![National Disability Services logo]

Submission to the Australian Productivity Commission on the potential impact of disruptive digital technology

It is timely for the Productivity Commission to be undertaking research on the potential impact of disruptive technologies and business models (for example 'Uber') on the economy and regulation. This submission focuses on the disability sector, where new technologies are beginning to generate considerable opportunities and challenges as the National Disability Insurance Scheme (NDIS) takes shape.

There is no denying the potential of digital technology to solve some longstanding and historically-entrenched problems; however it also poses risks to disability access and the quality of disability support services. This submission highlights a range of digital technologies that are disrupting the disability sector, as well as innovations that are emerging. It then outlines key concerns and challenges with these various developments.

Potential benefits

Personalised digital assistive technology can enhance independence
History has shown how advances in general use technology can replace the reliance on human support in the disability sector. For example, mobile phones and internet shopping have reduced the reliance on both informal and formal disability support.

There has also been continual development of technology specifically designed to assist people with disability that has radically improved life options and often reduced reliance on residential care[1]. This has included digital technology such as various Wi-Fi based environmental control devices[2]. Many customised and complex products such as electronic lifting hoists, robotic limbs, communication software and vehicle modifications are also now relying on digital interfaces.

While much of this technology and its benefits are known, its use is restricted by logistical and administrative hurdles impeding upfront investment and adapting support service models[3]. The NDIS should help change this situation by funding plans focused on individual outcomes and which enable more flexible investment for long-term gain.

Telecare and telehealth may enable more people to live independently
Telecare and telehealth services are being explored in aged-care, health care and, to a

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[1] Layton, N. & Wilson, E. (2009) Re-conceptualizing Disability and Assistive Technology: Australian consumers driving policy change. Assistive Technology, Volume 21, 135-141.

Salman, S. 2013. Using assistive technology to support personalisation in social care. UK.

[2] See examples in a virtual house: www.abilityhouse.org.au

[3] Layton, N; Wilson, E; Colgan, S; Moodie, M & Carter, R. 2010. The Equipping Inclusion Studies: Assistive Technology Use and Outcomes in Victoria. Burwood: School of Health and Social Development and Deakin Health Economics, Deakin University.

lesser extent, the disability sector, particularly in Europe where the pressures from an ageing population are greater than in Australia[4].

Telecare is an integrated system of communication devices, personal and environmental sensors operating in the home and remotely, for checking in and responding to emergencies. It can also include remote orientation support through GPS navigation and a staffed helpdesk. It is a service that enables people to live independently. Additionally, 24 hour monitoring can ensure that information is acted on immediately and the most appropriate response taken (see case studies[5]). Sometimes the response involves an informal or voluntary network, including family and neighbours, as well as paid support. The level of confidence provided by telecare enables people to live in their own home for longer, delaying the move to expensive residential facility with rostered staff.

Various UK pilot studies have provided evidence that investment in these technologies results in improvements for both individual wellbeing and wider economic outcomes. This evidence was sufficiently compelling to prompt UK policy decision-makers to invest further[6]. However, we do not yet know how well telecare services would work across the complexity of disability services or indeed in Australian-specific contexts. There are some Australian products developed with telecare dimensions, such as Jeenee Mobile[7]. Messaging apps or more sophisticated 'therapy apps' are also increasingly used to provide instant feedback and communication between clients and therapists or to support providers.

Remote service delivery could reach under-serviced populations
A potentially expanding area is remote support delivery through telecommunications, video conferencing, Internet, video games or virtual worlds[8]. Remote services can range from social support (digital participation services), advice or training, through to clinical therapy. For example, people with cognitive disability have been able to learn social skills through virtual worlds and games and this has enabled them to participate more fully in society. This

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[4]Department of Health. 2011. Whole System Demonstrator Programme, Headline Findings. UK

Cruickshank J. 2010. Healthcare without Walls: A framework for delivering telehealth at scale.

Alaszewski, A., and Cappello, R., University of Kent, Centre for Health Services Studies. 2006. Piloting Telecare in Kent County Council: the key lessons. Final report, Canterbury

[5] See www.vodg.org.uk and www.scie.org.uk/socialcaretv/

[6] See http://3millionlives.co.uk/ launched in the UK in 2012 by the UK Department of Health in partnership with industry to benefit "people with long term conditions and/or social care needs through the use of telehealth and telecare service.

