

# Information and Communications Technology

FutureNow is the Western Australian Training Council for the creative, leisure and technology industries. The Council is a skills advisory body that represents the voice of industry, advising the State Government on the training and workforce development needs of our industry sectors.

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## Current industry environment

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A digitally fluent labour force that is communicative, adaptive and technically skilled, is vital to the success of Western Australia's future diversified economies. Digital technologies continue to grow in Australia and are outpacing many projected growth forecasts. Australia's ICT workforce grew by 3.5% in 2017, with demand predicted to increase by 100,000 by 2023.<sup>i</sup> The prevalence of ICT workers throughout the broader workforce continues to grow as digital disruption impacts across the economy- over half of Australia's ICT workers are employed outside of the ICT industry. Deloitte Access Economic data shows an estimated increase in the size of the WA workforce from 45,555 in 2018, to 55,105 in 2024, an average annual growth rate of 3.2%.<sup>ii</sup>

### People

The most significant development issue facing the Western Australian ICT industry is workforce related, with local talent being drawn away to digital hubs interstate and abroad, skilled migrants facing greater challenges to residency, and graduate numbers declining. Industry seek a local workforce with high-level, strategic and technical skills to develop and deliver scalable product.

The number of ICT graduates continues to be lower than industry requirements and is currently less than half of what it was at its 2002 peak, with new graduates representing only 1% of the total workforce each year. Western Australian domestic higher education graduates reached their lowest numbers in more than ten years in 2017- dropping below 300,<sup>iii</sup> even as demand is predicted to grow. The cost of gaining a qualification may be a contributing factor, with high contact hours contributing to a comparatively high cost for some Certificate IV and above ICT qualifications. Anecdotal evidence also suggests that perceived job insecurity and a lack of permanent employment opportunities may be an influencing factor.

### Government initiatives

The WA government has a focus on economic diversification, delivering a \$16.7m New Industries Fund (NIF), with applicability for the ICT sector across the initiative. X-TEND WA grants are a part of the fund, open to training and education providers that can develop and implement programs that support WA start-ups, emerging businesses and small-to-medium sized enterprises.<sup>iv</sup> The International Access Fund, also part of the NIF, has been established to help WA's computer games development sector access new global markets.<sup>v</sup>

Three innovation hubs have been established since March 2017, including the Western Australian Data Science Innovation Hub, the Joondalup Innovation Hub focused on cyber security and the MTPConnect WA Life Sciences Hub.<sup>vi</sup> A stated aim of the hubs is to create more tech-related jobs and develop new industries. NOF grants also support programs that educate investors about the potential of investing in early-stage innovation, so they become 'innovator ready'.

# A snapshot of Information Communications Technology

Cyber security | Software & App development | Networking | Web development | Games development | Data analytics |



The digital sector's contribution to GDP is expected to increase by 40% by 2023, to \$65 billion.\*\*

**ICT in Western Australia\*\***

WA's **tech workforce** is predicted to grow at a rate of 3.2% to 2024.

Our tech workforce is predicted to grow from **45,555** in 2018, to **55,105** in 2024.

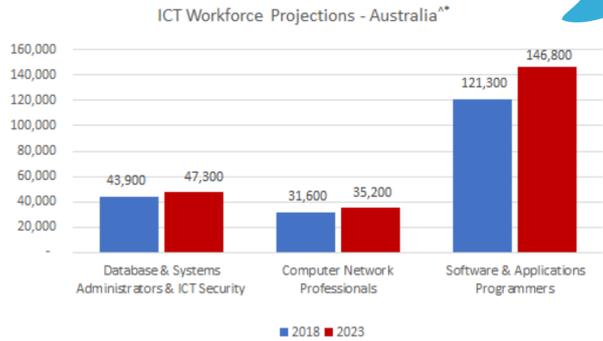
That's the **fasted growth rate** of any state in Australia.

