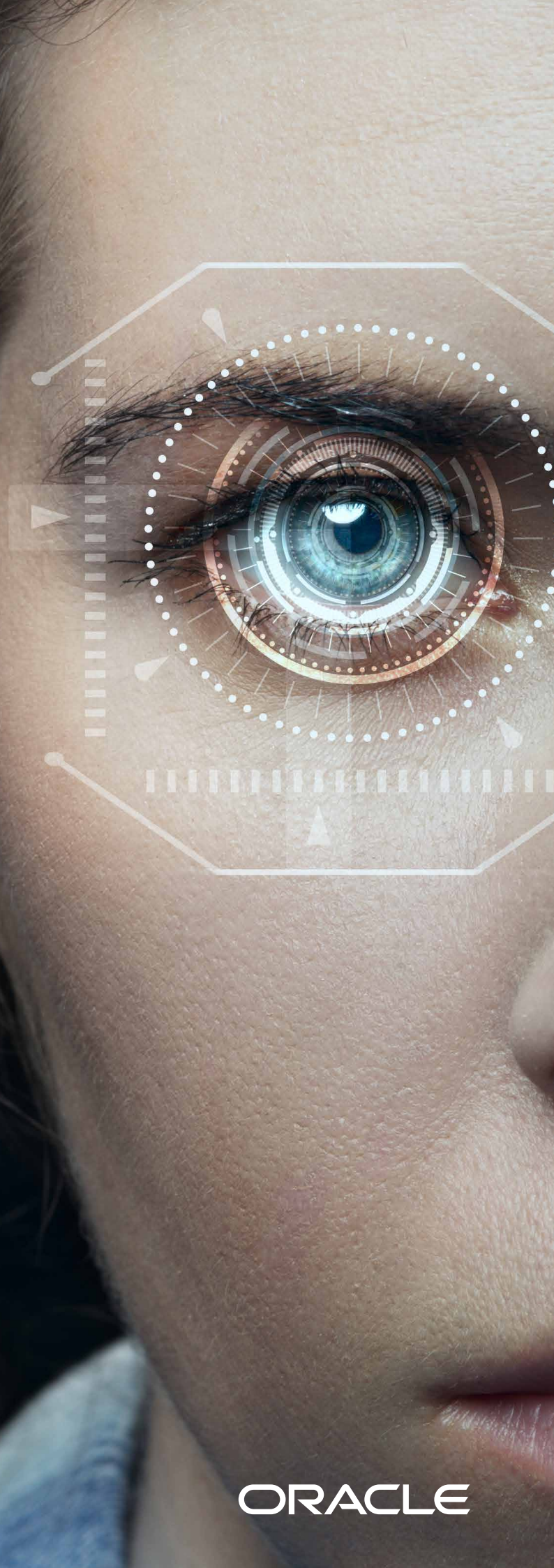**Oracle CIO
ThinkTank**

AI and autonomous technology: beyond the buzzwords

Defining the challenges and opportunities of autonomous and self-learning technologies and their potential for adoption.

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Oracle, in partnership with Accenture and IBRS would like to thank members of the ThinkTank who attended the Inaugural May 2019 AI & Autonomous Technology Summit in Sydney & Melbourne – CIOs and tech leaders from large Australian enterprises across sectors such as financial services, public sector and telecommunications. Their contributions both in person and pre-summit interviews helped shape the thinking presented within this report.

There is much hype surrounding AI and autonomous technologies that crosses industries and use cases. As with all hype, of course, it is important for enterprises to clearly define the challenges and the opportunities involved. In fact, just agreeing on a definition is hard enough. In this report, we will seek to clarify the terminology involved as well as outline a viable strategy to make AI and autonomous technologies work in your enterprise.

CUTTING THROUGH THE COMPLEXITY

Not since the advent of cloud has a technology caused so much confusion. Part of the reason for this is the consumerisation of technology, with AI in particular becoming a buzzword in the B2C (Business-to-consumer) space, featuring on products such as mobile phones, as well as those less obvious, such as fridges and bathroom mirrors. Naturally, people want the same experience through business applications. But what is that experience, and what is "AI" anyway?