[7] **Jeenee Mobile** is a not-for-profit Telco (an initiative of Community Connections Australia). It tailors mobile digital technology to help people with disability to live more independent lives. E.g. security and safety features on a mobile device provide some people with confidence to catch a bus on their own for the first time (reducing need for support workers). The features include a help icon/button which connects directly to a call center for assistance that may include working out when the next accessible bus will arrive or dispatching support for a medical emergency (drawing on secure and discrete GPS tracking). Another example is tailored tablet software that enables an individual with cerebral palsy to wave to answer the phone and send the caller to voice mail.

[8] Enaksa Garde, E and Bruce, W. 2013. Literature Review: Specialist Support at A distance, Scope, NDIA Practical Design Fund Project

particular innovation may require one-on-one skilled support from people familiar with virtual worlds or gaming technology[9].

Other less radical innovations, such as the use of information technology to deliver advice and therapy services, may provide scope to support previously unserved populations and thus improve outcomes. These may reduce costs related to travel. However, development of many of these services and related evidence of efficacy is only just emerging. Similar to telecare there are also a range of ethical considerations related to privacy and confidentially of information and quality control around service delivery that may be difficult to manage in remote service delivery.

Digital engagement systems can help match support workers with demand
It is anticipated that digital technology may provide solutions to the logistical challenge of deploying appropriately skilled workers where and when support is needed in a way that is efficient and suits workers as well as participant (client) preferences. A mix of mobile or online payment facilities, mobile employee activity records and online engagement and rostering could allow remote and efficient matching of workers with demand. When combined with a staff and client database it can include functions for remote updating of worker availability and skills, search to dispatch the most appropriate and cost effective support, remote access to participant information, and integrated payroll and billing.

Currently area-based rostering staff bank systems, which aim to solve the flexible deployment challenge, are mostly theoretical or fledgling amongst traditional employers in the not-for profit disability support sector[10]. More controversial developments that do not support traditional employment relationships are also being explored in the disability sector using 'Uber' style systems. These provide a platform/e-market where clients can find workers with whom to contract directly. They also provide payment and feedback systems but do not negotiate the terms on which a worker is contracted to do a job. Hire Up is an example.

This model may help address an expected trend (propelled by the NDIS) towards demand for short shifts at any hour of the week and in more diverse settings. The response already observed is a tendency for organisations to casualise their workforce and the resulting disjointed and insecure hours of casual work may make it hard to attract workers seeking full-time work and a career in disability support. However, digital engagement systems may provide one solution where workers can determine when they are available. These increase worker flexibility, which can be attractive to some workers with other commitments and may be a viable alternative for service delivery if there are sufficient workers within a staff bank.

E-markets for disability support
The National Disability Insurance Agency (NDIA) has been promising the development of an e-market and progressive interface with its funding and allocation system. If designed

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[9] Stendal, K. 2012. How do People with Disability Use and Experience Virtual Worlds and ICT: A Literature Review. Molde University College / University of Agder, Norway, Journal of Virtual Worlds Research. Vol 5, N0 1 and Balandin, S. 2012. Virtual Worlds: A new tool? Jessie Hetherington Educational Research Centre a presentation to the 2012 Australasian Society of Intellectual Disability Conference in New Zealand

[10] Radius Disability Services investigated work-banks in a NDIA Practical Design Projects 2013.

well, this would offer the potential to enhance the connections consumers and providers can make to relevant information, advice and assessment services. It would also offer an opportunity to collect and convey useful feedback data (similar to 'TripAdvisor' but ideally nuanced to ensure feedback is free from conflict of interest, moderated and appropriately accessible) and monitor who is accessing information and support.

Potential Risks

New digital technologies may exclude some people with disability
There are several regulatory instruments based on human rights that require communication mediums, including online material, to be provided in formats that are accessible to people with disability. However, constant ongoing monitoring is required to ensure the obligations are met. Moreover, technology is constantly changing and the various standards struggle to keep up to date. For example, while many retailers have made their websites accessible, they now provide their service innovations through 'apps' which are often not accessible.

As e-markets become the norm and, for many, the only way they can access goods and services, it is increasingly important that they are accessible to people with disability. For example, flights are now mainly booked via online systems and the parallel phone system has become very slow. A blind woman who could not access the online system was required to wait over two hours to book flights.

