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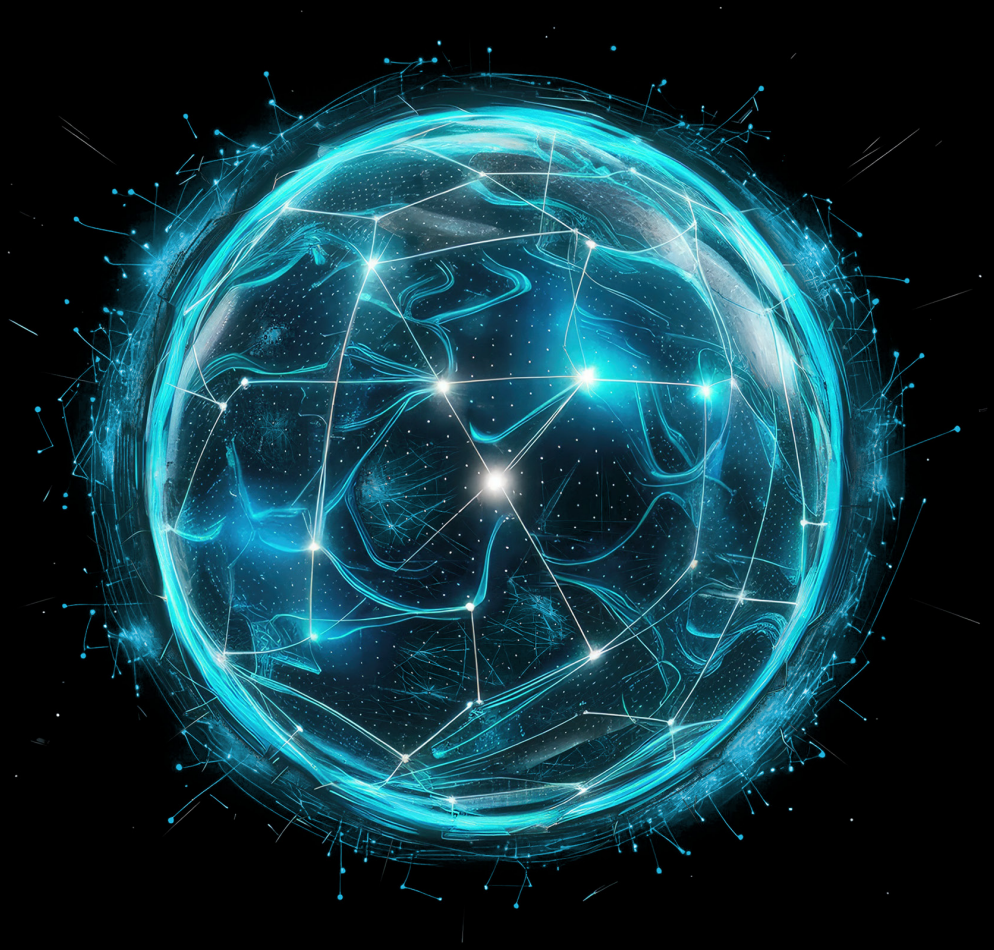

# Exploring the digital frontier
# The digital industry in the Northern Territory

ICT Industry Association of the Northern Territory

2025

Deloitte
Access Economics

# About this report

Deloitte Access Economics was engaged by the ICT Industry Association of the Northern Territory (ICTNT) to develop a snapshot of the digital industry, which included valuing its contribution to the Northern Territory economy and identifying opportunities to support further growth. To inform the analysis, a survey was developed and distributed to the ICTNT contact list, supplemented with an industry workshop with 15 businesses, and two consultations with the Department of Trade, Business and Asian Relations (DTBAR) and the Department of Corporate and Digital Development (DCDD).

The key components of analysis include:

- exploring trends to define the current state of the digital industry
- a deep dive into key skills and capability gaps
- identifying opportunities and barriers to business growth
- discussing government actions to support digital industry growth.

The survey used to inform the analysis contained in this report was fielded between March and April 2025. A total of 23 Northern Territory businesses operating in the digital industry completed the survey. A business was considered a part of the digital industry if the business:

- if they self-identified as being in the digital industry, and/or
- considered digital industry products, services and/or technologies to be one of their core business offerings.

The information gained from the survey was supplemented by publicly available information from the Australian Bureau of Statistics (ABS), the Department of Education, the National Centre for Vocational Education Research (NCVER), government consultations and other relevant research reports.

**Terminology in this report**

The research contained in this report focuses on the digital industry, which incorporates both businesses in the Information Communications Technology (ICT) sector and businesses outside of the traditional ICT sector that extensively utilise digital technologies for their business operations. Some data presented in this report reflects only the ICT sector, such as data from the ABS, given the lack of data sources based on the digital industry. This report highlights where data refers to the digital industry and where it refers to the ICT sector.

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# Exploring digital frontiers
# The digital industry in the Northern Territory

The Northern Territory has a growing digital industry with a diverse set of capabilities that leverage cutting edge technologies such as Artificial Intelligence and Machine Learning (AI and ML), Internet of Things (IoT) and advanced software development and engineering. In FY24, Deloitte Access Economics estimates that the ICT industry in the Northern Territory contributed $538 million in economic activity to the local economy, driven by 137 businesses. Over 5,000 technology workers were employed across the Northern Territory in 2024.

The Northern Territory digital industry is well positioned for growth, supported by its proximity to South-East Asia and proven capability in operating in remote areas and sub-tropical environments. The proximity to growing Asian economies also suggests there are sustainable long-term growth prospects for the industry. This report provides a snapshot of the economic contribution of the industry and analyses the barriers and enablers that will help support further growth in the industry.

## Business snapshot

**Technology consulting** was the most commonly-provided service, with nearly half of businesses providing this service, followed by software development (26%) and IT and computer software (26%).

**Government is an important revenue source,** with the average business generating 57% of revenue from public sector clients.

**Cloud, cybersecurity, digital platforms and AI and ML** were the most commonly used technologies by the industry, with over 85% of businesses using or trialling these technologies.

## Key opportunities and barriers

**Exploring AI solutions** will position the digital industry in the Northern Territory to leverage growing interest among business leaders in this technology.

**International markets** can help businesses diversify their customer base and capitalise on fast growing economies in South-East Asia.

**The resources and defence sectors** are sectors identified as having long-term growth potential. Given the reliance on digital services and technologies, promoting local digital transformation solutions could help grow these priority sectors.

To take advantage of these opportunities, the digital industry will need to overcome several barriers. Major barriers faced by the sector are **the lack of access to skilled staff, high costs associated with developing and commercialising new products and services and the lack of access to government contracts and procurement opportunities**.

## Industry outlook

The Northern Territory economy is expected to grow from FY26 based on Deloitte Access Economics' Business Outlook estimates, with strong growth of 5.7% forecasted for FY26.

### 10-year forecasts

If digital industry businesses grow to become industry leaders, the ICT sector is expected to reach over $1.1 billion in supported economic activity, which is 8% higher than Deloitte Access Economics' baseline estimations.

## Priorities

1. Strengthening government procurement processes.
2. Greater local involvement in digital transformation projects across all industries.
3. Building the digital skills pipeline.
4. Enabling regional connectivity and development.
5. Encouraging greater access to new interstate and international markets.
6. Promoting industry and government partnerships

# Executive summary

## Importance of the digital industry

The digital industry in the Northern Territory is key driver of productivity and growth for the local economy. The industry supports the integration of important technologies such as remote sensors, AI and ML and drones that are already transforming broader industries.

To further promote the important role of local industry, the ICTNT has engaged Deloitte Access Economics to value the contribution of the digital industry in the Northern Territory. By examining industry trends, identifying opportunities and barriers to growth and recommending actions for the industry, this report aims to foster further growth within the digital industry.

This research is informed by a business survey, a workshop with industry leaders, as well as consultations with the Department of Trade, Business and Asian Relations (DTBAR) and the Department of Corporate and Digital Development (DCDD). This is information is supplemented with publicly available data sources on the digital industry, workforce and education.

## The current state of the digital industry

Digital technologies are vital for business operations within the digital industry and the broader economy, evident in the contribution of the ICT sector to the Northern Territory economy. According to estimates using Deloitte Access Economics' Input- Output model, **the ICT sector contributed $538 million, as measured through value added, to the Northern Territory economy in FY24**. This represents an 18% increase in real terms from the $456 million contribution of the sector in FY20 based on Deloitte Access Economics estimates. These estimates reflect both the direct operational activities of ICT businesses and the indirect contribution made through purchases to supplying industries.

Most of this economic activity is supported by the **137 ICT businesses that operate within the Northern Territory in 2024. Digital activities undertaken by the Digital Government branch of DCDD also contributed $141 million in value added to the economy in FY24**, highlighting the important role of the Northern Territory Government in the sector.

**Businesses operating in the digital industry supply a diverse range of products and services, with 70% of businesses providing more than one core product or service.** The most commonly offered product or service was technology consulting, with nearly half (48%) of surveyed businesses indicating this was one of their core business offerings, followed by software development (26%) and computer and IT services (26%).

**The Northern Territory's technology workforce has experienced strong growth, reaching over 5,100 workers by 2025. Three-quarters of this workforce is employed in management or professional occupations.** The workforce has grown strongly from the 4,500 technology workers employed across the Northern Territory in 2020. Despite this strong growth, technology workers account for 3.6% of the total occupations, which is lower than the national average of 6.9%, suggesting an opportunity for the technology workforce to continue its growth trajectory.

An important pipeline for growth in the technology workforce is students gaining IT qualifications through university and Vocational Education and Training (VET). Northern Territory University enrolments in IT more than doubled in 2023, largely driven by international students. This significant increase is likely to be a one-off for enrolments, driven by a large intake of international students.

IT VET enrolments are also gaining momentum, surpassing pre-pandemic levels in 2023. **However, women and First Nations students remain underrepresented in university and VET IT courses. Addressing these gaps offers a chance to create a more inclusive sector and enhance the talent pipeline for the digital industry.**

# Executive summary

### Challenges facing the digital industry

To continue to foster growth in the Northern Territory digital industry, there is a need to address several challenges that hinder growth in the industry. **The most common barrier to growth identified by businesses is a lack of skilled employees, cited by 87% of businesses.** Critical areas lacking expertise include software development, IT support, and cybersecurity. Both industry and government reveal that these gaps are concentrated in roles requiring experience rather than entry-level roles.

**Current initiatives employed by businesses to overcome these skills gaps include upskilling existing employees, hiring local graduates and workers from the Northern Territory**, with upskilling in particular showing promise in bridging these gaps. However, additional action from government and educational providers on workforce development is required to help bridge these gaps, especially as competition for scarce technology talent is likely to intensify.

Additional barriers to growth encountered by surveyed businesses were high costs in product development and commercialisation (43%) and limited access to government contracts (26%).

**Failure to address these challenges risks the closure or relocation of businesses out of the Northern Territory**, with nearly one in five (17%) surveyed businesses considering leaving the Northern Territory within the next five years. This has been attributed to staffing challenges, lack of demand for business products and/or services, and competition from domestic businesses.

### Outlook for the digital industry

Despite the current contraction in activity across the Northern Territory economy in FY25, **economic growth is expected to rebound starting in FY26, primarily due to major projects and export-led initiatives**. In this environment, surveyed businesses within the digital sector expect strong revenue and employment growth over the next five years.

Against this backdrop of recovery following subdued growth and an optimistic business outlook, **the Northern Territory ICT sector could reach $1 billion in economic activity and over 10,300 technology workers within the next ten years**. Under an assumption that the value-added of the technology workforce matches that of leaders in the sector, an accelerated growth scenario could see the Northern Territory ICT sector reach nearly $1.1 billion. This accelerated scenario represents an 8% increase in value added by the sector in FY34, compared with the baseline.

Innovation stands out as the primary driver of growth, with two-thirds (67%) of surveyed businesses expecting growth through new products or services. Additionally, surveyed businesses highlighted increased demand for existing products and services (58%) and government contracts and procurement opportunities as enablers of growth, aligning with the reliance on government for surveyed business revenue.

Ongoing support and strategic initiatives will play a key role in harnessing these growth opportunities. Our priority actions to support this growth are outlined to the right.

## Priority actions

### Priority 1
Strengthening government procurement processes.

### Priority 2
Greater local involvement in digital transformation projects across all industries.

### Priority 3
Building the digital skills and workforce pipeline.

### Priority 4
Enabling regional connectivity and development.

### Priority 5
Encouraging greater access to new interstate and international markets.

### Priority 6
Promoting industry and government partnerships.

# 01

# Digital industry snapshot

The digital industry encompasses a diverse range of businesses. This section provides a spotlight on the industry, including the economic contribution of the ICT sector to the Northern Territory economy, key business activities and sources of revenue. The important role of the public sector for the digital industry is also explored.

