KPMG

Industry 4.0: The Australian manufacturing advantage

A playbook for sustainable growth and innovation

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In this playbook, we look at how the Australian manufacturing sector can become a powerhouse – building sovereign capability and economic resilience through sustainable growth. We provide practical steps to help manufacturers build a competitive edge locally, and on the global stage.

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Realising Industry 4.0

SECTION ONE | REALISING INDUSTRY 4.0

The Australian status quo

Business processes continue to evolve quickly around the world. And, according to the National Skills Commission, Australia's industrial base needs to keep pace with the global trends that are changing the nature of production and consumption[1].

In its 2023 report, Seize the moment - A plan to secure Australia's economic future, The Business Council of Australia lists two important thinking points for the Australian manufacturing sector:

1. **Innovation in the production of goods and services is being driven by changes to processes, the use of new materials and production methods, and state-of-the-art digital technologies.**

2. **Digitisation and technological change are transforming business. Technology is redefining the relationship between consumers and businesses.**

Key challenges in Australian manufacturing

The Australian manufacturing sector is also facing some common issues:

- **Ageing capital:** Outdated assets are costly to maintain, slower in output and have limited automation and connection across operations.
- **Outdated technology:** Legacy technology and inadequate data frameworks are impacting growth and the speed to respond to demand.
- **Supply chain challenges:** Geopolitical uncertainties, fluctuating commodity costs, freight disruptions, logistics and natural disasters are putting supply chains at risk.
- **Security and privacy:** Increasingly sophisticated cyber attacks on organisational data.
- **Shrinking profit margins:** Rising energy prices are impacting operation costs, exacerbated by outdated and inefficient machinery.
- **Increased regulations:** Changes in global accounting standards will mandate Scope 1 and 2 emissions from 1 July 2024. Scope 3 emissions are also being scrutinised.
- **Skills shortages:** The war for talent continues across all aspects of business and is a constant challenge.

[1] National Skills Commission's 'State of Australia's skills 2021' report, page 21

Industry 4.0 at a glance

Industry 4.0 is the coming together of many individual technologies combined in different ways to automate processes and data exchange at an enterprise level. It provides holistic integration across the end-to-end value chain, to improve performance and deliver better value to customers. Given the challenges in the industry, and the evolution of global business processes, investing in Industry 4.0 technologies is becoming increasingly urgent for manufacturers to gain a competitive edge.

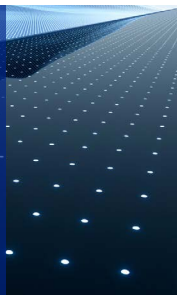
Benefits of Industry 4.0

REAL-TIME DATA FOR BETTER DECISIONS

connect all areas of an organisation through digitalisation, automation and networking, where real-time data can provide maximum transparency and improved decision-making.

TOTAL QUALITY MANAGEMENT

24-hour production can be monitored without interruption, while quality and efficiency are constantly optimised.



INCREASED COMPETITIVENESS

including new product opportunities arising through connected processes and the latest technology.

INTEGRATING CUSTOMERS

improved data and analytics capabilities allow the organisation to integrate customer needs and preferences into product design and quickly respond to emerging trends.

SUSTAINABILITY

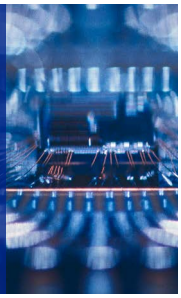
helping businesses monitor and reduce their environmental impact, contributing to a more sustainable value chain.

ENHANCED SUPPLY CHAIN MANAGEMENT

a more secure and connected supply chain, for better management prediction.

BETTER RISK MANAGEMENT

including cyber security risks.



IMPROVED WORKFORCE AND ASSET MANAGEMENT

creating more efficiencies within the organisation.

Why transformation is necessary

As many competitors are already taking the bull by the horns, manufacturers need to move faster, or get left behind. According to KPMG International's 2022 Global CEO Outlook Survey[2],

78% of CEOs say,

"WE NEED TO BE QUICKER TO INVEST IN DIGITAL OPPORTUNITIES."

And they're right.

Yet adopting Industry 4.0 is not just about investing in individual pieces of technology, rather it's a holistic approach to business processes. To make the most of this opportunity, Australian manufacturers will need to consider how they can transform their overall business model – from research and development to procurement, operations and customer experience.