There needs to be recognition that some people do not have access to digital technology due to their environmental, financial and cultural circumstances. These people should not be excluded from access to essential services and information.

Theft, fraud and bullying
There are known risks to all consumers whose presence and information are available online. These include financial theft, fraud, identity theft and bullying. Some people with disability may be particularly vulnerable to these risks and become the target of scams. If people with disability are expected to use online systems to access support, information and social networks, there will need to be extra vigilance to ensure their privacy and safety are properly respected and protected. This must be done in a way that is specifically tailored to individual disability access needs as well as the needs of people who require support with decision-making. In some cases this will require additional resourcing and regulation.

Social isolation
For some people with disability the support they receive, as well as perhaps their regular trips to the shops, can be the main personal contact they have with their communities. If they increasingly work remotely from home, shop online and use electronic assistive and monitoring equipment to replace support workers, they may become more disconnected and socially isolated. Again, this is a risk for all people but can be particularly significant for people with disability. People with disability are over-represented among people experiencing social isolation.

Privacy and ethical concerns
Telecare is not a 'fit and forget' type of monitoring system like smoke alarms; it requires user awareness and engagement, induction, education and encouragement by staff and

informal carers who also need to understand and act on the technology[11]. This will involve development of some new skills and knowledge by all stakeholders. The privacy and ethical concerns associated with 24 hour monitoring systems[12] will need to be considered.

Another key part of new telecare service models is likely to involve the coordination and building of new informal support networks (including neighbours) as part of the response team. This will require community engagement and volunteer coordination skills. While there are ethical considerations in engaging neighbours and friends to be part of emergency care networks, it can be an effective way to prevent the need for expensive 24 hour residential support options and building community engagement.

CCTV monitoring has also been mooted as an option for preventing and detecting abuse in the context of care, particularly for children with disability. Again, there are significant privacy concerns that need to be considered in relation to the use of CCTV technology and resourcing implications if it is to be used responsibly.

Workforce implications

Information and communication technology increasingly pervades our lives. Most of us now communicate through instant messaging, text, email, and video and we collaborate through social media, blogs and wikis. In a very short amount of time these technologies have become commonplace. However, while the general population is becoming more technologically adept, a UK study suggests that the lack of workforce development in relation to technology has slowed the wider adoption and acceptance of technology such as Telecare.[13] Adapting to technology change takes time for a workforce, including introducing the cultural change necessary to accept and adopt it.

Adopting and understanding the various new technologies that can benefit the disability sector requires new types of workers and skills, as well as development of the existing workforce:

- There will be some changed and/or growing workforce demands to address the information, assessment, prescription, installation, helpdesk and ongoing servicing requirements of some new technology.

- A more technologically aware direct support workforce will be required to work alongside or improve the technology use. A technologically proficient workforce (e.g. in ICT skills) can improve performance of both the administrative part of their roles and the direct support they provide.

- Smart use of some assistive technology support options and telecare could reduce the demand for rostered direct support workers.

- There is scope for remote specialised supervision of workers or perhaps informal workers acting locally. Advice and supervision could be provided by experts (including

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[11] Mansfield, L., Halloran, J. 2011. Human Factors and Assistive technology. TSA Conference, Coventary University and Obit Heart of England. www.housinglin.org.uk

[12] Perry, P. Beyer, S. Francis, J. and Holmes, P. 2010, Ethical issues in the use of telecare. Social Care Institute for Excellence. Great Britain - http://www.scie.org.uk/publications/reports/report30.pdf

[13] Circle - Centre for International Research on Care, Labour and Equalities. 2012. Workforce Development for Assisted Living Technology: understanding roles, delivery and workforce needs

medical, positive behaviour support, speech pathology and more) to family or less qualified support workers who are providing direct care. This will have workforce regulation implications.

- There are a number of online training options offered to disability support workers which may not be effective without appropriate follow-up supervision and support. In the context of digital engagement systems, this is a particular concern for a workforce that does not have regulated qualification or accreditation requirements.