# The Northern Territory ICT sector contributed $538 million to the economy in FY24

## 137 businesses with operations in the Northern Territory are driving this contribution.

Technology has become increasingly important to the operation of businesses and the function of the local economy in the Northern Territory. The increasing digitisation across the economy has supported growth in the local digital industry. **The Northern Territory ICT sector contributed an estimated $538 million, as measured through value added, to the Northern Territory economy in FY24**, an 18% increase in real terms from $456 million in FY20. This consists of a direct contribution of $329 million from ICT business operations as well as an indirect contribution of $210 million through purchases to supplying industries based in the Northern Territory.[1] Further details of the economic contribution and methodology are contained in Appendix A.2 of this report.

This economic activity is supported by the **137 ICT businesses with operations in the Northern Territory.*** The 137 businesses with local operations make up approximately 0.8% of all businesses in the Northern Territory.[2]

**According to the ABS, the number of ICT businesses operating in the Northern Territory is growing, with an average annual growth of 1.5% between 2019 and 2024.**[3] This growth rate is slightly lower than the growth experienced in other Australian states and territories. ICT business growth was also lower than the broader Northern Territory business growth rate across all industries, which was 2.1% per year on average over the period. This is demonstrated in Chart 1.1. Given government is a key contributor to revenue (see page 11), this growth may potentially be reflective of major projects conducted and government activity within the Northern Territory.

**$538 million contributed to Northern Territory economy in FY24**

**137 ICT businesses operating in the Northern Territory**

**Chart 1.1: ICT and overall business growth from 2019 to 2024**

Source: Australian Bureau of Statistics: Counts of Australian Businesses (2024).

*The 137 ICT businesses have been identified by the ICTNT. The ABS business count data provides an alternative figure of 258 ICT businesses in operation.1 The difference is likely a result of ABS data including businesses who may have informally ceased operating or transitioned into another industry but have not updated the Australian Business Register. For these reasons, the ICTNT business count figure has been used for this report, while ABS figures have been used for comparisons to other jurisdictions and growth rates.

# The digital industry provides a diverse range of products and services

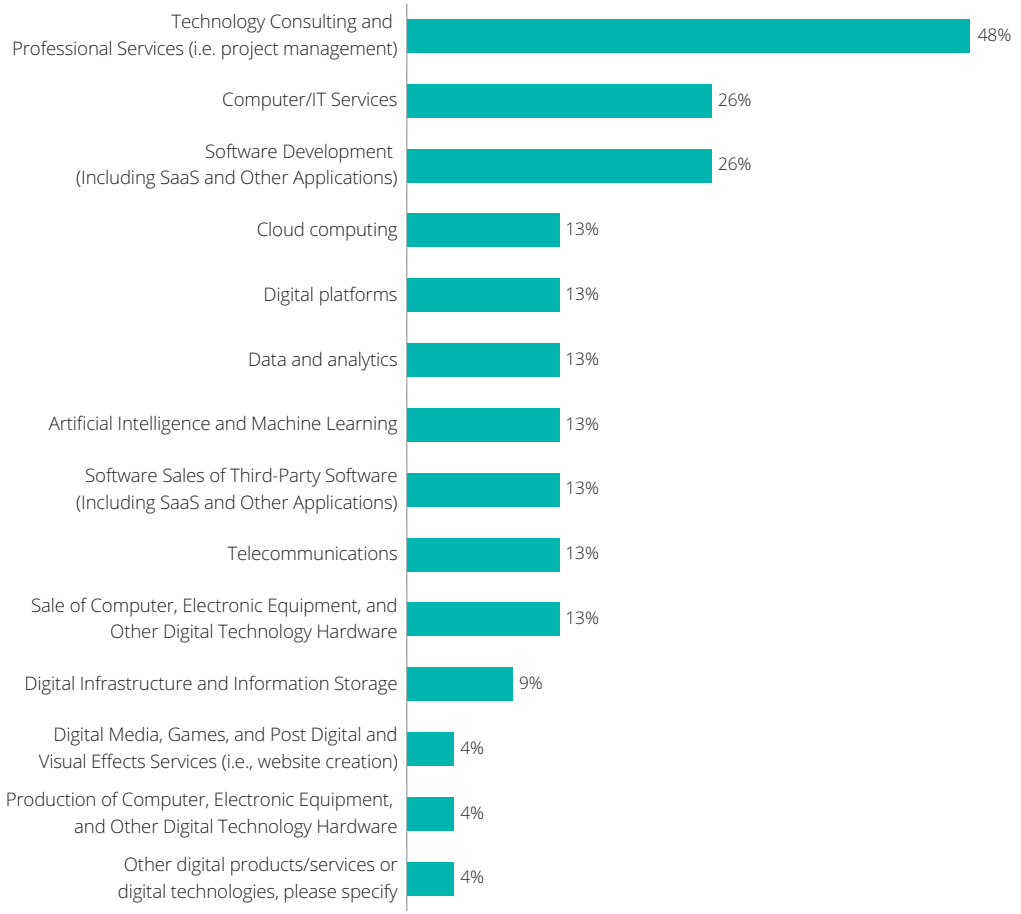
## There is a focus on digital service delivery such as technology consulting, software development and computer and IT services.

The digital industry in the Northern Territory are predominantly involved in delivering technology services, **with nearly half (48%) of surveyed businesses indicating technology consulting and professional services was one of their core business offerings, followed by software development (26%) and computer and IT services (26%) (Chart 1.2)**. Consultations with industry found that local Northern Territory businesses often have a unique business offerings that are tailored to the extreme climate or issues with connectivity in remote settings.

**The industry has a diverse product offering, with 70% of surveyed businesses providing more than one core product or service.** By not relying on a single product, businesses can mitigate risks associated with fluctuations in demand, which can lead to greater resilience to absorb shocks.

**The digital products and services provided by the digital industry play a key role in enabling productivity growth across the broader Northern Territory economy.** For example, beef producers are now using GPS to improve stock monitoring and reporting processes, which helps to inform investment decisions.[4] One med tech start-up, Go Locum, has recently secured funding to scale up an AI-driven medical staffing platform with temporary roles in regional and remote areas.[5]

**Chart 1.2:** Products and service provided by the digital industry




Source: Northern Territory Digital Industry Survey (2025), n=23.

Note: Figures may not add to 100% due to rounding.

# Digital industry businesses leading adoption of new technologies

## There is a focus on adopting enabling digital technologies such as cloud technologies, cyber security and digital platforms.

Compared to other industries, the digital industry is leading when it comes to adopting and using digital technologies within their businesses. **The most commonly used or trialled technologies by surveyed digital industry businesses were core enabling digital infrastructure such as cloud technologies, cyber security and digital platforms** (i.e., social media, e-commerce, service, learning or project management platforms) (Chart 1.3).

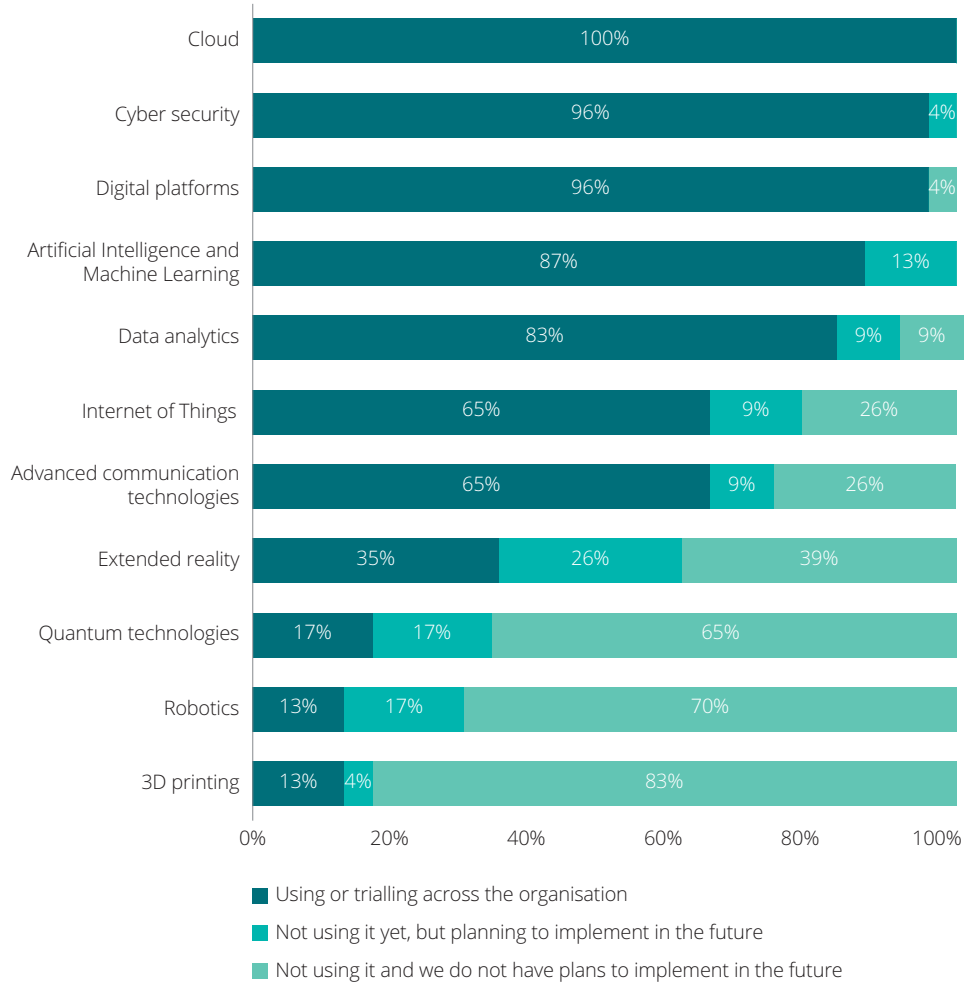
**AI and ML are also currently being used or trialled by the vast majority of surveyed businesses.** This reflects broader digital trends, with a significant focus on AI adoption and use identified as a priority for business leaders and government alike. Recent estimates suggest AI technologies have the potential to add up to $115 billion annually to the Australian economy by 2030.[6] By adopting technologies such as AI and ML, businesses in the digital industry are well placed to realise significant productivity benefits.

Meanwhile, among the 11 technologies included in the survey, technologies that are still experimental or require significant hardware investment, such as quantum technologies and robotics, were the least likely to be used or trialled.

Looking forward, the Northern Territory digital industry is planning to increase the use of advanced digital technologies, with over a quarter (26%) of surveyed businesses planning to implement extended reality in the future.

On average, businesses reported using or trialling seven different digital technologies out of the eleven technologies presented. This illustrates the digital leadership displayed by the sector when it comes to adopting key technologies in their operations.

**Chart 1.3:** ICT and overall business growth from 2019 to 2024




Source: Northern Territory Digital Industry Survey (2025), n=23.

Note: Figures may not add to 100% due to rounding.

# Nearly half of digital industry business revenue comes from customers based in the Northern Territory

## There are opportunities to diversify industry revenue streams with more private sector clients and international markets.

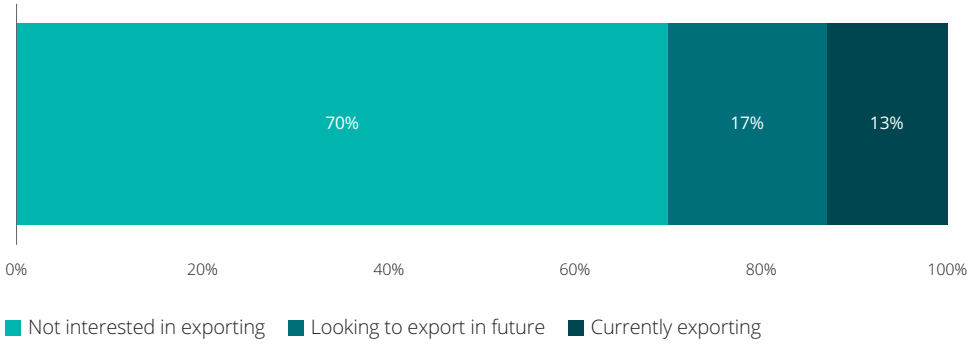
The customer base for the digital industry is focused on local markets. **For the average digital industry business operating in the Northern Territory, most revenue was generated by domestic (46%) or interstate markets (46%).** The remaining revenue was supported by demand from international markets. For businesses servicing interstate markets, Western Australia (35%) and New South Wales (20%) were key markets.

As demonstrated in Chart 1.4, **there are opportunities to grow the value of exports for the Northern Territory industry. Only 13% of surveyed businesses currently export, while a further 17% are not currently exporting but are looking to export in the future**. For exporting businesses, key export markets were primarily in Asia-Pacific, including Singapore, China, India and Indonesia.