Meanwhile, WA had the greatest **decrease** in IT undergraduate degree completions between 2012-2017\*\*

## The future workforce

**ICT Everywhere**

Over half of **Australia's ICT workforce** are embedded in other industries, including education, health, resources, finance and agriculture.



Demand for technology workers will grow by 100,000 by 2024.\*\*

References:  
 \*\* ACS Australia's Digital Pulse 2019

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## Industry developments

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### Growth Areas

Games development, connected devices, IoT, cloud, data storage, artificial intelligence, additive manufacturing, and network design continue to be areas of growth and rapid technological change. Start-up enterprises offering tech solutions for the Healthcare, Agriculture, Resources and Finance sectors are continuing to see healthy growth in the state. Industry feedback chimes with Deloitte research which suggests demand is growing for software engineers and developers and in cloud computing and cyber security. Industry demand for full-stack developers has grown and is driving a labour shortage in WA. Whilst state labour market statistics show good availability of developers, industry report this skills-profile as difficult to recruit.

Demand is also high for occupations that integrate ICT systems and processes with broader business, such as business development managers and business analysts.

### Cyber security

Cyber security remains an area of primary focus for local industry, in particular with regards to potential skills and labour gaps. Industry note that an early reticence by the broader economy to move to cloud is beginning to wane, driving an expanded need for associated cyber security measures, skills and products. Cyber security Specialists remain top priority on the WA State Priority Occupation List.<sup>vi</sup>

### Data analytics

Data analytics is emerging as the next area of significant industry concern. Rapid advances in data generation are spurring an explosion in new applications of data- for smart cities, in business, government, health, education, resources and at varying levels across virtually every industry. Skills gaps exist in managing, processing and analysing data, and even as advances in artificial intelligence mean that many data related processes are becoming automated, human interpretation is an ever present need. Industry advise there is a role for VET in supporting students to develop data management skills and in providing pathways into higher education data analytics related qualifications. Much as has been the case in the cyber security field, the ICT industry is aware of the potential of new data technologies and is anticipating a significant uptick in demand for embedded data analytics skills, as well as for data specialist workers. Therefore the shortage is characterised as both a skills and projected labour shortage.

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## Workforce opportunities

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As well as in cyber security, and data management and analytics, skills or labour gaps have been identified by industry in a number of areas including 'full-stack' development; UX (user experience); DevOps, .Net, C# and general coding language adaptability; business analytics; interpersonal and emotional intelligence; and resilience and self-care. Some government agencies report difficulty recruiting ITSEC, networking, DevOps and Cloud engineers. These gaps, and the labour market, are a global phenomenon, and competition for skilled labour is high.

The demand for ICT workers throughout the broader workforce continues to grow as digital disruption impacts across the economy- over half of Australia's ICT workers are employed outside of the ICT industry. Employment is often project based, and while this can mean ICT workers are subject to some insecurity, the rapid growth of industry means that opportunities are abundant, and real unemployment of skilled workers is low.

Western Australia will need targeted strategies to grow Perth as a digital hub, and centre for a highly skilled technology workforce. Without this, labour outsourcing and automation may lead to a contraction of the local labour market.

There has been a long term and growing trend towards global outsourcing of lower skill-level ICT-related jobs to emerging economies. As technology evolves, more complex ICT tasks are going to be performable remotely, putting related occupations at risk of offshoring. Automation will also displace some roles, meaning that a successful strategy to grow the ICT workforce in Western Australia will need to focus on growing high-level skills including technical and 'soft' skills.

The ICT industry is almost exclusively urban, and within that, ICT hubs tend to be in the largest urban centres. This trend is observable in Australia, where Western Australia has approximately 7.3% of industry as compared to 10.8% of the population, and over two thirds of the sector is based in Sydney and Melbourne. The majority of existing industry in WA is based in Perth, though the South-West is making notable progress in attracting the 'digital-nomad' creative technologies sector.

