



Bridging Australia's Knowledge Economy Gap in Industry 4.0

Yes



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John Paitaridis

Managing Director, Optus Business

Australia has a tremendous, high quality workforce. There are Australians working in every corner of the world. But with a relatively small population we cannot afford to leave anyone behind.

Our economy is in transition and disruption is the new normal.

Digital technology is creating this disruption and most industries are struggling to keep pace with the demands for new skills. As leaders of enterprise, government and academia, it is our joint responsibility, indeed our obligation, to prepare our existing workforce and those entering the workforce for a very different future.

Innovations in the emerging technologies of the Fourth Industrial Revolution have the potential to be a power for good – connecting billions of people globally, solving complex scientific and medical challenges and addressing world poverty. However, governments, policy makers, education and industry are struggling to keep up with the rapid changes, be it legally, ethically, culturally or socially.

How we think, what we once believed was 'normal', the 'rules' and what we're influenced by is all changing and this is being driven by consumer demand for greater access to information anywhere, anytime on any device. The power is now in the hands of every digitally connected citizen.

It's now personal. Artificial Intelligence (AI) and Machine Learning (ML) will become some of the biggest catalysts of change to the human workforce. Jobs are changing, that's irrefutable. The AIIA report 'Skills for Today. Jobs for Tomorrow' revealed 51 per cent of those surveyed are prepared to change careers or jobs as new roles emerge.¹

So what do these jobs look like? What should be automated? What processes can benefit from harnessing Industry 4.0 technologies? What blend of technical, hard and soft skills will be required? These are all critical questions leaders across Australian enterprise need to be addressing.

We need roles that will fuel our economy and launch Australia into a more prosperous and sustainable future. These types of jobs include cyber specialists, engineers, data analysts, programmers, robotic repairs, AI, ML and Internet of Things integrators. Our human ability to handle unpredictable situations that require out-of-the-box thinking – critical thinking and problem solving, empathy, understanding and creativity - are all skills that must be encouraged and developed.

Think of the rapid advances in science and technology changing healthcare and medicine. How we stay healthy in 2056 will be very different from today. The 3D printing of organs and bones is now a reality. This all creates the need for a workforce that can innovate, build, operate, fix, and 'feed' the machines.

As technology develops and different skills are required, we must look at our existing workforce and upskill them, cross-skill them, prepare them to excel on the world stage and attract work to our country. We must pick our mark: evolve our industries for which we are renowned in mining, agriculture, construction and medicine; create productivity efficiencies; reduce waste; and, importantly, leverage our human workforce.

To achieve this, we need a different mindset – to challenge the status quo – and to become life-long learners. Our education, government and industry sectors must develop new learning models that are adaptable and can be digitally consumed.

Our ability to plan and prepare our workforce for this exciting future is the challenge for all leaders. We know our world will continue to evolve - by increasing our awareness, and collaborating and partnering across industries, we will be in the best position to succeed.

Executive summary

The Fourth Industrial Revolution (Industry 4.0) we are currently experiencing is unparalleled in its speed, scale and impact. Fuelled by technologies once the preserve of science fiction, its impact on consumers, employees, enterprises and society is – and will continue to be – profound.

We first reported on this in the Optus Business study, Enterprise 4.0, one of the largest studies of its kind in Australia to date.

Here we looked at:

- The issues and technologies expected to have the biggest impact in the future;
- How advanced enterprises are in their digital transformations;
- The potential of Australian enterprises to perform exponentially; and
- What enterprises must do to succeed in Industry 4.0.

In this report, *Bridging Australia's Knowledge Economy Gap in Industry 4.0*, we delve further into the issue of what enterprises must do to thrive in a world characterised by rapid, wide-ranging and disruptive change.

And it's not just about investing in the underlying technologies that are powering Industry 4.0, although this is critical. When our study examined the exponential attributes of Australian enterprises, it found significant cultural, capability and operational gaps. To date, many organisations don't have the appropriately skilled workforce, corporate culture or processes in place to compete effectively. Optus Business calls this discord the 'knowledge economy gap'.

So what skills and culture do we need to develop in our workforce? What technologies could help us redesign processes and, potentially, fill talent gaps? In other words, what is the true extent of Australia's knowledge economy gap? And then, how do we bridge it?

The situation means we must evolve how we develop and utilise human capital. Doing so requires the identification of new skills, new organisational structures and new business models. In this report, we highlight how enterprises can recruit and educate their workforce with the skills needed to thrive in Industry 4.0.

Of interest to leaders, our research also unveils a disquieting disconnect between how CEOs rate their readiness for Industry 4.0 and what the rest of the business thinks. We also reveal why digital collaboration and knowledge sharing tools are essential to creating high-performing teams, the processes to facilitate innovative cultures, and why strategic partnerships are essential to meeting future workplace needs. Bridging the knowledge economy gap is a challenge that can only be solved through the collaborative efforts of enterprises, academia and government.

It is only by bridging the knowledge economy gap that the full potential of Industry 4.0 will be realised.

We must evolve how we develop and utilise human capital. Doing so requires the identification of new skills, new organisational structures and new business models.



The importance of skills and culture in Industry 4.0



Without effective strategies developed and planned collaboratively by enterprise, academia and government, Australia risks widening its ingenuity gap.

As with all past industrial revolutions, human ingenuity can explain the developments that have lead our evolution to this point. Our resourcefulness transcended global boundaries that fundamentally changed our labour, production and financial markets.

Industry 4.0 is different from those in the past, due to its speed, scale and impact. These conditions present us with a significant challenge – how do we close the ingenuity gap?

The ingenuity gap was defined by Thomas Homer-Dixon as the shortfall between the rapidly rising need for ingenuity and its adequate supply². The unpredictability of this revolution's speed, scale and impact, driven by the emerging technologies associated with this revolution, means we can't always supply the ingenuity we need at the right times and places.

Without effective strategies developed and planned collaboratively by enterprise, academia and government, Australia risks widening its ingenuity gap. The situation means we must evolve how we develop and utilise human capital. Doing so requires the identification of new skills, new organisational structures and new business models.

Simply investing in new digital technologies is not the silver bullet to success in Industry 4.0. While a critical component, it fails to address knowledge gaps in the development, deployment, application and management of these platforms. Optus Business refers to this discord as the knowledge economy gap.