Adding to this complexity, businesses, vendors, and experts are applying AI and related autonomous capabilities in many different ways. Google has demonstrated its so-called 'autonomous' Virtual Agent that can take on tasks such as appointment booking on your behalf. But there are human inputs behind the curtain, meaning there was little virtual about the process – the use of the term 'autonomous' here is misleading and reflects the current lack of industry clarity.[1]

We spoke to Senior Executives who indicated that this lack of definition was an issue. To overcome this confusion, let's establish what we mean by these terms before looking at the strategies that organisations can adopt to bring this technology to life.

"AI has the potential to solve so many problems but, at the moment, because of the complexity and the lack of understanding around it, unpacking AI is a problem all of its own."

Scott Newman, Solution Engineering Lead, Oracle Australia & New Zealand

Clarifying our terminology

Autonomous – the capability for a machine* to automatically act based on AI prescriptions, without human intervention (decide, act)

Machine learning – iterative application and evaluation of complex algorithms applied to large sets of data in order to predict and prescribe

Artificial intelligence – the capability for a machine to perform a task that typically requires human intelligence (perceive, reason, learn)

Deep learning – artificial neural networks, algorithms inspired by the human brain, learn from large amounts of (potentially very diverse) data (infer)

Scott Newman, Solution Engineering Lead, Oracle Australia & New Zealand

HOW ARE THESE TECHNOLOGIES APPLIED IN THE REAL WORLD?

The key to unlocking the true meaning of these terms is how they apply to real-world business operations and use cases, delivering value.
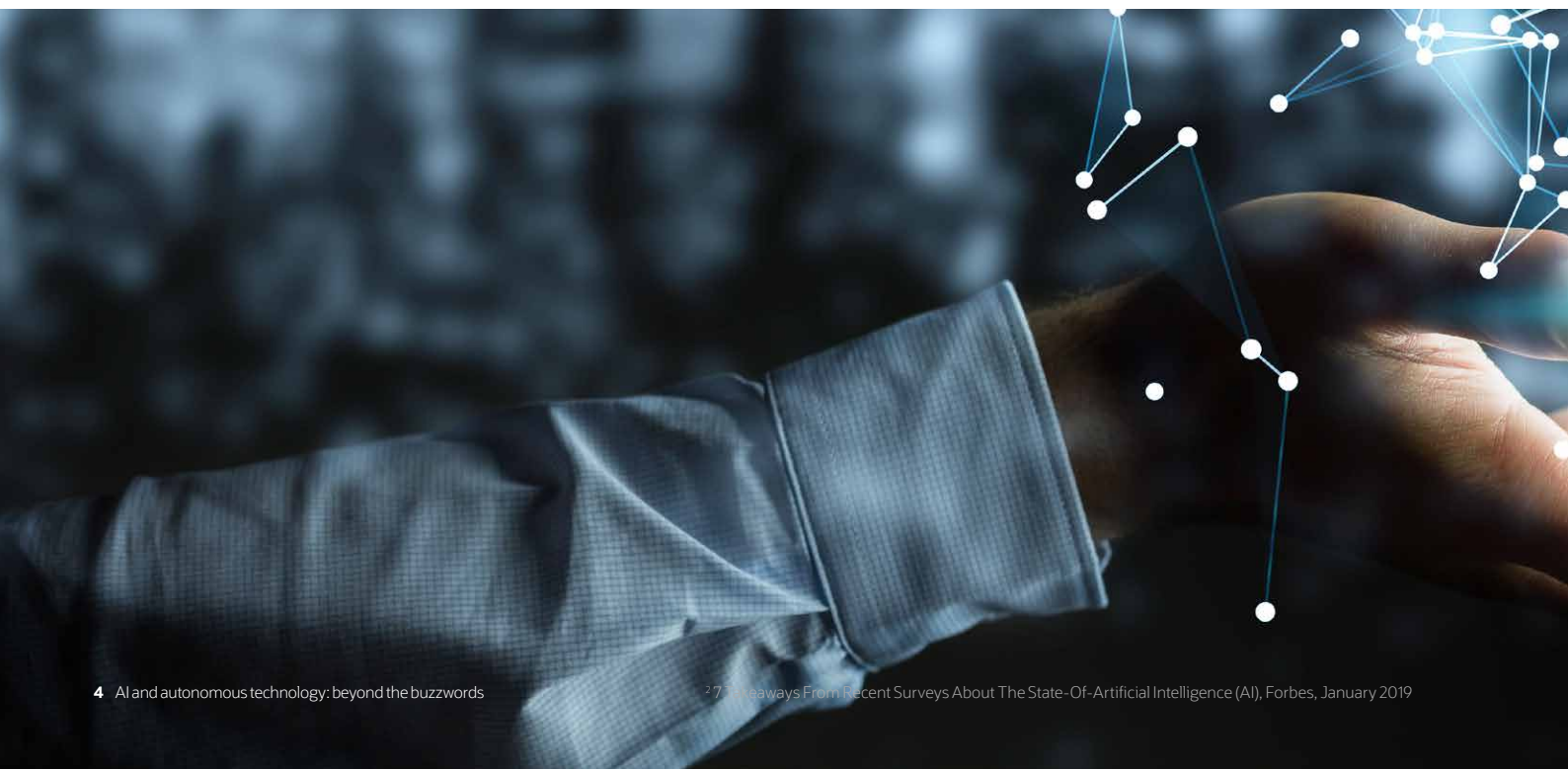For an agricultural organisation that needs to maximise yield and productivity, the entry point might be using AI to boost invoicing efficiency with optical character recognition, or to deliver insights for maximising production based on rainfall, and available farming resources.