While the ICT industry is well positioned to work remotely, which might reduce the necessity for congregating in urban centres, the trend continues owing to the value that highly sought-after workers place on being in these centres, and the strategic advantages of in-person collaboration. WA's ideal position as a digital hub is well recognised by industry, particularly given its position in the world's most populous time zone, and companies including Microsoft and Google have established Perth offices in light of this.

Government and industry strategies around developing liveability; skilled worker retention; skilled migrant attraction; workforce diversity; and local STEAM skills development are likely to have long-term benefits in supporting the growth of Perth as a digital hub, thereby capturing a larger share of technology-related enterprise.

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## Skills and training strategies

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The Western Australian training and education response to rapidly growing demand for cybersecurity specialists has been robust. North and South Metropolitan TAFE launched comprehensive cybersecurity training products in 2018. Edith Cowan University's Security Research Institute is now Australia's largest cybersecurity research and education center.

As well as a need for highly skilled ICT security experts, there is a requirement that the broader workforce has an appropriate level of understanding with regards to cybersecurity, in order to minimise 'weak links' and risks to the broader economy. Nationally a number of cross-sector training products have been developed to embed social media, cybersecurity and general digital skills across a broad range of vocational qualifications as appropriate. The 'units of competency' were developed to ensure that workers across the broader workforce are able to apply essential cyber safety principles and operate effectively in contemporary digitally supported workspaces. ICT-specific vocational qualifications have also been reviewed and made more flexible, in recognition of the rapidly changing needs of industry.

Community health and ICT are the two industry areas which are the subject of a national trial, in the very early stages, which seeks to implement elements of the Strengthening Skills (Joyce) Review.<sup>viii</sup> Implications of the trial Skills Organisations (SOs) in practical terms are not yet clear, however the intention of the changes is to improve the degree of industry engagement in the development of training products.<sup>ix</sup>

Key industry advice in WA around the development and delivery of vocational education with relation to ICT points to two potential areas of focus; improving formalised pathways and immersive training models, so that for instance better use is made of high level traineeships and internships, and; making better use of skill sets, micro-credentialling and just-in-time delivery modes.

## References

All links accessed October 2019

- i [https://www.itnews.com.au/news/australian-it-salaries-spike-528022?eid=1&edate=20190711&utm\\_source=20190711\\_AM&utm\\_medium=newsletter&utm\\_campaign=daily\\_newsletter](https://www.itnews.com.au/news/australian-it-salaries-spike-528022?eid=1&edate=20190711&utm_source=20190711_AM&utm_medium=newsletter&utm_campaign=daily_newsletter)
- ii <https://www.acs.org.au/content/dam/acs/acs-publications/Digital-Pulse-2019-FINAL-Web.pdf>
- iii <http://highereducationstatistics.education.gov.au/>
- iv <https://www.mediastatements.wa.gov.au/Pages/McGowan/2019/10/More-investor-and-start-up-training-on-the-way-to-help-grow-the-economy.aspx>
- v <https://www.mediastatements.wa.gov.au/Pages/McGowan/2019/09/International-Access-Pass-reboots-for-a-second-round-of-grants.aspx>
- vi <https://www.mediastatements.wa.gov.au/Pages/McGowan/2019/08/Innovation-Consortium-a-hub-for-ideas-to-create-WA-jobs.aspx>
- vii <https://www2.dtwd.wa.gov.au/apps/spol/Pages/default.aspx>
- viii <https://www.pmc.gov.au/resource-centre/domestic-policy/vet-review/strengthening-skills-expert-review-australias-vocational-education-and-training-system>
- ix <https://www.voced.edu.au/content/ngv:84509>

## Please Get in Touch

FutureNow is continually seeking broad input from stakeholders and representatives in the Western Australian Information Communications Technology sector. If you would be interested in providing your perspective on this snapshot or related workforce matters for your sector, we would love to hear from you:

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