In Optus Business's first study, *'Enterprise 4.0 – A Blueprint for Success in Industry 4.0'*³, we revealed the most successful businesses in Industry 4.0 will be those that empower employees through greater experimentation and risk taking, have flatter hierarchies fuelled by collaboration and knowledge sharing, and utilise real-time data capture and analysis.

Today, leaders are aware of the need to up-skill, re-skill and recruit employees with the required digital capabilities for this new way of work. The World Economic Forum's *Future of Jobs Report 2018* states that 54 per cent of employees will need re-skilling by 2022, with training programs lasting upwards of six months⁴.

The most in-demand skills will include both 'hard' and 'soft' skills (see Table 1) such as analytical thinking, innovation, active learning and broad learning strategies. They will be required for roles ranging from data analysts and scientists through to software engineers and application developers⁵.

Table 1: In-demand skills

Emerging Roles	Growth Roles	New Specialist Roles
<ul style="list-style-type: none"> Data Analysts and Scientists Software and Applications Developers Ecommerce Social Media Specialists, roles that are significantly based on and enhanced using technology 	<ul style="list-style-type: none"> Customer Service Workers Sales and Marketing Professionals Training and Development People and Culture Organisational Development Specialists Innovation Managers 	<ul style="list-style-type: none"> Artificial Intelligence and Machine Learning Big Data Process Automation Experts Information Security Analysts User Experience and Human-Machine Interaction Designers Robotics Engineers Blockchain Specialists

Source: World Economic Forum, (2018) Future of Jobs

For Australian enterprises to cultivate digital skills and a digital culture, *Enterprise 4.0* revealed several gaps that must be bridged:

- **Capability Gap**

Australia needs 200,000 technology workers by 2023 if it's going to be a world leader in Industry 4.0. Yet there are less than 5,000 graduates from ICT degrees each year⁶ and Australian CEOs are not prioritising the re-skilling of existing staff as much as their global counterparts⁷. Consequently, Australian enterprises will not be able to fully exploit their technology investments or equip and recruit a workforce with the skills required (see Figure 1).

- **Cultural Gap**

An enterprise's ability to scale exponentially* is a key indicator of success in Industry 4.0. Yet Australian enterprises do not actively support the risk-taking, collaborative, and autonomous digital cultures that enable businesses to grow this way. This issue is exacerbated by findings revealing many CEOs overestimate their organisation's ability to leverage digital technologies to unlock exponential growth.

- **Operational Gap**

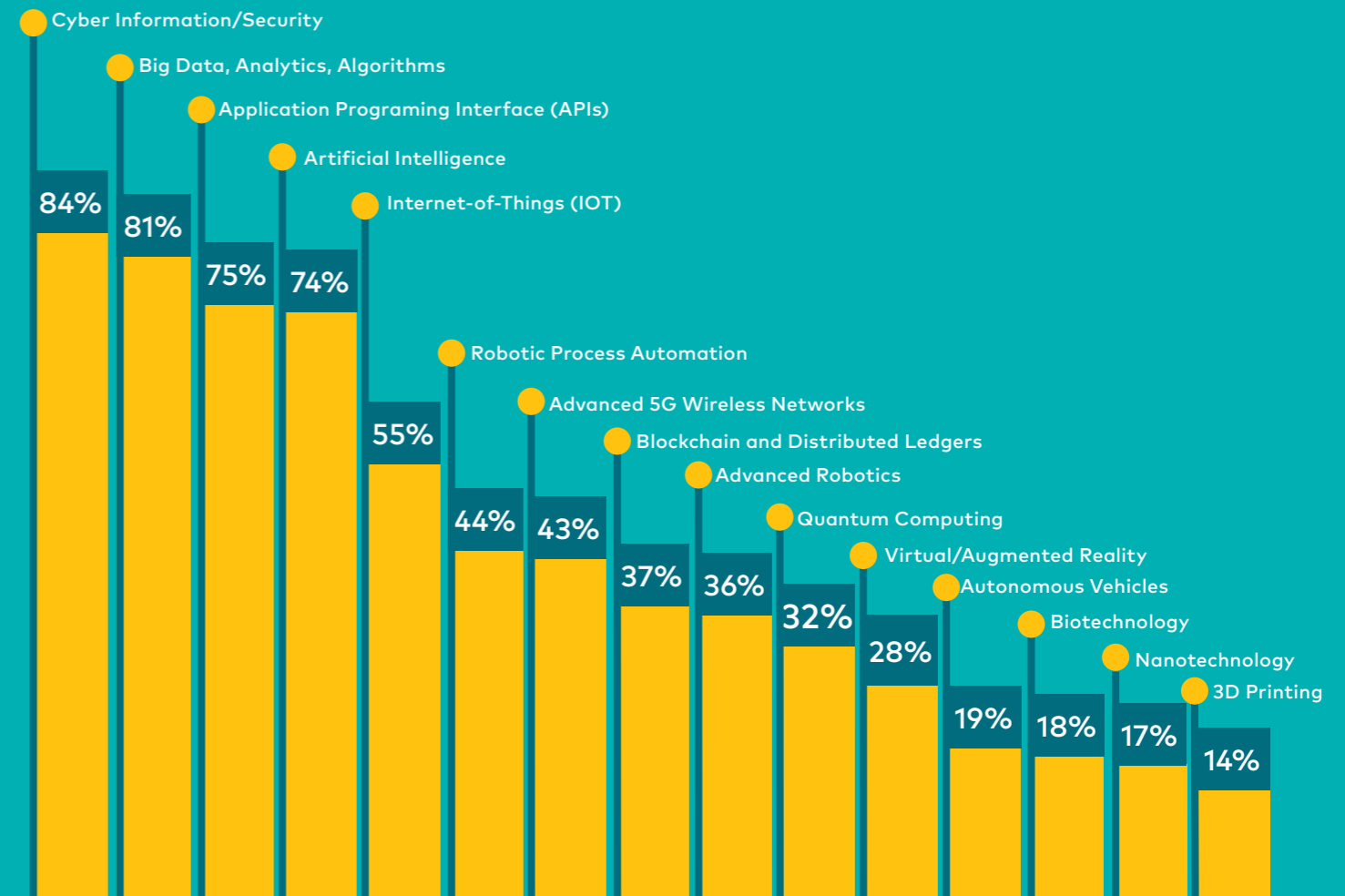
Technologies that help redesign processes and, potentially, fill talent gaps are not being used at scale. This results in a static approach to managing most business operations, which limits the ability to perform like a business designed for success in Industry 4.0.