Impacts of digital staff rostering or engagement on worker conditions
The theory behind digital staff rostering is that collectively a group of casual, permanent full-time and part-time employees can be productively deployed if the group of participants they support is large enough to even out the impact of fluctuating demand. A system like this should ideally be more attractive to untapped potential workers, as well as existing staff, and aid flexible deployment of employees as opposed to casual staff. However, achieving this may require changes to employment relations regulation and in particular the relevant Social, Community, Home Care and Disability Services (SCHADS) Industry Award. Currently, roster change provisions can make it difficult for employers. For example, employers would be more likely to offer permanent jobs if they were confident they could change rosters with agreement and average minimum pay/hours across agreed periods of time without being sanctioned by a court.

On the other hand if casualisation or an 'Uber' style model becomes more common there will be significant implications for how workers are supervised, mentored and upskilled. This will affect disability sector quality controls, safeguards and accountability arrangements. At the moment most regulations are actioned through organisations and the registration of disability provider organisations. If in future workers are deployed outside of organisational accountability controls, there may need to be more direct quality controls on workers and/or the consumers who employ them.

There will also be a need to examine what employer responsibilities an individual with disability may have towards a support worker they regularly contract with, when the agreement is made through an online platform. At what point will the worker become an 'employee' if there are regular hours and work requirements? And if so what health and safety, insurance, training and working condition obligations will there be?

'Uber' style digital engagement may lead to market failure
In addition to worker implications, the digital staff engagement systems that are being proposed may undercut other providers and ultimately lead to the exit of some essential and good service providers from the market. This could cause market failure for some forms of disability support that require additional supervision, expert customer service and innovation that cannot be delivered through an 'Uber' style system. For example, some people have very specific personal care and feeding requirements that a support service trains staff to provide. These services may not be viable and become unavailable if the majority of their customers and workers have left to use an alternative more casualised system.

Similarly, it will not be a fair playing field if the system continues to require traditional services to undertake quality compliance activities and meet costs that are not required of competing e-markets. The traditional services will potentially be at a competitive

disadvantage in two areas – the wages they can offer workers and prices they can offer clients.

Impact of outsourcing to other jurisdictions
It is possible that some services that can be offered in a virtual format, such as some types of therapy and advice, could be offered by international consultants from overseas sites that are not subject to Australian legislation. Careful consideration needs to be given to when and how to prevent this occurring if it is deemed to cause a risk to consumers. These services may also undercut prices for some local services.

Regulation, monitoring and investment

While regulation has the potential to hinder good digital technology developments in the disability sector, it also plays an essential role in protecting consumers and quality vibrant markets. Regulatory innovation will be essential to get the balance right.

The Government must take a stewardship role which closely monitors disability markets and responds swiftly with appropriate regulation or other interventions as required. Due to the many unknown impacts of both the NDIS and digital disruption, there is a need to invest in careful tracking of risks. This is the only way the Government can know when it might need to intervene in a timely way. It must also establish nimble enough regulatory structures so that regulation can be responsive to positive digital disruption while safeguarding people with disability and monitoring the economic and social impact. This may involve continuing a learn/build culture which trials new approaches such as telecare 'without prejudice' while maintaining strong stakeholder relationships so that key information is kept before decision-makers.

There is no doubt that new and disruptive technologies will play a role in how NDIS markets work through the proposed 'e-market' and the delivery of support. A key to success will be the provision of enhanced digital technology information, advice, helpdesk and servicing support. This investment in information, linkages and capacity building should draw on disability specific technology expertise and partner with broader technology markets to ensure links are made, opportunities are understood and benefits are reaped.

The disability support market must be sufficiently flexible to adapt and develop future support arrangements that are yet to be thought of but which may dramatically improve support options through technology. It is inherently hard to illustrate this potential, but an example on the horizon is software for instant Auslan interpreting (translation on a hand held device in both directions) which could have a major impact on Deaf access to information and reduce demand for interpreters. Another example often speculated about is self-driving cars.

If the market is to be responsive it requires investment to ensure we grow a more technologically proficient and aware disability sector and workforce. Our sector should be identified as an Australian innovation sector that warrants a major research and innovation agenda.

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National Disability Services is the peak industry body for non-government disability services. Its purpose is to promote and advance services for people with disability. Its Australia-wide membership includes over 1100 non-government organisations, which support people with all forms of disability. Its members collectively provide the full range of disability services—from accommodation support, respite and therapy to community access and employment. NDS provides information and networking opportunities to its members and policy advice to State, Territory and Federal governments.