alerts to the right person if something needs to be reviewed.

"It's very hard to constantly monitor and review everything that's out there," says Poos. "Having smart machines helping us with that is an area we're actively exploring at the moment."

Automating labour-intensive processes

AI is enabling organisations to automate repetitive, labour-intensive tasks such as processing forms and entering data.

Search365 helps insurers streamline email

Uses AI automation to replace outsourcing

Saw 2019 as a turning point in capability

According to Search365's Gavin Keeley, AI is driving a new wave of business process re-engineering. Instead of outsourcing to offshore teams, companies can now achieve similar cost reductions by employing AI systems to automate processes. Keeley's firm is enabling two Australian insurance companies to use AI that recognises the content of emails coming into its claims division and categorises them for further action.

"I was an insurance industry executive myself for many years in the UK and Australia, and one of the things we absolutely knew when we started to offshore our back-office roles was that at some point in the future, the machines would get smart enough to do what the offshore teams were doing – we just didn't know when that would happen," Keeley says. "What I tell people is, I now know that date to be 2019."

Simple KYC accelerates checks

Halves time to onboard clients and cuts costs by 20–30 per cent

Provides an audit trail for compliance

Another local business using AI to enable financial institutions to automate their 'know your customer' checks is Simple KYC. The company uses machine learning, OCR and natural language processing to read and extract key information from complex sources such as trust deeds, then run electronic verification and politically exposed person (PEP) and sanction screening. These checks can be run on individuals and organisations.

According to Simple KYC, this approach can reduce the time to onboard clients by more than 50 per cent, and cut operating costs by 20–30 per cent. The time required to read a trust deed, for example, has been reduced by more than 75 per cent. The system also enables businesses to meet their regulatory requirements by providing an audit trail and generating reports.

Onfido enables digital access

Only about 10 per cent of American banks can currently onboard new customers without having them complete or sign paper forms at some point. The desire to digitally onboard customers is leading to the emergence of new companies that specialise in remotely verifying identities. One leader in this area is Onfido, a company that has received funding from Microsoft's M12 venture fund. Founded in 2012, the company uses a hybrid mix of AI and human experts to help more than 1,500 businesses verify their users and prevent fraud. It is now expanding globally, with offices in San Francisco, New York, London, Lisbon and Singapore.

Understanding payments and transactions

> "The beauty of machine learning is that it can handle those kinds of new scenarios; it's more flexible than writing expert systems and coding all the rules."

**Stuart Grover,
Look Who's Charging**

AI is enabling the financial services industry to solve some challenges that have eluded it for years – the financial services equivalent of a computer finally beating a human at chess. An example of a global problem that has been solved by an Australian company is the inability to reliably tell credit and debit cardholders the source of a charge, even when businesses hold merchant facilities in different names.

This problem has traditionally cost Australian banks and card providers an estimated $200 million a year, as they've answered customer queries or pursued suspect transactions unnecessarily. It's also greatly annoyed customers and merchants alike.

Look Who's Charging solves card reporting mystery

Makes card payment statements meaningful

Uses machine learning to manage new scenarios

Look Who's Charging has solved the problem of unclear transactional information by using AI to intelligently match unclear entries on statements to more comprehensive information about underlying merchants. ANZ, CBA, NAB, Westpac and others already use the system to provide better information about more than 1 billion transactions each month.

The company has made this possible by building a database of Australia's 1.2 million merchants and understanding the 120 million ways that information about them can appear on a bank statement.

It then cross-references those points against about 150 other data sources, such as registers of business names and liquor licensing lists, to help identify the merchant and provide more detailed information about the transaction.

Look Who's Charging's solution has only become possible with the arrival of probabilistic and flexible AI-based computing solutions. "For example, we're looking for a business called Pete's Plumbers in Sydney," says Stuart Grover, Co-founder of the company. "We'll get back five or 10 candidates via our larger repository of merchants. We then use machine learning for scoring those candidates based on a number of data points. We've built a classifier over time that enables us to get a pretty good match rate based on what we know about the merchant and what we know about what we're trying to match."

The company also uses AI principles to sort between 'signals' and 'noise' to keep the data in its system current. For example, if a company ceases to appear on a state liquor licensing registry it could be a signal that it's gone out of business. Updating often unpredictable information on the fly like this is difficult or impossible with traditional narrow, rules-based computer programs.