Talent management and development is crucial to addressing these gaps. To be effective, talent management must be focused on current digital business requirements and prepare for those required in future. Training programs and collaboration through industry partnerships can equip employees with the required digital skills – formally and informally through on-the-job experience.

Greater collaboration and redesigned hierarchical structures, along with revised approaches to intelligence-based decision-making, will allow enterprises to operate at the speed and scale Industry 4.0 demands.

The most successful businesses in Industry 4.0 will empower employees through greater experimentation and risk-taking, have flatter hierarchies fuelled by collaboration and knowledge sharing, and utilise real-time data capture and analysis.

Figure 1: What impact do you believe each of the following technologies will have on innovation and/or disruption in your industry in the next three years? Highest Impact %



Source: Optus Business' Centre for Industry 4.0

* Defined as an organisation whose impact is disproportionately large compared with its peers because of the use of new organisational techniques.

The extent of Australia's knowledge economy gap



The best performers think like digital businesses, rather than simply owning the tools that allow them to act like one.

In *Enterprise 4.0*, Optus Business discovered that while Australian enterprises are investing in emerging technologies for Industry 4.0, the strategic focus to optimise the performance of these assets is lacking.

Deloitte states most enterprises are simply using digital technologies to undertake the same processes, but just faster and better⁸. This approach is advantageous in the short term. But there's more value in looking at redesigning processes by harnessing technology in addition to re-skilling employees to achieve long-term benefits.

As well as enabling businesses to operate at the speed and scale required in Industry 4.0, fostering digital skills and a digitally-focused culture will address widespread fears that technology will replace humans in the workplace. Research shows there is a net-positive outlook for jobs⁹. This is because digital technologies require new types of workers, such as big data specialists and cyber security experts.

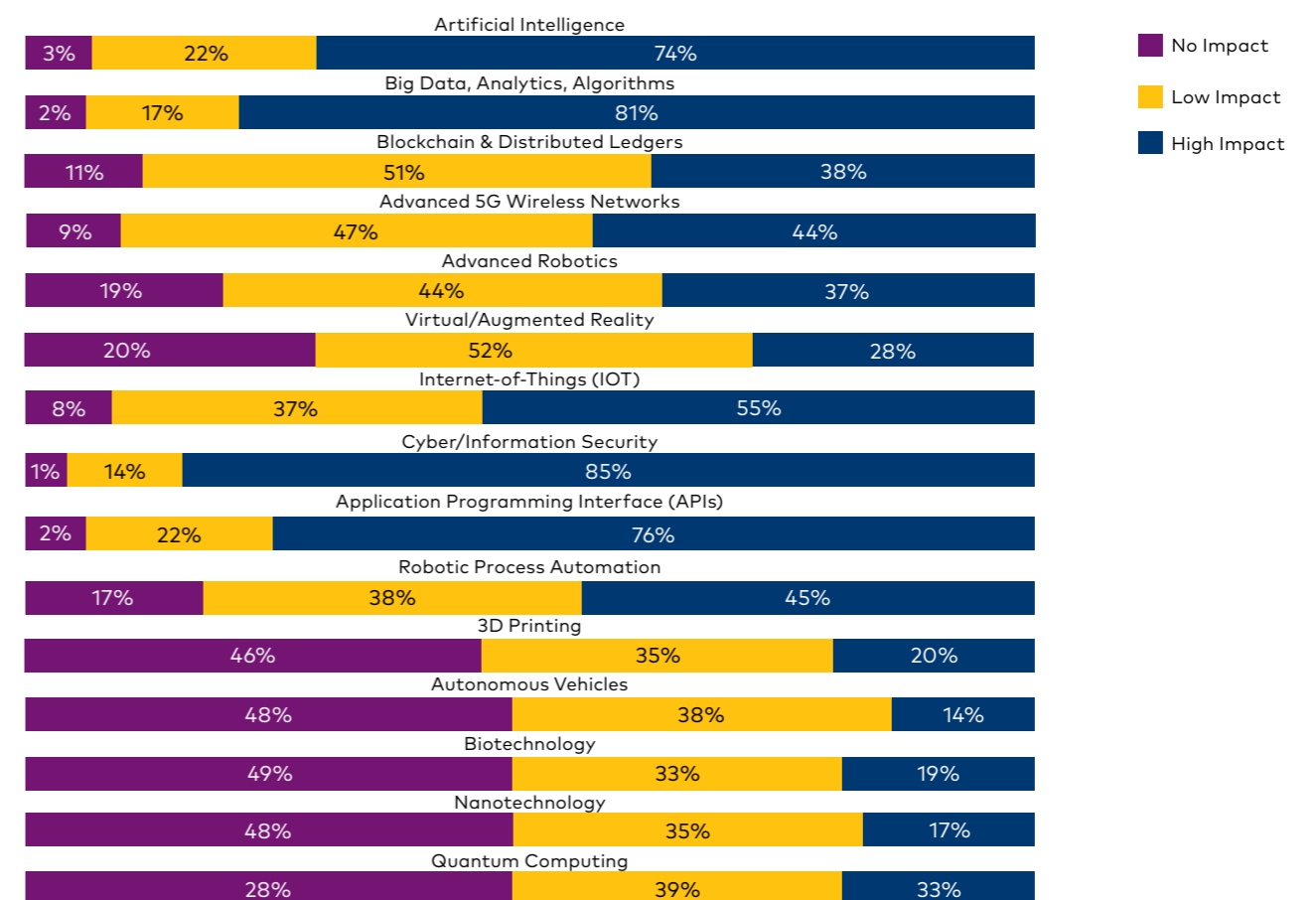
To address the digital discord beginning to emerge in Australia, the best performers will need to think like a digital business, rather than simply owning the tools that allow them to act like one. *Enterprise 4.0* highlights the capability, cultural and operational gaps that need to be filled for this to be a reality.

