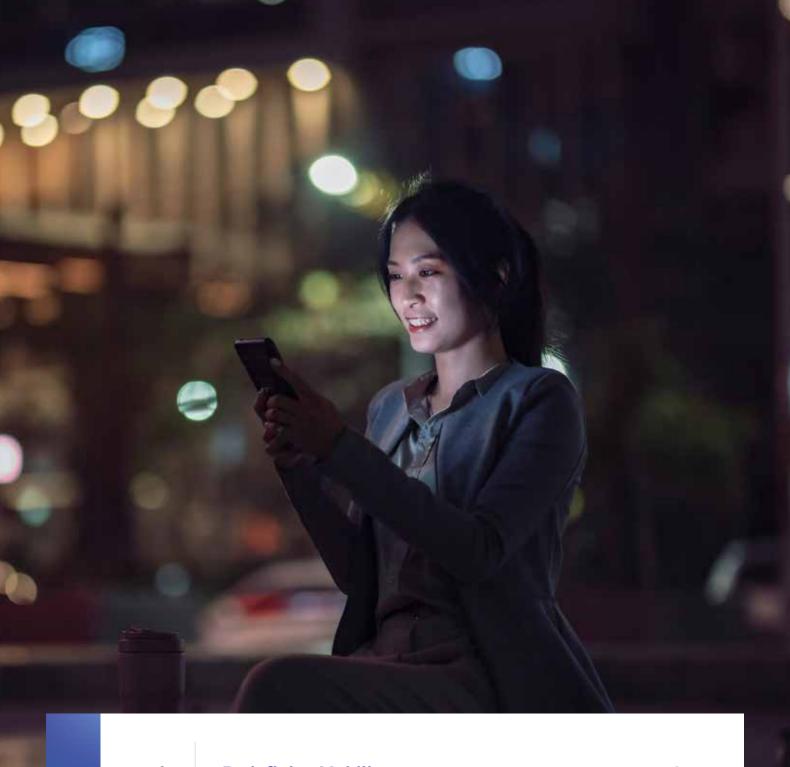


How to be Upwardly Mobile

Harness 5G for quick wins and future disruption



1	Redefining Mobility	3
2	Embracing Hybrid Working	4
3	State of 5G Adoption	6
4	Understand the 5G Mixology	7
5	Identify your 5G workforce	10
6	Run in the Field with 5G Use Cases	12
7	Get moving	16



# **Redefining Mobility**

Are you upwardly mobile? Mobility has a new meaning in Australia: it's not simply about physical movement or a network, but about empowering people whatever their occupation, work space or industry.

5G is set to have a big role in making work more engaging, productive and safe. Business leaders are now adding 5G to the dream team of technologies<sup>1</sup> that they're counting on to attain their strategic goals, according to Omdia research.

Enterprises' strategic goals are increasingly ambitious and tied to technology investments. The traditional innovation curve describing how enterprises adopt technology doesn't apply anymore. The number of firms that view themselves as innovators has quadrupled compared to prepandemic patterns, while the proportion of laggards has halved (see figure 1).

Nevertheless innovative ambition doesn't guarantee successful execution. Timing is also key: what's an achievable quick win versus a longer-term objective? Which ingredients in the 5G mixology kit can deliver the best outcome? This report provides pragmatic guidance and emerging solutions on how to become upwardly mobile.

# How does your organisation adopt technology?

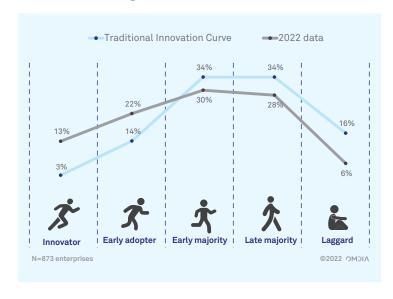


Figure 1: Australia's enterprises want to be upwardly mobile

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<sup>&</sup>lt;sup>1</sup>Besides 5G, the technology dream team also includes Internet of Things, artificial intelligence, machine learning and big data analytics according to Omdia's 2022 ICT Enterprise Insights Survey.