"People have been building expert systems for 20 or 30 years, but the problem is that they're just not flexible enough – they can't cope with new scenarios," says Grover. "The beauty of machine learning is that it can handle those kinds of new scenarios; it's more flexible than writing expert systems and coding all the rules."

Modelling and predicting risk

One of the most critical core capabilities of any bank, insurer or fund manager is the ability to understand and accurately price risk. This is achieved by using sophisticated computer models that help teams make decisions in often complex and unclear situations – and almost always in situations that involve making educated guesses about the future.

AI is having a profound impact in this area by enabling progressive institutions and new fintech start-ups to understand risk more quickly or more accurately than their competitors. Access to improved real-time intelligence about risk is also allowing organisations to better meet their regulatory reporting requirements and stay within required limits.

GainX help institutions manage risk

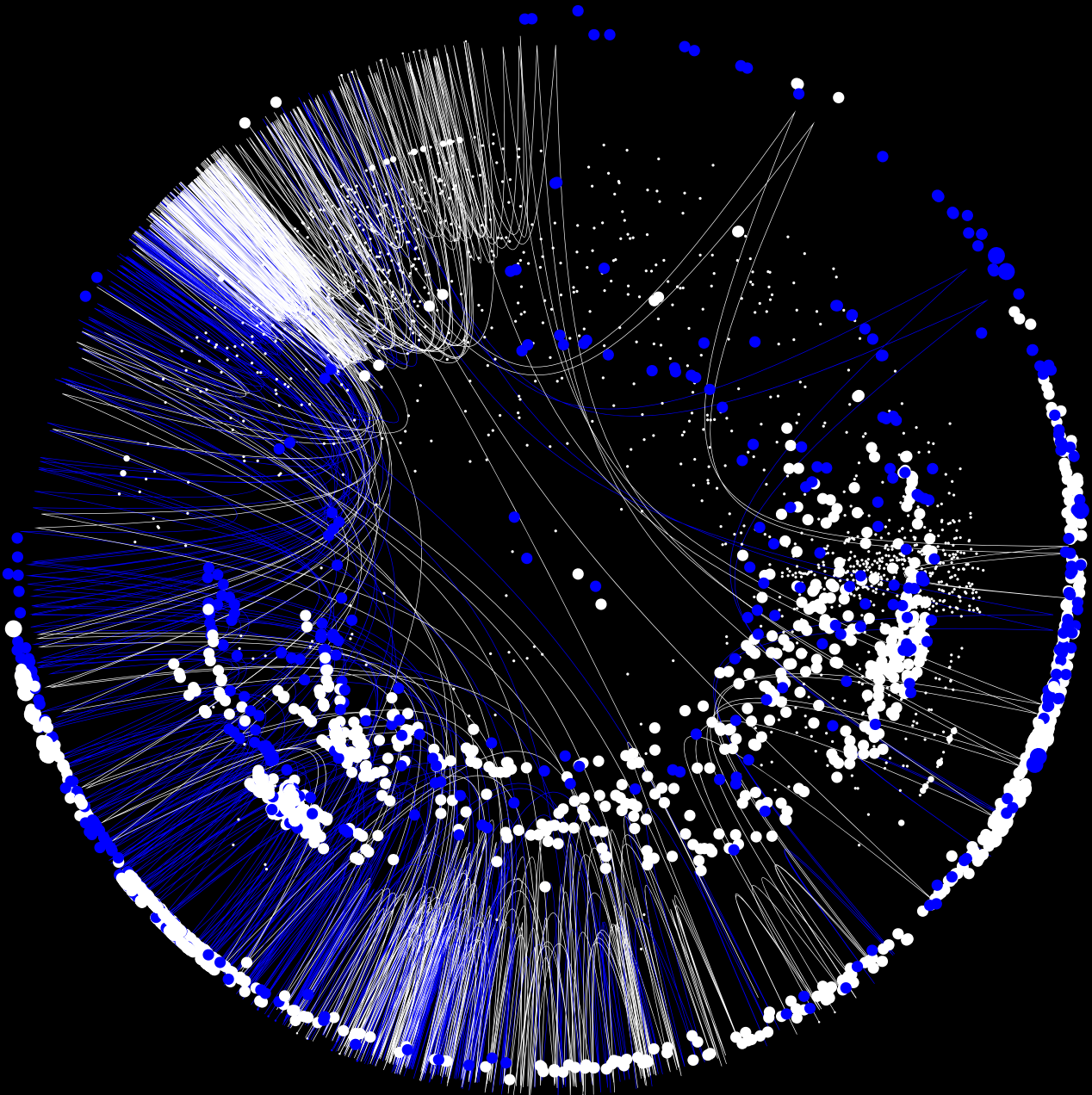Uses AI to provide a better understanding of risk