Capability

The urgency with which Australia's well documented ICT skills shortage must be addressed is heightened by findings that outline the technologies enterprises expect will have the biggest impact on their business.

Cyber Security, Artificial Intelligence (AI), the Internet of Things (IoT), Application Programming Interfaces (APIs), and big data technologies are expected to drive the biggest changes during the next three years. Recruiting and re-skilling employees in these areas needs to be an immediate focus to unlock the value they bring (see Figure 2).

Figure 2: What impact do you believe each of the following technologies will have on innovation and/or disruption in your industry in the next three years? (%)

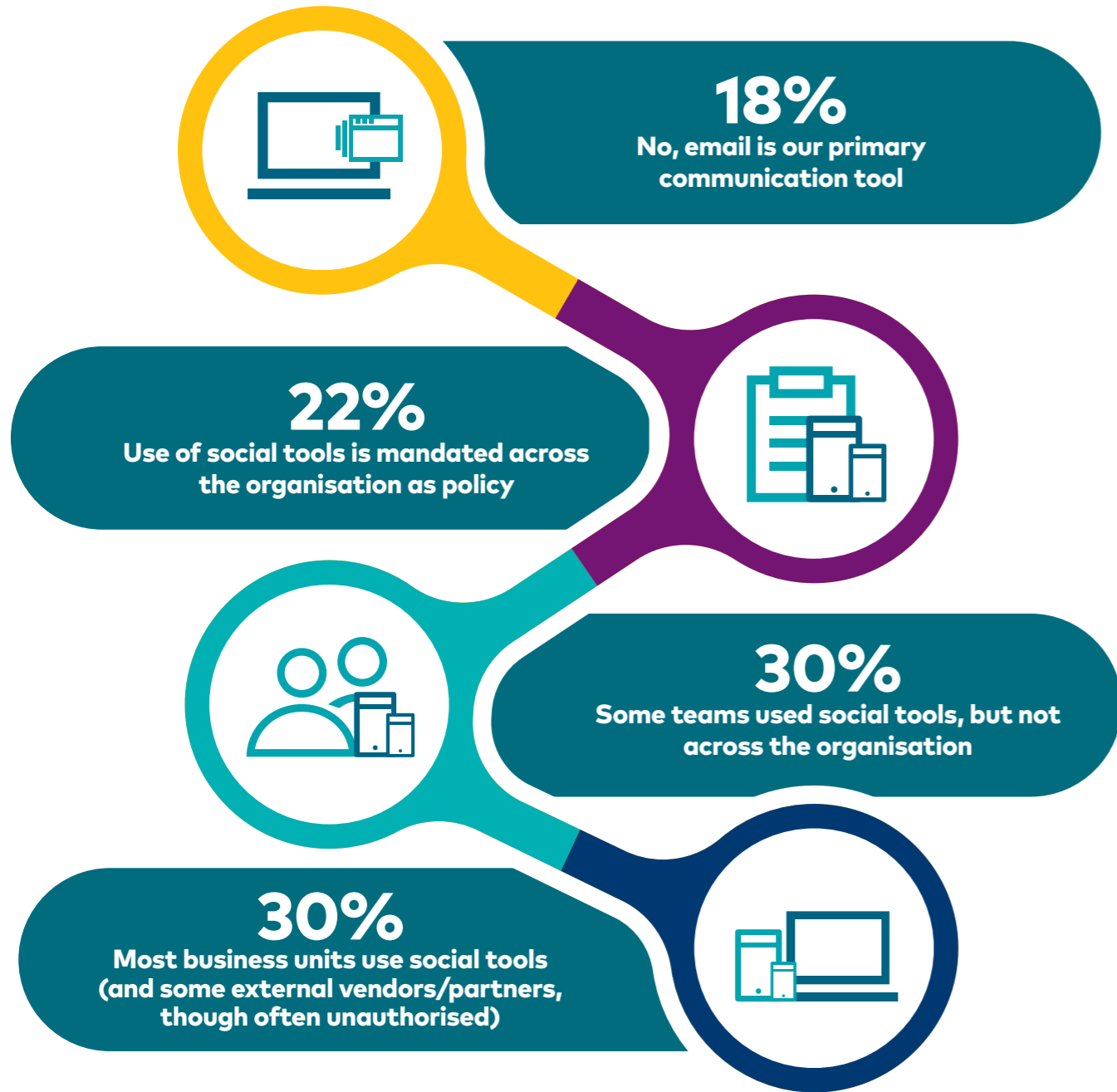


Source: Optus Business' Centre for Industry 4.0

Mandating the use of digital collaboration tools that enable the sharing of knowledge and communication across the entire business is an opportunity for Australian enterprises to unlock the value of Industry 4.0 technologies.

Doing so will enable them to seamlessly communicate and share information to make smarter and faster decisions. Currently, only 22 per cent of businesses do this in Australia (see Figure 3).