Successful digital business transformation may seem like a huge undertaking, but the opportunities are attractive: better responsiveness, greater competitive advantage, higher productivity, lower environmental impact, more nimble product development and a bigger market share. But remember, it's a two-way street. If the transformation is not managed properly, the consequences could be harmful.

Scenario: products as a data platform

Australian manufacturers tend to focus on changing a single aspect of their business model and neglect to consider the many disruptive elements that alter the way the entire company works.

For example, a producer of motors for cars and forklifts is shifting to digitised motors that deliver data. This means it will now need to think about its products as a data platform that can share information with the customer, and the opportunity for a long-lasting client relationship across many interactions.

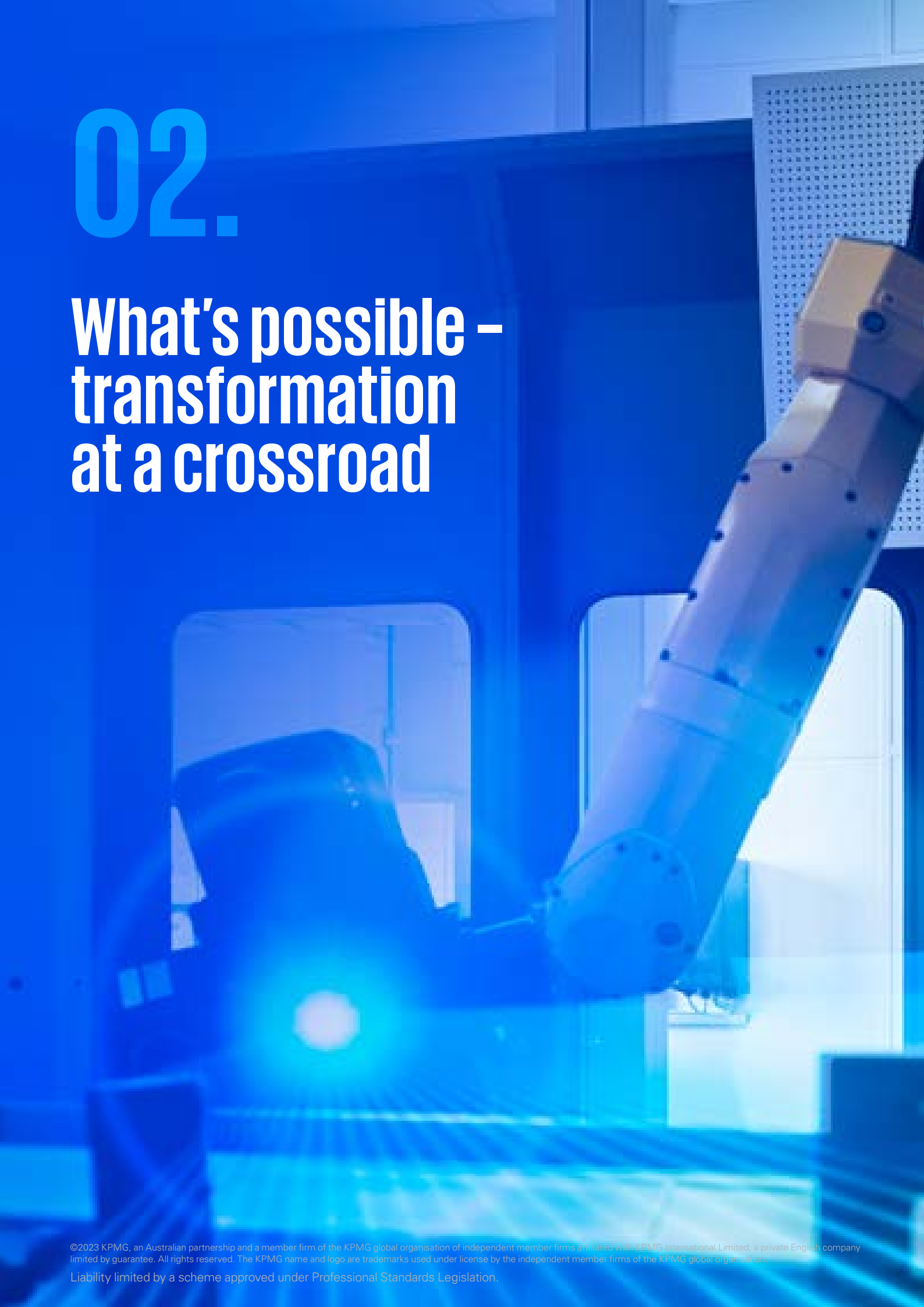
The play: where are you now?