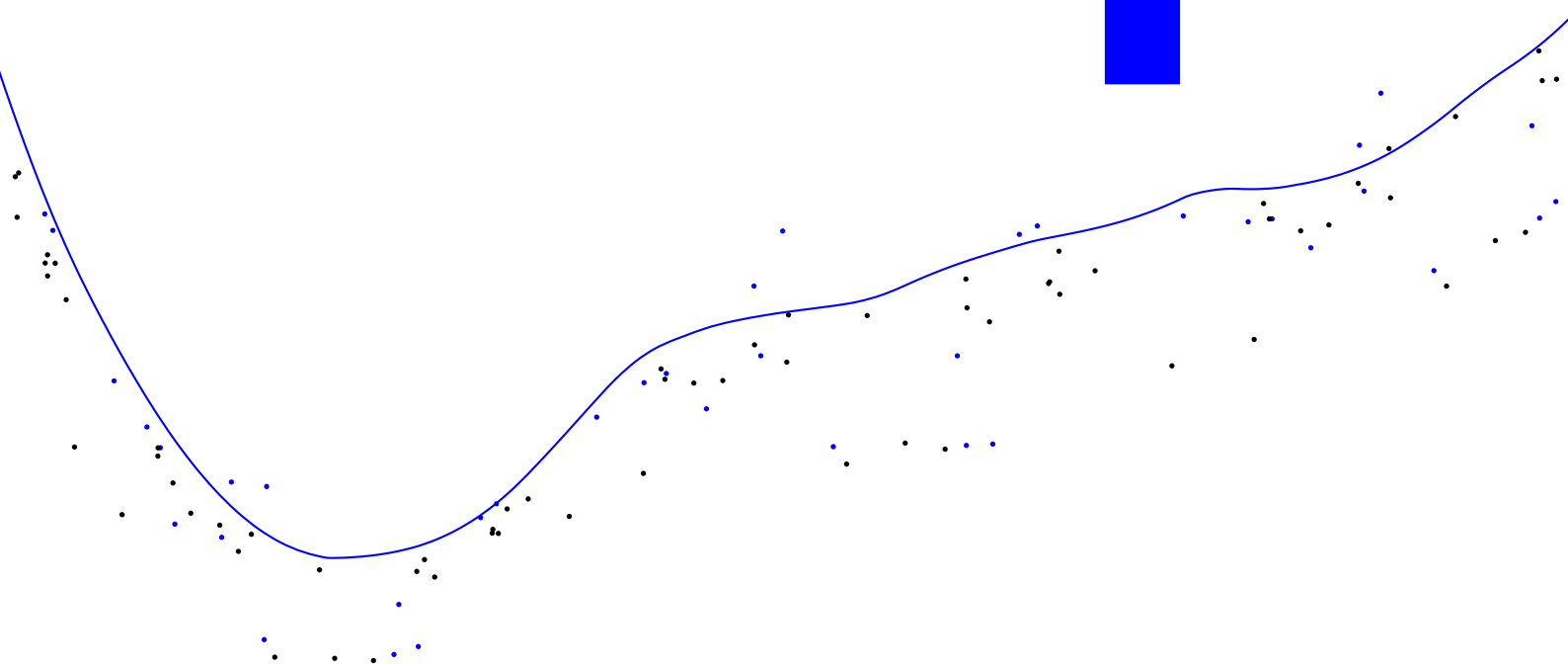Optimises use of capital in project spending

The British consultancy GainX has used AI tools to help a major financial institution improve how it reported on projects and better understand its risks, where projects had failed in the past and other issues across £3 billion of strategic spending. As a result of the work, the institution was able to recover nearly £2 billion in at-risk expenditure.

Six steps
to success

Many financial services organisations are interested in AI and convinced it has an important role to play, but are still yet to deploy it in production systems at scale. Here, we discuss six practical steps organisations can take to unlock AI's potential.