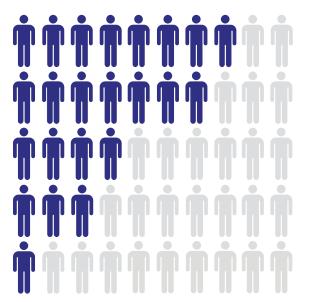


# **Embracing Hybrid Working**

## There's no going back

The pandemic has helped us identify what's important in our lives, how we want to work and, not least, what we want technology to do for us.

Insights: How does Australia work today?



#### Mobility rules

8 out 10 Australian workers are mobile

#### Everyone is a data scientist

7 out of 10 create or harvest information

#### Work is not a location

4 out of 10 work outside of a traditional office

#### **Employment is fluid**

A third work part time and a quarter in casual jobs

#### **Results matter**

Only one in 10 employers will keep time as a measure of worker output

Sources: Omdia, Australia Bureau of Statistics, International Labor Organization, US Bureau of Labor Statistics, Herbert Smith Freehills

Figure 2: How does Australia work today?

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4

## The perimeter of mobility has changed.



Mobility encompasses a wider diversity of people as hybrid working becomes the norm (see figure 2). Eight out of 10 Australian workers perform mobile work (indoors or outdoors) and four out of 10 work outside a traditional office. Work is more fluid, physically and contractually. There's also wider recognition of the profound contribution to society that people are making working on call, in the field and in hazardous situations.

#### Why 5G?

5G supports and contributes to the retention of a hybrid workforce, and also helps enterprises attract a new generation of employees that prioritises flexible working environments. The ability to flex securely to ebbs and flows of demand as part of a freelance on-demand workforce also helps self-employed individuals compete and stand out from the crowd.

## Everyone can be a knowledge worker.



Seven out of 10 Australian workers routinely collect, process or create data in their day-to day-tasks. Knowledge workers are not defined by the colour of their shirts or whether they work in an office versus a mine or a farm. What transforms people into knowledge workers - and even data scientists - are the tools they can access to derive insight from peers, customers, devices or their physical environment.

#### Why 5G?

5G democratises access to digital insight tools that were limited to certain employee classes, encouraging employee engagement and creating productivity benefits.

### Results matter, not time served.



Nine-to-five office jobs and time-based measurements of value are increasingly outdated ways to manage people and get the best out of them. Nine out of 10 Australian employers are looking at alternative ways to compensate people using tracked outcomes2.

#### Why 5G?

5G helps employers use better tools for rostering and resource allocation based on who's in the field. Live activity and location tracking can help employers measure employee performance more accurately based on achieved outcomes, rewarding employees more fairly.

## Experience is all.



Seventy percent of Australian enterprises re-evaluated their technology partners over the past two years. The top reasons to change the line-up: poor service experiences, poor responsiveness and lack of an aligned digital vision. Innovative ambition may have accelerated among enterprises, but so also have expectations of experiencing smooth digital engagement and accountability – that's because enterprises' customers expect this too.

#### Why 5G?

5G's low latency performance aligns to customer demands for better service responsiveness whether it's to take a payment or run a mobile video consultation session with a client. 5G is also designed to keep digital data more secure, contributing to a better experience.

<sup>&</sup>lt;sup>2</sup> Herbert Smith Freehills, The Future of Work Report 2021.



# **State of 5G Adoption**

## How are Australian Enterprises responding?

Two thirds of Australian enterprises now plan to put 5G front and centre in their digital strategy over the next 18 months<sup>3</sup>.

While most enterprises around the world still think of 5G in terms of wireline replacement, Australian enterprises have moved ahead.

5G has become a top digital enabling technology for Australian enterprises, alongside the Internet of Things, artificial intelligence, machine learning and big data analytics.

75% of Australian enterprises believe that 5G and edge computing are a critical combination for new value creation and expect 5G to offer new benefits for their business.



#### **Augmented reality**

Four out of 10 are building a business case for augmented reality, and a fifth have already invested. Smarter diagnosis of problems, more effective training and safer working environments are top reported benefits.



# Become predictive instead of reactive

By combining computational power and near zero latency data analytics, businesses can react readily to customer needs, business threats and new opportunities.



# Real-time situational intelligence

Already proving a game changer for public safety, manufacturing, and utilities, to name a few.



# Combining physical and digital experiences

This is another top-ranked benefit that Australian enterprises highlight.

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# Understand the 5G mixology

## **Choose your outcomes**

Embarking on a 5G strategy is not one product or one size fits all. What matters are the outcomes you're trying to achieve, who benefits, and where the action needs to happen. Your budget, internal skillsets and existing infrastructure are relevant factors too.

