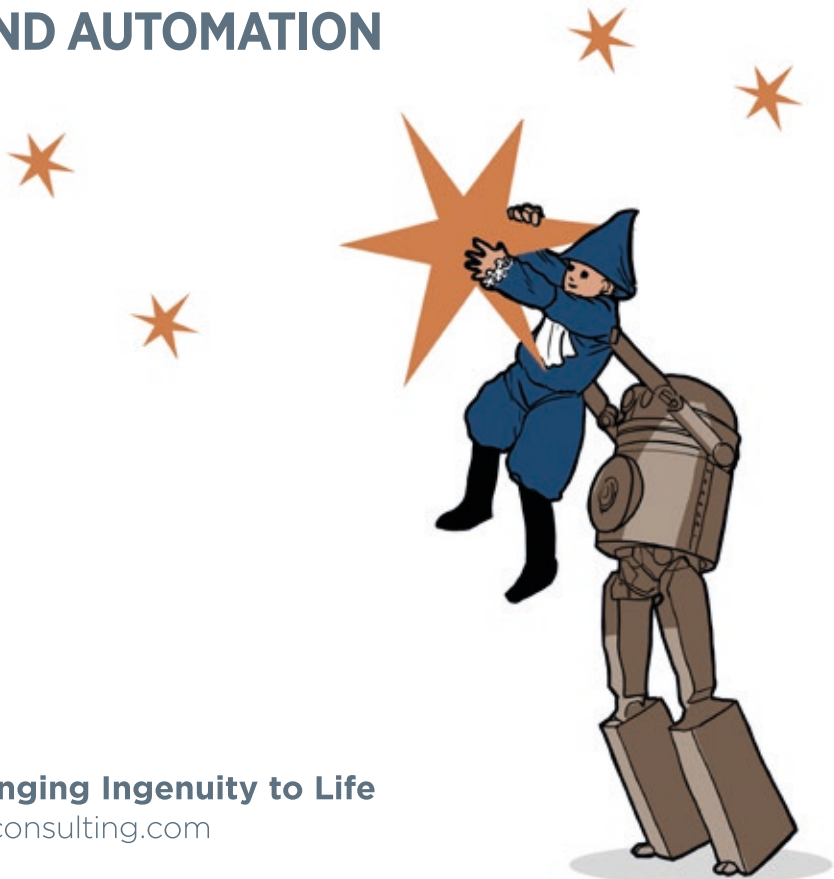


How CIOs can optimise their organisations

A GUIDE TO AI AND AUTOMATION



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The situation today



Artificial intelligence (AI) and automation provide the Chief Information Officer (CIO) with both new opportunities and new challenges. For all of the raging debate around the impact of these technologies in the future, the action for CIOs is very much in the present. The most important aspects of the CIO's role are to keep the organisation up and running on a day-to-day basis, whilst building and maintaining an ICT platform for innovation and growth. Some CIOs take an active role in leading innovation as well. Many existing tools, such as network and security management products, already have elements of AI built in. As well as having to keep abreast of how AI and automation capabilities are being absorbed into existing products, CIOs face an additional challenge – the technology is also entering the organisation under the radar. Individual business units can easily procure and integrate it into the wider IT estate, without the involvement or oversight of the IT organisation.

This lack of clarity on what constitutes AI and automation, and how and where it is being used, creates a dilemma for CIOs who wish to play a leading role in their organisations' transformation journey. There is an inherent conflict between 'thinking big' about how the technology might enable wholesale organisational transformation and new business models, and the need to keep the lights on and manage existing infrastructure and legacy.

Moreover, many organisations are still preoccupied and grappling with previous waves of technology. For example, despite the proven benefits and strong business case for cloud, some organisations have been reluctant to embrace it. And even as the focus shifts to AI, many organisations have not been bold enough to radically reimagine themselves as 'digital to the core'. In fact, for CIOs, AI and automation significantly raise the stakes of any digital transformation. Unless you approach adoption



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consciously and with your eyes open, not only do you risk doing it wrong and exposing the organisation to greater risk, there's also a chance your existing rivals do it better or a new entrant will appear to disrupt and challenge your position in the market.

On the other hand, AI and automation presents the IT department with an opportunity to redefine its own role and the value it provides to the organisation. An IT organisation enabled by AI could move from a fast-reactive mind-set (which can often be characterised by periods of firefighting) to a predictive and proactive model. For example, rather than waiting for an employee to call when they have a problem with their laptop, IT is able to react before the problem manifests, arriving with new hardware that has been preconfigured and loaded with all the relevant data.