1

Define the use case

The first step is to determine the business's priorities. What problems is it experiencing and is AI the right solution? This initial prioritisation shouldn't come from the technical or business teams, but as a result of collaboration across the entire organisation.

Organisations need to:

be clear where the technology will add value in their business

have a specific return on investment that AI could contribute to

ensure the use of AI aligns with business strategies, values, and existing policies and operating principles.

"You need to be very clear on what you're trying to solve for," CBA's Jasper Poos says. "You need to think about what your focus areas are and what your problem areas are, and then start looking for solutions. Then it's sort of a matchmaking game to find the right solution for your problems. Over the past 18 months we have looked at more than 200 solutions.

"Bigger companies have a tendency to over-conceptualise and get stuck in planning and concepts, without getting to execution. So I think you just need to start with a narrower use case and then build out from there. Start narrow. Start small. But start."

2

Consider ethics and privacy

"Financial services organisations play a crucial role in the wellbeing of individuals, communities and businesses. This responsibility should not be taken lightly, and financial services employees should always be cognisant of the positive and negative impact they have on these groups. As AI is being used to influence these consequential decisions, it's essential that it functions responsibly."

Nick Lewins, Financial Services Lead, Microsoft Research

Organisations must ensure they are developing and deploying AI responsibly, and in ways that protect their customers' privacy and mitigate bias.

The Australian Government has issued AI Ethics Principles, which NAB, CBA and Microsoft have already signed up to. These eight principles can guide organisations to design and use AI systems that are fair, secure, reliable and explainable, and that have people directly accountable for them. Such principles will keep organisations from infringing anti-discrimination and other laws. Microsoft has also formed its own six principles to help customers design AI systems that are trustworthy, safe and transparent.

Jasper Poos at CBA emphasises the importance of having ongoing discussions about the ethics of a project. "Everything we do has to meet our values," he says. "[Solutions are] always tested against: is this actually producing better customer outcomes? And also better risk outcomes? It's always aligned to these values.

"We ensure that ethical and moral aspects of AI are covered off to address any customer and external stakeholder concerns. We are introducing AI in a measured and considered manner without going full force. These matters are fully addressed and reviewed before progressing to the next stage."

There are a number of approaches to building an ethical governance system for your AI systems. Some organisations appoint a chief executive officer to develop and oversee company-wide policies around ethics, and to ensure accountability. Others create a dedicated ethics team to design and implement policies at scale. Teams like this can be especially useful when it comes to building a culture of integrity. Another approach involves bringing in an ethics committee – a group of experts and senior leaders from across an organisation. This brings a diversity of internal and external perspectives, focused on best practice and policy.

Accelerate your journey to the cloud

3

"Migrating to the cloud is as big an issue for the financial services industry as AI is itself. Privacy is paramount and compliance with the regulatory environment is paramount."

Richard McCarthy, Perpetual Corporate Trust

According to Richard McCarthy at Perpetual Corporate Trust, organisations that want to use AI need to start by modernising their platforms and moving more of their computing to the cloud under a full or hybrid approach.

"You can't leverage data lakes, or AI and machine learning tools, if you're not in a secure cloud-based environment," he says. "Migrating to the cloud is as big an issue for the financial services industry as AI is itself. Privacy is paramount and compliance with the regulatory environment is paramount."

Fortunately, there are no regulatory or legal barriers to implementing AI specifically in Australia. Organisations only need to consider existing rules and guidelines such as obligations to protect customers' privacy and to keep computing systems secure – such as APRA's CPS 234 Prudential Standard, released in July 2019.

Regulators also expect AI to play a central role in the industry going forwards. For instance, in the words of James Shipton, Chair of the Australian Securities and Investments Commission (ASIC): "ASIC can see a future where artificial intelligence, including machine learning, text analytics, voice analytics, and other technologies are a seamless component of financial services firms' business models. A future where firms can record, store and analyse all communications with consumers using these tools."

Cloud adoption solutions

Microsoft's Cloud Adoption Framework for Azure is a good starting point for businesses making the move to the cloud. It provides a set of tools and guidance to help organisations shape their adoption efforts, from strategy to migration to operations management. See microsoft.com/en-au/azure/cloud-adoption-framework for more information.

Microsoft's new Azure Arc solution is also making it possible for customers to establish new approaches on premises, then scale more quickly into the cloud.

