

Future of Work National Trends and Megatrends

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Abstract

At CSIRO's Data61 we are exploring the evolving nature of work. A number of Megatrends are evident, including an ageing population with growing demand for services, more flexible working environments, more opportunities for entrepreneurs and a workforce with increasing skill levels. The exponential rate of technological change continues to disrupt employment, automating existing jobs and creating new ones, while changing the structure of many industries. As with previous technological revolutions, prophecies of doom for the human workforce will prove exaggerated. However, the skills required in the labour market are changing rapidly. Interpersonal skills are showing the strongest growth in demand, while the market for many technical skills is declining. Workers without the right skills for the future labour market are at growing risk of becoming marginalised from the workforce. There is also evidence of growing regional disparities as the new 'knowledge work' is increasingly concentrated in our major cities.

Summary of the address

New technologies

The recent reports of a large proportion of jobs being replaced by technology are more extreme than true. In all previous periods of technological growth more jobs have been created than have been destroyed. However, historically as now, the jobs created require new capabilities and knowledge and many workers will be displaced from existing jobs. As many individual workers become displaced, this presents challenges for many communities. (6mins)

Changing workforce demographics

Sharp rises in life expectancy - early retirement will be out of the reach of many. There will be greater demand for care services and care workers and this will have an impact on the supply and demand for human labour. Manufacturing work is not 'dead' despite predictions but it is in decline. Sharpest rises in employment are in the healthcare sector and the professional services. (8mins)

Workforce participation rates are changing with a decline in the participation rate of single men particularly (rather than married men). An increasing number of men are dropping out of the labour force and this may be due to an increasing rate of disability i.e. a growing number of people who are unable to participate in the workforce. Workforce participation of married women is increasing.

Entrepreneurship is on the rise for digital start-ups, but this contrasts with a decline in the overall rate of new business entry in Australia and internationally. The overall level of entrepreneurship in our economy is falling slightly overall - as it is worldwide.

Disruptive business models

The media reports of rises in freelancing, portfolio and flexible work are not supported in the CSIRO and census data. Many companies still find that freelancing is not the best way to attract and retain the best staff. In theory, technology will make freelancing more common as it becomes more economically viable - but this is not yet supported by the data. Digital products in digital marketplaces scale faster with lower expenses than before and now allow for new reputation networks. This has implications for universities and education providers - as there is increased competition from new digital players but students still place higher value on good teachers and contact with peers. (19 mins)

Changes in skill demands

The sharp employment increases have been in the most highly skilled occupations - this has been a trend over the past 30 years. Most of the jobs created are not in ICT but technology is enhancing productivity in many occupations. For example, the more highly skilled roles in banks such as financial advisers and brokers are growing whilst the number of bank tellers is declining.

Strongest demand for workforce skills is in: caring for others; communication; teaching and training; decision making/problem solving; working with information. Highest growth in skills demand is in communication and interpersonal skills. Whereas demand for technical skills in making, building and repairing are declining.

A surprising result from the CSIRO data is that there is only very limited growth in demand for specific STEM skills, but large growth in the demand for the generic STEM skills of scientific and critical thinking and analytical reasoning. Engineering and technology specific skills are still in demand. Interacting with computers is in demand. However, only the most highly skilled employees in ICT have seen increased job demand, whereas medium and lower skilled ICT jobs are in decline because computers are now replacing those workers or the work is increasingly being sent offshore. (24 mins)

Jobs of the future

STEM skills are clearly still important - particularly working with technology, rather than working in highly specialised STEM work. Working with technology is absolutely essential and is the key to productivity.

“Surprisingly, technology is actually increasing collaboration and the value of collaboration. The technology is automating the routine jobs that many of us used to fill chunks of our day with. We are left with the more complex and tricky work where we build support and work with interdisciplinary teams to solve problems for clients. We are actually needing to work together more. It is being shown that the most successful workers need to combine those technical and the interpersonal skills. Even people with very strong STEM skills who lack interpersonal skills are not necessarily going to do so well”

There is a growing need to combine technical and interpersonal skills. There is a need for innovation and entrepreneurship. Most innovation is not about inventing new products, but rather finding new things to do with these products and new ways to work with existing products and services. Innovation is not about inventing a mobile phone, for example, but about finding something new to do with a mobile phone.

Lifelong learning is increasingly important and new modular or subscription model of education provision may become more desirable. (28 mins)

“People skills are becoming more and more important. What we’ve got that the technology doesn’t is our humanity - in the economic parlance, that’s our comparative advantage and we have to use it. There are growing opportunities to use technology to help people and that’s where most workers are going to add value.”

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- See slides and full video of the presentation at: <http://westernsydney.edu.au/fowforums>
 - See the full report: Tomorrow’s Digitally Enabled Workforce: Megatrends and Scenarios for Jobs and Employment in Australia over the Coming Twenty Years
<https://data61.csiro.au/en/Our-Work/Future-Cities/Planning-sustainable-infrastructure/Tomorrows-Digitally-Enabled-Workforce>