However, 70% of surveyed businesses are not exporting and not looking to do so in the future, potentially due to scale-related barriers that may limit capacity to access and compete in overseas markets. This is despite industry consultations suggesting that the **Northern Territory's proximity to fast-growing markets in South-East Asia, alongside high-quality local infrastructure, positions the industry well to access these markets**.

**When considering the type of customer, over half (57%) of surveyed business revenue was from government (B2G),** with the remaining revenue coming from businesses (B2B, 26%) and from customers (B2C, 17%). This is demonstrated in Chart 1.5. **Looking ahead, sources of revenue are expected not to change significantly,** with government remaining as one of the key contributors to revenue for surveyed businesses.

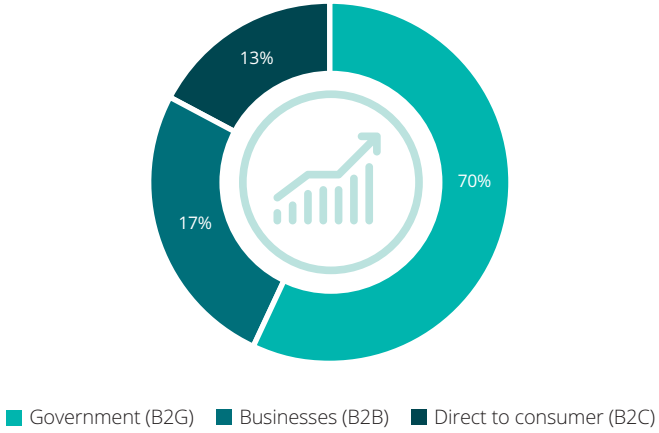
**Chart 1.4:** Export intentions




Source: Northern Territory Digital Industry Survey (2025), n=23.

Note: Figures may not add to 100% due to rounding.

**Chart 1.5:** Shares of revenue, by market




Source: Northern Territory Digital Industry Survey (2025), n=23.

Note: Figures may not add to 100% due to rounding.

# The Northern Territory Government is a key contributor to the local digital industry

## The digital activities of the public sector account for quarter of the digital industry in the Northern Territory.

The Northern Territory Government makes a significant contribution to the local digital economy through its own activities, enabling a policy environment that drives demand to further facilitate private sector growth.

The Department of Corporate and Digital Development (DCDD) has responsibility for the delivery of digital government services and the use of digital devices and infrastructure for government purposes. These responsibilities contribute to the economic activity described at the beginning of this section. In fact, **the activities of DCDD contributed $141 million in economic activity in FY24, accounting for a quarter of the activity generated by the industry. DCDD also employed 1,159 full-time equivalent employees in FY24**. These figures are based on the annual reports for the Digital Government Development component of DCDD.[7]

**The economic activity supported by DCDD's digital activities has decreased since FY21, when public sector contribution reached $325 million.**[8, 9] This decrease is likely a result of scaling back investment activity from the spikes and troughs of several large digital projects, such as Acacia and Serpro.

Aimed at strengthening local digital capability and improving government service delivery, the Northern Territory Government also supports a range of projects focused on developing technological skills and enabling business growth long-term, as shown in Figure 1.1.

The Northern Territory Government is currently developing a Digital Industry strategy to support future growth in the industry. This Strategy will build upon the existing Digital Transformation Plan and Digital Industry Growth Strategy, which extends across several strategic areas, including investment promotion, workforce development and grant funding.

**Figure 1.1:** Significant projects supported by the Northern Territory Government

### Data centres

The Northern Territory's improving connectivity is attracting data centre operators to the region. NEXTDC, in partnership with the Northern Territory Government and Vocus, established the $80 million D1 Darwin data centre in 2024. Powered by terrestrial and subsea cables, these facilities are boosting the Northern Territory's digital capabilities by enabling real-time access to global cloud platforms and networking infrastructure to connect them to the broader Asia-Pacific region.[10, 11]

### Northern Territory Police Force

The Northern Territory Police Force is undergoing digital transformation with tools such as SerPro, designed to streamline frontline operations by integrating data sources, enabling mobile access, and automating information workflow. Trials of advanced radar technologies and AI-enhanced Automatic Number Plate Recognition systems to increase road safety and operational responsiveness across the Northern Territory.[12, 13]

### Vocus' Darwin-Jakarta-Singapore Cable

The Vocus Darwin-Jakarta-Singapore Cable was supported by a $7.9 million investment from the Northern Territory Government as part of its Terabit Territory strategy. Given that 98% of the world's data and voice traffic is carried by international submarine cables, this cable will improve Australia's global connectivity and will provide opportunities for growth, innovation and development in the Northern Territory.[14]

# 02

# The technology workforce and digital skills

The digital industry is composed of a diverse workforce and educational backgrounds. This section examines the technology workforce and discusses IT education trends. This includes estimating the size and characteristics of the technology workforce in the Northern Territory.

# Technology workers makes up 4.1% of the Northern Territory workforce

## The technology workforce has grown consistently since 2018.

The technology workforce and digital skills across the broader economy are key drivers behind the growth in the digital economy and the adoption of new technologies. **The Northern Territory's technology workforce has experienced strong and sustained growth in recent years, more than doubling since 2004 to reach over 5,100 workers by 2025.** According to estimates from *Australia's Digital Pulse 2025*, the Territory's technology workforce is projected to rise to 10,300 by 2034, more than doubling again over the next decade.[1]

More recently, **since 2020, the Northern Territory's tech workforce has grown by 19%, underscoring the industry's increasing** presence in the local economy. While this growth reflects the expansion of the digital industry, **the Northern Territory's technology workforce accounts for 3.6% of its total labour market,** lower than the national average of 6.9%.

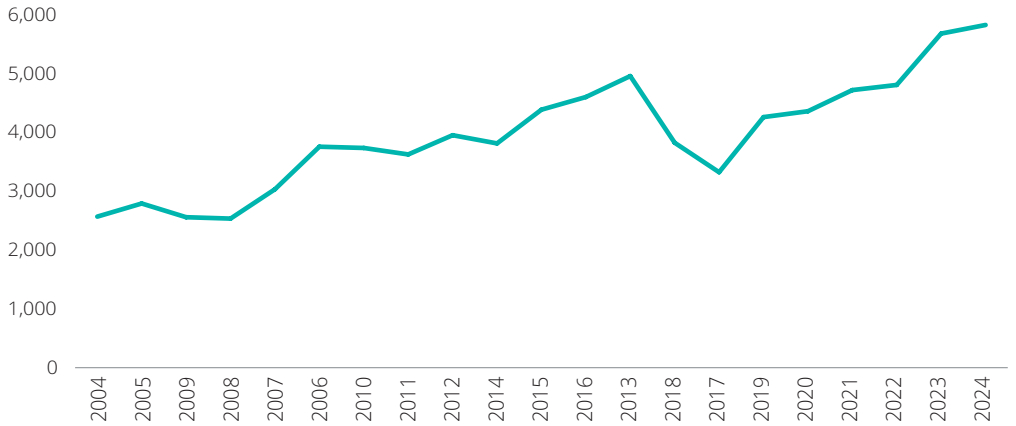
In regional areas, there is strong demand for technology workers, somewhat attributed to changing work patterns following COVID-19. *Australia's Digital Pulse* included regional hotspot analysis to identify regions in each state with the highest concentration of technology workers and their growth rates over the last 12 years. Currently, the Outback region in the Northern Territory is home to over 1,400 technology workers, an increase of an average annual rate of 6% over the last 12 years.[2]

By occupation groupings, the largest share of technology workers in the Northern Territory is in management and operations roles (44%), followed by those in technical and professional roles (33%), and trades (11%) (Chart 2.2).[3]

### Methodology note

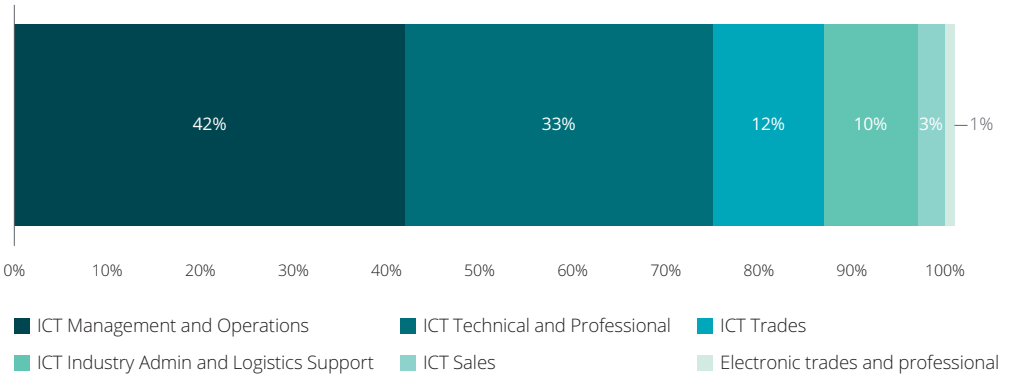
Technology workers include those employed in ICT businesses and the broader economy (i.e., digital workers in industries such as finance and government). The workforce analysis contained in this report uses ABS occupation and industry classifications and draws on the methodology developed by the Centre for Innovative Industries Economic Research (CIIER) lead researcher, Ian Dennis FACS.[4]

**Chart 2.1:** Northern Territory technology workforce




Source: Australia's Digital Pulse (2014 – 2024).

**Chart 2.2:** Technology worker occupational groupings




Source: Australia's Digital Pulse (2024).

# Northern Territory university IT enrolments more than doubled in 2023

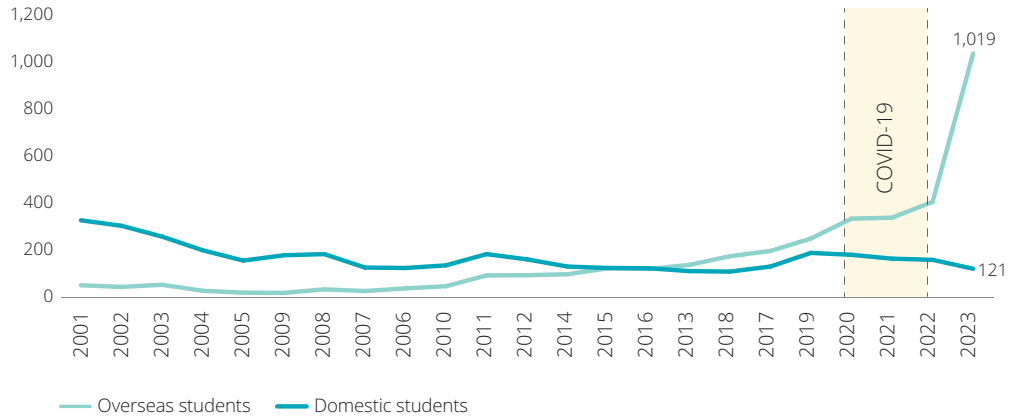
## The pipeline of technology workers in the Northern Territory is growing, supported by rising overseas university enrolments.

Historically, the university system has been seen as a cornerstone of developing technology talent and strengthening the pipeline of workers. IT student enrolments refer to the number of students enrolled in university-level information technology courses. Enrolments in IT university courses in the Northern Territory have increased in recent years, with the number of enrolments **more than doubling from 557 in 2022 to 1,140 in 2023.[5] This large increase is a one-off that is driven by international students, who accounted for 89.4% of enrolments in 2023** (Chart 2.3). The share of Northern Territory students enrolled in IT courses more than doubled to 8.8% in 2023, up from 4.3% in 2022 and exceeds the national average of 7.6%. The Northern Territory ranked fourth nationally in terms of enrolment, led by Victoria with 10.9%, followed by the Australian Capital Territory (10.2%) and New South Wales (9.6%).

IT enrolments and completions in the Northern Territory remain relatively small at a national level, highlighting potential for further growth. However, on a per capita basis, the Northern Territory performs relatively strongly in IT enrolments. **In 2023, the Northern Territory recorded 450 IT enrolments per 100,000 people, well above larger states such as Queensland (270) and Western Australia (328).[6, 7]** In comparison, **the Northern Territory reported 57 IT completions per 100,000 people,** ahead of Queensland (48) and Western Australia (49) but trails behind other jurisdictions, such as the Australian Capital Territory (221) and Victoria (136). IT completions have more than doubled from 61 in 2019 to 144 in 2023. While there has been a slight decline in completions in 2023 compared to the previous year (161), the overall trend reflects the growing pipeline of digitally skilled graduates.