"ASIC can see a future where artificial intelligence including machine learning, text analytics, voice analytics, and other technologies are a seamless component of financial services firms' business models."

James Shipton, ASIC

4

Be ready to explain

One essential component of implementing AI technology is 'explainability' – the ability to explain to a customer, regulator or other stakeholder how an organisation arrived at a decision. AI systems often reach conclusions by calculating probabilities in ambiguous situations, so it's important to keep track of the logic it's relying on to reach these decisions. AI systems can also learn and change over time using the data they were 'trained' with, but this source data can be inherently biased. This can lead to the system providing discriminatory results.

According to McKinsey, a lack of explainability is seen as a significant risk involved in using AI – alongside cybersecurity, regulatory compliance and personal privacy.[3] The key to addressing the explainability issue is to have a clear understanding of how systems are working, and the ability to audit them transparently.

"Financial services and other highly regulated industries will need to be able to clearly explain to the regulator how they are using these technologies and how they have got to their end outcomes," says McCarthy. "Having a clear, auditable trail is going to be key to companies using AI. If you write a process, you can audit a process. But if that process if being improved by AI, how do you audit that?"

CBA's Jasper Poos agrees that auditability and explainability are musts. "You need to know how it works," he says. "Other [computing] forms are more binary, you program it to do A plus B is C, so it's probably a bit easier. AI in contrast requires constant monitoring – you have to keep monitoring the outcomes and if they keep meeting the intentions. But I don't think we should be fuelling the fear that the machine will run away from us."

James Twiss at Westpac also notes that explainability is particular to AI but says that it should be considered as part of a wider picture.

"Explainable AI is a significant theme in analytics as some of the more advanced models are by nature more complex and hence it is harder to understand how the multiple underlying variables interact," he says. "However, this is really just a broader point around having to understand and have confidence in data and data analysis more generally. Often, this comes down to ensuring accuracy in the underlying data – how it's collected, maintained and processed."

[3] *Global AI Survey: AI proves its worth, but few scale impact.* McKinsey & Company, November 2019.

"Explainable AI is a significant theme in analytics as some of the more advanced models are by nature more complex and hence it is harder to understand how the multiple underlying variables interact."

