Strategic Examination of Research and Development: discussion paper

Prepared by Cerebral Palsy Alliance

For the Australia Government Department of Industry, Science and Resources
Submitted Monday 7th April 2025

Contact

Rob White
Chief Executive Officer

✉ RWhite@cerebralpalsy.org.au

🌐 cerebralpalsy.org.au

📞 02 9975 8700 / 0408 116 710

Cerebral Palsy Alliance (CPA) welcomes the opportunity to provide a submission to the independent expert panel on the Australian Government's Strategic Examination of Research and Development (R&D).

The time is right for the Australian government to consider technology in the disability, ageing and health sectors as a major part of Australia's R&D strategy.

Disability, Age and Health Tech (see definitions in Appendix 1) has strong opportunity for domestic growth with an ageing population and our world leading National Disability Insurance Scheme (NDIS). Of the $43.8 billion of support provided in 2024, only $606 million was spent on assistive technology.[i] We believe that the government needs to consider the benefits of supporting commercialisation of home grown co-designed technologies with the potential to create efficiencies, reduce the high costs to provide care and services, and address persistent workforce shortages and retention gaps.[ii]

Australia is at a critical juncture and there is unrealised opportunity for investment and strategic policy to drive research, development and sovereign manufacture of technologies that will promote the independence, safety, health and wellbeing of older Australians and people with disabilities; enable ageing in place; make life better for people with disability

Australian context

1 in 6 Australians are aged 65 and over - that is, 4.4 million people, or 17.1% of the total population. By 2066, it is projected that there will be 10.2 million Australians over 65. Aged care is one of the biggest spends in the federal budget and, without action, spending is expected to more than double as a share of GDP over the next 40 years.[iii]

1 in 5 Australians have a disability – that is, 5.5 million people, or 21.4% of the total population.[iv] Disability prevalence increases with age - the longer people live, the more likely they are to experience some form of disability. People with disability are more likely to have poor general and mental health, higher health risk factors, barriers to accessing and using health services and are significantly less likely to participate in the labour force (60.5% compared to 84.9% for people without disability).[v] The NDIS is one of the fastest growing spends on the federal budget, with costs expected to reach $58 billion by 2028, assuming that targets to moderate annual growth rate to 8% are met.[vi]

Global context

The World Health Organization estimates that 1.3 billion people, or 1 in 6 globally, live with disability[vii]. However, the true number may be larger as disability is likely underreported globally due to many complex factors - some estimates are up to 1.85 billion people.

Over one billion people around the world require the use of at least one assistive technology. By 2050, the need is expected to double to two billion - due to an ageing global population, increasing prevalence of non-communicable diseases, and other factors.[viii]

There is significant social and economic benefit from targeting this market – worth an estimated $13 trillion USD in global annual disposable income from people with disability and their community of friends and family.[ix]

R&D opportunity in the Disability, Age and Health Tech fields

The NDIS is widely regarded as a global benchmark in social policy. This progressive framework uniquely positions Australia to become the global innovation and advanced manufacturing hub for disability and assistive technology, exporting our home grown and truly needed products around the world.

There is a natural and strong synergy between Disability Tech, Age Tech and Health Tech, and with Southeast Asia at Australia's doorstep—where ageing populations are a top priority—this represents an opportunity we cannot miss.

Australia has a rich history of leading innovation in this space with successful examples like Cochlear, ResMed and Synchron. We are on the cusp of a technology revolution that must be harnessed by Australia to ensure we are leading the research, development, manufacture and export of technologies. This has the potential to create beneficial outcomes and prosperity for all Australians. Some examples of emerging technologies and treatments could include:

- Personalised custom medical devices and implants to enhance rehabilitation, reduce disability and ensure better long-term outcomes.
- Robotic assistive devices that can complete manual tasks, reduce risk of injuries to carers and provide social support.
- Brain computer interfaces to allow people with significant disabilities to control computers and everyday devices, operate prosthetic limbs, or to communicate, potentially assisting people with disability to more fully participate in the workplace.
- Stem cell therapies to reduce disability.
- RNA vaccine development to treat conditions such as Cytomegalovirus (CMV) - a common cause of cerebral palsy (CP).
- AI and machine learning technologies to create operational efficiencies, tailor personalised care plans, analyse behaviours, predict health issues, increase the speed of augmented communication, or provide automated captions and sign language interpretation.
- IoT devices linked with wearables, smart sensors and voice assistants to monitor health, activity and safety to support independent living and ageing in place.
- Virtual and augmented reality technologies that provide simulated experiences to train workers in care provision, or people with disabilities to learn how to use assistive technologies such as prosthetics or powered wheelchairs.
- AI to personalise workplace accommodations, optimise accessibility, and support inclusive employment for people with disability.

- Autonomous vehicles including wheelchairs and self-driving cars to enable people with disability to travel safely and independently, increasing community access and workforce participation.

CPA has already been successfully doing what the government is now looking to achieve through this R&D strategy —bringing together Australia's top neuro, biomedical and disability researchers, engineers, startups, scaleups, investors, industry and a large service delivery organisation to drive disability research, technology innovation, commercialisation and implementation in the disability sector and adjacent aged care and health sectors in Australia and beyond. CPA has laid the groundwork and will continue to refine and expand its efforts to make Australia the world leader in Disability, Age and Health Tech.

About Cerebral Palsy Alliance

CPA is a ground-breaking, global centre of expertise for CP services and support, research, technology and innovation.

As the first organisation in the world to support people with CP, for over 80 years CPA has been delivering innovative and evidence-based services to people with complex disabilities. CPA currently provides services to 5,000 clients across NSW and ACT and has continuously and progressively built its capacity to support people with CP and other complex disabilities, by expanding from its pioneering in-person service teams and establishing a world-leading Research Institute and startup venture arm Remarkable that have changed lives globally for people with disability.

CPA Research Foundation and Institute - 20 years of world leading research

CPA established the Cerebral Palsy Alliance Research Foundation in 2005 with a single goal – to fund and support ground-breaking research into the prevention, treatment and possible cures of CP. The Research Foundation was initially made possible by a generous benefactor and has since leveraged this initial funding to invest over $89 million AUD in global research and development across 48 countries.

The Cerebral Palsy Alliance Research Institute, also established in 2005, is co-located at the University of Sydney's Brain and Mind Centre. The Research Institute is the world's largest dedicated CP research organisation, employing four of the top 10 experts in the field and publishing 150 landmark academic papers since 2020.

The Research Institute today supports research in the field of Epidemiology, Early Detection and Intervention, Regenerative Medicine and Assistive Technology. The Research Institute's Technology arm is led by Dr Petra Karlsson, and Chair of Innovation and Technology at the University of Sydney, Professor Alistair McEwan, Associate Head of the School of Biomedical Engineering. Together their team of engineers, allied health clinicians and researchers focus on research specifically in cognition, mobility and communication.

 The impact achieved collectively through the Foundation and Institute includes:

- Establishing the Australian Cerebral Palsy Register, funding research into prevention and treatments and supporting implementation of research into clinical practice to contribute to a 40% decline in the rate and severity of CP in Australia, as well as assisting in the establishment of 14 Registers globally.
- Reducing the average age of diagnosis to as young as 3 months (compared to the average in high income countries of 12-14 months) through 3 dedicated Early Diagnosis Clinics in collaboration with NSW Health. These clinics implement international clinical guidelines for early diagnosis of CP published by a team led by CPA researchers and include trained CPA clinicians working with a paediatric neurologist. In the last 5 years, our 3 clinics have seen over 400 infants resulting in faster diagnosis and supporting access to essential early intervention services to improve both short- and longer-term outcomes for children with CP.
- Collaborating to enable Australia's first-ever clinical trial of umbilical cord blood stem cells as a treatment for CP.
- Publishing the first Clinical Guidelines to Guide Implementation of Eye-Gaze Control Technology for Children and Adults with CP.
- Establishing "My Voice Library", a world-first platform that uses gamification to collect voice and orofacial (mouth and face) data from children with CP to assist the development of future communication aids.
- Founding CP360 in 2023, a coalition of the world's leading CP specialists, with a focus on the first 1000 days of life and innovating and scaling solutions such as automated general movement assessments using AI to support early detection of CP.
- In partnership with Toyota, developing a soft robotics prototype for infants with CP.