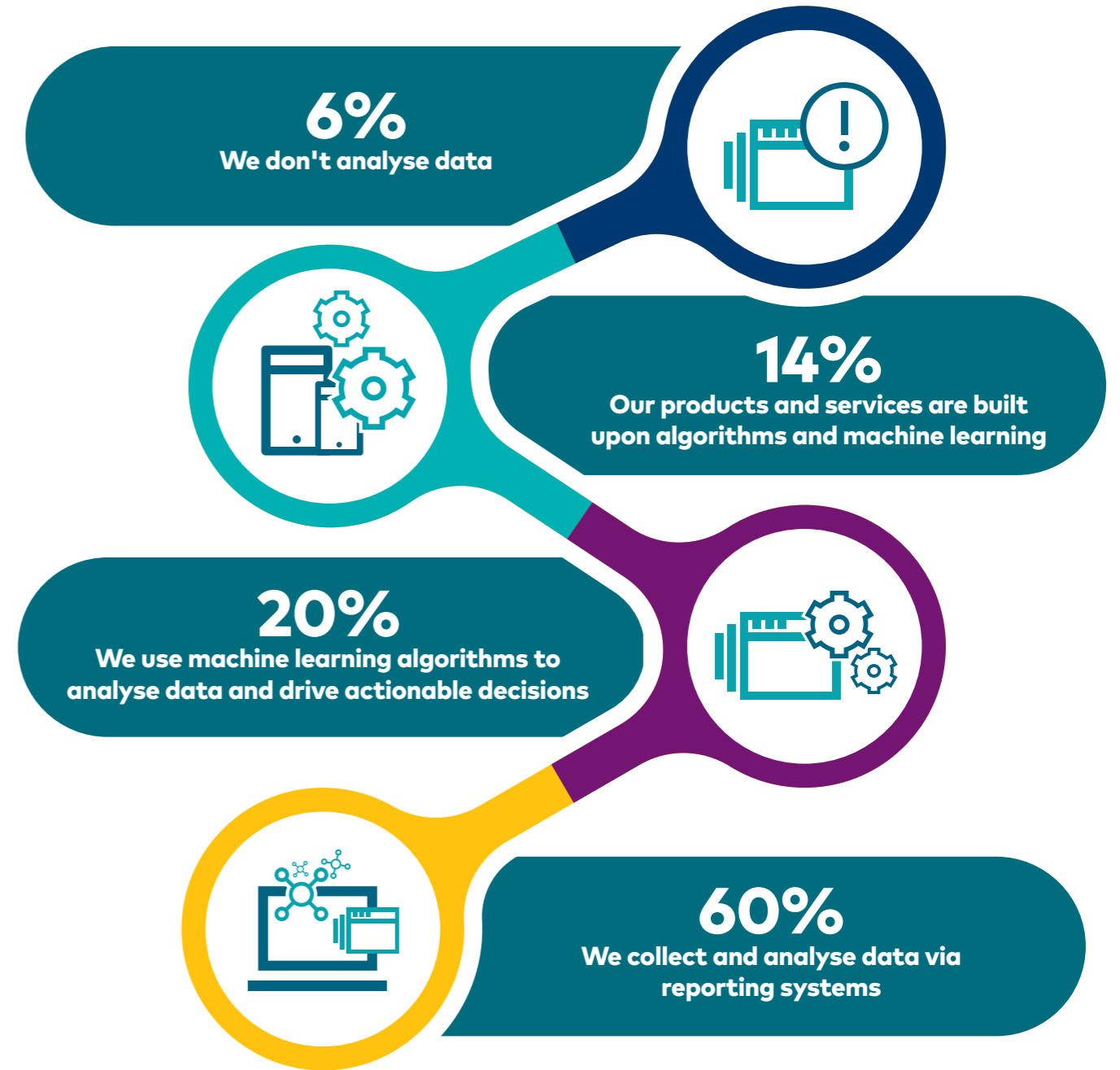
Figure 3: Does your organisation use advanced social tools for knowledge-sharing, communication, coordination and/or collaboration? (%)



Leveraging data insights to make business decisions in real time is another untapped opportunity. Thirty four per cent of businesses use machine learning to analyse data and drive decisions, with nearly two-thirds still using pre-set

reporting systems. As a result, employees are not empowered to make informed business decisions at the speed required for Industry 4.0 (see Figure 4).

Figure 4: To what extent does your organisation use algorithms and machine learning to make meaningful decisions? (%)



Source: Optus Business' Centre for Industry 4.0

Cultural

Enterprises are not unlocking the full value of the digital technologies in which they are investing.

Australian enterprises need to embrace experimentation in product development and decision-making to create the innovative digital culture needed in Industry 4.0. It will also help to attract and retain workers with digital skills in a cost-effective way.

Enterprise 4.0 found 54 per cent of enterprises actively tolerate failure and encourage risk taking. An additional 38 per cent said these practices are encouraged but in name only. This demonstrates the cultural shift needed to accelerate transformation among Australian enterprises.

To optimise business processes, we also need to change the models we use. Despite the need to constantly evolve and refine offerings, one

third of enterprises continue to use traditional and static models to optimise business processes. This results in enterprises not unlocking the full value of the digital technologies in which they are investing. Nor are they providing an environment whereby employees can re-skill to deliver value back to the business.

Enterprises united by a transformational purpose that goes beyond a mission statement are more likely to achieve exponential growth. Twenty five per cent of Australian enterprises have successfully fostered this culture. It means businesses need to find a way to unite their workforce behind a shared goal that makes a difference to more than financial performance.

While greater autonomy can lead to better performance in Industry 4.0, decision-making is often still reserved for senior leaders in Australia. Forty two per cent of enterprises in Enterprise 4.0 said they use traditional, top-down command and control processes. This practice can slow the speed at which decisions are made and acted upon.

Empowering more employees to make more meaningful decisions that have an impact on performance will accelerate the rate at which Australian enterprises can evolve structures for Industry 4.0. The most successful organisations in Industry 4.0 leverage small, multi-disciplinary, networked, and self-organising teams. Currently, 30 per cent of Australian enterprises are designed this way, with many more beginning to lay the foundations for this type of structure (see Figure 5).

The most successful organisations in Industry 4.0 leverage small, multi-disciplinary, networked, and self-organising teams.

Figure 5: Does your organisation operate with large, hierarchical structures or small, multi-disciplinary, self-organising teams? (%)



Source: Optus Business' Centre for Industry 4.0





Operational

Optus Business believes the next generation of successful Australian enterprises will be built on capital-light, data-intelligent and multi-sided platform business models that can be rapidly scaled to enable exponential growth.

Enterprise 4.0 discovered many businesses (40 per cent) only have the ability to scale processes internally. Just 15 per cent are benefitting from core processes that are self-provisioning and can be executed outside the organisation (see Figure 6).

This is likely due to the 72 per cent of enterprises in the country are not leveraging on-demand assets at scale, such as shared office spaces and cloud technologies (see Figure 7).

Most enterprises continue to use permanent employees for the majority of business functions (59 per cent), with some beginning to recruit freelance talent to augment mission-critical areas (25 per cent).

This results in enterprises unable to benefit from the flexibility this way of working provides, such as expanding technological capabilities to meet demand or increasing office space to accommodate growth in stages. The ability to flex a workforce up and down based on the skills and capabilities required is critical.

This has a follow-on effect regarding the sharing and use of data. The majority of respondents only share data internally, if at all (54 per cent). Similarly, 32 per cent track key performance indicators at pre-set times, rather than just in time.