James Twiss, Westpac
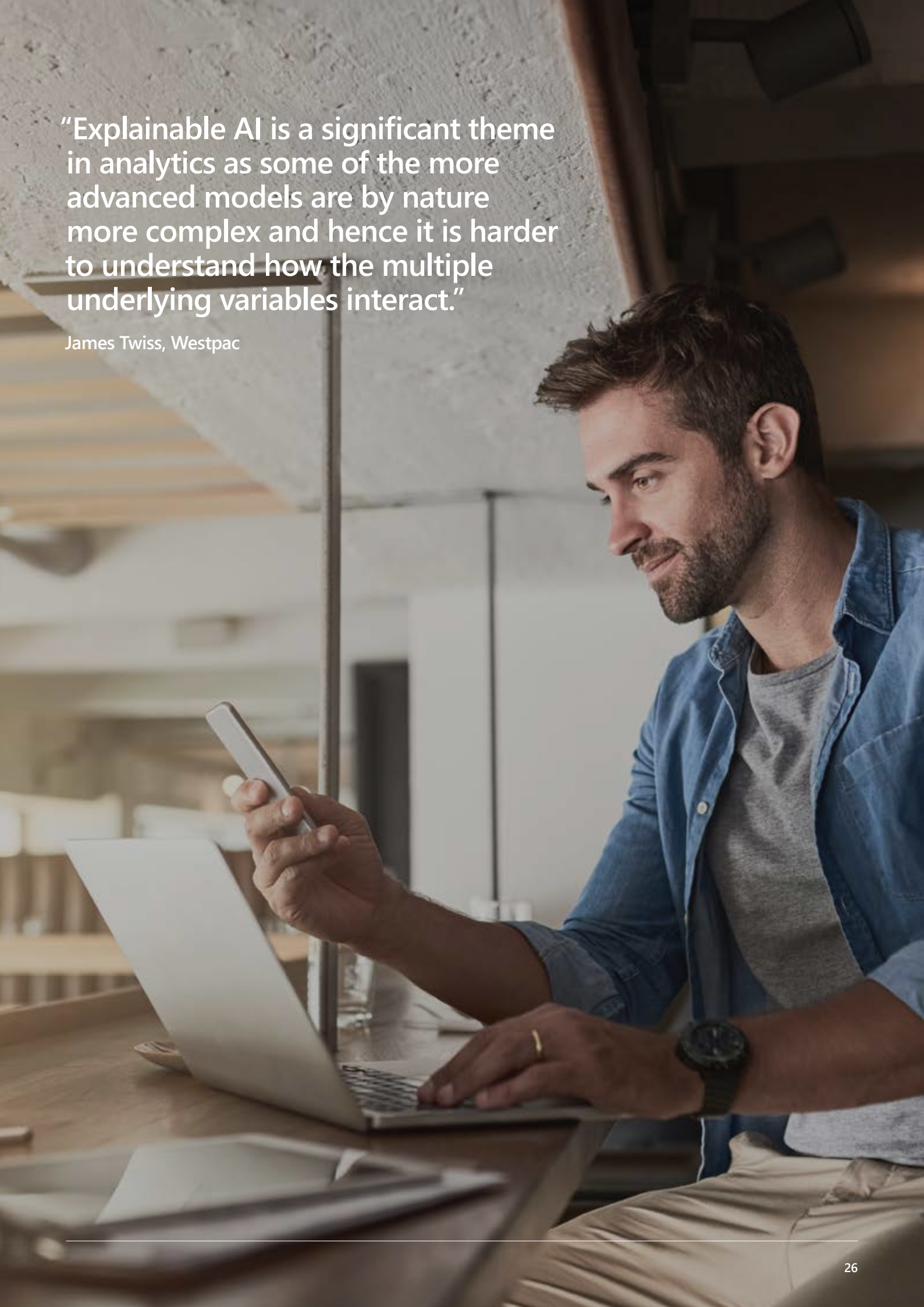
5

Accelerate and drive AI adoption

"This is not a five-year plan. You need to start today. Otherwise you're seriously going to get left behind."

Deborah Young,
The RegTech Association

Once organisations have a view on where AI could help or play an expanded role, they should actively explore its potential. This might be through direct trials or by working with specialised third parties. Whatever the path, experts argue there is no time to lose.

"This is not a five-year plan," says Deborah Young from The RegTech Association, citing views from a recent panel event. "You need to start today. Otherwise you're seriously going to get left behind."

Perpetual's McCarthy advises that progress involves multiple, cumulative steps. "For financial services institutions to be in the position to use cloud technology, machine learning and AI in the future, they must get the basics right first," he says.

Gavin Keeley at Search365 emphasises that AI has advanced significantly in the past year or two, and that the key litmus test for the industry should be not whether it's perfect, but whether it's as good as or better than what a competent human can do performing the same task – what he calls 'human equivalence'. He adds that AI will typically be used to make people more effective, not to replace them.

"I think the vast majority of the market still underestimates the actual capability of the deployable technology," says Keeley. "Every time we've done a pilot the organisation has been overwhelmed by the capabilities."

However, he concedes that some vendors are promoting capabilities that AI cannot yet deliver and that might remain in the realm of science fiction for years to come. To sort the fact from the fiction, he recommends that organisations trial the technology and see for themselves. "If you're not already doing a pilot, you should be, to understand its relative strengths and weaknesses," he says.

"If you're not already doing a pilot, you should be, to understand its relative strengths and weaknesses."

Gavin Keeley, Search365

6

Collaborate for scale, and focus on skills

"My advice … is to be open to collaborating or partnering with other companies who can provide specialist expertise to support your business."

Richard McCarthy,
Perpetual Corporate Trust

The financial services industry has long been a leader in analysing and making decisions using large data sets. However, as McKinsey has noted, the industry is average when it comes to progressing from small trials to deploying the technology at scale in daily operations.

To get fully running with AI, financial institutions need to collaborate ongoingly, both across their business and with partners. "My advice for organisations looking at this is to be open to collaborating or partnering with other companies who can provide specialist expertise to support your business," says Perpetual's McCarthy.

McCarthy believes incumbents should partner with niche providers as digital transformation accelerates in the sector. He also sees a need for financial services firms to become data-driven organisations. "It's a step-by-step process and it takes time," he says. "It involves finding the right partners, collaborating with specialist providers, and then structurally moving data into a cloud-based environment that enables organisations to utilise tools that are going to benefit their business going forward."