The benefit here is insight; bringing together multiple sources of input at speed to make new decisions, suggest actions and understand contrasting, but convergent, needs. The emerging concept of the 'smart farm' however, shows us how the power of autonomous could be used to realise different benefits.

Fully autonomous farm equipment can take over lots of tasks normally performed by humans – driverless tractors, picking off (increasingly sensitive) crops, even detecting ripeness levels. The point is that AI alone does not make a viable business case for wider autonomous applications. Both provide different benefits but must move together. This is where CIOs can and must educate their colleagues with a clear strategy for adoption, made up of three components: impact on business culture and skillsets, importance of data, and ensuring business outcomes.

> "I don't understand what the real opportunities are – and whether the investment is worth it."
>
> CIO pre summit interview

[2] 7 Takeaways From Recent Surveys About The State-Of-Artificial Intelligence (AI), Forbes, January 2019

Managing skillsets and culture

One of the main challenges for enterprise uptake of autonomous technologies is the perceived threat to the workforce. Research shows that cultural agility makes up 95% of the challenge in real terms, which means not simply overcoming resistance to change but also the need for specialised skillsets to accommodate and maximise value.[2]

Chatbots, for example, are often linked to this threat of redundancy. But, if we peel away the label, we see the term "chatbot" can mean many different things in the real world. Script-based chatbots need a lot of training – and they don't learn for themselves.

The rules they are taught define the capabilities they provide to a business. By definition, AI chatbots are a lot more intelligent straight 'out of the box' but, even then, different vendors will provide different levels of capability in this context.

But, let's consider our own definition for a moment. Autonomous technologies can replace human intelligence to perform a task. It does not always mean that machines replace people. It is this kind of nuance that is important to communicate to a workforce. Human interaction can and will enhance potential business value here – and free up their time to focus on higher value tasks and the business overall.

Business culture can and must follow in the slipstream of technological advances. By doing so, the workforce gains momentum afforded by technology to enhance what they can achieve day-to-day.

This is made more challenging because of the number of different kinds of specific technologies and tools available. Because of their novelty but also because of the misunderstanding caused by combining them, it is unlikely that many enterprises will have the necessary skills internally to fully exploit the opportunities available. This may require a different approach to fill in the gaps, such as using crowdsourcing or the gig economy, or partnering with vendors to source these new skills.