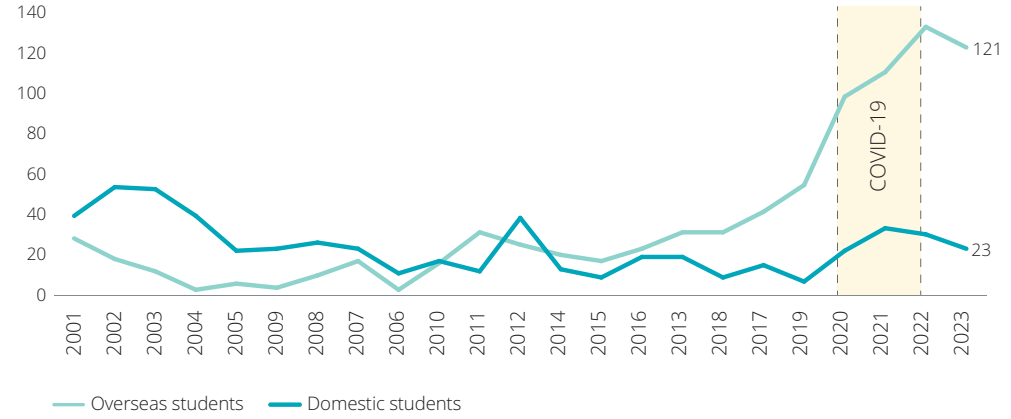
The Australian Government recently introduced the National Planning Level (NPL), which imposes a cap of 270,000 on new overseas student commencements. Charles Darwin University has been provided with an indicative cap of 2,200 new overseas commencements for 2025, which is likely to soften future growth.[8] Given the role of international students driving IT enrolments, **the NPL cap may weaken the pipeline of new overseas students entering the Northern Territory**.

**Chart 2.3:** Northern Territory IT university enrolments




Source: Department of Education (2024).

**Chart 2.4:** Northern Territory IT university completions




Source: Department of Education (2024).

*Note: the most relevant field of study in the Department of Education's student data is 'Information Technology'. This term is used on this slide instead of ICT to remain consistent with the enrolment data terminology.

# Enrolments in VET IT courses are gaining momentum, surpassing pre-pandemic levels

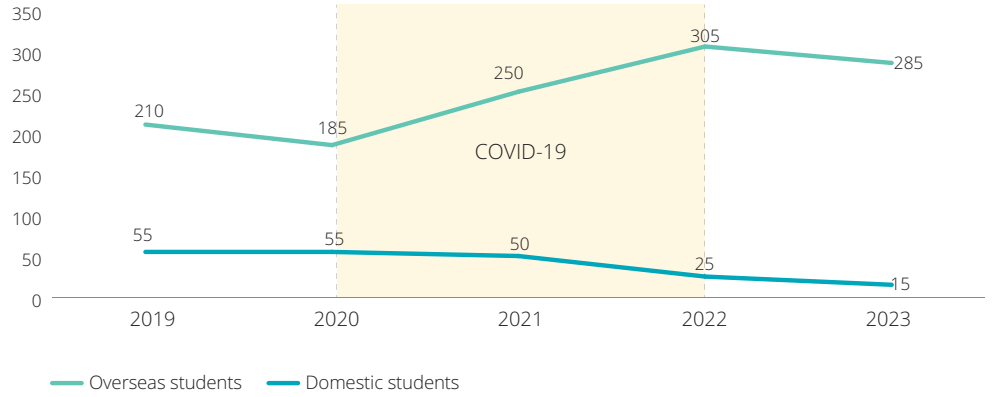
## Yet completions in VET IT courses have seen a decline over the past five years.

In addition to university courses, Vocational Education and Training (VET) courses represent another opportunity to gain digital skills and experience. There is an opportunity to increase the number of workers coming through VET IT courses, given **IT enrolments accounted for just 1.1% of total VET enrolments in the Northern Territory**. This is 1 percentage point below the national average of 2.1%.[9] This share was even lower for IT course completions, with IT courses accounting for only 0.2% of total VET completions in the Northern Territory, 1.2% below the national average. Fields of study with large shares of total enrolments in the Northern Territory include Society and Culture (21.5%), Engineering and Related Technologies (20%) and Management and Commerce (17.6%).

Despite the lower share of enrolments and completions, there has been a rising interest in Certificate III and IV IT courses. **Certificate IV enrolments increased more than fourfold from 11 in 2022 to 57 in 2023** (Chart 2.6), significantly outpacing national growth (36%). Similarly, Certificate III enrolments grew by 44%, ahead of the national rate (18%). This **growth may reflect the impact of Charles Darwin University's (CDU) fee-free TAFE courses,** which supported 600 student enrolments across the Northern Territory. This growth may be set to continue, an additional 2,200 free TAFE training placements will be made available to support students from 2024 to 2026.[10]

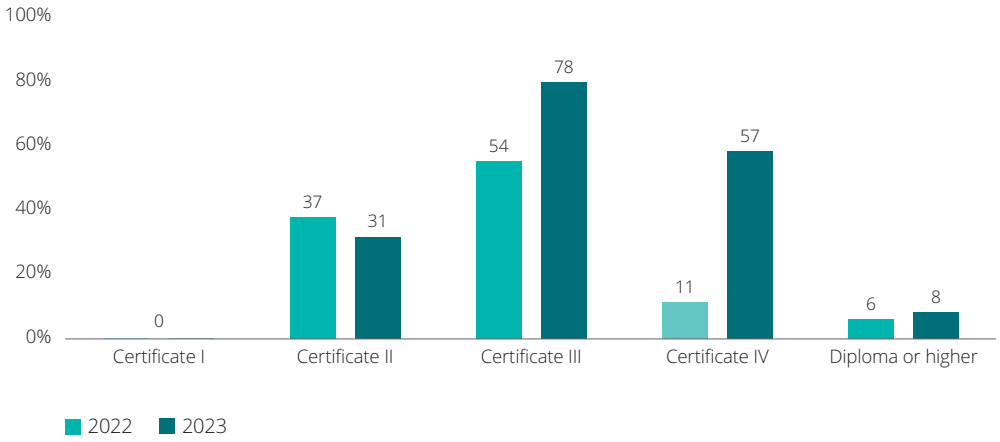
**Enrolments in lower-level qualifications remain low.** Only 31 students were enrolled in Certificate II courses in 2023, and no students enrolled in Certificate I courses. **This may signal a shift in preferences, with consultations with digital industry businesses revealing that students and employers are increasingly turning to microcredentials** for more flexible ways for individuals to upskill and meet evolving industry demands quickly. Charles Darwin University is actively involved in developing and delivering microcredentials in priority fields. They offer a range of six-month IT microcredentials courses in fields such as cybersecurity, programming, data science and AI, which help to address digital skills gaps.[11]

**Chart 2.5:** Northern Territory VET IT course enrolments and completions




Source: NCVER (2024).

**Chart 2.6:** Northern Territory VET IT course enrolments, by level




Source: NCVER (2024).

*Note: the most relevant field of study in the Department of Education's student data is 'Information Technology'. This term is used on this slide instead of ICT to remain consistent with the enrolment data terminology.

# There is an underrepresentation of women and First Nations students in IT-related courses

## Introducing more inclusive pathways to higher education will help to diversify and strengthen the pipeline of technology workers.

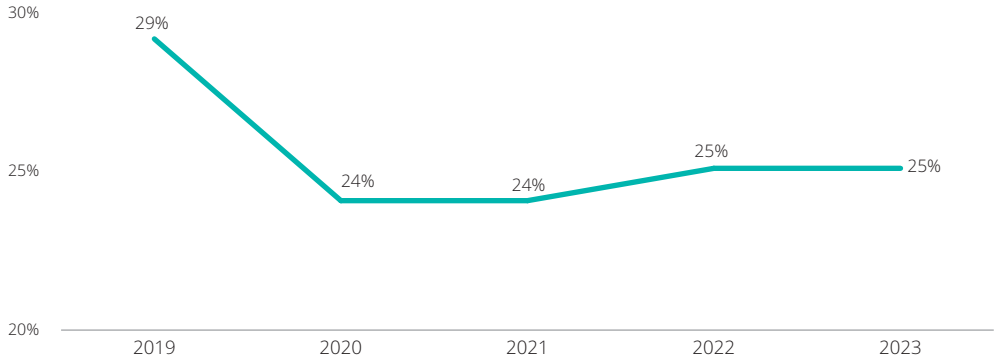
A more diverse student pipeline is critical to building a technology workforce that brings a range of ideas and perspectives to the digital industry. However, women and First Nations students remain underrepresented in IT-related courses in the Northern Territory.

**While women make up nearly two-thirds (65%) of university enrolments in the Northern Territory, they make up only a quarter (24%) of total enrolments in IT.**[12] Although this is in line with the national average of 25%, there is a significant opportunity to increase the share of women in university IT degrees. **Similarly, women make up a quarter (25%) of total enrolments in VET IT courses, despite making up 49% of all VET students in the Northern Territory.** While the number of women enrolled in IT VET courses in the Northern Territory rose from 45 in 2020 to 70 in 2023, their share fell from 29% to 25%, reflecting the national average and highlighting a persistent gender gap (Chart 2.7).[13] By contrast, women make up the majority of enrolments in fields such as Education (77%) and Health (72%).

First Nations students are also underrepresented in VET IT enrolments. **While First Nations students accounted for 29% of all VET enrolments in the Northern Territory in 2023, only 0.3% enrolled in IT courses.** In fact, IT VET enrolments from First Nations students halved from 50 in 2019 to just 25 in 2023.[14] This makes IT the field of study with the second lowest share of First Nations students, after natural and physical sciences (Chart 2.8). This is reflective of the national picture, with only 514 First Nations university students enrolled in IT courses in 2023, representing just 2.2% of all Indigenous enrolments.[15]

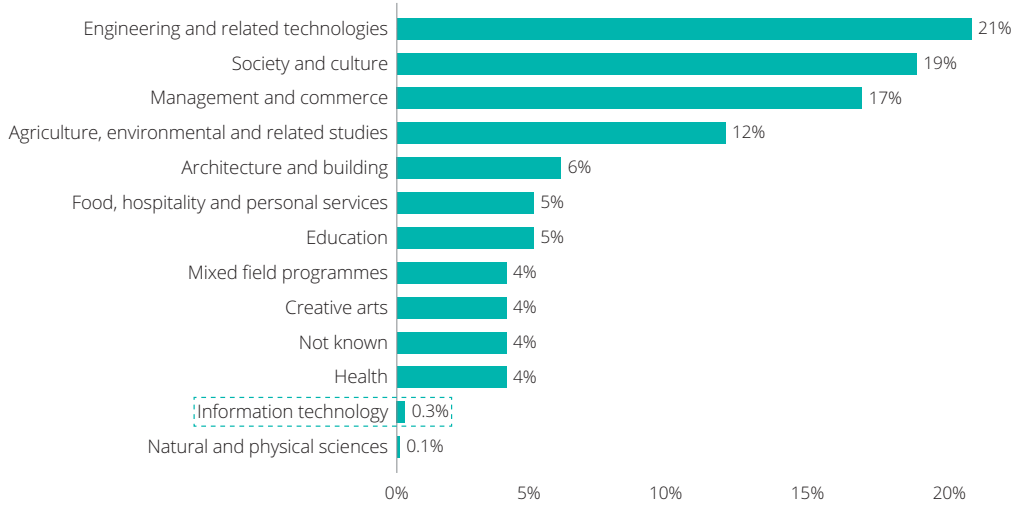
Efforts to foster more inclusive pathways into IT courses and retention strategies will be critical in strengthening the Northern Territory's future technology workforce. These initiatives will not only address the current underrepresentation of First Nations peoples and women in the digital industry but also tap into a broader, more diverse talent pool to drive innovation and strengthen the pipeline of workers.

**Chart 2.7:** Share of women in VET IT enrolments




Source: NCVER 2024.

**Chart 2.8:** Share of First Nations in IT VET enrolments




Source: NCVER 2024.

*Note: the most relevant field of study in the Department of Education's student data is 'Information Technology'. This term is used on this slide instead of ICT to remain consistent with the enrolment data terminology.

# The majority of digital industry businesses face both technical and non-technical skill and capability gaps

## Skill and capability gaps are a more common concern amongst digital industry businesses in the Northern Territory compared with those nationally.

**Digital skills are essential to support the ongoing growth of industry and the broader economy.** 87% of jobs in Australia now require digital literacy skills, which is projected to increase as businesses continue to adopt more advanced technologies.[16] Yet in the Northern Territory, businesses continue to report technical and non-technical skill gaps. The ability to attract, train, and retain digitally capable workers is critical. Without sufficient digital skills, businesses face barriers to innovation, service delivery, and productivity.