- Consider where your manufacturing business is today. Is it sustainable in the long term?
- What is your current state of business technology and investment?
- Are there new global competitors emerging in your market, and if so, how are they gaining market share?
- Revisit your vision and strategy – investigate what technology, systems and opportunities could help. Consider what key barriers are holding back your organisation's growth.
- Do you have all the information you need to make the best decisions for your organisation?

[2] KPMG 2022 CEO Outlook: Growth strategies in turbulent times, October 2022

02.

What's possible – transformation at a crossroad



SECTION TWO | WHAT'S POSSIBLE – TRANSFORMATION AT A CROSSROAD

The future of manufacturing

Adopting Industry 4.0 requires an enterprise operational strategy and clear steps, rather than large investments in technology. Current catalysts for business model transformation lie in the merging of two trends:

1. **Industry 4.0 technologies taking manufacturers to a new level of digital connectivity.**

These include artificial intelligence (AI), the Internet of Things (IoT) and edge computing, and can help an organisation monitor, process and analyse vast amounts of data to bring more business benefits across the value chain.

2. **A change in customer demands.**

Customers expect a deeper and more sustained experience with their suppliers – from the beginning to the end of each product cycle.

"Clients' expectations are changing radically and their thirst for information, together with the interface platform it is provided on is becoming the differentiator."

Tim Plenderleith,
Sector Leader Manufacturing and Life Sciences
KPMG Australia

Transforming the business model

If done right, digital business transformation can have a significant impact on the business, including cost reduction, increased inventory efficiency, and flow controls on the factory floor. It may also lead to increased insights into what customers are demanding and improved overall employee satisfaction, including a safer work environment.

The design and plan of a new business model must start with a thorough assessment of where the enterprise is today and where it intends to go. Through this process, consider the relevance of Industry 4.0 across your end-to-end supply chain. Think about what technologies are needed in your organisation's ideal state such as digital twins, 3D printing and highly scalable, connected open-source platforms.

Transformation could mean a very different looking organisation from where it stands today. Old relationship structures may change, and organisations should consider how forming new partnerships and ecosystems could help create innovation.

"We need to visualise and lead our businesses as holistically integrated networks and not the traditional silos of capability and function, leveraging the highly skilled workforce and driving operational efficiency."

Tim Plenderleith,
Sector Leader Manufacturing and Life Sciences
KPMG Australia

To help make digital transformation a success, your entire enterprise will have to work smoothly and collaboratively. This requires a holistic, enterprise-wide approach to transformation, involving all major business functions and operating units.

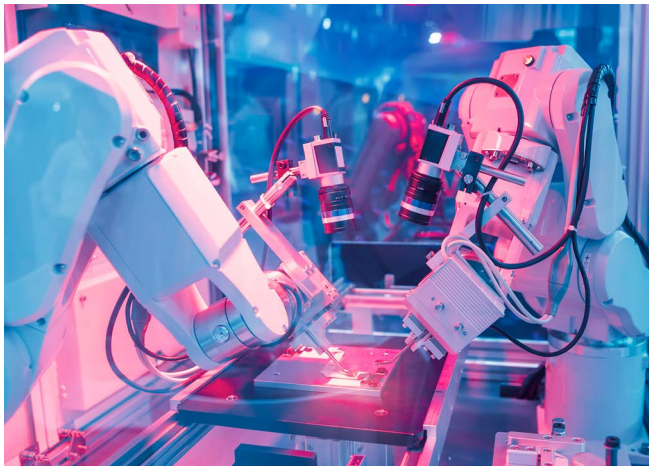
Supply chain innovation

Collaboration is another key to the success of digital business transformation and starts with supply chain innovation – designing solutions across the supply chain using real-time input upstream from suppliers and downstream from customers – that can enable innovation and demand-driven output. As a result, the relationship becomes less transactional and more mutually beneficial.

Upstream business partners, such as suppliers, can collaborate with manufacturers to create innovative products and find opportunities to share costs and fill skills gaps. For example, an original equipment manufacturer (OEM) may only be able to devote handful of employees to creating a novel minimum viable product, but by working with other partners, might significantly increase productivity.

Downstream, industrial manufacturers should be able to engage their customers in innovation projects that can lead to better products and more profits for the end user, as well as the producer. OEMs around the world are regularly involving clients in the customer experience and minimum viable product development so they can make changes before committing to full production. The relationship then also becomes less transactional and more mutually beneficial.

