



Human Rights and Technology

Response to Australian Human Rights Commission
Issues Paper

October 2018

Executive Summary

The University of Melbourne welcomes the Australian Human Rights Commission's 'Human Rights and Technology' Issues Paper. The Paper makes a timely contribution to the conversation around how human rights are to be respected and promoted in the context of responsible technological advancement.

The University held a series of three roundtable events in September 2018, drawing together leading researchers from various disciplines to discuss both the Issues Paper and the human rights-related challenges associated with emerging technologies. The comments provided below are the product of those roundtable discussions. A key aim is for the submission to reflect the multi-disciplinary approach we believe is essential to meeting the challenges generated by new technologies. A list of contributors has been included at the end of the submission.

The submission does not attempt to address all the topics that are discussed in the Issues Paper. Instead, we offer some comments that speak to the general approach that ought to be taken to human rights and technology – outlining the 'human rights by default design' principle and its implication – followed by responses to a selection of the consultation questions contained in the Issues Paper. These responses include some discussion of the threats and opportunities arising from new technology (in reply to Question 2), the challenges relating to AI-informed decision making (in reply to Questions 5, 6 and 7) and issues relating to accessible technology and persons with disability (in reply to Question 8).

We also note that Human Rights Commissioner Ed Santow was invited to one of the roundtable sessions. We greatly appreciate the Commissioner's attendance and his insights into the background of the AHRC's work in this area.

For further information, or to discuss the submission, Professor Liz Sonenberg, Pro Vice-Chancellor (Research Infrastructure and Systems), can be contacted at l.sonenberg@unimelb.edu.au or on (03) 9035 8619.

General comments

Human rights and responsible innovation

Much of what is challenging in this area is the rapid rate of technological change, and the problems that this poses to existing laws intended to safeguard human rights. The starting point for our thinking about these issues is that human rights and responsible digital innovation must *not* be seen as exclusive of each other. As the Issues Paper notes, new technologies are often accompanied by risks, but also promise significant benefits. If developed properly, new technology can help disrupt patterns of exclusion and contribute to Australia's economic and social wellbeing. The appropriate response to the flow of new technologies is to establish a framework that attends to the genuine risks that they pose without stifling their development.

Existing regulatory arrangements in the domains of privacy and consumer rights, as well as human rights, need to be elaborated and improved to properly accommodate the changing opportunities and risks associated with novel technologies. There will be new roles for certification, changed concepts of consent, and an ongoing need for education of consumers, policy makers and regulators. Given the scope and influence of new technology, we encourage a co-regulatory response that draws input from regulators across relevant sectors.

'Human rights by design and default'

The University of Melbourne suggests the adoption of a principle of 'human rights by design and default'. The motivating insight for this principle is that human rights ought to inform the design of new technology from the very beginning. This contrasts with an approach that seeks to correct already developed products and services that would otherwise fall short of a human rights standard. This means that human rights-related considerations should be present in the research that leads to new technologies, right through to product and service development and delivery. It also means that the governance and regulatory framework that provides oversight of new technologies develops in parallel to the technology itself, enabling responsible innovation.

A multi-disciplinary approach

The Issues Paper understandably has a focus on ensuring that the legal and regulatory framework intended to safeguard human rights in Australia remains adequate to the constantly changing digital environment. However, we cannot afford to become narrowly focussed on the legal implications of new technology. The questions that arise in this context are in many cases social, ethical and economic in nature. For example, issues relating to algorithmic bias and discrimination raise questions as to when discrimination between individual cases is 'unfair'; an ethical (as well as a legal) question. The regulation of new digital products ultimately needs to be sensitive to the relevant economic conditions in order to be effective, thus demanding the insights of economists, as well as legal scholars and technical experts. A siloed approach to tackling the implications of new technology will fail. What is called for is a broad, multi-disciplinary response to emerging technologies.

This response will address the way that products and services are designed and provided, and the various arms of the legal and regulatory framework that applies to new technology. It will draw from the research community that extends beyond Technology and Law, into the Humanities and Social Sciences. A broad approach of this kind reflects the scale of the issues raised in the Paper. The following comments explore selected issues in more detail, and flag some areas in which University of Melbourne researchers are already actively engaged.