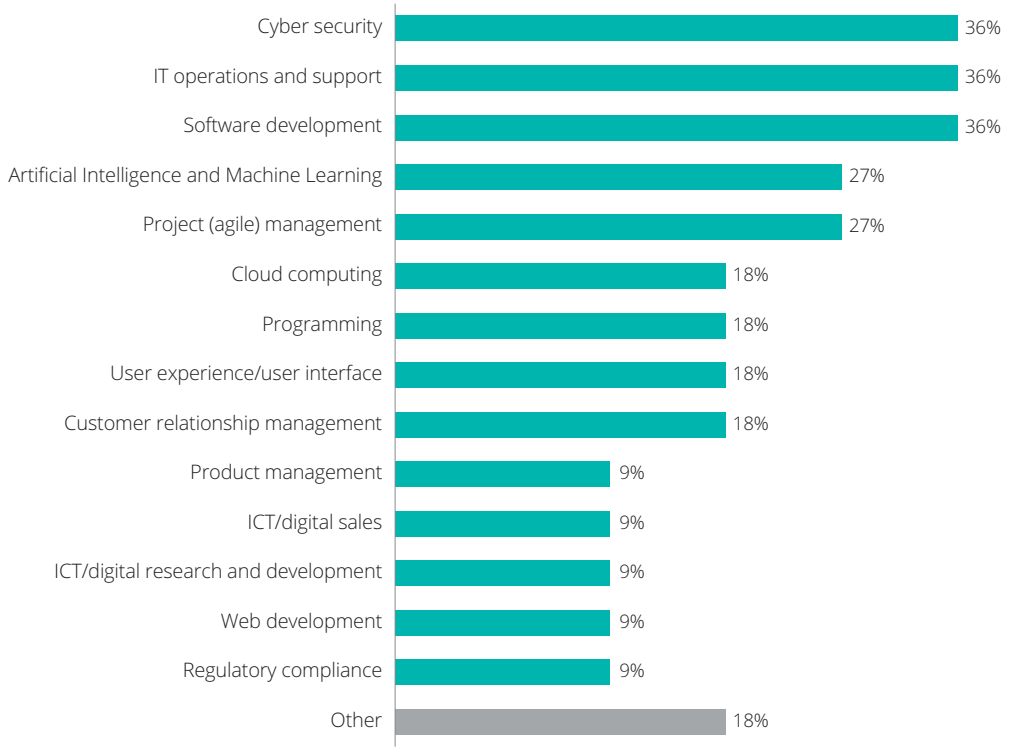
Skill gaps are a key constraint for digital businesses in the Northern Territory, **with the majority (87%) of surveyed businesses considering technical skill or capability gaps to be a challenge for their business**. Of these, nearly two-thirds (65%) considered these gaps to be a major or significant challenge. **Three-quarters (74%) of businesses also considered non-technical skill gaps to be a challenge.** This is well above the rate for the overall economy, where 38% of businesses reported digital skill shortages.[17]

**The most common skill gaps faced by surveyed businesses were software development, IT operations and support, and cybersecurity.** Over a third (36%) of businesses facing skills gaps identified these among their top five preferences (Chart 2.9). These were followed by project (Agile) management and AI and ML, identified by over a quarter (27%) of businesses. The survey did not ask about specific non-technical skill gaps, however, gaps in self-management and analytical skills have been identified as key non-technical gaps for national technology businesses in the 2024 AIIA member survey.[18]

Consultations with the Northern Territory Government and industry align with our survey findings, indicating that skills gaps are most pronounced at the mid-skill level (skills that require more than three years of experience), while demand for entry-level skills is relatively limited. The talent shortage facing local digital businesses is driven by strong competition for skilled workers from the Northern Territory Government, as well as comparatively lower wages for technology roles in the Territory compared to other jurisdictions. **The median hourly rate for Northern Territory Information, Media and Telecommunications (IMT) workers is $41.88, compared to the national median hourly rate of $48.07.**[19]

Other factors include employment benefits offered by the Northern Territory government, the close relationship between the digital industry and the Northern Territory government, including ICT placements within government business, and recent observations of increased internal servicing rather than reliance on external providers. Taken together, these factors could create an incentive for technology workers to move to the public sector or other jurisdictions for higher levels of pay.

**Chart 2.9:** Areas of skill and capability gaps




Source: Northern Territory Digital Industry Survey (2025), n=23.

NB: Digital marketing and data analytics was not suggested as a skills gap by surveyed businesses.

# Upskilling workers is a common and effective action to overcome skill and capability gaps

## Although hiring new graduates, local and interstate workers are also common approaches, they are not as successful as upskilling existing staff.

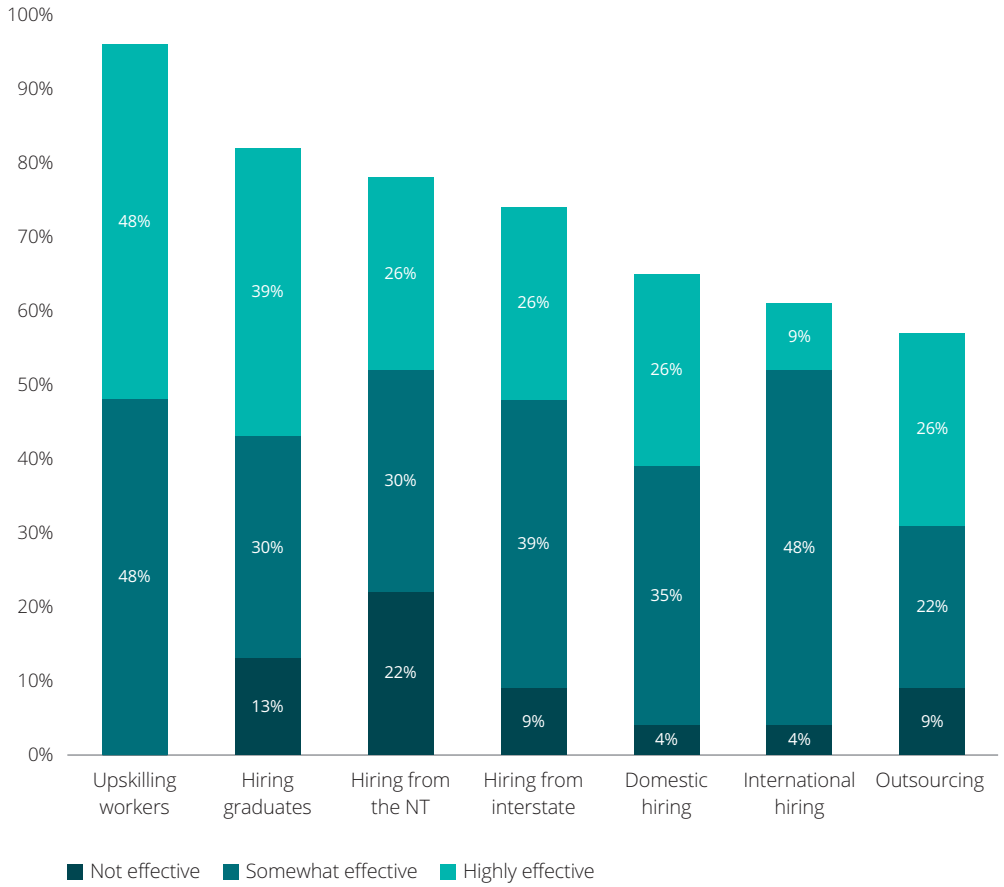
More digital businesses in the Northern Territory are addressing skills gaps by investing in their existing workforce, and it's proving to be their most effective strategy. **Upskilling existing workers was the most widely adopted strategy to address skill gaps, implemented by 96% of surveyed businesses.** This was also found to be the most effective strategy, with all businesses that used this strategy reporting it as either highly effective or somewhat effective (Chart 2.10).

Upskilling workers can occur through several means, including offering in-house training, covering course costs, or supporting learning through measures like paid study leave. Research has found that doing so can help to reduce business costs, with costs of replacing an employee within six months up to 2.5 times annual salaries.[20]

Hiring graduates was another common strategy to overcome skill gaps, adopted by nearly three-quarters (83%) of surveyed businesses, with 84% of these businesses finding it at least somewhat effective. In contrast, **outsourcing was the least adopted approach**, with 57% of surveyed businesses using this action to address skill gaps, likely because smaller business size or scale-related limitations make outsourcing less feasible or attractive.

**Microcredentials are emerging as an opportunity to address skills shortages** in the Northern Territory's digital industry. These courses are delivered by educational institutions and large businesses, which enable technology workers to upskill efficiently and flexibly in high-demand technical areas.[21] Consultations with digital industry business leaders viewed microcredentials as a promising pathway to upskill staff, with these courses increasingly being endorsed by employers seeking to address specific skill and capability gaps without the time and cost commitment of full qualifications.

**Chart 2.10:** Actions undertaken by surveyed businesses to address skill and capability gaps




Source: Northern Territory Digital Industry Survey (2024), n=23.

# 03

# Northern Territory digital industry outlook

This section provides an overview of the outlook for the digital industry in the Northern Territory, including projections of the size of the industry in a decade. In addition, the current barriers and enablers to growth are explored before presenting five key priorities to support growth in the industry.

# The Northern Territory economy is expected to return to growth from FY26 to FY29

## Against this backdrop, digital industry businesses expect strong revenue and employment growth.

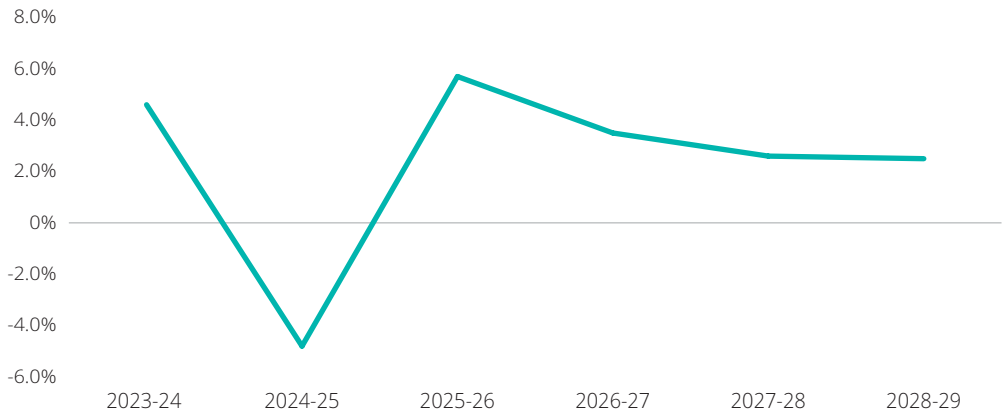
The Northern Territory economy has typically been more volatile than other jurisdictions in Australia, given a traditional reliance on the resource sector and major infrastructure projects. **According to Deloitte Access Economics' Business Outlook, economic activity in the Northern Territory is forecast to decline** by 4.8% in FY25 before rebounding with strong growth of 5.7% forecasted for FY26 (Chart 3.1).[1]

**Growth beyond FY26 will be driven by major projects and export-led growth**, with strong growth of 9.9% in international exports forecasted for FY26.2 Following a strong period of growth between FY24 and FY25, business investment is expected to decrease over the next two years before beginning to grow again.

Despite this volatility in the local economy, surveyed businesses were relatively optimistic. **Over the next five years, businesses expected a median compound annual growth rate (CAGR) of 14%.** This optimistic figure should be interpreted with caution as a relatively small number of businesses provided expected revenue growth (n=9). The survey also contained a large sample of small to medium businesses that may be more likely to experience high growth.

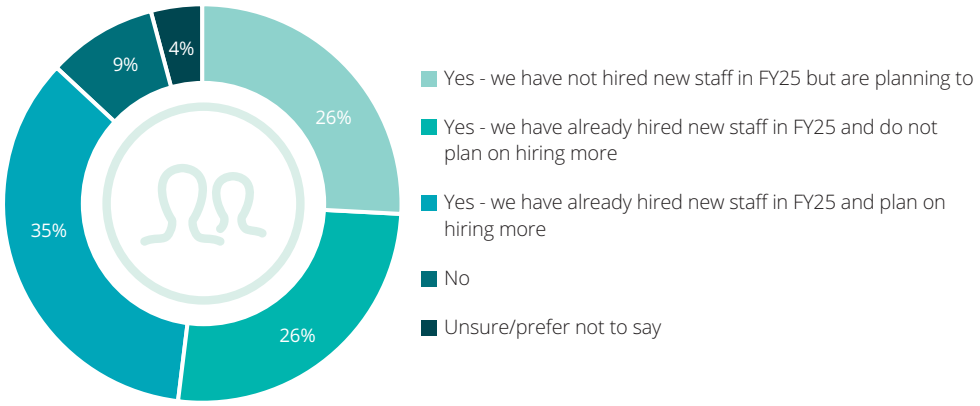
This optimism was also reflected in business expectations to hire new staff. **The majority (87%) of surveyed businesses had either already hired new staff or were intending to hire new staff in FY25** (Chart 3.2). Less than 10% of businesses did not expect to hire any more staff throughout the financial year.

**Chart 3.1:** Real gross state product forecasts, % growth




Source: Deloitte Access Economics Business Outlook (2025)

**Chart 3.2:** Business expectations to hire




Source: Northern Territory Digital Industry Survey (2025), n=23.