> "We're seeing many manufacturing clients' expectations shifting towards a much more personal approach. They want proven ESG measures, timely output and the ability to tailor products to their needs."
>
> **Toni Jones**
> Partner, Corporates Industry Leader
> KPMG Australia



Scenario: decentralising production

A global milk-product manufacturer realised it could no longer compete by shipping its products around the world in refrigerated containers. So, instead it shipped milk powder to 50 factories around the world, where it would be converted into downstream dairy products more closely suited to local tastes. This change required a sophisticated, central monitoring system to control the quality of dozens of factories and a decentralised framework with a complex logistical ecosystem. Without data analytics, IoT, cloud infrastructure, and other technologies, it is exceedingly difficult to achieve a higher level of automation and centralised control of quality across geographical regions.

The play: rethink your solutions

- Map out how your suppliers and customers are connected to your solutions and services.
- Look at your supply chain model from a cost perspective and where it could be optimised.
- Consider where there may be opportunities to create collaborative relationships with your suppliers.
- Look at how you can develop your customer relationships through technology and feedback.
- Is your organisation open to adding more customer-centric services such as financing, long-term servicing, and other selling options? An example is to re-imagine the company as a service provider as well as a manufacturer. This can help develop new revenue streams along the entire lifecycle of a product and foster richer client relationships.

03.

Making it happen – building a success model

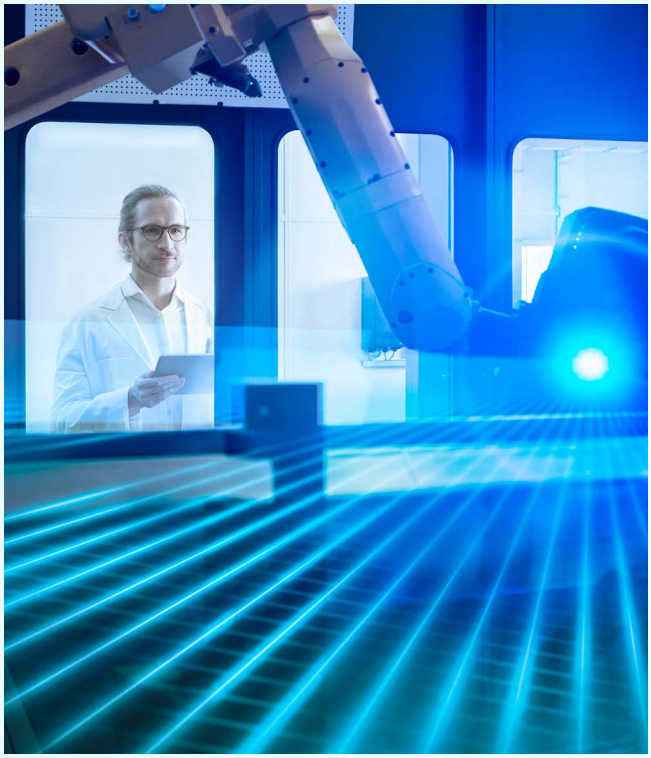
SECTION THREE | MAKING IT HAPPEN – BUILDING A SUCCESS MODEL

The journey to sustainable growth

The first step of digital transformation requires a fresh look at what technologies are needed, making sure they are aligned to the business objectives – not the other way around.

The next step then depends on what stage of digitalisation the company has reached. For those starting off, there is likely to be an adjustment within the organisation's culture – where employees are adapting to the technological changes, and the different way things are being done.

Organisations at a later stage of maturity, perhaps running a hybrid approach of old and new, should plan how to scale up to an enterprise level. Hopefully, having gained confidence from use case success, investing in these changes will make sense.



Processes and frameworks

Industry 4.0 technology also needs to help create efficiencies and confidence in the processes and frameworks across an organisation. When aligning tech to objectives, make sure you consider:

RISK

Organisational risk across all levels including supply chains, customers, production processes and factory sites. Make sure you have updated frameworks in place to mitigate any risk of failure, delay and reduced productivity.

SECURITY

Building security (including cyber security) into the organisational strategy, across the front, middle and back-office functions, not just IT systems. Asset optimisation and cyber security need to be a part of the organisation's Industry 4.0 strategy, as only then can the business reduce costs and protect its intellectual property.