	Off the	shelf 5G	A la carte 5G		
	Some 5G services, like Public 5G and 5G Fixed Wire Access (FWA) are simply off the shelf – ready to us widely available today. These services are where m wins for upward mobility are possible today.		Other flavours, like Private 5G and in future 5G network slicing, involve à la carte elements that a technology partner can help you define (see figure 3). These services are where long-term disruptions — of your business model or processes — are most likely to happen.		
5G services	Public 5G	5G Fixed Wireless Access FWA	Private 5G	5G network slicing	
Proposition	"Anywhere productivity"	"When time is money"	"Optimal control, ultimate security"	"My experience, my way"	
Focus	<b>†††</b> People	Location	Campus +	( ) ( ) Virtual group	
Features	<ul> <li>For people on the move or working in several locations</li> <li>Supports non-stop productivity</li> <li>Better remote collaboration</li> </ul>	<ul> <li>For fast expanding, merging firms and temporary sites</li> <li>Rapid set up and easy tear down</li> <li>Better group collaboration</li> <li>Great for backup</li> </ul>	For critical operations support     Dedicated network assets + spectrum     For people & things     Excellent security, resilience, performance	Unprecedented control of digital experience     Fine tuned app performance, security     Reinvents virtual private network for new services and business models	

Figure 3:5G is not one size fits all

### Off-the-shelf 5G

Public 5G: Great for people on the move or working ad hoc. It demands a simple change of device and mobile plan to get started. Through network engineering and enhanced service-level agreements, Public 5G can also deliver speed boosts and enhanced quality of service when needed to support bandwidth-intensive applications and tasks.

#### **Quick wins**

- Field engineer: Stuck on fixing a piece of machinery and don't have the manual to hand? Crowdsource the answer with your peers with a word or a click: share live video of the problem using your voice-powered smart glasses or a 5G handset during a quick conference call. A chatbot could also help you identify the right schematics and suggest solutions.
- Sales rep: No more briefcase time to log a sale back at the office. Turn your mobile handset into a payment terminal. Upload sales statistics to the cloud at the end of the day with a temporary speed and quality boost. Don't worry about someone slurping any financial data: 5G connections are automatically encrypted to protect you and your customers' identity.
- Hybrid worker: Collaborate at home as well as in the
  office with a reliable device to replace or in addition to
  old copper-based connectivity. You can keep the kids
  happy streaming Kayo while you run client videocalls.

**5G FWA:** Want to avoid the hurry-up-and-wait for fixed connectivity? 5G FWA is the likely solution. Using a dedicated router, 5G FWA offers no-compromise high speed and performance to homes and businesses even in rural and suburban areas. It can also act as an emergency backup to an existing connectivity service.

#### **Quick wins**

- Fast food restaurant: Get ahead of the competition and set up your new outlet fast. 5G FWA offers a no fuss way to get started taking online orders for delivery without anyone needing to come out to train or set you up.
- Construction firm: Keep tighter control over project costs, starting with connectivity on working sites. 5G
   FWA supports team communication across a large site.
   Combined with networked cameras, 5G can help keep everyone accounted for and safer too. Get client approval for any proposed changes without asking them to attend on site. Show them their options visually potentially in 3D with the right device and application. The same high quality video can also act as a log of compliance to building standards, reducing construction holdups and accelerating time to revenue.
- Retail shop: when you need reliable connectivity to Point
  of Sale systems, move premises easily or take advantage
  of seasonal trends by quickly opening pop-up stores and
  kiosks.

#### A la Carte 5G

**Private 5G:** Private 5G offers an entirely dedicated network designed, built, and controlled for a specific organisation. It can operate and be entirely disconnected from any public network. With control over spectrum and infrastructure, private 5G can support critical ultra low-latency uses.

- Mining: A mine uses driverless haul trucks precisely controlled via private 5G to move between shovel and dumping sites, increasing production efficiency and reducing worker exposure to risks. Other uses could involve remote drill operations.
- Manufacturing: A manufacturer replaces paper-based instructions for assembly workers with augmented reality training – one of several new applications that a private 5G network can support.