# The Northern Territory ICT sector could reach $1 billion within the next ten years

## Under a scenario of sustained high employment growth, there is potential for the ICT sector to reach nearly $1 billion by 2034.

As noted in the first section of this report, the ICT sector contributed $538 million to the Northern Territory economy in FY24. The shrinking Northern Territory economy is expected to keep growth in the ICT sector subdued for the remainder of 2025, with a gradual recovery that accelerates from 2027 onwards.

As outlined on page 14, Australia's Digital Pulse forecasts that the Northern Territory technology workforce will double to reach **over 10,300 technology workers by 2034**. Assuming the industry maintains a similar structure and the value-added by workers remains constant, **the baseline scenario suggests the ICT economy could reach $1 billion in economic activity** (Chart 3.3).[3, 4]

A more accelerated growth scenario was also modelled for this report. The accelerated scenario suggests that the Northern Territory ICT sector transforms from steady-state operations. While the next couple of years follow the baseline scenario, the acerated scenario assumes the value-added of technology workers grows to match that of leaders in the sector by the end of the decade. If this growth rate were reached, **the accelerated scenario suggests the ICT sector would generate $1.1 billion in economic activity by 2034. In this scenario, the economic activity supported by the Northern Territory ICT sector in 2034 is 8% larger than the baseline scenario.**

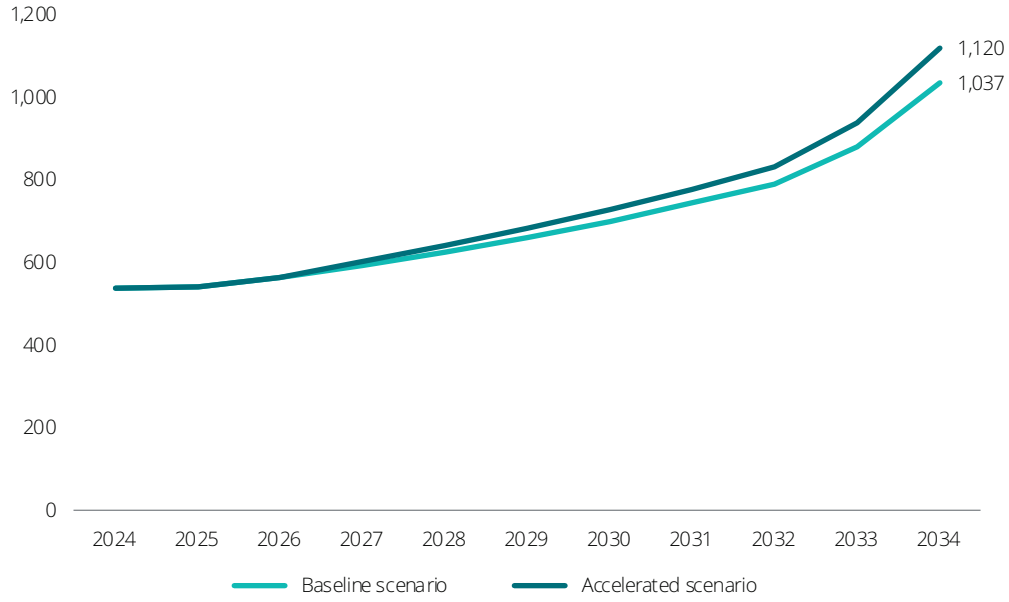
### Methodology note

The estimates of value and projections of the ICT sector were developed using Deloitte's Input-Output model of the Northern Territory and forecasts of the technology workforce. The amount of economic activity supported per worker (measured as total value added per worker) was used to translate expected growth in the workforce to economic activity. Workforce forecasts are consistent with the ACS Australia's Digital Pulse forecasts to provide expected growth in the technology workforce.

**2024 → 2034**

**Technology workforce doubles from over 5,000 to over 10,300, Contribution of $538 million increases to $1 billion under a baseline scenario and $1.1 billion under an accelerated scenario**

**Chart 3.3:** Economic contribution of the ICT sector, 2024-2034




Source: Deloitte Access Economics (2025).

# Skills shortages were the most common barrier to growth

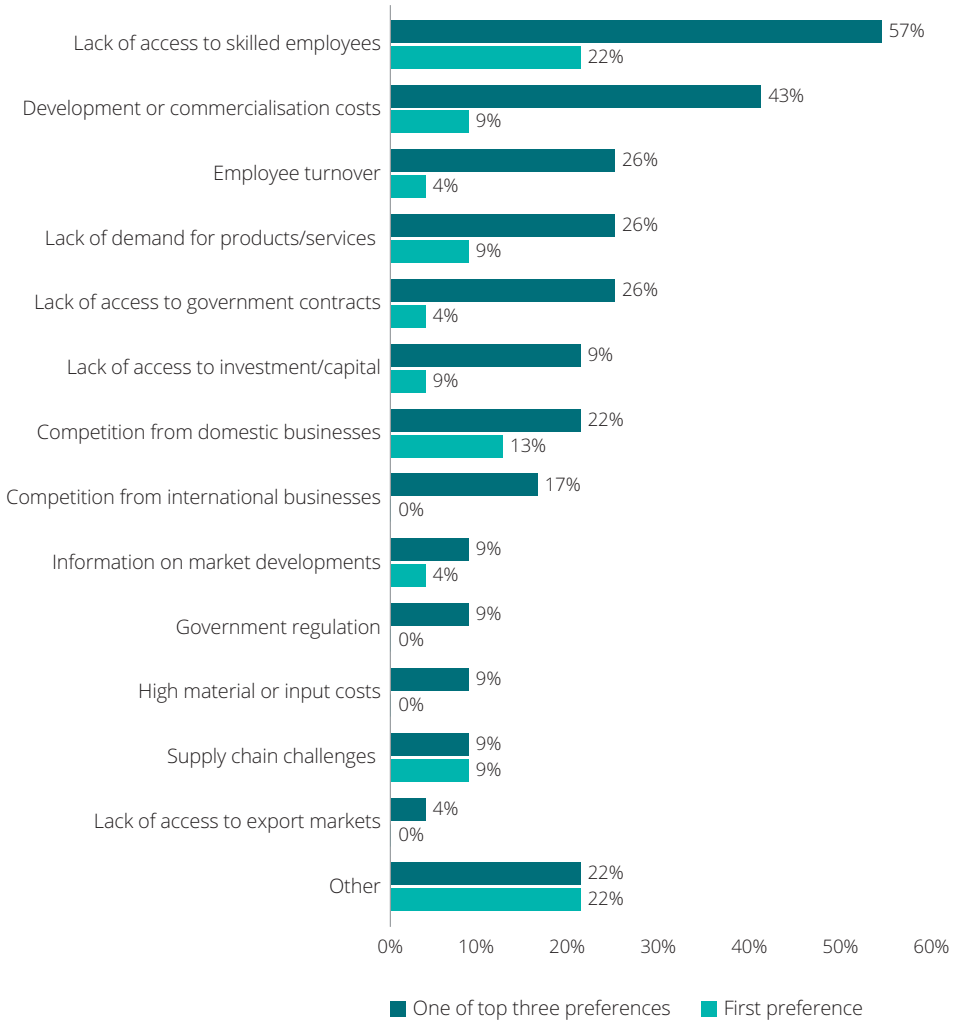
## Other barriers to business growth include the costs associated with developing or commercialising products or services, and a lack of access to government contracts and procurement opportunities.

Realising the projected growth of the digital industry will require businesses to address operational and workforce challenges. **Lack of access to skilled employees was the most common barrier to growth, with 57% of surveyed businesses identifying it as one of their top three challenges (Chart 3.4).** Staff turnover was another commonly identified barrier. This finding was reinforced qualitatively in discussions with both industry and government, where the ability to find, attract and retain skilled workers was identified as a major challenge for more experienced workers. The scarcity of talent has led to a transfer of talent to the public sector, where wages are generally higher.

**The costs of developing or commercialising products and services was the second most commonly cited barrier to growth (43%).** Government consultation suggested that the relatively small domestic market in the Northern Territory may contribute to this issue. A lack of funding sources could exacerbate this issue, limiting investments in innovation from the industry. **Lack of access to government contracts and procurement opportunities was another commonly reported barrier.** This is a significant concern as over half (57%) of revenue was supported by the government, as outlined in Section 1. **Consultations with industry and previous industry development strategies suggest that procurement processes can be overly prescriptive and use 'body shopping' amongst preferred suppliers, which involves outsourcing work on a resource-by-resource basis rather than procuring an outcome-based project where vendors can utilise their resources appropriately.** This can limit competition and potentially more innovative solutions offered by the broader market. In addition, consultations suggest that industries involved in large projects in the Northern Territory, such as the defence and resources sector, are likely to use interstate or international providers for digital solutions. This is potentially due to cost savings or greater access to specialised services, limiting market opportunities for local digital businesses.

Another key barrier identified by both government and industry during consultations is the recent shutdown of the 3G network and the slow pace of connectivity upgrades in regional and remote areas. This infrastructure gap limits growth, particularly where technologies like 5G are critical for delivering digital services across the Northern Territory. More broadly, the Northern Territory has scored the lowest in the latest Australian Digital Inclusion Index (ADII), reflecting ongoing challenges in accessing digital infrastructure and technology in remote and regional areas.[5]

**Chart 3.4:** Barriers to business growth




Source: Northern Territory Digital Industry Survey (2025), n=23.

# Largest opportunities for the digital industry in the Northern Territory

## Innovation and the diversification of customers, both across geographic regions and sectors, represent key opportunities for growth within the digital industry.

### Opportunity 1 | Embrace AI solutions and other emerging technologies

Innovation plays a key role in promoting growth and productivity within an economy. In fact, **the majority of surveyed businesses expect growth in their business from introducing new products or services to market, with 67% identifying it as one of their top three enablers**. With the majority (87%) of surveyed businesses now using or trialling AI and ML, there is an opportunity to focus on offering these solutions, given the significant focus on AI adoption and use identified as a priority for business leaders and government alike. Other emerging markets mentioned within consultations with digital industry business leaders include the gaming industry and geospatial technologies, both utilising the Northern Territory's location advantage.

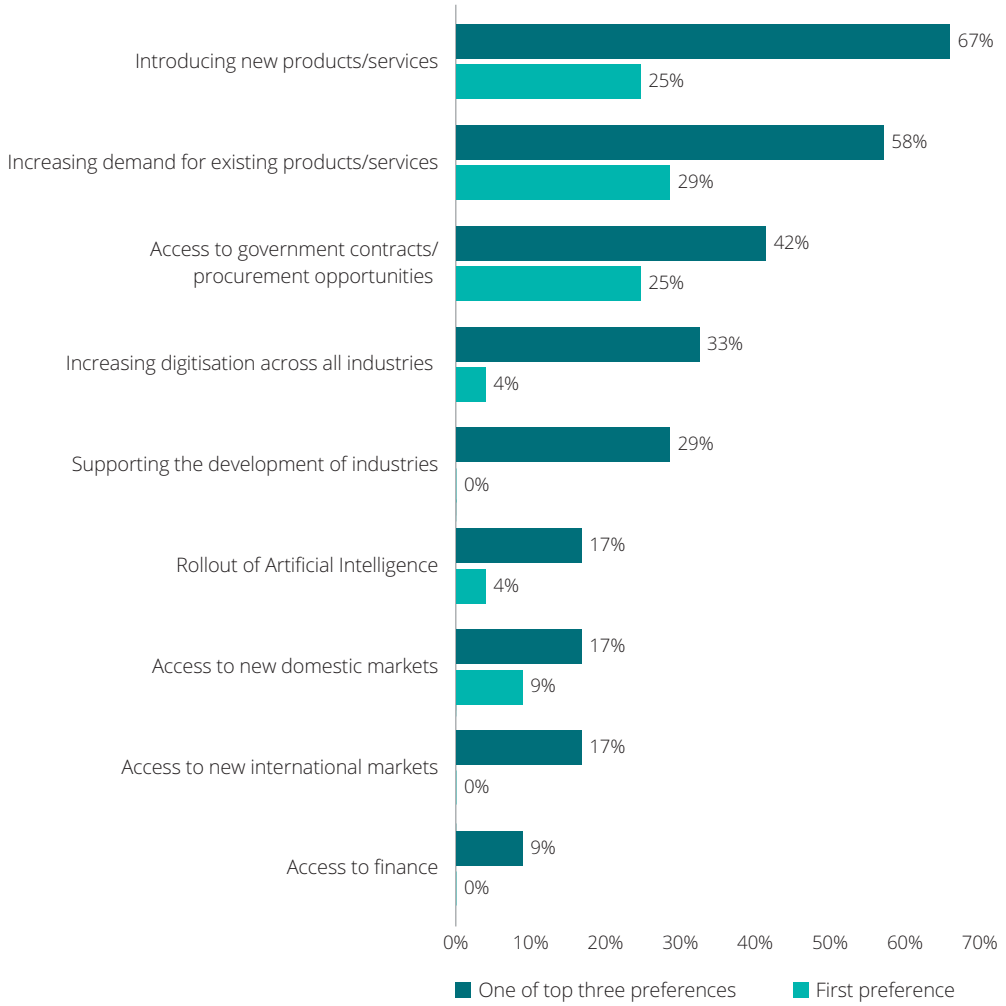
### Opportunity 2 | Leverage competitive advantages to access new markets

With nearly half (46%) of surveyed business revenue coming from the Northern Territory, **there is an opportunity for digital industry businesses to increase their presence in international and interstate markets**. Notably, 17% of surveyed businesses identified access to international markets as a key driver of growth, underscoring the export potential of the Northern Territory digital industry. The proximity to Indo-Pacific markets and high-speed connectivity were identified as key competitive advantages by government and industry stakeholders. Combined with ongoing investments in infrastructure mentioned in Section 1, this represents an opportunity to strengthen the Northern Territory's position as a regional digital hub.[5]

### Opportunity 3 | Promote digitisation within other sectors of the economy

Given the industry's reliance on government revenue, reflected in 42% of surveyed businesses identifying access to government contracts as a key growth enabler, there's also a clear **opportunity to strengthen the digital sector's presence across other parts of the Northern Territory economy**. Over a third of businesses expect growth from increased digitisation across industries (33%) and by supporting the development of other sectors (29%). This reflects strong awareness within the industry of its role in the digital transformation of the Northern Territory. Industries of focus include those that play a major role, including the resources sector and construction.[6]

**Chart 3.5:** Enablers of growth




Source: Northern Territory Digital Industry Survey (2025), n=23.