A new Technology Commissioner

The University of Melbourne suggests consideration of a new Chair – a Technology Commissioner – being established within the Human Rights Commission to have oversight of this area. The legal

framework for protecting human rights in the context of new technology is dispersed across a range of Acts and instruments, including the Privacy Act, various anti-discrimination laws, and Australian Consumer Law. Attempting to re-build this legal framework from the ground up is neither desirable nor practically feasible. Moreover, in view of the rapidly changing context that laws and regulations need to grapple with, a “set and forget” approach to this area is inappropriate. A new Chair would enable a cohesive approach across Government to engaging with these challenges, working with industry and the research sector.

The University of Melbourne would welcome the opportunity to further discuss these topics with the Human Rights Commission.

Response to consultation questions

Threats and opportunities arising from new technology

Question 2: Noting that particular groups within the Australian community can experience new technology differently, what are the key issues regarding new technologies for these groups of people (such as children and young people; older people; women and girls; LGBTI people; people of culturally and linguistically diverse backgrounds; Aboriginal and Torres Strait Islander peoples)?

New technology typically impacts different cohorts in different ways. The Issues Paper rightly gives significant attention to this basic point. It is important that an understanding of the different ways in which particular groups interact with, and are affected by, technological transformation is integrated into the design process and into the policy response. In very broad terms, the two key issues concern (a) access (or lack of access) to new technologies for particular groups, and (b) the effects of those new technologies for particular groups.

In some cases, new technology promises to disrupt patterns of disadvantage, offering unique benefits to members of traditionally marginalised groups. Smart speaker technology represents a mere convenience for many. For people with vision impairment, this technology can provide a means of media access and a level of social connection that would otherwise be unavailable.

Of course, it is also true that technology can adversely impact demographic cohorts that are already disadvantaged, thereby further entrenching inequality. Women, LGBTI people and members of ethnic minorities contend with prejudice that is both harmful in itself and that drives unequal outcomes across a range of areas. There is a danger that prejudice gets ‘built in’ to new technology, for example where AI-applications unfairly discriminate against individuals based on their membership of a particular group. This brings the risk of compounding unequal outcomes relating, for example, to employment.

Similarly, low socio-economic and regional communities suffer from lower levels of access to education, employment and social amenity. Since lower levels of material wealth mean that members of these communities find themselves on the wrong side of the “digital divide”, there is a danger that digital advances exacerbate unequal access. Those at the lower end of the socio-economic scale could find themselves doubly disadvantaged by digital disruption, to the extent that they occupy jobs that are more susceptible to being displaced than other parts of the labour market.

Grappling with the digital divide is not just a case of defining those who have access against those who do not. A range of other factors should be taken into account, including: level of comprehension and self-efficacy of use of digital technologies; general level of digital literacy and; groups that have been either victims of online crimes or who are more susceptible to online harms, or who have a fear of crimes or other harms caused by interacting with digital technologies.

We should also note that groups not yet identified may become disadvantaged by the transition to new technologies. This highlights the importance of publicly funded research to monitor the ‘emerging disadvantaged’, and to enact interventions that address this.

AI-informed decision making

Question 5. How well are human rights protected and promoted in AI-informed decision making? In particular, what are some practical examples of how AI-informed decision making can protect or threaten human rights?

AI-informed decision making is becoming increasingly prevalent across a range of areas. It is now used for the purposes of credit scoring, recruiting, predictive policing and in the criminal justice

system. The following comments focus on the criminal justice system, but there are significant human rights implications in the use of AI applications across each of these domains.

The application of AI-informed decision making is becoming common in the criminal justice system. There is a risk that the right to liberty and the right to non-discrimination may be compromised if the relevant applications are not developed in a carefully considered manner. In Australia, AI-informed risk assessment tools are widely used for the purposes of risk management in correctional settings and for predictive purposes in post-sentence detention. Post-sentence preventive detention and supervision schemes exist in multiple jurisdictions¹: these schemes are regarded as problematic, independent of the use of AI-informed risk assessment. While the High Court of Australia has held that post-sentence detention is constitutional,² eleven of the thirteen members of the United Nations Human Rights Committee have agreed that such schemes breach Article 9(1) of the International Covenant on Civil and Political Rights.³