The scale of the transformation offered by the technology means that the CIO cannot lead it alone. Success will demand close collaboration with the executive team, those with responsibility for people and talent, and all the individual business units. The canny CIO will act as an enabler, creating the environment for innovation to flourish, whilst continuing to maintain expected levels of performance, security, and risk management in the IT domain. This will require new ways of working from IT – build, borrow, buy and share will all be ways to source capabilities.

Things to consider

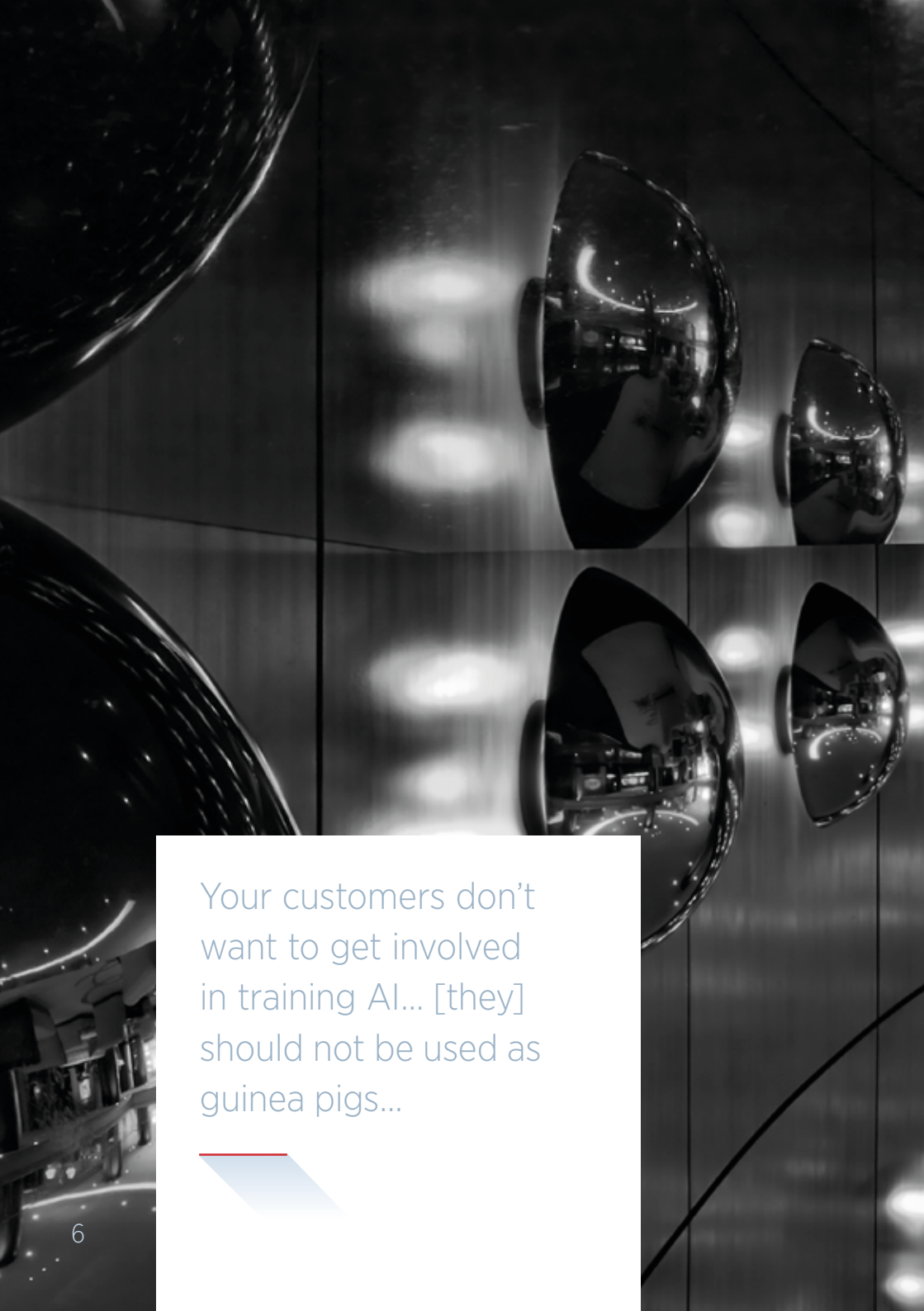


AI and automation will place considerable demands on the CIO and the IT organisation. Things to consider include:

A reappraisal of data – what is it, where is it, and what is its value? Within many organisations, data is often fragmented and inconsistent. To benefit from AI and supervised Machine Learning you need to ensure access to high quality structured data. Inconsistent data, multiple versions of the truth, inconsistent formulas/definitions and limited adoption across the enterprise will all hinder the effectiveness of AI and will need to be addressed through strong data governance.