This way of operating suggests most enterprises continue to take a static approach to work. This limits their ability to rapidly and cost-effectively scale resources, and leverage real-time data insights to improve business operations.

Most enterprises continue to take a static approach to work, limiting their ability to rapidly and cost-effectively scale resources, and leverage real-time data insights.

Figure 6 : How replicable and scalable are key processes outside your core organisation? (%)

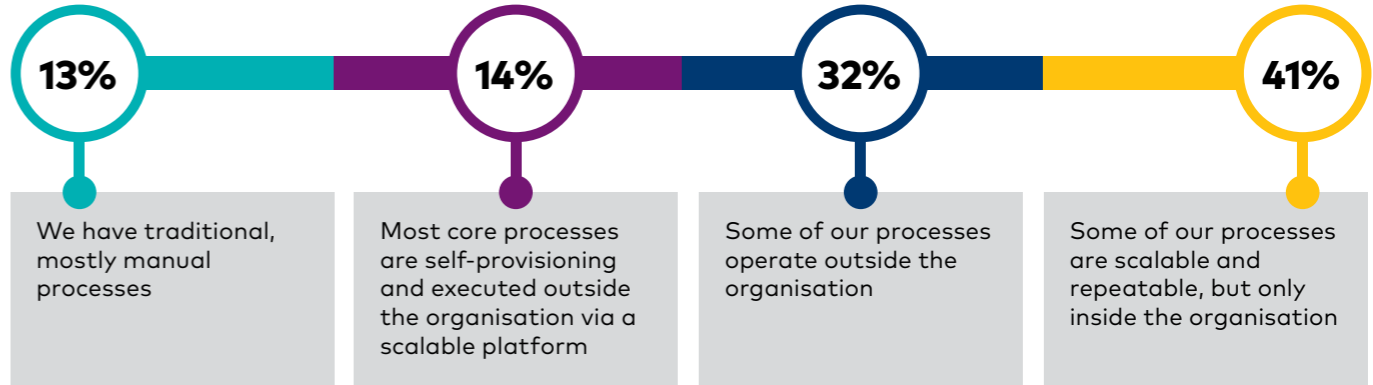
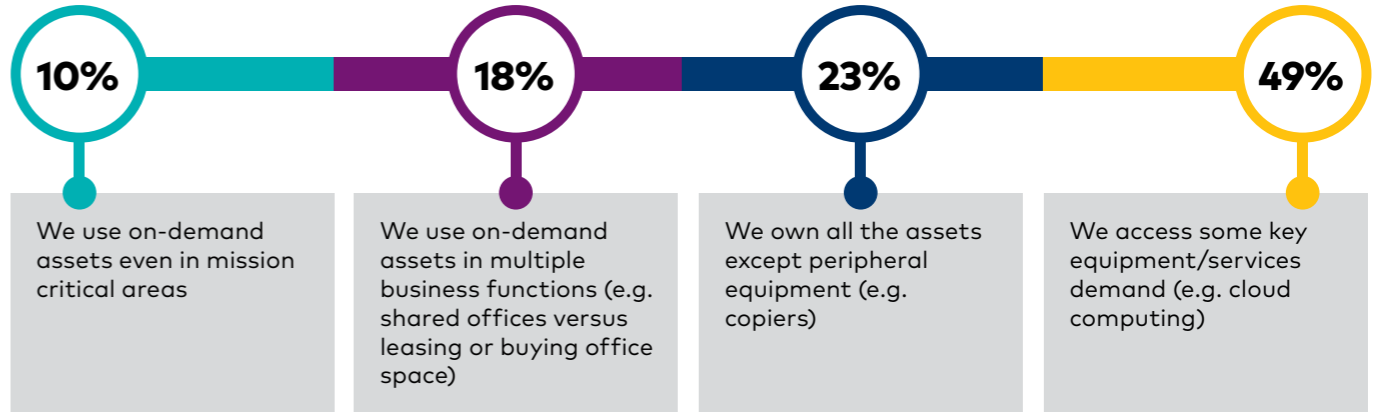


Figure 7: To what extent does your organisation own versus rent its assets? (%)



Source: Optus Business' Centre for Industry 4.0

How CEOs rate their readiness for Industry 4.0 compared with the rest of the business

There are significant gaps in how CEOs and board members rate their enterprise's ability to scale exponentially compared with other C-level roles.

As shown in Table 2 the biggest differences exist in the cultural and operational characteristics associated with businesses that have experienced exponential growth. There is relative parity in how both groups view their ability to leverage Industry 4.0 technologies.

The speed at which enterprises must communicate and collaborate in Industry 4.0 means enterprise leaders cannot afford to have differing views on what can and can't be achieved.

This belief among CEOs that their organisation is more digitally-enabled than it actually is could hinder their ability to transform. The misalignment could mean traditional processes are maintained, opportunities to innovate are missed and access to industry talent is limited.

Deloitte's *The Industry 4.0 Paradox* demonstrates the impact this discord creates. Supply chain processes are often rated as having the most to gain by Industry 4.0 influences through technologies such as advanced robotics, automation, autonomous vehicles. However, those responsible for managing departments rarely have a seat at the management table. It means decisions and investments are not always tailored to current and future requirements.¹⁰

Aligning beliefs with an informed reality – based on information/data – will ensure performance metrics are realistic, training programs are tailored for current needs, industry partnerships are leveraged, and investments are focused in the right areas.

Having the right workforce skills and corporate culture will enable the broader business to operate in the way the CEO and Board members expect. It will enable employees to take more ownership of their decisions and responsibilities, help them inform leadership teams of current business performance, develop the skills needed to perform in the digital workplace, and identify future opportunities for business improvement.