CONTROLS

Having governance controls set up, reviewed and fit to your organisation.

ESG

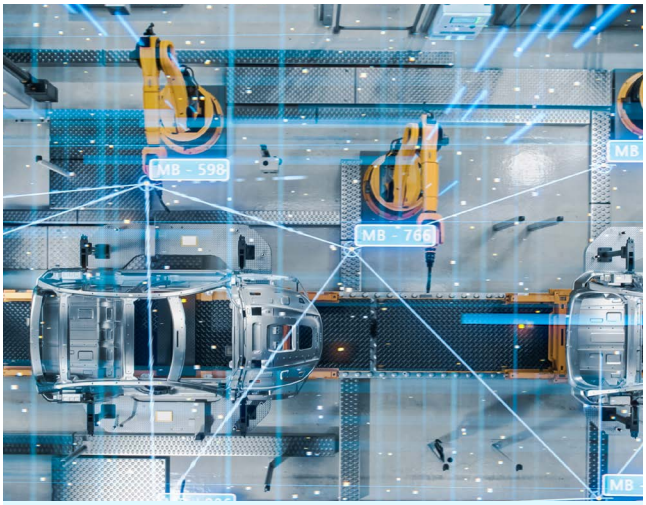
Your ethical, social and governance (ESG) frameworks and growth strategies. ESG frameworks are a key part of the journey to Industry 4.0 as it not only enables compliance under increased regulatory scrutiny, but also offers new opportunities created by a circular economy.

Going faster, harnessing technology

To gain a competitive edge in digital transformation, companies should expect to move faster, or risk missing the opportunity to create a more integrated and nimble enterprise.

Fortunately, Industry 4.0 technologies empower manufacturers to move rapidly. Edge computing, for example, can handle massive amounts of data at minimal levels of latency, providing instant insights at the factory floor, rather than having to send data to the cloud. This opens up possibilities like machine operators working remotely on equipment thousands of miles away in real time.

Manufacturing operations can be continuously monitored in the same way.



"When customers are changing their behaviour or markets are trending in a different direction, by observing real-time actions, companies can adjust to customise their operations to the needs of the ecosystem,"

Matt Wright
Partner, Technology Integration
KPMG Australia

Upskilling the workforce

The mindset to operate an Industry 4.0 business model will likely be quite different from the old one. Every employee needs to be digitally aware and able to use the technologies at work. Corporate leaders must start building capability across the organisation as early as possible, and use the transformation as an opportunity to listen and gain insights from their team members.

> "Organisations have been seen leaping straight to a technology-driven transformation, but they neglect the need to align employee objectives with the business aims of the new operating model. This approach results in enterprises not realising the full benefit of these transformations and potentially creating unsatisfied employees, shareholders, and customers.
>
> Many employees are unclear about the potential benefits of Industry 4.0 technologies and of the ways in which they may make their jobs easier. As a result, they often fear that technology will replace them. They need to be shown the opportunities arising from the innovative technologies to learn new skills and take on new responsibilities."
>
> **Tim Plenderleith**
> Sector Leader Manufacturing and Life Sciences
> KPMG Australia

Skills gaps may also be alleviated by the effective use of technology. This could mean preparing for a new kind of data architecture such as the asset administration shell (AAS) – where machines communicate with each other to deal with manufacturing problems that need to be solved. The use of AAS and digital twins, which mirror physical operations to forecast and optimise production processes, is expected to grow rapidly. In fact, machine-to-machine communications may eventually free up human resources and redeploy workers to more productive activities in the factory.

Scenario: a connected approach to business

A manufacturer's customers wanted smarter services and frictionless interactions – without these the business was rapidly losing market share. Despite its ambition, it lacked a clear path forward.

KPMG helped them develop a broad, connected approach to its business, by creating a strategy and operating model design for digital services that boosted annual services revenue growth rate by 20 percent. They also defined automation and operating model efficiencies that reduced expenses for digital services by approximately 15 percent. And identified over 50 key performance gaps and developed a roadmap for closing them.