**5G network slicing:** Network slicing offers enterprises the ability to create a dedicated virtual network on demand, potentially for temporary use, configured with the specific performance and security levels they define. It will take the concept of virtual private networks to a new level.

- Sports club: A football club offers home-based fans a subscription to exclusive viewing content enabled through 5G powered augmented reality, sensors, and network-connected cameras tracking players in the field. With haptic gloves, even the experience of throwing a ball could be possible.
- Civil protection: During a natural disaster or other emergency, government teams need to set up highly secure communications fast to handle people and logistics, assess threats and establish control. Potential life threatening hazards like a bomb can be neutralised with remote controlled bomb disposal equipment supported on a 5G network slice.

# Case study:

Telstra brings 5G AR wayfinding to Marvel Stadium

**Watch Video** 



## Add popular mixers

It's not just 5G - expect to mix 5G plus something else to create a solution.

Edge computing: Combined with 5G, edge computing solves a long standing problem: data driven decisions need to be made on the spot. Edge brings cloud processing power closer to where enterprises need insights. An emerging combination is private 5G with edge computing to support mission-critical situations.

 Water utility: It's life or death if a dam breaks and floods homes and businesses. With private 5G and edge, water utilities can process vast amounts of sensor data in real time on site, and also power complex computational models that can predict latent threats. Combined with 5G-controlled drone inspections, engineers can observe infrastructure status with greater accuracy that humans could ever achieve alone.

Artificial intelligence (AI): Artificial intelligence empowers computers to think, while its subset computer vision makes it possible for machines to see, observe and make decisions. These activities require ultra low latency communications and considerable computing power too.

Logistics firm: Space and time cost money in logistics.
 Computervision can assist with product packing, gathering data in near real time on any packing errors.
 This improves quality assurance, reduces processing time, improves profit margin and time to revenue.

Immersive technologies: Immersive is an umbrella term for extended reality (XR) technologies that blend physical and digital environments including augmented (AR), virtual (VR) and mixed (MR) reality. Immersive needs heavy duty image processing in real time and is often coupled with a 5G network and edge compute.

• Transportation firm: Augmented reality and a private network can bring new accuracy and insights to complex maintenance operations. AR can help to diagnose problems, comparing current and previously recorded operating states to pinpoint trouble. Immersive tools also offer better ways to train employees out in the field in ways that resonate better than paper-based or classroom instruction. Trying out new processes with a 5G supported digital twin model is also a no risk way for companies to be more efficient.

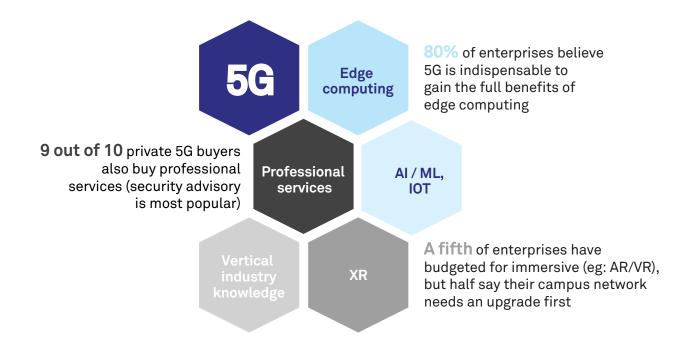


Figure 4:5G mixology - some key ingredients



# **Identify your 5G workforce**

## Map out your workstyles

5G correlates to some human workstyles better than others. That's important in considering how urgently your organisation should migrate to 5G and which flavours to invest in.

Take the Desk Jockey (one of five main workstyles that Omdia has identified): Does an office worker sitting in a fixed desk position really need 5G? The likelihood is low unless there is no alternative connectivity to their location. By contrast, people in some Free Mover occupations — like architects, midwives or real estate agents — could find public 5G an ideal choice to suit their peripatetic workstyle.

Then there's the issue of work spaces. A stationary individual sitting in the confined space of a crane's control cabin might seem like a poor 5G candidate. But when the only choice to communicate complex instructions to them is via a fiber optic cable that breaks constantly, think again: it's a relevant example for private 5G (although more campus wide use cases will need to justify that investment).

The growing number of connected machines and things are also part of the 5G conversation. Their chatter — with humans and with each other — creates insights that can help organisations make better decisions about operational efficiency or to save lives. For instance, automating the collection of feeds from CCTV cameras with orchestrated 5G-powered video analytics could prevent worker accidents and improve site efficiency.