Table 2 : Exponential readiness: CEOs + Board Members versus C-Level (%)

Industry 4.0 characteristic		CEO and Board Member (%)	C-Level (%)	Difference
Capability	Use of social tools is mandated across the organisation as policy	28	18	-10
	We emphasise agility	20	9	-11
	Products and services are built around algorithms and machine learning	14	13	-1
	We expose data to external ecosystems via open APIs	14	15	+1
Cultural	Failure and risk-taking are expected, measured, and celebrated	31	13	-18
	Small, multi-disciplinary, networked and self-organising teams are the primary operating structure	45	19	-26
	All key decisions are decentralised	23	11	-12
	We have a transformational purpose that goes beyond a mission statement. We aspire to deliver significance to the whole world	29	21	-8
Operational	The lean approach is used for all core functions	22	10	-12
	We mostly use on-demand contractors in addition to the full-time core team	26	7	-19
	Objectives and key results are used across the organisation with full transparency	9	2	-7
	We collect real-time and value-learning metrics	22	26	+4

Source: Optus Business' Centre for Industry 4.0

Work, reimagined

FÆTHM

An Australian start-up leading the way in Industry 4.0

Faethm is a fast-growth Australian start-up that enables companies and governments to create value from the impact of emerging technologies and to predict the future of work.

Founded in 2017, this Sydney-based start-up provides a strategic software-as-a-service platform designed to identify the unique skills and resources needed in a digital workplace, and the roles most at risk. This allows enterprises to recruit and re-skill employees accordingly.

The technology blends machine learning and proprietary analytics with client data to predict the impact of emerging technologies on any role, workforce, company, industry, location or economy.

The platform also provides detailed learning pathways for workers to develop new skills and a technology adoption indicator to describe their impact over a set period (see Technology Adoption Model).

"The world of work is undoubtedly being transformed by emerging technologies but, because we're talking about the future and there's such a wide range of predicted outcomes, leaders are hesitant to develop and execute an effective response," said Greg Miller, Executive Director at Faethm.

"Faethm provides a scenario-planning tool to help guide the workforce through expected change, such as re-skilling those employees at risk of automation, identifying which roles should be augmented with technology and what roles to add. We can assess any workforce and demonstrate which emerging technologies are going to have the biggest impact, and which enterprises need to get on their roadmap."

Faethm used data from the 2017 Australian census to identify the impact emerging technology will have specifically in the financial services industry (FSI)¹¹ during the next fifteen years. It found:

- 40 per cent of jobs are at risk of being automated entirely;
- 37 per cent of the workforce is well placed to be augmented by emerging technology;

- 18 per cent productivity boost will be powered by emerging technology augmenting roles;
- 44 per cent of women are in at-risk roles compared with 36 per cent of men; and
- The most at-risk roles include traditionally well-paid jobs requiring higher education.

Their research highlights where FSI enterprises should focus to ensure they are ready for the future of work. It also shows how all roles are subject to transformation, including traditionally 'safe' and well-paid jobs.

Companies and governments across North America, Europe, and Asia-Pacific are already working with the Australian start-up. Faethm was also invited to be part of the World Economic Forum's Centre for Industry 4.0, allowing the company to directly influence the way industry and governments around the world consider the impact of digital technologies.

Technology Adoption Model

Faethm describes the impact of the five key technology-types over time (Social AI, Process AI, Mobile Robotics, Fixed Robotics and Advanced Materials). Its technology taxonomy classifies technology into these five categories, then uses the assessments from 45 individual technology adoption indicators to create a proprietary assessment of each country's technology adoption rate. The assessments are founded in research by the World Economic Forum, INSEAD and Cornell University.



Social AI

AI and ML applied to interacting with people, understanding human intent and anticipating people's needs



Process AI

Advanced analytics, ML and other disciplines of artificial intelligence applied to diverse data sets for optimisation and prediction



Mobile Robotics

Machines interacting with an unpredictable physical environment; automating skills such as human judgement and situation awareness



Fixed Robotics

Machines autonomously manipulating physical objects and materials in a controlled environment, in concert with other machines



Advanced Materials

Materials that have been developed or modified to obtain superior performance critical for the application

Collaboration, reimagined



Connected by culture

Insurance Group Australia (IAG) has been providing insurance services that help Australians protect their homes, cars, lifestyles and businesses for almost 160 years.

The insurer has consistently responded to market changes to remain relevant and achieve growth while the world around it has evolved. Today, IAG delivers services to Australia, New Zealand, Malaysia and India, and in 2018 delivered 1.8 per cent year-on-year growth.¹²

IAG attributes its ongoing success to the company's unwavering commitment to cultivating a culture that aligns to its purpose: *We make your world a safer place.*

"To succeed in Industry 4.0 companies will have to fully embrace, trust and respect people and culture," explained Jacki Johnson, Group Executive, People, Performance & Reputation, IAG.

Modern collaboration technologies allow IAG employees to easily work from anywhere, helping to increase the speed of decision-making across the organisation, encouraging accountability and transforming old hierarchical structures.

"As processes become automated, human interactions are going to become increasingly important. Organisations need to focus on equipping their workforce with the right skills and tools, empowering them to provide new ways of

engaging people, plus winning and retaining trust and respect," said Johnson.

IAG is on a journey to cultivate this culture. Integral to achieving this goal was the relocation of the insurer's three Sydney CBD offices to a single location in 2018.

"Everything about the move was focused on creating a workforce that is collaborative, transparent, demonstrates ethical behaviour, is diverse and has a powerful sense of belonging," said Johnson.

The building has been designed to promote openness and transparency. Executives have not had their own office for over three years, employees are encouraged to host meetings in open spaces, leaders openly talk about working remotely, and employees are empowered with digital technology to work at times suited to their individual needs.

Digital collaboration and data-driven platforms and tools power this new way of working.

"Modern collaboration technologies allow our employees to easily work from anywhere. It's helping us increase the speed of decision-making across the organisation and encouraging accountability, which helps transform old hierarchical structures," said Johnson.

IAG surveys its workforce every two months to measure shifts in employee connectedness and leadership. It is a five-question survey asking employees how they are experiencing leadership, if they understand their contribution to the business, and their general well-being at work.

The insights are presented back in a culture dashboard and leaders' annual performance outcomes are linked to the results. The insurer also analyses how office space is being used to ensure it is being utilised effectively and, in the ways, IAG hoped.

The investment IAG has made in digital technology and office space provides the foundations for the two strategic initiatives driving culture:

- **Lead by Example – *Leading@IAG*** is a system of work designed to set clear expectations about the skills and behaviours the insurer expects from its people at every level. Business leaders are seen to demonstrate the DNA IAG wants to instil across its workforce, from the way they work to the services delivered.
- **Preparing for the Future – *Future ME*** is a proactive approach to building awareness of the future of work and the skills needed. The program incorporates practical steps that empower employees to develop digital capabilities and leverages IAG's partnerships to provide greater development opportunities.