Businesses must also ensure they have the internal skills required to support their AI initiatives. This might involve retraining existing teams or hiring new talent – which can be a significant challenge given the demand for staff with skills in data science, machine learning programming and other relevant disciplines across all sectors.
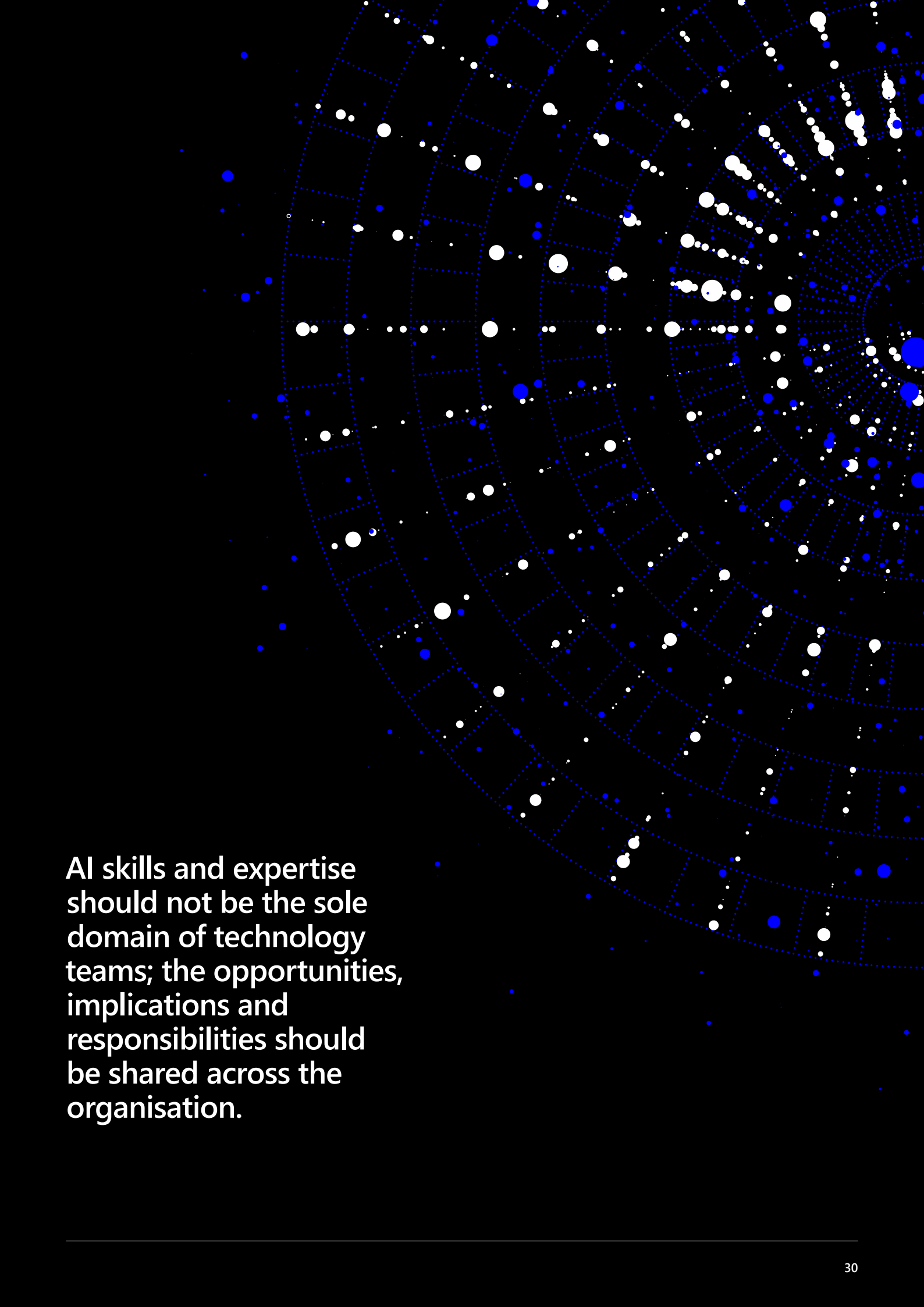
6

"Artificial intelligence has been on our radar for at least the last three years but even before that, we started to make investments and run projects that were connected to helping the bank make sense of 'big data'," says CBA's Jesse Arundell. "We've also provided training in design thinking, experimentation, agile, productivity and data analytics to our people. So as an organisation, we have laid the foundation for our use and scale of artificial intelligence over many years. It's not something that's happened overnight."