You will also need to consider your unstructured data and how you might benefit from using this with AI to generate new insights. For example, analysis of sentiment and tone of voice in CEO and board speeches has been used to predict future company performance. It is also important to look closely at the context in which data will be used, for example, a security camera or security gate may be useful in identifying movement patterns to ensure that office facilities are correctly positioned and stocked. Use of the same data may be unacceptable for tracking and monitoring the movements and behaviours of individual employees.

Understand the demands of AI in terms of infrastructure, data models, knowledge management etc. and design the target architecture for AI. This is not a new or unique problem for the IT organisation. Many businesses will have gone through similar exercises when adopting cloud computing.



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Skills required will be very different in the future, particularly in the IT organisation where there is already a strong business case for automating many repetitive and mundane tasks. These include reducing support effort for compute and storage services, applications monitoring and management, security operations, backup/restore services, etc. or back office processes such as accounts payable/receivable. The positive effect of this is that employees will be freed up to carry out higher value creative and innovative work. CIOs will need to assess the mix of skills and where necessary upskill existing employees through training, or acquire the skills from elsewhere.

There will be changes in how both human and technology capabilities are sourced in the automated future. The decision of whether to build, buy, borrow, or share applies equally well to human or technology capabilities.

Your customers don't want to get involved in training AI.

Although a key benefit of AI is its ability to improve and learn through experience, your customers will not want to feel that they are having to invest their own time and effort in training AI. Customers should not be used as guinea pigs and customer facing AI must be tested to ensure that it meets baseline capability requirements.

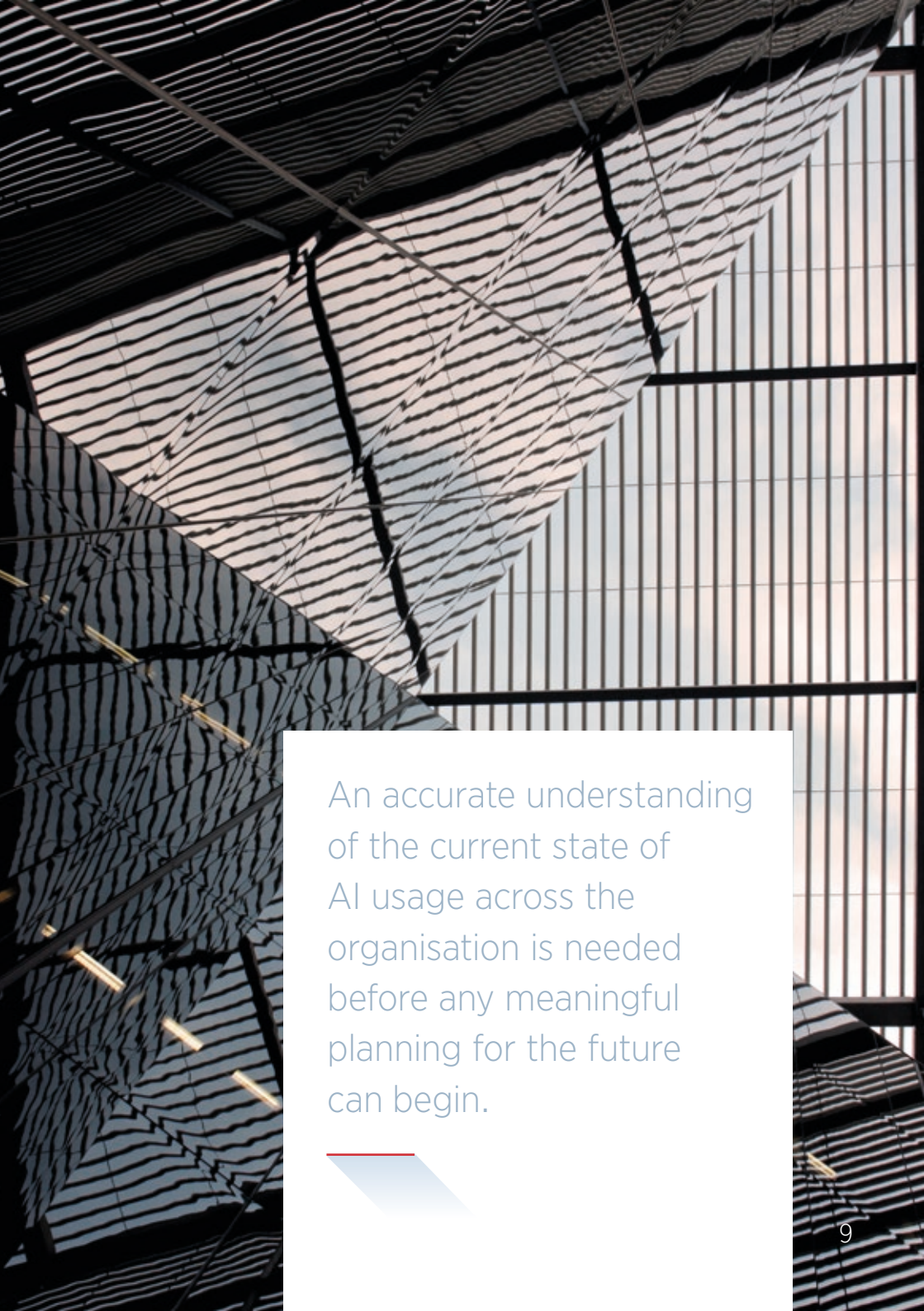
Where do you go from here?