Remarkable - 10 years of world leading Disability, Age and Health Tech innovation

CPA launched Remarkable in 2016, with the mission to accelerate startups innovating in Disability, Age and Health Tech to break down barriers to equal participation for all people with disability and amplify human potential. Remarkable maintains a pan-disability focus with a strong commitment to accelerating solutions for the entire breadth of the disability and aging community. CPA has invested $15 million AUD in Disability Technology since 2016 helping to grow the pipeline of investible and commercial technologies.

Remarkable has grown significantly to include initiatives accelerating and scaling Disability, Age and Health Tech startups globally including:

- **Remarkable's pre-accelerator program, Launcher**, has supported 74 startups (148 Founders), to validate the commercial viability of their solutions who with notable examples being Homeable (AU), RehabExo (AU), BlissFlow (AU), RooWalk (GER), ReviMo (US) and ByStormBeauty (AU).
- **Remarkable's Accelerator program** has supported 69 startups, who collectively serve 339,200 people with disability, with notable examples being Like Family (AU), MediStays (AU), Biomotum (US), AbilityMade (AU), Sameview (AU), Rove Wheelchairs (AU), Virtetic (AU), Nuroflux (AU), Sound Scouts (AU) and Possibility Neurotech (CAN).

- **Remarkable's latest initiative, [Scaler](#),** launched in late 2023, has invested in seven scaleups to help turn their products into successful scalable businesses, including [Aurie](#) (US), [Cephable](#) (US), [Hayylo](#) (AU), [Marlee](#) (AU), [Perx Health](#) (US), [Sociability](#) (UK), and [Umps Heath](#) (AU) who collectively currently serve well over 100,000 older people and people with disability.

Remarkable also established the +N [Inclusive Innovation Network](#) in 2022, an affiliate network of 'assistive tech startup building organisations' from seven countries (Kenya, India, China, New Zealand, Canada, USA and Australia) who work together to connect the global market intelligence, build the case for local and global investment in Disability, Age and Health Tech, and support the development of the Disability, Age and Health Tech ecosystem.

Remarkable and the Research Institute have attracted global recognition and investment and successfully co-hosted 3 global tech summits (2018, 2022, 2023), bringing together leaders from around the world in research, entrepreneurship, investment and industry.

Remarkable and the Research Institute work closely together on projects including industry partnerships such as the [Toyota Mobility for the Future Partnership](#), and inclusive design mechanisms such as the [User Feedback Community](#) and various industry/research collaborations.

The Importance of Inclusive R&D for National Priorities

CPA strongly supports the Australian Government's focus on maximising R&D investment to drive economic growth, technological advancement, and national resilience. We also believe that inclusive innovation—particularly in Disability, Age and Health Tech—must be recognised as a core component of Australia's R&D priorities.

Key considerations include:

- **Alignment with Future Made in Australia Strategy:** CPA has been at the forefront of R&D and commercialisation in Disability, Age and Health Tech for more than a decade. This aligns with the government's aim to build sovereign manufacturing capability and drive industrial transformation through innovation. Australia cannot compete in mass manufacturing, but it can excel in high-quality, safety-critical Disability, Age and Health Tech manufacturing.
- **Strengthening the translation of research into industry:** Australia's R&D efforts should foster stronger pathways between research institutions, startups, and industry to translate high-impact research into commercially viable solutions, particularly for social impact for older people, people with disabilities and carers.
- **Leveraging Australia's proximity to the Asia-Pacific region:** With Asia's rapidly ageing population, Australia is uniquely placed to become the global leader in Disability, Age and Health Tech innovation, manufacturing and export.
- **Australia's unique experience dealing with our expansive geography:** Our experience in providing equitable access to low-cost technology, healthcare and service in regional and remote areas and difficult landscapes/climates, presents a unique opportunity to test and scale technologies that can benefit underserved Low-

and Middle-Income Countries (LMIC) markets globally. The return on investment of assistive technologies in LMIC is 9:1.[xi]