> "The business needs to provide an environment for the workforce… do they feel digitally enabled, with the right tools?"
>
> CIO pre summit interview

Optimising data

While adapting business culture and skillsets is important, the driving force behind any AI or autonomous solution is data. The use of data in terms of algorithms and labelling is not necessarily the challenge here, rather availability and quality data.

On the one hand, we have the challenge of escalating data quantity. When enterprises move from a purely observational to an autonomous data capability, this will generate ever-increasing amounts of operational and experiential data (as long as it's machine-readable). This can and must be used and reused to maximise the value from it.

And on the other hand, data quality is key. Really good data running with last-generation algorithms will provide better results than the latest deep learning model running on poor data or fragmented data sources.[3]

This is why the strategy of every business hoping to implement autonomous technology must consider business data maturity, but also develop an understanding of the many datasets available across the enterprise and how autonomous technology can be applied to them. In contexts such as Open Banking, better outcomes are only possible with more high-quality data behind every decision.

"The quality of the data and the processes that are used to produce the data are as important or more important than particular algorithms. Given the trade-off, I'll always take the good data even if it means I have to use an older model."

Mark Johnson – Chief AI Scientist, Oracle Digital Assistant

Focusing on business outcomes

Clearly, with any strategy, determining better business outcomes is the main goal. Which business units need simple automation – and which might need more than that? Are there any quick wins to test the opportunity? Sometimes it is best to start with a lower-value outcome because the solution to a problem isn't automation, AI, or autonomous capability but simply fixing a problem that's inherent in the process.

It's important to have a good level of understanding of the processes and operations that you intend to integrate these technologies into – not just for your own peace of mind but also for the integrators themselves. They won't be able to guide you properly if they don't know what to expect.

Most integrators will favour a 'crawl, walk, run' approach to mitigate risk and ensure real business problems are being solved. This is why back-office AI projects are more common – they provide more universally applicable use cases for process automation, AI, and autonomy. But it's important to recognise the spectrum of possibilities too: this is why proofs of concept can be valuable in trialling these new capabilities, to start simple, then learn and grow. Line of business use cases are likely to be more advanced simply because of the specific, unique process elements or lack of process industrialisation involved.

"It's about getting started; start to solve some very simple use-cases, and learn and grow. Then we'll be much more informed to think through the challenges we face. It's also useful to differentiate, corporate back office-type use cases from line of business-use cases."

Peter Lane, CIO, Department of Jobs, Precincts, and Regions, Government of Australia

Areas of improving performance that are most important to CIOs

- Social & Corporate Responsibility
- Cost Containment
- Employee Experience & Satisfaction
- **Risk Reduction**
- Financial Profitability
- **Operational Efficiency**
- **Customer Experience and Satisfaction**

CIO pre-summit interview findings, May 2019

Operational efficiency, risk reduction and customer experience are considered the most important area for autonomous technology, while the experience of employees is seen as a much lower priority.

ETHICS AND EXPLAINABILITY: ACHIEVING BUY-IN FOR BOTH AUTONOMOUS, AND AI, IN THE ENTERPRISE

With the Australian Federal Government soon to publish a framework on its position regarding AI in the workplace, local enterprises will have greater clarity on the ethics of technology-enabled autonomy. This guidance will hopefully include the issues of data ownership in the autonomous world – a real challenge for organisations, as exemplified by Tesla's recent data security issues with owners and insurers.[4]

High-quality data is essential for AI and autonomous technology to work effectively, enhancing decisions and actions with more informed insight than would be possible with purely human interactions. But the ethical lines become blurry when we consider how AI capabilities could help organisations to up-sell services based on personal information held in different parts of the business. In many sectors, such as healthcare, there are already significant restrictions on data that AI and autonomous capabilities are complicating.[4] For example, is a health insurance provider morally obliged to act if AI highlights that certain customers don't need the level of coverage they currently pay for?