*No one selected Other,

# Government actions to retain and attract technology workers will help drive digital growth

## Other potential actions include increased funding towards programs that upskill and reskill local workers and greater engagement with industry on market developments.

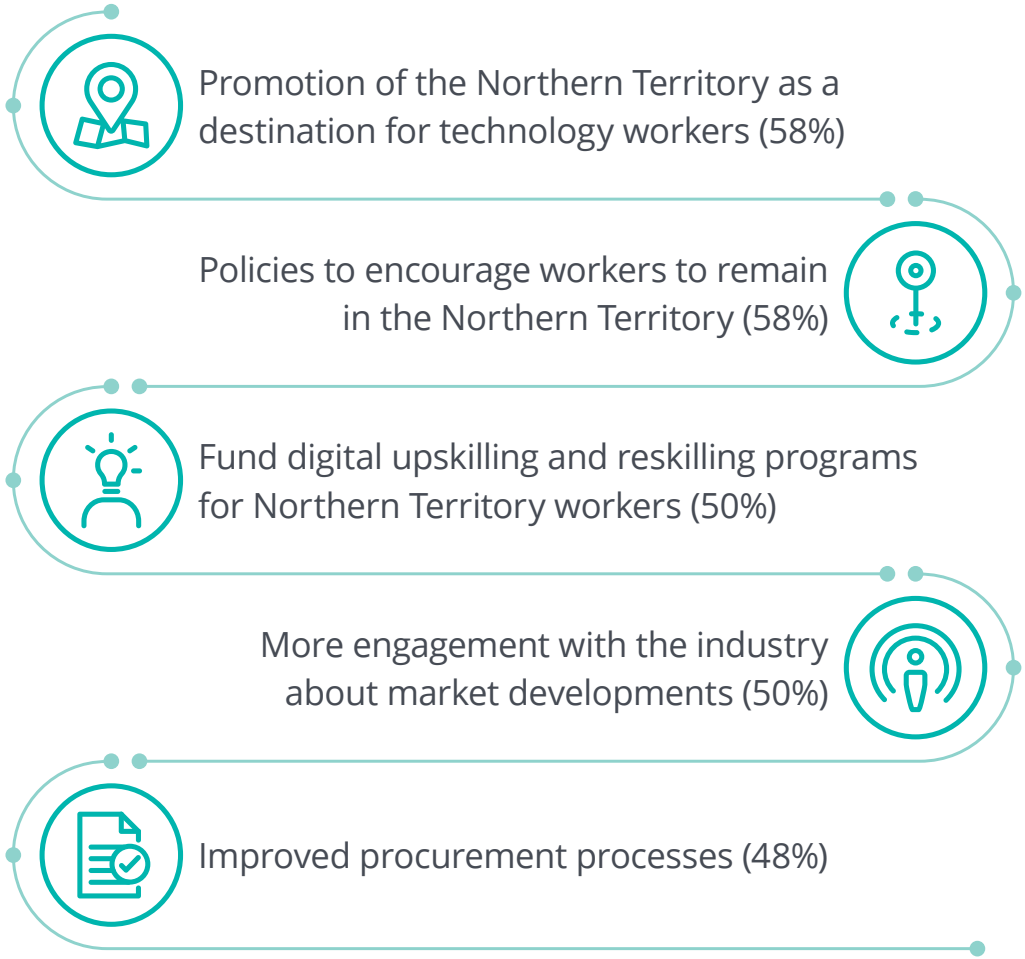
**When digital industry businesses were asked about the most effective actions by the government to support industry growth, the top three related to improving access to a skilled workforce.** For example, 58% of surveyed businesses identified promoting the Northern Territory as a destination for technology workers as a key government action, with an equally high share also emphasising the importance of policies that encourage skilled workers to stay in the territory. Given that the median wage for Information Media and Telecommunications workers is approximately 12% lower in the Northern Territory compared to the national median, the Northern Territory needs to lean on other advantages in order to keep talent in the Northern Territory. This could include lifestyle benefits, career opportunities, and support for relocation or upskilling workers.

Meanwhile, half of surveyed businesses (50%) indicated that future growth would be supported through government-funded programs to upskill and reskill local workers. **These findings highlight the significant impact skills gaps have on the local industry and the importance of the government's role in providing support to alleviate this issue.**

**Half of surveyed businesses highlighted the need for more active industry engagement on market developments (50%) and improvements to existing government procurement processes (46%).** This is particularly significant given the digital industry's reliance on public sector contracts, which account for roughly half of their current and expected future revenue.

This point was emphasised in discussions with industry, which suggests an **opportunity to review procurement processes to ensure appropriate settings are in place. In particular, early engagement with industry could help avoid overly prescriptive contracts and enable the co-design of more innovative solutions**.

**Figure 3.1:** Top five government actions to support industry growth




Source: Northern Territory Digital Industry Survey (2025), n=23.

# Priorities to support growth in the Northern Territory digital industry

The Northern Territory digital industry has experienced strong growth in recent years, yet businesses are encountering significant barriers holding them back. Promoting further long-term growth as outlined in the accelerated scenario will require concerted effort from both industry and government to address these barriers. This report identifies six key priority areas based on the insights from the business survey, consultations and workshops.

### Priority 1 | Strengthening government procurement processes.

The Northern Territory Government provides procurement criteria for major projects to have local industry involvement, including the DCDD having processes for the buy-local policy in the ICT space. However, the local industry still struggles to compete with interstate or international providers. There is an opportunity for the Northern Territory Government to implement accountability measures for suppliers on local involvement and consider restructuring contracts into smaller, service-focused parts. This would provide opportunities for local industry to supply services and to partner with major businesses. Alongside this, creating an accessible capability map could help major businesses operating in the Northern Territory identify and engage with local providers.

### Priority 2 | Greater local involvement in digital transformation projects across all industries.

The Northern Territory Government's Rebuilding the Economy Strategy identifies priority sectors (in addition to digital industries), including energy, defence, agriculture, mining and tourism that have long-term growth potential. Each of these industries relies on digital services and technologies to operate. This presents an opportunity for businesses within the digital industry to provide unique digital solutions suited to the geography of the Northern Territory.

### Priority 3 | Building the digital skills pipeline.

The Northern Territory is well-placed to lead nationally in piloting alternative pathways into digital jobs by partnering with industry to trial inclusive models. As highlighted in *Australia's Digital Pulse 2025*, the NSW Digital Skills and Workforce Compact sets a precedent, with partners pledging that 20% of entry-level tech hires will come from non-traditional pathways by 2030. A similar commitment in the NT could address critical skills gaps and unlock new career pathways for local workers. Collaboration with Migration Northern Territory can further strengthen the digital skills pipeline. Targeted migration initiatives, such as the NT Designated Area Migration Agreement and the Migration Innovation NT program, offer streamlined pathways and connections to local industry through partners like the Darwin Innovation Hub. To support long-term retention, these efforts should be paired with strategies that promote the Territory's unique lifestyle and career opportunities.

### Priority 4 | Enabling regional connectivity and development.

To support economic growth in regional areas, it is important to facilitate digital access in regional and remote communities. This is particularly crucial with the recent shutdown of the 3G network, which disproportionately affects regional areas, where there are more than 5,300 residents living in remote communities with inadequate data services.[1] Given the differing responsibilities of government in this space, all levels of government should look to incentivise the deployment of emerging technologies that enhance connectivity, with opportunities to engage in partnerships with existing providers such as Starlink and other low-orbit technology providers. Examples of work already underway in this area from government and industry that should continue to be incentivised include, such as the announcement of greater connectivity for Northern Territory's remote schools and the expansion of emerging technologies such as Satellite Messaging to connect remote communities.

### Priority 5 | Encouraging greater access to new interstate and international markets.

Despite a small share of exporting businesses, the Northern Territory has an advantageous location with its proximity to South-East Asia. Both the Northern Territory Government and industry should promote opportunities to capitalise on emerging trade opportunities by organising and promoting trade missions, partnerships, and knowledge exchange initiatives to enhance their international visibility.

### Priority 6 | Promoting industry and government partnerships.

Industry and government should work in partnership to set agreed goals and track success. The NSW Digital Skills Compact illustrates this particular model of partnership between industry, government and education providers to strive for a common goal. It is acknowledged that ICTNT and the Northern Territory Government have collaborated to form working groups and achieve previous actions within the Digital Government Action Plans. The formation of an industry action group will be important to oversee the partnership and set clear goals and timelines for accountability. The group should focus on improving collaboration between industry and government on procurement processes that can achieve mutually beneficial improvements overtime. This should include ensuring advocacy of local suppliers in the procurement process and engage industry early in processes to assist in scoping and designing innovative solutions.

# Appendix

The appendix contains further details on businesses in the Northern Territory Digital Industry Survey and the methodology behind the economic contribution modelling.

# Appendix A.1: Survey

## The Norther Territory Digital Industry Survey received 23 responses.

**Overview.** Data for this report was gathered using an online survey. The survey was fielded online and was undertaken by the ICT Industry Association of the Northern Territory (ICTNT) and Deloitte Access Economics to measure the economic contribution of the digital industry in the Northern Territory.

**Survey design.** A key focus of this survey was to reach digital industry businesses, defined as those that rely critically on digital industry (such as the internet, mobile and sensor networks) as a platform for production and/or delivery of their products and services, but may fall outside the definition of an ICT business.

In total, the survey comprised 34 questions covering a range of topics including the business characteristics and product offerings, business performance, drivers and barriers to growth, outlook for the economy, employment and skills, innovation and technology adoption, and export activity.

**Survey distribution.** The survey was distributed to industry contacts through the ICTNT contact list, which contained 86 businesses with valid emails. Further distribution was promoted through ICTNT networking events and the ACS NT branch. Respondents were provided with a link to complete the survey. The survey was fielded from March to April 2025.

**Survey respondents.** A total of 23 businesses completed the survey. Respondents to the survey were employees of digital industry businesses with headquarters or operations in the Northern Territory. Respondents' answers were validated to ensure that businesses were only represented once in the survey sample.

**Defining digital industry businesses.** Classification of digital industry businesses was developed acknowledging that companies can develop or sell multiple digital-related products and services. Two questions were used to identify businesses in the digital industry: a self-identification question on being part of the digital industry and a question on products, services and/or technologies provided. Businesses were classified as digital industry if they identified their business as part of the digital industry and/or considered at least one of the products, services and/or technologies to the right to be one of their core business offerings.

Which of the following products, services and/or technologies would you consider to be your core business offering? Please select at least one and up to three responses.