- **Increasing business investment in R&D:** The government should provide more targeted incentives for businesses to invest in R&D focused on disability inclusion, accessible technologies, and adaptive workforce solutions, creating more jobs and a more resilient and vibrant economy that, like the NDIS, becomes the envy of the world. This economy-building approach is strengthened by its savings to the disability, aged care and health systems.

- **Disability as a driver of innovation:** Some of the most groundbreaking technologies we take for granted such as speech-to-text, texting, and even the keyboard were pioneered to support people with disabilities first, and then opened up to wider populations who also saw these technologies as beneficial. Disability offers diversity that is not yet represented in AI training data (including different voices, movements, and thinking). This diversity is becoming essential as AI runs out of training data and it is important to include these differences, while considering privacy, safety and regulation of data.

- **Recognition of the global market opportunity:** As previously highlighted, the global annual spending power of people with disabilities and their families, estimated at $13 trillion USD, is a significant market that businesses cannot afford to ignore. By failing to include people with disabilities in their workforce and their customer base, companies are missing out on a vast pool of talent and potential revenue.

Challenges in Australia's R&D Ecosystem

1. Limited support for experimental development in social impact

Australia's R&D funding disproportionately supports early-stage research, with limited funding for experimental development and commercialisation. Many Disability, Age and Health Tech startups struggle to secure funding for later-stage development and scaling and face lengthy regulatory pathways which create barriers to commercialisation of critical breakthrough technologies.

For example, Remarkable startup [ResusRight,](#) a groundbreaking monitor providing a safer experience for the more than 10 million babies born each year who require resuscitation at birth, developed by some of the top neonatologists in Australia, but unfortunately the startup ran out of funds before it made it through the lengthy TGA/FDA approval process.

Recommendation: Introduce sector-specific R&D funding streams that support inclusive technology and social impact ventures, ensuring that solutions developed in Australia reach commercialisation and scale globally.

2. Barriers to collaboration between research and industry

Collaboration between research institutions, industry and Disability, Age and Health Tech startups is essential but remains weak due to misaligned incentives, funding structures and fragmented distribution channels. Many research outputs do not transition into industry applications due to a lack of commercialisation pathways.

Recommendation: Establish dedicated innovation hubs that bring together researchers, startups, industry, investors and people with disability to accelerate translation of Disability, Age and Health Tech research into commercial solutions. See the Hub for Human Potential proposal from Remarkable for a more detailed vision.

3. Workforce and talent development for inclusive R&D

Australia lacks structured pathways for researchers and entrepreneurs in Disability, Age and Health tech. There are also limited opportunities for people with disability to participate in STEM careers and R&D leadership roles. There is also growing interest in highly skilled talent moving to Australia to benefit from our progressive social policy and excellence in research in this space.

Recommendation: As recommended in the recent Pathway to Diversity in STEM Review,[xii] commit to a whole-of-government, long-term strategy to increase diversity and inclusion in STEM, including developing targeted R&D workforce programs that support diverse talent pipelines, and grants for disability-led R&D initiatives and industry-academia exchange programs.

Opportunities for Strengthening R&D Impact

1. Strategic funding mechanisms

Existing R&D funding mechanisms should be restructured to better support social impact ventures, particularly those focused on Disability, Age, and Health Tech.

Recommendations:

- Introduce dedicated funding within the National Reconstruction Fund for Disability, Age, and Health Tech innovation.
- Expand the R&D Tax Incentive to include enhanced benefits for Disability, Age, and Health Tech startups focused on social impact.
- Establish targeted commercialisation grants for Disability, Age, and Health Tech ventures to bridge the gap between research and market entry.
- Provide matched government funding for private investment in disability and ageing focused innovation.