With many layers of AI or autonomous capabilities stacked on top of each other in an enterprise, this is a risk that needs managing end-to-end. An important part of this is corporate governance buy-in: while new capabilities can be introduced that greatly improve the business, do the business leaders trust the AI logic that produced the result?

The issue of trust is a cultural rather than technological challenge, needing transparency and a level of human interaction to reinforce confidence in the results. And this is important not just for business leaders, who may be relying on the process to clarify their sales pipeline, but also for customers, especially if they are applying for a life-changing service such as a credit card. If the application is refused based on an AI-informed, decision-making process, or even autonomous action. In either case, the process should also provide feedback on of how that decision was reached and what the customer can do to rectify a problem.

> "It will be effectively a trust thing. Are we going to let go of our understood, documented processes, and let a machine that can learn, actually run part of all of them?"
>
> **CIO pre summit interview**

> "As these models evolve, [the calculations] become so complex that a human can't do it, because there are so many parameters and so many variables. But they do need 'explainability': show me why you made that decision or how you got to this outcome?"

Rob James, CIO & Director of Business Enablement, Vodafone

AUTONOMOUS AND AI OFFER VAST OPPORTUNITIES. TO ATTAIN THEM, FOCUS ON THE OUTCOMES YOUR BUSINESS NEEDS TO ACHIEVE

The opportunities that AI and autonomous can unlock are many and varied. So too are the challenges enterprises face to realise such capabilities. This requires a clear AI strategy that strikes the right balance between business technology, data and culture	and, ultimately, the outcomes that an enterprise requires, without doing harm to itself or society.

In the second report in the Australia CIO ThinkTank series, we will look in more detail at the role that data plays in the adoption of AI driven processes and increasingly autonomous, self driven business decisions and actions, as well as highlighting the most effective entry points for you on your journey to becoming positively autonomous.

If you would like to talk about how AI and autonomous technologies can play a bigger role in your business, simply get in touch with Oracle Autonomous evangelist Scott Newman at **scott.newman@oracle.com**

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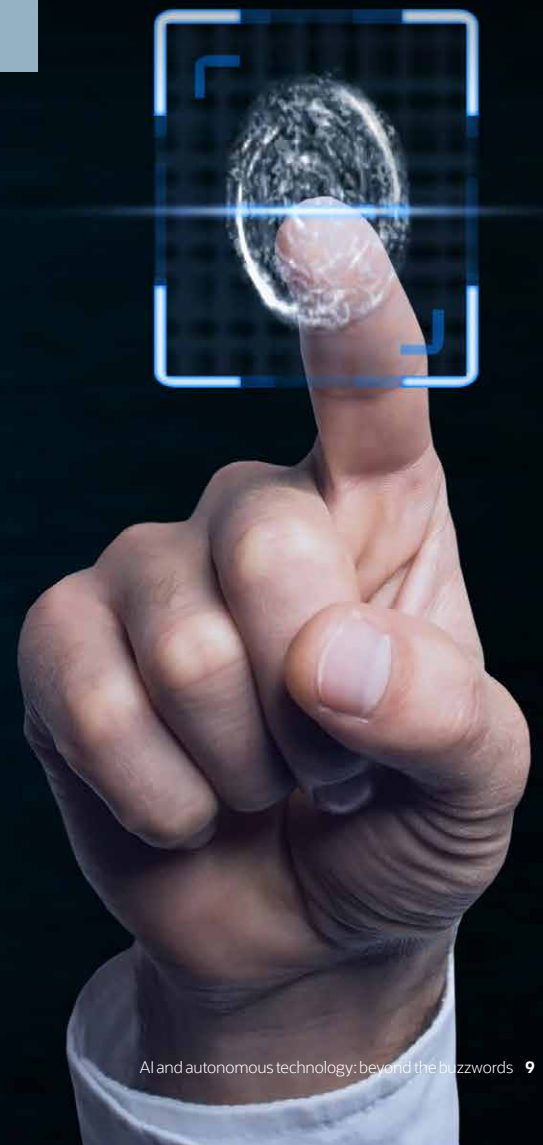
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