Such schemes often call upon forensic psychologists and psychiatrists to provide a predictive risk assessment of individual cases. Usually, the assessment involves the use of an algorithm that uses empirically identified risk factors to generate a risk score. Much of the research in this area is focused on the risks concerning future violence: there are more than 200 violence risk assessment tools available.⁴

The use of these tools to inform decisions based on a prediction of the likelihood of future offences is problematic:

- **Transparency:** there are serious concerns relating to the transparency of the algorithms used. Where the particular method by which a decision was arrived at is unclear, there is a danger that the defendant is prevented from challenging the grounds for that decision. This was the central issue in *Loomis v Wisconsin 2017*, discussed in the Issues Paper (p.29).
- **Reliability and accuracy:** there are concerns relating to the reliability and accuracy of AI-informed risk assessment in a courtroom. Assessment outcomes may deliver a “false positive” – a finding that the individual concerned is at risk of harming others when this is not the case – resulting in unnecessary detention.
- **Application of risk assessment across differing populations:** The application of assessment tools to members of particular demographic cohorts can be problematic to the extent that the tool was predominantly developed and tested on members who do not belong to that cohort. In one case, the Supreme Court of Canada found that Correctional Services Canada breached its obligation to take all reasonable steps to ensure that information about an offender that it uses is as accurate as possible.⁵ This was on the basis that in assessing the risk of Indigenous offenders, it used actuarial risk assessment tools that were developed and tested on predominantly non-Indigenous populations. The use of such tools in relation to Indigenous offenders in Australia has also been questioned.⁶

¹ See in general Bernadette McSherry, *Managing Fear: The Law and Ethics of Preventive Detention and Risk Assessment* (New York: Routledge, 2014).

² *Fardon v Attorney-General (Qld)* [2004] 223 CLR 575; Kirby J dissenting.

³ *Re Fardon v Australia* [2010] Human Rights Committee, Communication No. 1629/2007 UN Doc CCPR/C/98/D/1629/2007 (12 April 2010); *Re Tillman v Australia* [2010] Human Rights Committee, Communication No. 1635/2007, UN Doc CCPR/C/98/D/1635/2007 (12 April 2010).

⁴ Seena Fazel and Achim Wolf, “Selecting a risk assessment tool to use in practice: A 10-point guide” (2018) 21(2) *Evidence Based Mental Health*, 41-43.

⁵ See *Ewart v Canada* [2018] CCC 30.

⁶ *Attorney-General (Qld) v McLean* [2006] QSC 137, para [26]; *Attorney-General (Qld) v George* [2009] QSC 2, para [33].

These problems point to the need for clear guidelines for – and constraints upon – the use of AI-informed risk assessment in a criminal justice setting. Justice Glazebrook of the New Zealand Court of Appeal has attempted to formulate such guidelines; these could serve as a regulatory model for this area of AI-informed decision-making.⁷

Question 6. How should Australian law protect human rights in respect of AI-informed decision making? In particular:

- a) **What should be the overarching objectives of regulation in this area?**
- b) **What principles should be applied to achieve these objectives?**

The overarching objective for Australian law should be the provision of a regulatory space that promotes and fosters beneficial innovation consistent with respect for human rights. The approach should be oriented around a basic principle of human rights by design and default, drawing on and expanding beyond the now established idea of ‘privacy by design’, or ‘data protection by design and default’ embodied in the EU General Data Protection Regulation (GDPR).

Importantly, the University of Melbourne urges a multi-faceted response to respecting human rights in the context of digital automation. The legal framework is an important part of this response, but it is only part of it. The reply to Question 7 below notes non-legal measures that should be considered to help ensure that human rights are protected and advanced in the face of new technologies. Before coming to these, we offer some general points that ought to guide the approach to developing laws and regulation that deal with new technology.