Arundell adds that it's been very important to the bank that new AI-powered systems are developed in close cooperation with the business groups that will use them – and that they understand the customers they're designed to serve.

"We have our businesses working hand in hand with data scientists and engineers to build and refine these models that underpin our AI-powered solutions," Arundell says. "So effectively, the core team who are building these solutions are the ones who will benefit most from using this technology. It isn't something that's done to them; it's done with them and for them."

AI skills and expertise should not be the sole domain of technology teams; the opportunities, implications and responsibilities should be shared across the organisation. This approach ensures the impact of AI is considered across all parts of the business and from an operational, governance and ethical point of view.

By considering the potential of the tools alongside higher-level issues such as fairness, privacy, security, transparency and accountability, Australia's financial organisations can move forward on a sustainable path.

AI skills and expertise
should not be the sole
domain of technology
teams; the opportunities,
implications and
responsibilities should
be shared across the
organisation.

Further information

Learn more about AI in financial services
through the following resources.

Educational resources

AI Business School

The information, learning materials and resources you need to start integrating AI into your organisation.

VISIT SITE >

Microsoft Trust Centre

Tips for how to build trust by focusing on data integrity, security, privacy and compliance.

VISIT SITE >

Microsoft Learn

A hands-on learning environment to help you arrive at your goals faster, with more confidence and at your own pace.

VISIT SITE >

Understanding APRA

Material to help you navigate the Australian Prudential Regulation Authority's requirements for cloud computing, privacy protection and more.

VISIT SITE >

Cloud Adoption Framework

Proven guidance designed to help you create and implement the business and technology strategies necessary for your organisation to succeed in the cloud.

VISIT SITE >

Partners to help you with your AI journey

Learn more about the Microsoft partners featured in this report:

BIOCATCH
Less Friction. Less Fraud.

GAINX

onfido

NetGuardians

quantexa

quantium

resonate

SEARCH365

SIMPLEKYC

Discover many more partners and solutions at our portal.

White papers and blogs

Microsoft Financial Services Industry blog

A comprehensive range of blogs discussing issues relevant to financial services organisations, including AI.

VISIT BLOG >

Blog: Microsoft at Money20/20: Where our payments, fintech and financial services ecosystem unites

VISIT BLOG >
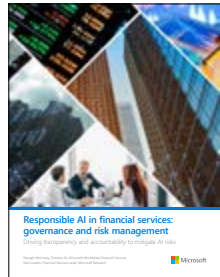
The latest news from Microsoft with links to two major new papers:

1 **Microsoft's Perspective on Responsible AI in Financial Services** – ethical principles for AI solutions and how they apply uniquely to financial services.

Microsoft AI blog

Everything you need to know about AI, with a focus on how the technology is being used in practice around the world.

VISIT BLOG >

2 **Responsible AI in Financial Services: Governance and Risk Management** – examining sources of AI risk such as data, models and usage scenarios.

The Future Computed: Artificial Intelligence and its role in society

This book – led by Brad Smith, Microsoft's President and Chief Legal Officer, and Harry Shum, Executive Vice President of Microsoft's AI and Research Group – asks how society can ensure AI is designed and used responsibly. How can we establish ethical principles to protect people? How should we govern its use? And how will AI impact employment and jobs?

DOWNLOAD >

Further customer stories from around the world

Anglo Gulf Trade Bank

The story behind the world's first end-to-end digital trade bank

HSBC PayME

HSBC is enabling fast, cashless transactions via its mobile app in Hong Kong

Saxo Bank

Following a market leader's migration to the cloud

TD Bank

How a banking giant is completing its digital transformation

YES Bank

A leading Indian bank is using cloud and AI to power better customer experiences

Industry associations

PARTNERSHIP ON AI

Partnership on AI

This foundation was created by global industry leaders including Microsoft to advance the understanding of AI technologies and how they can be used to benefit people and society.

VISIT SITE >

The RegTech Association

The association was founded in 2017 as a non-profit organisation to support the growth of Australia's regulatory technology sector. Microsoft is pleased to be a Platinum Partner of the association.

VISIT SITE >