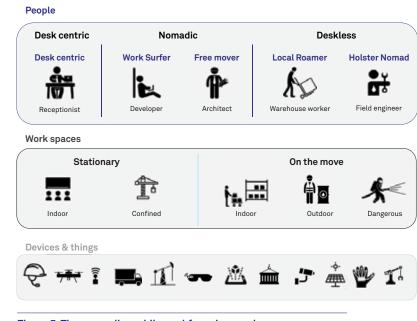


Figure 5: The upwardly mobile workforce is complex

## **Establish priority targets**

Look at your people to identify potential 5G quick wins. As workforce segmentation shows, there are vast differences in the human composition of industries (see figure 6).

- Holster Nomads are excellent 5G beneficiaries: They are constantly out and about, and may sometimes work alone which brings workspace risks. They are common in agriculture, construction, mining and energy, as well as transportation.
- Free Movers are excellent 5G targets: They work as much out in the field as in a traditional office environment. They are common in energy, health, mining and education.
- Local Roamers are good 5G targets: They are working on their feet, moving within a location like a warehouse or factory floor to do their jobs. They are common in manufacturing, retail and wholesale trade, transportation and education.
- Work Surfers are good 5G targets: They work in a fixed position like a table or desk but do this in many places, often as freelancers for hire. This group is growing as more Desk Jockeys transition to be hybrid workers. They are a significant group in ICT and professional services.
- Desk Jockeys are poor 5G targets: They're tied to their desk, in a single location. They are dominant in banking, financial services and insurance as well as ICT and professional services.

#### Employment by industry and workstyle, selected industries

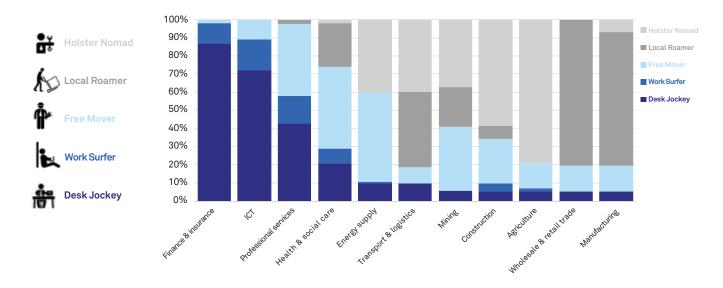


Figure 6: Industry workforces by workstyle



# Run in the field: 5G Use Cases

Let's look at how some key Australian industries and their employees can become upwardly mobile with 5G:

#### **Transportation & logistics**

Hurry up and wait? Time and space mean money for transportation and logistics firms. Not least, safety is a paramount concern in all activities. For these pressures, real-time data and insights enabled by 5G will transform outcomes across all modes of transport.

Industry	5G enhancements		
	Focus area	Today	Future
	People	5G enables better collaboration from the field using handsets, tablets or hands free connected headsets and safety helmets	People make better decisions with integrated insights from connected transport assets
Transportation & logistics	Machines & things	Myriad sensors on trains, ships and other moving vehicles report on location and operational status  Transport machinery maintenance is more effective	Machinery maintenance becomes predictive  Unmanned road trains deliver greater efficiency and environmental benefits 5G-powered drones provide real-time insight on transport assets status and identify any hazards
	Processes po	Improved space management with 5G powered smart glasses and AR tools saves money and time as goods are processed for onward delivery	True multimodal data sharing in real time ensures no spoilage of time critical goods – be it food, flowers or medicines – from ship, shore to final destination
	Customer Experience	5G motion analytics help manage mass transit of people, vehicles and trains more safely and effectively, handling traffic surges and emergencies	Real-time data provides certainty on departures and arrivals Biometrics enable frictionless travel as people are identified and guided seamlessly to available seats

Figure 7: 5G outcomes in transport and logistics - today and in the future

#### Construction

Construction is set to become a multi-sided user of 5G: not only for efficiency, safety, risk management but also marketing outreach and monetisation. Immersive technologies will have a significant role in enriching work patterns and client interaction.