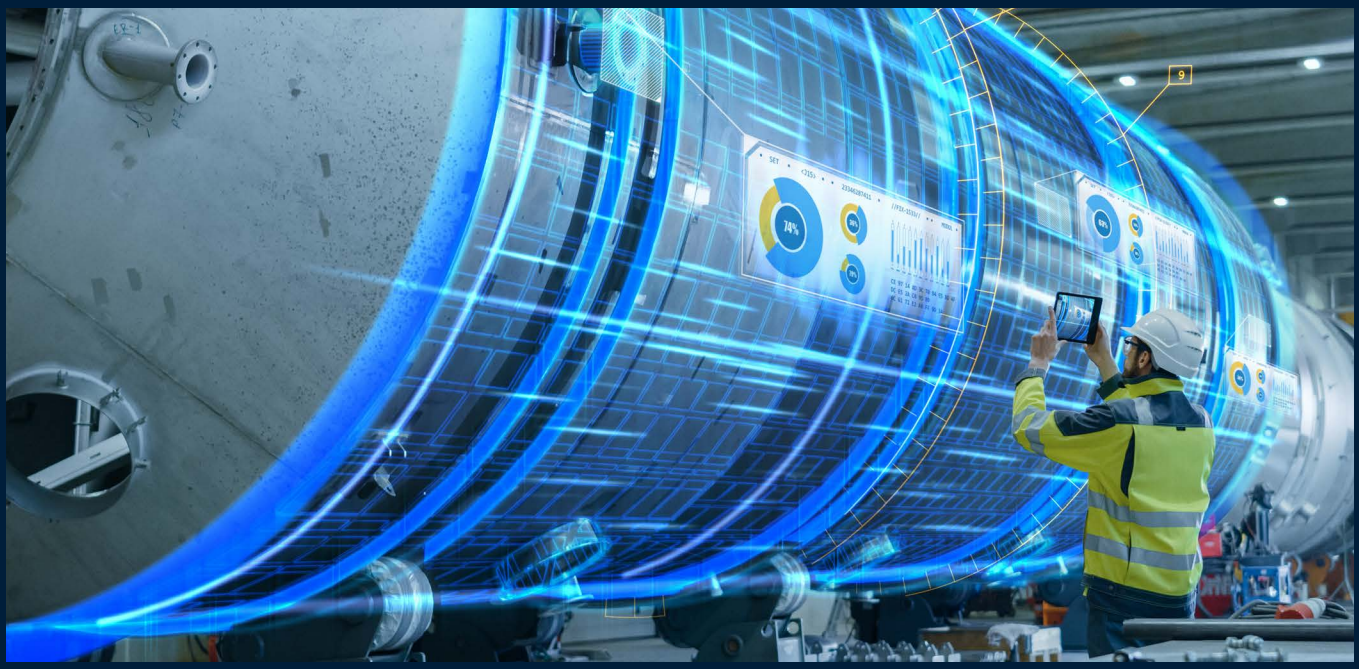
20%
boosted annual services **revenue** growth rate

15%
reduced expenses for digital services

50
performance gaps identified and roadmapped

The play: develop a business case for investment

- Consider how processes and frameworks can be built-in and improved by new technologies.
- Engage your workforce early and bring them on the journey. By taking a more transparent and open approach, your company can dramatically influence the impact of change, and the value employees bring to the organisation.
- Create a cross-functional team separate from the existing framework to design the new model and then develop a proof of concept before going enterprise-wide.
- Test a minimum viable product on a selection of customers, without disrupting the normal operations of the rest of the organisation.
- Measure the benefits of change before rolling it out. This will help get the buy-in of executives.



04.

Act today and get support

SECTION FOUR | ACT TODAY AND GET SUPPORT

Don't wait, take action

Unfortunately, change is imminent and manufacturers who don't move with the times will be quickly left behind. It's time to act, understand the new world of production and gain a competitive advantage on evolving technology.

A good first step is to develop use cases in isolation first, then scale up once they are successful and stakeholders are on board.

Finally, Industry 4.0 is dynamic and looks different for every organisation. Don't expect to know everything. Enlist help.

KPMG is here to help

KPMG can help at all stages of your transformation journey. Drawing on deep sector experience and technology know-how, we can help you scale up and unlock the potential of true digital transformation – driving increased revenue, productivity and growth.

We bring global best practice to Australia and deep industry expertise to provide the confidence for Australian manufacturers to invest in their future and establish themselves as global leaders.

Talk to us about:

- understanding and embracing new technologies and ways of working
- sustaining your existing businesses
- supply chain innovation
- aligning technology to your objectives
- keeping your data and people safe
- embedding new processes and frameworks
- driving operational efficiencies and agility and becoming more competitive
- onboarding new tools and technologies.

The play: get in touch

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October 2023. 1142803651CORP