AI and non-AI technology

The Issues Paper has a strong focus on decision-making using AI, with section 6 of the Paper dedicated to the human rights implications of AI technology. While the interest in AI is understandable given its dramatic increase in recent years, the University of Melbourne cautions against attempts to develop laws that are specific to AI, to the exclusion of other technology. There are two reasons for this:

- i. From a legal perspective, the distinction between AI and non-AI technology is irrelevant. AI is a branch of computer science; AI algorithms are just algorithms. There is no reason why a law or a regulation should apply to an AI algorithm but not to other algorithms that are tasked with the same decisions. While there may be additional challenges of opacity applying to modern machine learning techniques, the regulatory response should be independent of algorithmic implementation details.
- ii. Attempting to introduce AI-specific regulations is problematic, given the lack of a clear or widely accepted definition of AI. Such an attempt would likely result in the wrong kind of behaviour on organisations who are targeted by those legal rules. Rather than aiming to comply, organisations would invest time and effort arguing that the regulations do not apply to them because what they are doing does not count as ‘AI’.

Accuracy

Despite the interest in this area, there is some confusion surrounding what ‘accuracy’ in AI actually means. In many cases, AI informed decision-making should not be viewed in binary terms, i.e. as issuing either a correct or an incorrect answer to a given question. Such an approach is often neither realistic nor desirable:

- This may be because the AI application is predictive in nature, providing an assessment that is probabilistic and that reflects the *likelihood* of an event taking place, rather than a statement as to whether the event will (or will not) take place.

⁷ See *R v Peta* [2007] 2 NZLR 627, CA., paras [51]-[53].

- In other cases, incomplete input data – arising from imprecise measurements, missing observations, human error or linguistic ambiguities – means that a degree of uncertainty is inevitable. This is an issue across many problem areas, including health and finance.

The key point is that such uncertainty can have positive or negative effects. Negative effects should be addressed and/or rectified. On the other hand, sometimes an uncertain measurement can be beneficial as it captures the essence of the problem or ‘gold standard’, e.g. a range of expert opinions.

From a research standpoint, what is needed are methods to quantify and model uncertain data to optimise the datamining and hence decision support capabilities of the AI system when faced with some inherent uncertainty. There is a further question of whether it is reasonable or appropriate to place expectations on AI-enabled decision making that go beyond that which is expected of human decision making.

Explainable AI

Given both the significance of decisions in which AI technology is now involved and the complicated nature of the applications in question, it is important for individuals affected to understand why AI applications arrive at the decisions they do. The currently active research topic of ‘Explainable AI’ aims to address the reasons for AI decision making, such that the relevant reasoning can be understood by humans. Explainability is essential to the legitimacy of AI decision making.⁸

Differential privacy

Differential privacy is a relatively new framework for guaranteeing the privacy of individuals in a sensitive dataset, when releasing aggregate statistics or machine-learned models on such data. This should be part of the approach to privacy-by-design in data sharing systems. Differential privacy is yet to be addressed to any significant extent in law or regulation.

Companies such as Google⁹ and Apple¹⁰ have deployed products and services using differential privacy, while the U.S. Census Bureau has announced that all releases of the 2020 Census must preserve differential privacy.¹¹ Ongoing research at Melbourne is seeking to develop new tools for making the framework usable by developers.¹² The framework complements cryptographic protocols for guaranteeing privacy when temporarily storing, transmitting, or processing data in untrusted environments such as over the internet or in a cloud service.

Penalties for failure to comply

To be effective, laws and regulations that constrain the design of digital products and services need to be backed by penalties for organisations that fail to comply. The University of Melbourne supports consumers being given individual rights of redress in circumstances where their data has been misused. An analogy here lies in consumers’ right of redress for unsafe or defective products

⁸ See Vered, M. and T. Miller (2018) ‘What were you thinking?’, *Pursuit*.

<https://pursuit.unimelb.edu.au/articles/what-were-you-thinking>

⁹ Úlfar Erlingsson, Vasyl Pihur, and Aleksandra Korolova. "Rappor: Randomized aggregatable privacy-preserving ordinal response." *Proceedings of the 2014 ACM SIGSAC Conference on Computer and Communications Security*. ACM, 2014.

¹⁰ Apple Computer Inc. "Differential Privacy Overview." Report https://www.apple.com/privacy/docs/Differential_Privacy_Overview.pdf accessed Oct 5, 2018.

¹¹ John M. Abowd. 2018. The U.S. Census Bureau Adopts Differential Privacy. In *Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD '18)*. ACM, New York, NY, USA, 2867-2867.