Industry	5G enhancements		
	Focus area	Today	Future
	People	People's location can be tracked and physical safety ensured with 5G networked CCTV  Mobile video collaboration makes work more effective  Seamless HQ to site communications shares resource needs, project reporting data	360-degree situational awareness becomes standard reporting on potential safety issues Hiring and rostering of tradies becomes automated
Constructon	Machines & things	Prevent theft or damage with asset tracking and networked CCTV	Autonomous machines report status, operational health and performance statistics
	Processes	Digitisation of construction build quality auditing via tablet On-site material tracking between head office and construction site	Hands-free auditing with smart glasses Visual compliance inspection and signoff via drone Automated ordering of building materials
	Customer Experience	Remote site to client mobile video communication  Augmented property walk through at building development marketing suite	Digital twin modelling of client design requests with time and cost impact analysis On-demand holographic walkthroughs of planned buildings

Figure 8:5G outcomes in construction – today and in the future

# Case study:

Taylor Construction draws on 5G to improve productivity and create new efficiencies

**Watch Video** 



#### Mining & Energy

Mining and energy firms face tough scrutiny of the sustainability of their strategy and day to day operations. 5G supports their transformation into real-time data-driven organisations. They are learning more about themselves, becoming more efficient, safer and transparent with customers about what they're doing for the environment.

Industry	5G enhancements		
	Focus area	Today	Future
<b>#</b>	People	Lone workers can stay safe and connected to peers in remote areas with 5G handsets and connected helmets  5G and AR can support effective training of staff in the field without incurring excessive downtime	Deeper automation with tele-remote drill operations and mobile inspection robots reduces the need for workers in dangerous areas  Full situational awareness from sensor grids help workers be more productive and safe
Mining and energy	Machines & things	Machine intelligence and analytics are delivering new operational insights with 5G and IoT	Machinery maintenance becomes automated, predictive and efficient with 5G and Al
	Processes	Smart grids are more resilient with 5G and edge computing  Demand response is more accurate with 5G backhauling consumption data	Teleprotection becomes fully automated and self healing, learning from faults to prevent outages
	Customer Experience	5G enables better data reporting on consumption patterns as consumers become more driven to be sustainable	Greater data granularity with 5G powered energy monitoring helps everyone find ways to save energy and lower costs in homes and businesses.

Figure 9:5G outcomes in mining and energy - today and in the future

#### Manufacturing

Vast and multi-faceted workspaces in manufacturing facilities are an extraordinary challenge to map, manage and optimise. 5G is set to transform innovation processes, production and how people interact with machines.

Industry	5G enhancements		
	Focus area	Today	Future
	People	Employee efficiency and knowledge improve with augmented training via 5G	A zero-accident environment becomes the norm as employee location and movement
	People	AR also enhances safety alerting to no-go zones for humans in factories	are constantly monitored
M	Machines & things	Machinery monitoring improves with real time data analysis from connected sensors processed using edge compute and 5G	Condition monitoring of precision tools become predictive and self healing
Manufacturing		Robots and autonomous guided vehicles conduct more tasks controlled via ultra low latency 5G communications	More factories become entirely autonomously run
		5G enables faster ideation, product design and process efficiency using digital twin modelling with partners and even clients	Cycle time improves with 360 degree situational awareness across the supply chain with 5G IoT
	Processes	5G with IoT throughout production environments creates validated insights on production trends that were modelled in the past	Digital twin capabilities are applied to more tasks — even product packaging for less shipping cost and lower environmental footprint
	Customer Experience	Customer demand trends are fulfilled faster in a 5G-powered factory to beat the competition	People design their own goods remotely and order their production or order goods up on a 3D printer at home

Figure 10:5G outcomes in manufacturing - today and in the future

#### **Agribusiness**

Droughts, labour shortages and price fluctuations have brought uncertainty to Australian agricultural producers in recent years. Deploying 5G with complementary technologies like AI can bring greater stability and new insights to this important sector.