- Cloud computing
- Digital platforms
- Data and analytics
- Artificial Intelligence and Machine Learning
- Internet of Things
- Technology consulting and professional services (i.e., project management)
- Software sales of third-party software (including SaaS and other applications)
- Software development (including SaaS and other applications)
- Digital infrastructure and information storage
- Computer/IT services
- Cyber security
- Production of computer, electronic equipment and other digital technology hardware
- Sale of computer, electronic equipment and other digital technology hardware
- Internet publishing, broadcasting and media streaming
- E-Commerce
- Social media and other digital community networking (i.e., social platforms)
- Digital media, games and post digital visual effects services (i.e., website creation)
- Digital marketing and communications
- Other digital products, services and/or digital technologies, please specify

# Appendix A.1: Survey

## Key survey demographics from digital industry businesses that responded to the survey are presented below.

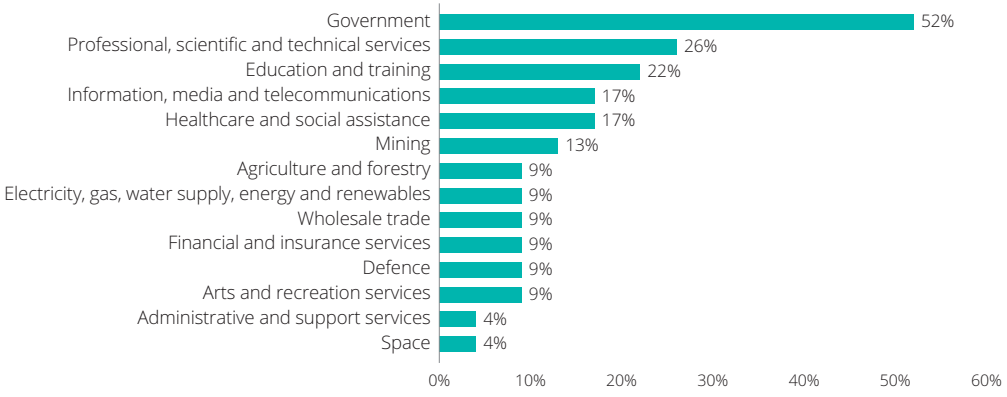
Businesses by employee size. The majority of surveyed businesses were medium-sized (43%), employing between 20 and 199 people. Large businesses with over 200 employees accounted for 26%, while 30% were small, with fewer than 20 employees.

Years in operation. Most surveyed businesses (69%) have operated in the Northern Territory for over a decade. Only 18% of surveyed businesses had operated in the industry for less than five years.

Location. Over half of the surveyed businesses have their headquarters in the Northern Territory (65%, n=15), and nearly every business surveyed has its physical operations in Darwin (96%, n=22).

Source of revenue. Government was the most common customer for surveyed businesses, with over half (52%) selecting government as a contributor to their revenue in FY24. Other significant sectors contributing to business revenue in FY24 were professional, scientific, and technical services (26%) and education and training (22%).

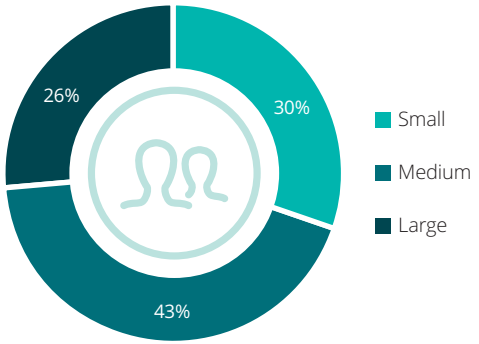
**Sources of revenue, by industry**




Source: Northern Territory Digital Industry Survey (2025), n=23.

Note: Figures may not add to 100% due to rounding.

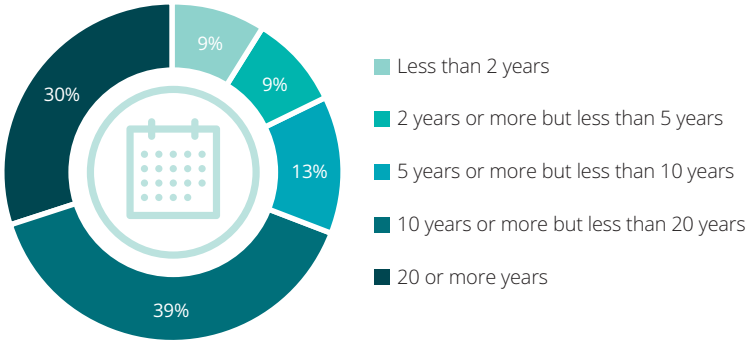
**Business size in the Northern Territory, by employees**




Source: Northern Territory Digital Industry Survey (2025), n=23.

Note: Figures may not add to 100% due to rounding.

**Years of business operation**




Source: Northern Territory Digital Industry Survey (2025), n=23.

Note: Figures may not add to 100% due to rounding.

# Appendix A.2: Economic contribution modelling

## Deloitte Access Economics' Regional Input-Output Model (DAE-RIOM) was used to determine the economic contribution of the Northern Territory's ICT sector.

Economic contribution studies are intended to quantify measures such as value added, exports, imports and employment associated with a given industry or firm, in a historical reference year. The economic contribution is a measure of the value of production by a firm or industry.

### Methodology used for this project

The Deloitte Access Economics' Regional Input-Output model (DAE-RIOM) was used to estimate the Northern Territory ICT Sector's economic contribution to the state's economy. The Northern Territory IO use tables were used to calculate the direct contribution of labour income, gross operating surplus (GOS) and tax less subsidy on production for the following ANZSIC industries

- Professional, Scientific, Computer and Electronic Equipment Manufacturing,
- Internet Service Providers, Internet Publishing and Broadcasting, Web Search Portals and Data Processing,
- Telecommunication Services and
- Computer Systems Design and Related Services.

As Professional, Scientific, Computer and Electronic Equipment Manufacturing contained ICT and non-ICT components, employment proportions provided by the 2021 Census were used to disaggregate and estimate the ICT component of that sub-division.

For the indirect contribution, the domestic Northern Territory IO use tables were used to estimate the total expenditure of the Northern Territory ICT sector towards suppliers in non-ICT industries.

The contribution methodology captures both the private sector contribution, estimated using relevant industry classifications, and the public sector, based on figures reported in annual reports published by the DCDD, which reflect service delivery through components such as labour income and gross operating surplus.

This methodology has some advantages relative to using survey data from the Northern Territory Digital Industry Survey. Firstly, using the IO tables avoids having to scale up revenue, profit and expenditure data from a sample of businesses to a large population. Secondly, the IO tables reflect activity from businesses that have headquarters outside Northern Territory but have operations within the state.

### Value added

Value added is the most appropriate measure of an industry's economic contribution to gross domestic product (GDP) at the national level, or gross state product (GSP) at the state level. Other measures, such as total revenue or total exports, may be easier to estimate than value added, but they 'double count'. That is, they overstate the contribution of a company to economic activity because they include, for example, the value added by external firms supplying inputs or the value added by other industries.

### Measuring the economic contribution

There are several commonly used measures of economic activity, each of which describes a different aspect of an industry's economic contribution. Value added measures the value of output (i.e. goods and services) generated by the entity's factors of production (i.e. labour and capital) as measured in the income to those factors of production. The sum of value added across all entities in the economy equals GDP. Given the relationship to GDP, the value added measure can be thought of as the increased contribution to welfare.

### Value added is the sum of:

- Gross operating surplus (GOS), which represents the value of income generated by the entity's direct capital inputs, generally measured as earnings before interest, tax, depreciation and amortisation (EBITDA).
- Labour income, which represents the value of output generated by the entity's direct labour inputs, as measured by the income to labour.
- Tax on production less subsidy provided for production, which generally includes company taxes and taxes on employment (given the returns to capital before tax (EBITDA) are calculated, company tax is not included or this would double count that tax).

Gross output measures the total value of the goods and services supplied by the entity. This is a broader measure than value added because it is an addition to the value added generated by the entity. It also includes the value of intermediate inputs used by the entity that flow from value added generated by other entities.

# Appendix A.2: Economic contribution modelling

## The economic contribution model calculates both direct and indirect contributions.

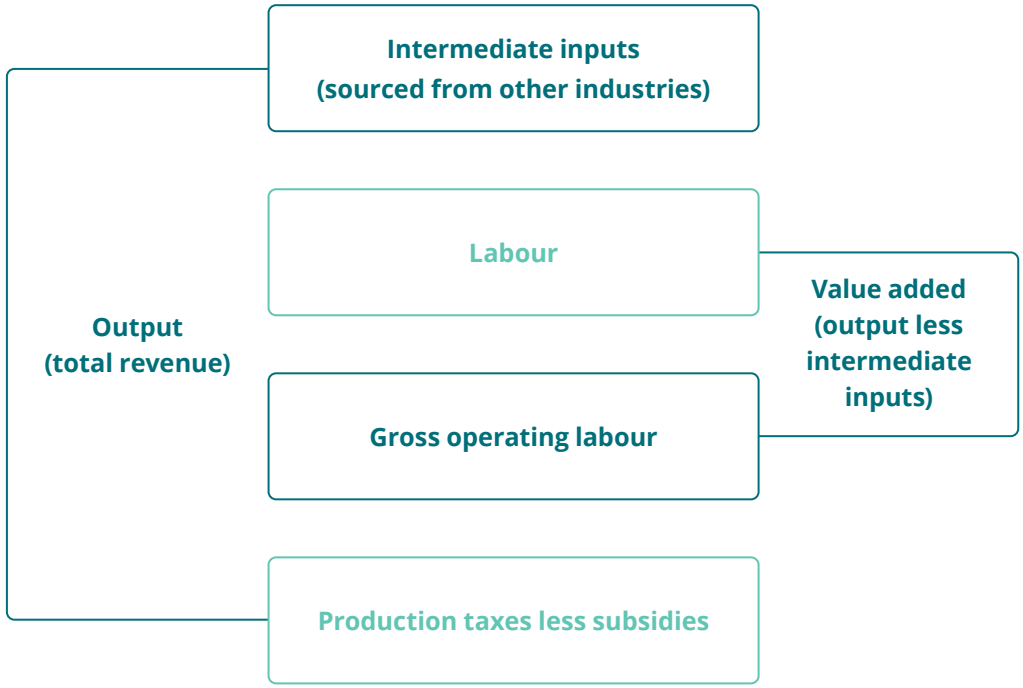
The figure to the right shows the accounting framework used to evaluate economic activity, along with the components that make up gross output. Gross output is the sum of value added and the value of intermediate inputs. Value added can be calculated directly by summing the payments to the primary factors of production, labour (i.e. salaries) and capital (i.e. GOS, or profit), as well as production taxes less subsidies. The value of intermediate inputs can also be calculated directly by summing up expenses related to non-primary factor inputs.

### Direct and indirect contributions

Direct economic contribution is a representation of the flow from labour and capital within the sector of the economy in question. Indirect contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by the sector in question.

Estimation of the indirect economic contribution is undertaken in an input-output (IO) framework using the Australian Bureau of Statistics input-output tables, which report the inputs and outputs of specific sectors of the economy (ABS 2010). The total economic contribution to the economy is the sum of the direct and indirect economic contributions.

**IO model accounting calculations framework**




**Economic contribution of the Northern Territory ICT sector, FY24**

| Commodity | Direct contribution | Indirect contribution | Total contribution |
|---|---|---|---|
| Wages ($m) | 244 | 143 | 387 |
| Returns to capital or Gross Operating Surplus ($m) | 77 | 67 | 144 |
| Other tax less subsidy on production ($m) | 8 | NA | 8 |
| Value added ($m) | 329 | 210 | 538 |

Source: Deloitte Access Economics (2025).

Note: Taxes and subsidies on production relate to sector specific taxes and subsidies. For example, this includes the Research and Development Tax Incentive, the Small Business Digital Adaptation Program rebate and the Venture Capital Limited Partnerships Program (VCLP) tax benefits.

# Appendix A.2: Economic contribution modelling

The economic contribution estimates within this report align well with estimates from other studies, however, the limitations must still be understood and considered when interpreting the results.

### Limitations

In a fundamental sense, economic contribution studies are simply historical accounting exercises. The analysis—as discussed in the report —relies on a national input-output table modelling framework and there are some limitations to this type of modelling framework. The analysis assumes that goods and services provided to the sector are produced by factors of production that are located completely within the state or region defined and that income flows do not leak to other states.

The IO framework and the derivation of the multipliers also assume that the relevant economic activity takes place within an unconstrained environment. That is, an increase in economic activity in one area of the economy does not increase prices and subsequently crowd out economic activity in another area of the economy. As a result, the modelled total and indirect contribution can be regarded as an upper-bound estimate of the contribution made by the supply of intermediate inputs.

Similarly the IO framework does not account for further flow-on benefits as captured in a more dynamic modelling environment like a Computable General Equilibrium model.

There are also limitations specific to the economic contribution modelling of the ICT sector. As the DAE-RIOM provides input-output figures by ANZSIC3, the Professional, Scientific, Computer and Electronic Equipment Manufacturing component of the Professional and Scientific Manufacturing component needed to be extracted and excluded as it does not sit within the ICT sector. To do this, the employment counts within that industry from the 2021 Census was used as a proxy to disaggregate the industry into its ICT and non-ICT components. This limits the accuracy of the economic contribution estimates.

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