¹² Benjamin Rubinstein and Francesco Aldà. "diffpriv: Easy Differential Privacy." open-source R package, <https://cran.r-project.org/package=diffpriv>

under the Australian Consumer Law, and for various contraventions in the Consumer Data Right, applicable in the first instance to banking.¹³

Trade-offs between conflicting aims

Ultimately, decisions around the use of AI-informed decision making involve trade-offs between desired but conflicting aims. The use of algorithms promises considerable benefits relating to efficiency in decision making and to the mitigation of some of the risks of human error and bias. On the other hand, the same algorithms may raise legitimate concerns regarding accuracy and fairness, particularly when their operations are opaque. In some cases, key objectives may be mutually incompatible, for example where two plausible sets of fairness criteria cannot both be satisfied.¹⁴

This issue highlights the need for judgement, exercised on a case by case basis, in consideration of the specific circumstances surrounding the application in question, and of its associated risks and benefits. Establishing a specific Chair within the Australian Human Rights Commission, with broad oversight of the relevant issues, to provide judgement on individual cases seems necessary at this stage of AI development. As noted, the Chair could also monitor trends and advise on issues as they arise, and guide policy development.

c) Are there any gaps in how Australian law deals with this area? If so, what are they?

d) What can we learn from how other countries are seeking to protect human rights in this area?

The legal framework in Australia is falling behind international standards and has not kept pace with data use and storage practices that form the basis of AI decision making. Current laws are patchy across a number of areas, in particular concerning privacy and consumer protection.

The Privacy Act 1988 (Cth) (Australia's version of a data protection regime) could usefully be updated in several respects in response to the challenges posed by advances in digital technology. Consideration should be given to:

- expanding the Act's definition of 'personal information' to take explicit account of digital technologies,
- extending responsibilities of data custodians, including in relation to a data subject's rights of access to data, and allowing for data portability (as provided for in the new Consumer Data Right being rolled out in the first instance for the banking, energy and telecommunications sectors¹⁵),
- providing more elaborated provisions about consent and what that means in this context,
- establishing a legal basis for individuals to object to automated processing, where reasonable,
- elaborating requirements for transparent and explainable automated decision making, and
- providing expressly for 'privacy by design and default' following the model of 'data protection by design and default' in the European Union's General Data Protection Regulation (GDPR).

The GDPR is significantly more advanced than the equivalent regulations in Australia, and may be used as a guide to updating our legal framework around data protection.

Recent cases before the European Court of Justice, the European Court of Human Rights and the United States Supreme Court are drawing from human rights frameworks to address what it means to be a member of a digital society in the context of powerful technology. We anticipate that the process will only continue as individuals and groups find that automated decision making

¹³ <https://treasury.gov.au/consultation/c2018-t316972/>

¹⁴ See Corbett-Davies, Sam, Emma Pierson, Avi Feller and Shared Goel (2016) "A computer program used for bail and sentencing decisions was labeled bias against blacks. It's actually not that clear", *Washington Post*. https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/?utm_term=.a13b72c87b12

¹⁵ See eg <https://treasury.gov.au/consultation/c2018-t316972/>

increasingly impacts the conditions in which they live. These approaches can offer useful insights for Australia.

Question 7. In addition to legislation, how should Australia protect human rights in AI-informed decision making? What role, if any, is there for:

- a) **An organisation that takes a central role in promoting responsible innovation in AI-informed decision making?**
- b) **Self-regulatory or co-regulatory approaches?**
- c) **A 'regulation by design' approach?**

As noted above, the University of Melbourne encourages a multi-faceted and co-regulatory response to protecting human rights in automated decision making. We envisage a cooperative regulatory model, coordinated by a proposed Technology Commissioner and including agencies such as the Office of the Australian Information Commissioner (OAIC), the Australian Competition and Consumer Commission (ACCC) and the Australian Securities and Investments Commission (ASIC). This will enable the leadership necessary to establish a constructive regulatory approach consistent with the principle of 'human rights by design and default'.

Beyond the legal and regulatory changes suggested above, we recommend considering ways in which businesses may be incentivised to drive continuous improvement in performance. The following interventions merit consideration.