The cycle time between mind-blowing AI innovation and business-as-usual functionality is rapid, with many vendors incorporating AI functionality into their existing products. This, along with the fact that significant amounts of AI and automation technology might already be in use across the organisation, means that the first step for the CIO is to assume that it is already there and to find out exactly what it is doing. An accurate understanding of the current state of AI usage across the organisation is needed before any meaningful planning for the future can begin.

Next on the agenda should be to:

- **Understand the currency and value of your information and data.** You need to think about data fundamentally differently – structuring and mastering data management are no longer as relevant. You need to understand where data is held and the context for use, without relying on assumptions. To understand your data and to avoid ‘data poisoning’ the CIO should consider:
 - Information that is held in organisational ‘backwaters’ and the risk associated with unleashing AI on such data.
 - All the different types of data that are available. AI doesn’t require highly structured data to generate insight – voice, video, third party data (eg weather), and a wide range of sensor data types can all be brought together with insight being generated in real- (or near to real-) time. An assessment should be made to determine what data are suitable for use with AI. This will likely present some opportunities you had not thought about, for example, the possibilities of image recognition.



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- **Start small, scale fast.** The IT organisation should roll up its sleeves and start ‘doing’ AI. Start with small teams experimenting and learning about the technology. For example, source some GPUs and start creating apps that exploit their processing capabilities. When a proof-of-concept succeeds, look to scale fast to exploit the benefits.
- **Make an AI assessment part of the regular IT portfolio review cycle** alongside all the other business-as-usual activities. Doing so will not only provide potential opportunities for innovation, but will also act as a catalyst for changing thinking and nudging the IT organisation to consider what is possible with the technology. Look to understand where AI fits into the roadmap for each application and build a framework where it can be applied to specific business cases. You should also regularly examine and audit AI systems to ensure that they are behaving correctly.
- **Follow the vendor market.** AI is a much hyped technology and CIOs may see the market has much in common with previous technology waves, such as cloud. Open source will always figure big in the AI landscape, and all the big players are moving with AI offerings. You will need to frequently evaluate new uses and emerging capabilities in cloud-based AI systems. Compared with cloud, however, AI is less of an evolutionary step and less easy to categorise. Whilst at the basic automation end of the spectrum there is already significant commoditisation, at the higher end of AI and cognitive solutions, commoditisation is less likely. The market may remain fragmented with spot solutions and engines that can be applied in different ways.

- **You will need to source differently.** You may wish to consider establishing relationships with academic institutions to gain early access to newly developed algorithms, for example. Regular horizon scanning across the market will help to ensure you keep abreast of new offerings and potential partnerships and relationships.
- **Learn from other markets.** Don't just default to the enterprise architecture status quo. There may be a better solution out there that exploits AI. You will need to focus externally and understand how AI is being used, and be able to rapidly enact what you have learned in your own organisation.
- **Address skills shortages** that are likely to characterise the AI environment for the next decade. This may again involve building relationships with academia, harnessing expertise from start-ups through partnerships and accelerator programmes, and establishing training and development paths within the IT organisation (which themselves might involve AI-assisted learning).

The CIO cannot lead the AI transformation alone. It demands strong leadership from the board down, and close collaboration between all organisational functions. Coming changes will be as much about people and culture as they are about technology. Where the CIO can add real value is in delivering strong foundations upon which the automated organisation can be built – ensuring access to good quality data and enabling infrastructure; and by demonstrating the art of the possible through the IT department's own AI innovations.



To find out more about how PA can help you make the most of artificial intelligence and automation, visit:

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This report was authored by PA's AI&A experts with major contributions from Rob Gear, PA's futurist.

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