Industry	5G enhancements		
	Focus area	Today	Future
00	People	Farmers are becoming expert data scientists optimising their operations with field reported insights	With deeper data insight powered by AI, farmers can predict issues and respond quickly – anticipating drought, blight or other threats
$\stackrel{\leftarrow}{\Rightarrow}$	Machines & things	Sensors track location and monitor condition of expensive farm machinery	Machinery like tractors are hired out as a service with 24/7 maintenance monitoring in the wrap
Agribusiness	Processes	Thermal imaging using rugged smartphones can identify risks such as hot spots in grain stores, or illness in stock animals  Cameras on drones provide detailed crop maps to standardise quality and ensure even watering	Routine operations become completely autonomous with machine vision insights that require humans to intervene only in case of unexpected deviations from the norm 5G's location intelligence ensures precision agriculture with less waste
	Customer Experience	Buyers communicate their needs better with producers to ensure crops are harvested in peak condition when required	Real-time field-to-fork supply chain data lowers food security concerns and reduces spoilage

Figure 11:5G outcomes in transport and logistics – today and in the future

# Case study:

Gidarjil land and sea rangers use 5G-enabled drones to stream high-definition video to remote locations

Watch video





# **Get moving**

#### Rethink value creation

It sounds counter-intuitive to say that the real value of 5G is not connectivity. The real value of 5G is as an enabler of extraordinary insights and experiences delivered in real time.

What does a real-time world of digital interactions mean for enterprises and their customers? We've barely scratched the surface to answer this question, but clues are out there:

- F1 racing: Few people realise that F1 drivers like Daniel Ricciardo are actually data scientists. Their success relies on superb orchestration between physical reflexes and data insights from myriad sensors on car performance reported in near real time. 5G and its successors will accelerate these types of 'phygital' insights and make them available to a much wider audience.
- Ultra-high frequency financial trading: Striking the best deals in commodities is as much about having an antenna on the right roof for a faster transaction as knowledge of future pork belly demand. 5G and its successors, combined with AI, will support decision making in even fewer microseconds.

These real world examples rely on a complex patchwork of legacy wireless technologies and clever engineering, but they are not 5G. With 5G, Australian enterprises in many industries – and any size - are in line to gain superior benefits with greater elegance, better security and less fuss to deploy. It simply takes a little imagination to see what might be possible (see figure 12).

	Today	Future	
Compliance slows down business	Third-party testing, inspection, and certification processes delay time to revenue across various industries and costs businesses billions a year.	Compliance becomes circadian	24/7 automated and perpetual tracking, evaluation and approval of asset, product, service, or process such as refrigeration of food and provenance of goods.
Road trains are in their infancy	Use of truck and trailer combinations reaching 50 meters in length for more effective freight delivery with fewer staff.	Autonomous freight goes global	Unnamed road trains proliferate globally, claiming greater efficency and environmental benefits.
Emergencies are responded to	Rapid set up critical communication networks improve situational awareness and outcomes in disaster and emergency contexts.	Emergencies are forecasted	First responders gain better situational awareness enroute, but also disaster prediction is possible via drone/sensor monitoring (e.g., seismic events).
Kaizen is a reactive objective	"Kaizen" or continuous improvement, notably in manufacturing, is hampered by lack of total operational visibility or data on people and things.	Kaizen becomes a real-time activity	Continuous improvement becomes a reality as networked autonomous machines report status and performance, reducing cycle time and downtime.

Figure 12: Real-time transformation scenarios

## Plan the journey

Your road to upward mobility isn't one to take alone. But be careful – and discriminating – in choosing companions. Below are recommendations for IT and business leaders to accelerate 5G strategies.



#### Start with people, not machines.

Look out for inefficiencies and irritations. Wherever people are using manual, paper-based processes are good places to explore. Observe different employees' workstyles to identify where, how and which flavour of 5G may enhance their existing workspace environment with the appropriate tools.



#### Check partners speak your language.

Don't let your objectives get lost in translation. Your partner should be able to speak the language of your industry and to different stakeholders within it (addressing the common operational and information technology divide for instance).



## Demand snackability.

Consumption of any digital service should be simple and easy from buying, configuring it to managing it (and paying for it). 5G should be no different, nor should it be a management silo disconnected from other digital services whose health your business depends on.



#### Seek co-creators.

Success in enterprise 5G is about connecting the dots between people, processes, and technologies. In partner selection, who they know matters almost as much as what they know – and whether they can play well together. That starts with how they handle you: work with those that listen, want to understand your objectives and are passionate about helping you find your wow.

# Omdia consulting

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We create business advantage for our customers by providing actionable insight to support business planning, product development, and go-to-market initiatives.

Our unique combination of authoritative data, market analysis, and vertical industry expertise is designed to empower decision-making, helping our clients profit from new technologies and capitalize on evolving business models.

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We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help your company identify future trends and opportunities.

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