Certification (The Turing Stamp)

The Issues Paper discussed the so-called 'Turing Stamp' advocated by Chief Scientist Alan Finkel, which would signal to consumers that a given product or service has been developed and designed in an ethical manner, with due consideration to human rights. This would be a voluntary measure; in theory, businesses that have secured the stamp for a given product would have an advantage over competitors that have not, entailing an incentive for businesses to better integrate human rights thinking into the design process.

While there is significant merit to this proposal, there are a number of issues that would need to be addressed. In one sense, a voluntary certification system for the compliance with human rights standards is conceptually problematic: companies are stringently obligated to comply with human rights standards, marking a difference with the 'Fair Trade' or 'Australian Made' certifications. Presumably, a trust mark would be available to businesses that go *beyond* their legal obligations, indicating a need to determine how the voluntary framework would interact with the obligations that all businesses are subject to.

Another issue with a voluntary framework such as this is the possibility that, for some products and services, none of the businesses operating in this area are concerned with meeting the standard that would secure the trust mark. This possibility is particularly prevalent where this is limited competition due to the market being dominated by a small number of large players.

Leveraging government procurement

The Federal and State Governments are major purchasers of digital goods and services, giving them the power to influence business behaviour. Government procurement may be leveraged to improve digital ethics standards, for example, by including ethics performance in the assessment of tenders for major Government contracts. If established, a trust mark may aid Government procurement decisions. In any event, Government procurement will require the skills to assess the use of AI-decision making and its human rights implications, and to assess the suitability of particular applications for government purposes.

A high-profile prize or award for innovation

A prize or award for innovation could help raise awareness of the human rights implications of new technology. The prize would be awarded to technology developed in Australia that innovatively addresses challenges linked to, for example, automated decision making. The prize could be administered by the Human Rights Commission, co-ordinating with other Government agencies e.g. the Chief Scientist, the Chair of Innovation Australia and representatives from industry and research.

The role of the university sector

Australia's university sector has a key role to play in the responsible development of new technology. Our universities will be central to ensuring that Australia labour force enjoys the high-level skills that are needed to drive ongoing innovation.

The importance of university research should also be emphasised. Publicly funded research is a key enabler of innovation in the broader economy and is essential to addressing the range of challenges that are associated with the emergence of new technologies. The rate of technological change heightens these challenges, making the target of public policy a moving one. The wealth of expertise that Australia's universities offer is needed to respond to these challenges as they arise. The research sector also offers rigour and integrity, supporting investigation of these matters in an independent and evidence-based manner. Universities bring a multi-disciplinary capability to education and research, which is essential to adequately dealing with the implications of new technologies.

Accessible technology

Question 8. What opportunities and challenges currently exist for people with disability accessing technology?

The University of Melbourne commends the attention given to the range of issues associated with new technology and persons with a disability. While it is appropriate to be especially concerned with potential transgression against the rights of persons with a disability, new technology entails benefits as well as challenges. We should hold both in view.

The principle of universal design demands that the perspectives of people with disabilities are made central to the design process, rather than treated as exceptions. People with disability are among the most digitally excluded groups in Australia, indicating that many experience serious barriers to access.¹⁶ This has possible flow-on effects, for example where the voices and needs of persons with a disability are excluded from data-sets and design processes. AI systems built on narrow data sets intended to represent a hypothetical or paradigm citizen risk perpetuating bias and discrimination. Research is urgently required to address the gaps in our knowledge of these issues. Inclusive design is likely to improve the functionality of new technologies for all users and will inform more adaptive and innovative AI systems.

Similarly, the development and review of the regulatory framework should draw from the perspectives of persons with a disability, as required by the UN Convention on the Rights of Persons with Disabilities (Preamble para (o) and Article 33).

The benefits of new technology

Notwithstanding the ongoing challenges, new technology is proving to be a powerful enabler for persons with a disability, delivering significant benefits. It is expected that, out of roughly \$22b in

¹⁶ Thomas, J, Barraket, J, Wilson, CK, Cook, K, Louie, YM & Holcombe-James, I, Ewing, S, MacDonald, T, (2018) "Measuring Australia's Digital Divide: The Australian Digital Inclusion Index 2018", RMIT University, Melbourne (see p.6).