IAG is harnessing digital technology to cultivate a collaborative culture that delivers long-lasting success. Initial signs of the change are positive. The employee net promoter score improved from minus 29 to minus 2 as at 30 June 2018. The goal is to reach plus 20 by 2020.

"IAG drives performance through a cultural lens. This is led by our purpose to make the world a safer place, which is an essence of why IAG exists," said Johnson.



Closing Australia's knowledge economy gap through collaboration

Australian enterprises understand more than their global counterparts the priority of human capital. Optus Business' research found that they prioritise talent management and human resources more so today compared with enterprises globally (third highest versus 12th)³.

People are the most crucial element in any successful business transformation. This is because the technologies are only as good as the people operating them. It's also why enterprises must prioritise developing digital skills and facilitating digital cultures.

Enterprises can augment their transformation with effective digital collaboration tools. These act as a catalyst for a plethora of positive changes by enabling enterprises to:

- **Accelerate and decentralise decision-making** – Employees can securely share assets inside and outside the enterprise. This means issues are easily resolved and that data insights are acted upon in near real-time so that opportunities are realised.
- **Bring the business closer together** – Mandating the use of collaboration and knowledge-sharing platforms encourages a growth-centered mindset. Inspired by their peers, employees will be motivated to drive change and acquire new skills. It is also a forum for providing feedback on current abilities.
- **Encourage new ways of working** – The significant degree of change delivered through improved collaboration and knowledge sharing inspires enterprises to see what else they can achieve with technology. It is an entry-point for further technological change and a way to re-skill employees in a streamlined way.

These capabilities help enterprises begin to bridge the gap between digital technology adoption and skills and culture so that organisational demands are met.

Partnerships between industry, government and academia are also essential to success in Industry 4.0. The speed and scale of change means no organisation can be expected to have all the answers or skills in-house.

Effective partnering can be achieved by strengthening ties with enterprises focused on developing digital skills and digital cultures, joining forces with universities to align curriculums with digital needs, and participating in accelerator and innovation-focused programs. This provides a forum to share learnings, ensures workforces are equipped with the skills they need, and helps enterprises forecast future requirements.

Australian enterprises must overcome their aversion to innovation failure to encourage digital innovation further, flatten hierarchical structures and decentralise decision-making. This can be achieved by adopting agile innovation methodologies to optimise processes through experimentation. Examples include design-thinking workshops, A/B testing and hackathons.

Developing the skills and culture needed for Industry 4.0 is an iterative and collaborative process. Enterprises need to complete a series of changes as well as forming a range of partnerships that will eventually combine to deliver the environments, platforms and communities that empower teams to flourish.

Australian enterprises need to act now if they are going to realise their potential. The elements are in place to do this – a focus on talent management, increasing technology investment, highly regarded education programs and digital business capabilities.

All that is needed now is a digital collaboration platform to bring it all together.

Australian enterprises need to act now if they are going to realise their potential.

Optus Business invests in developing the skills needed for Industry 4.0



Curtin University

Optus Business and Curtin University joined forces to develop an AI research group in the University's School of Electrical Engineering, Computing and Mathematical Sciences. It is designed to train the highly skilled and industry-ready students of the future.

Macquarie University

The Optus Macquarie University Cyber Security Hub supports businesses and government to recognise and protect themselves from cyber threats. The Hub provides research, short professional courses and consultancy services to the private sector and government agencies.

La Trobe University

Optus Business and La Trobe University formed a strategic alliance designed to deliver an integrated, digitally connected campus, a state-of-the-art Sports Precinct of the Future and a market-leading Cyber Security degree.

Cyber Security Cooperation Research Centre (CRC)

Optus Business invested \$3.5 million into Australia's CRC and provides direct access to its team of cyber security experts. The community is designed to build an ecosystem that maintains a resilient, secure and trustworthy cyber capability in Australia.

About us



Rocky Scopelliti

Director, Centre for Industry 4.0, Optus Business.

Report author

Rocky Scopelliti is a world-renowned thought-leader. His expertise and pioneering behavioural economics research into the confluence of demographic change with digital technology has influenced the way we think about our social, cultural, economic and technological future, with more than 150 boards and leadership teams – including Fortune 100 companies – seeking his strategic advice annually.

Rocky is a regular media commentator and distinguished author, with numerous internationally recognised thought-leadership research publications – including 'Youthquake 4.0 – A Whole Generation and the New Industrial Revolution' (published in September 2018).

At Optus Business, he is the Director for the business' Centre for Industry 4.0, leading a specialist team creating world class thought-leadership and innovation. Alongside this role, Rocky is a director on the board of Community First Credit Union, a member of the REST Super Technology Advisory Panel, and a member of the Australian Payments Council.

Educated in Australia and the USA, at Sydney and Stanford Universities respectively, Rocky has a Graduate Diploma and MBA in Corporate Management. He is also a graduate and member of the Australian Institute of Company Directors.

Optus Business

At Optus, we're passionate about creating compelling customer and employee experiences, and bringing to life the spaces and things that make this possible.

It's about empowering our customers to thrive in an age of unprecedented digital disruption. And it's why Optus is trusted by thousands of Australian organisations who value a partner that understands the full breadth of managed technology and services – from applications, security, cloud-led ICT, to collaboration and contact centres. All underpinned by our smart and secure network.

Backed by the international strength of the Singtel group and the power of our mobile, fixed and satellite networks, regional strength and local expertise, Optus Business brings together best of breed partners to create the solution that's right for your business.

No longer is it about products and services, but a connected digital experience that empowers people to do more.

Embark upon the journey with confidence, with Optus Business at your side.

Enterprise 4.0

A study conducted by Optus Centre for Industry 4.0, investigated how ready Australian industries, enterprises and executives are for Industry 4.0 and how their enterprises are progressing with their current digital transformations. The focus of this study was primarily on information-enabled industries, opposed to industrial sectors.

The study has drawn upon and augmented existing research from leading global institutions and localised those insights through a significant quantitative study.

Please visit <http://optus.com.au/enterprise/industry-4-0>



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