2. R&D infrastructure for disability, ageing and assistive technology development

Investment in shared R&D infrastructure can enable startups and researchers to accelerate product development and manufacturing.

Recommendations:

- Create a national disability and assistive technology testing and development facility, enabling companies to prototype, test, and refine solutions more efficiently.

- Increase access to specialised disability-inclusive design, manufacturing, and advanced technology capabilities within existing innovation precincts.

3. Strengthening Australia's global leadership in inclusive innovation

Australia has the potential to be a world leader in Disability, Age and Health Tech innovation, with a wealth of expertise in R&D of technology for disability, ageing and health, however greater coordination is needed to streamline efforts and enhance research translation and commercialisation.

Universities and research institutes working in Disability Tech innovation often compete for limited funding, leading to fragmented efforts and duplicated work. Consulting multiple universities, industry leaders, and advocacy groups separately can slow down research progress and increase administrative overhead for both government and stakeholders.

R&D investment should be prioritised for inclusively designed technologies that build or maintain people's capacity, improve independence and promote social and economic participation to reduce lifetime costs.

R&D investment must be accompanied by structures and policies that streamline funding and coordination and can support scaling solutions globally.

Recommendations:

- Explore a national platform for disability and ageing assistive technology R&D innovation and collaboration to help align funding, research, and industry partnerships, ensuring that innovations are efficiently developed in line with long-term government priorities. The recent Grattan Institute Orange Book 2025 recommended the government should establish an NDIS Innovation Fund. Our recommendation is that any innovation fund remains independent of the NDIS and can address needs for all Australians with disability, not only the 10% eligible for the NDIS. For example, a dedicated National Assistive Technology and Inclusive Innovation Authority, modelled off examples like Israel's Innovation Authority, an independent and impartial statutory public entity that operates for the benefit of the Israeli innovation ecosystem and Israeli economy as a whole. Its mission is to invest in innovation in order to promote sustainable and inclusive growth.
- Develop export support programs for Australian Disability, Age and Health Tech startups and scaleups, facilitating global market entry.
- Foster international research and industry collaborations focused on inclusive innovation and Disability, Age and Health Tech development.
- Ensure government procurement policies prioritise Australian-developed Disability, Age and Health Tech, driving domestic adoption and enabling Australian manufacturing.

4. Ensuring Co-Design, Accessibility and Workforce Inclusion

The principle of "Nothing About Us Without Us" must underpin R&D and ensure all technologies are co-researched and designed inclusively with people with lived experience of disability, consider accessibility, and do not create bias or barriers to use by people with disabilities. People with disabilities should actively participate in the research and co-design of new technologies and benefit from the employment opportunities they create.

The CPA Research Institute and Remarkable embed this ethos into all of our work, including establishing CP Quest in 2015, a world-leading collaboration with over 140 members including people with CP, their families, carers and advocates to better integrate lived experience into our program of research; and launching the Remarkable User Feedback Community in 2024, a growing community of people with lived experience of disability that connects Disability, Age and Health Tech Innovators to support inclusive design.

Recommendations:

- Invest in user testing hubs that train and employ people with disabilities as product testers (including the ability for remote work), ensuring real-world applicability and increasing employment opportunities for people with disabilities. See the Hub for Human Potential proposal for more details.
- Prioritise funding for disability-led startups with innovation grants, ensuring founders with lived experience drive new solutions.
- Set national targets for disability co-researchers and employment within publicly funded R&D projects.
- Develop an Inclusive Innovation Workforce Strategy to train people with disabilities in STEM and R&D careers.
- Implement an Accessibility Act and mandate adherence through R&D tax incentives and government procurement for any digital technologies, modelled off examples like the European Accessibility Act and Accessible Canada Act.
- Ensure the National AI Capability Plan considers AI Ethics Principles that AI systems should be inclusive and accessible and should not involve or result in unfair discrimination against individuals, communities or groups. As previously discussed, disability (particularly complex disability) offers diversity that is not yet represented in AI training data and AI technologies must be designed inclusively to increase diversity and reduce the risk of bias and discrimination.