NDIS expenditure, \$1b will be spent on assistive technology.¹⁷ Since this spending is driven by participant choice (rather than being controlled by Government), this serves as an indicator that participants themselves discern the value of new technology in helping overcome the barriers they face.

It is also worth noting that the tech industry is already embracing universal design. This is largely due to the market advantages of doing so; people with disability demand accessible design, and people without disability benefit from accessible features, e.g. being able to use smart devices when they cannot see them, touch them or hear them. In the age of personalisation, a device which cannot be used in every environment is not competitive. As a result, universal design is becoming core to technology companies, not a “nice to have”, as evidenced by the accessibility features which are being added to Apple and Microsoft devices and software continuously.

This is promoting digital access for people with a disability, because these smart devices are getting cheaper (due to Moore’s Law) and are being improved faster than specialist technology designed just for people with disabilities. There are further potential benefits relating to digitally enabled improvements in the accessibility of communication materials for those with cognitive impairments.

As well as the ‘stick’ of regulation, we should consider ‘carrots’. A key question is how technology companies can be further incentivised to embrace universal design. Our view is that there is a need for much more co-design, where persons with a disability are included in the design process. By putting people with disability at the centre of design, we design for all and therefore embrace ‘the edges’ described by Manisha Amin (Centre for Inclusive Design).¹⁸

Designing for Disability = Designing for All

University of Melbourne researchers are in the earlier stages of developing a research program to address some of the major gaps in global research on disability support.¹⁹ The ‘Designing for Disability = Designing for All’ research program will target two key areas: the benefits and challenges concerning consumer-directed human services; and the establishment of a longitudinal database that captures information on persons with a disability, e.g. details of diagnosis and functioning, the use of services and supports, and so on. The data platform will allow for the identification of new innovations as they arise, and will allow for the outcomes of technological and service innovations to be properly evaluated.

¹⁷ Centre for Digital Business Pty Ltd, “Submission to Joint Standing Committee Inquiry on the NDIS ICT Systems”, p.13.

https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/National_Disability_Insurance_Scheme/NDISICTSystems/Submissions

¹⁸ See “Technology – friend or foe of people with a disability?” (2018), *Big Ideas*, ABC Radio National.

<http://www.abc.net.au/radionational/programs/bigideas/technology-%25E2%2580%2593-friend-or-foe-for-people-with-a-disability/10056698>

¹⁹ The ‘Designing for Disability = Designing for All’ program is being developed within the Melbourne Academic Centre for Health (MACH), of which the University of Melbourne is a member.

Contributors to this submission

Dr Greg Adamson, Enterprise Fellow, Melbourne School of Engineering

Professor Uwe Aickelin, Head, School of Computing and Information Systems

Dr Paul Barry, Adviser, Policy and Government Relations

Professor Bruce Bonyhady, Executive Chair and Director, Melbourne Disability Institute

Dr Suelette Dreyfus, Lecturer, Department of Computing and Information Systems

Mr Assyl Haidar, Director, Digital and Data

Dr Yvette Maker, Senior Research Associate, Melbourne Social Equity Institute

Professor Bernadette McSherry, Foundation Director, Melbourne Social Equity Institute

Associate Professor Tim Miller, Academic, School of Computing and Information Systems

Associate Professor Carsten Murawski, Academic, Department of Finance

Professor Ampalavanapillai (Thas) Nirmalathas, Director, Melbourne Networked Society Institute

Associate Professor Jeannie Paterson, Academic, Melbourne Law School

Professor Megan Richardson, Academic, Melbourne Law School

Associate Professor Ben Rubinstein, Senior Lecturer, School of Computing and Information Systems

Professor Liz Sonenberg, Pro Vice-Chancellor (Digital & Data)

Associate Professor Mark Taylor, Deputy Director, Centre for Health, Law and Emerging Technologies (HeLEX @Melbourne)

Professor Frank Vetere, Director Microsoft Research Centre for Social Natural User Interfaces

Professor Monica Whitty, Professor of Human Factors in Cyber Security, School of Culture and Communication

Professor Tony Wirth, Professor, School of Computing and Information Systems