Conclusion

Australia stands at a defining moment—faced with the dual challenges of an ageing population and rising disability prevalence, yet uniquely equipped with the policy frameworks, talent, and innovation ecosystem to lead globally in Disability, Age and Health Tech R&D. As this submission has outlined, there is not only an urgent national need but a transformative economic and social opportunity in embedding inclusive innovation at the core of our R&D strategy.

CPA has demonstrated what is possible when research, technology, and lived experience are combined to create meaningful, scalable solutions. With more than two

decades of global leadership in disability research, and through initiatives like the CPA Research Institute and Remarkable, we have laid the foundation for a future where inclusive R&D becomes a pillar of Australia's competitive advantage.

To fully realise this vision, Australia must prioritise inclusive R&D through targeted funding, infrastructure, coordinated national leadership, and policies that embed lived experience into every stage of innovation. By doing so, we not only respond to the pressing needs of our time but unlock a $13 trillion USD global opportunity and reaffirm our place as a world leader in advancing equity, prosperity, and human potential through innovation.

The time to act is now. With the right investment and vision, Australia can lead the world in creating a future that is smarter, fairer, and truly inclusive—for everyone.

Appendix 1 - Definitions

Age Tech (or AgeTech, Age-Tech) - Digital tech that's built around the needs and wants of older adults, while including them in the design process. In a broader sense, Age Tech could be any type of technology that improves the lives of aging adults.

Accessible technology - technology that is designed with accessibility standards in mind and is directly accessible and can be utilised effectively by people with disabilities without additional assistive technology, or is compatible with assistive technology. This includes mainstream devices such as smart phones and tablets with built in customisable accessibility settings, or accessible websites that can be navigated by people with disabilities using assistive technology such as a screen-reader.

Assistive technology - Assistive technology (AT) is an umbrella term for assistive products and their related systems and services. AT enables and promotes the inclusion, participation and engagement of persons with disabilities, ageing populations and people living with chronic conditions in the family, community and all areas of society, including the political, economic and social spheres.

Assistive products - any external product (including devices, equipment, instruments or software) specially produced or generally available, the primary purpose of which is to maintain or improve an individual's functioning and independence, and thereby promote their wellbeing.

Digital Health - includes categories such as mobile health (mHealth), health information technology (IT), wearable devices, telehealth and telemedicine, and personalized medicine.

Disability Tech - Remarkable uses the term '**Disability Tech**' to define the emerging innovation and technology for people with disability, which includes a broad spectrum of inclusively designed accessible and assistive technologies. Disability Tech acknowledges that the lived experiences of people with disabilities have driven significant technological advances, and recognises the disability advocates who lead this innovation, creating a more accessible, inclusive, and equitable world for all. We acknowledge the intersection of Disability Tech with Age Tech and Health Tech, however while these technologies can benefit people with disabilities (including older people with disabilities), they may not traditionally have not been designed inclusively with, or for, people with disability in mind.

Health technology (or Health Tech) - the application of organised knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems developed to solve a health problem and improve quality of life. This includes digital health products.

Medical technology (or Med Tech, MedTech) - includes technologies / devices / tools for diagnosis, patient care, treatment and improvement of a person's health.

Rehabilitation technology (or Rehab Tech, RehabTech) - includes technologies / devices / tools that have a primary use in a clinical setting to help people recover or improve their functioning after injury or illness.

i NDIS Quarterly Report Q2 2024-25

ii Jobs and Skills Australia

iii Australian Institute of Health and Welfare

iv Australian Bureau of Statistics 2022

v Australian Department of Health and Aged Care

vi Grattan Institute - Orange Book 2025

vii World Health Organization

viii AT Scale - The Case for Investing in Assistive Technology

ix World Economic Forum and Valuable 500

x World Economic Forum

xi AT Scale - The Case for Investing in Assistive Technology

xii Pathway to Diversity in STEM Review