tech4life

Assistive Technology Innovation Framework

Focus: Optimised access to and use of the most appropriate technology that assists NDIS participants to meet their goals.
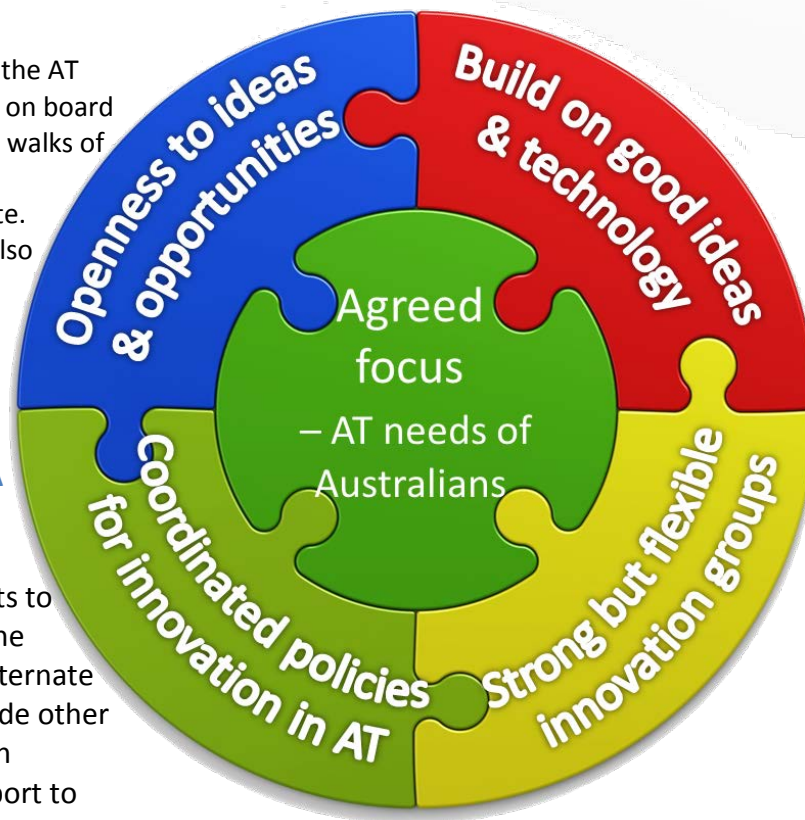
Scope: All aspects of the use of technology by people with disability, including both the AT service delivery system (Fig 2) and the product development & lifecycle (Fig 3).

Figure 1 is based on Jen Rae & Stian Westlake (2014) *When Small is Beautiful: Lessons from highly innovative smaller countries* www.nesta.org.au

Openness: Successful innovation in the AT sector increasingly depends on taking on board issues and ideas from everywhere. All walks of life, roles in the system, and location (including international) can contribute. In the same way, opportunities may also come from unexpected quarters and AT innovation must seek, evaluate and capitalise on these.

Building strength in downstream innovation: Emphasis needs to be on turning good ideas and early-stage innovations into successful products and systems. We have limited capacity to begin with basic research so should seek innovation partners from throughout the AT sector (Figure 2), and draw from around the world.

Coordinated government/NDIA Policies: Fragmented policy and regulation can undermine collaboration, creativity, and efforts to put innovative and novel AT into the hands of end-users or introduce alternate service systems. The NDIA can guide other government agencies and bodies in delivering optimal access and support to AT.

Strong AT innovation centres/ clusters with good links to the NDIA: need to be formed and strengthened incorporating key stakeholders, including AT end-users and industry. These groups would have capacity to address AT innovation projects/areas, yet be flexible enough to share and adapt to the rapidly changing demands and expectations of AT and those who deliver it.

Figure 1: Proposed AT Innovation Framework

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The AT Sector and Product Development.

Delivery of the optimal AT for a person with disability involves an ongoing process of addressing issues of activity limitation and/or environmental restriction (Figure 2). This is best achieved though collaboration between the NDIS participant (the outer circle shows their key role in the process) and the AT Service Delivery System (which includes funders, the participant's allied health and technical consultants, and one or more AT suppliers). Understanding the interactions at each stage and looking for ways to streamline the whole process are key opportunities for innovation. In parallel to the process for an individual's need for AT is the typical product development cycle (Figure 3) which draws critical information from all stages of the Service Delivery process (and interactions). With some minor adjustment, the cycle shown in Figure 3 can also apply to innovation and development of systems and services. **Open innovation** describes how the process of Figure 3 for some projects may involve a worldwide open competition for solutions to some challenges, while for other aspects it may be more directed to a specialist group. In any case, the emphasis needs to be on ensuring the most appropriate people/group is engaged for each element ('porous development pipeline'). Careful management of Intellectual Property aspects and appropriate compensation for contributors are particularly important.
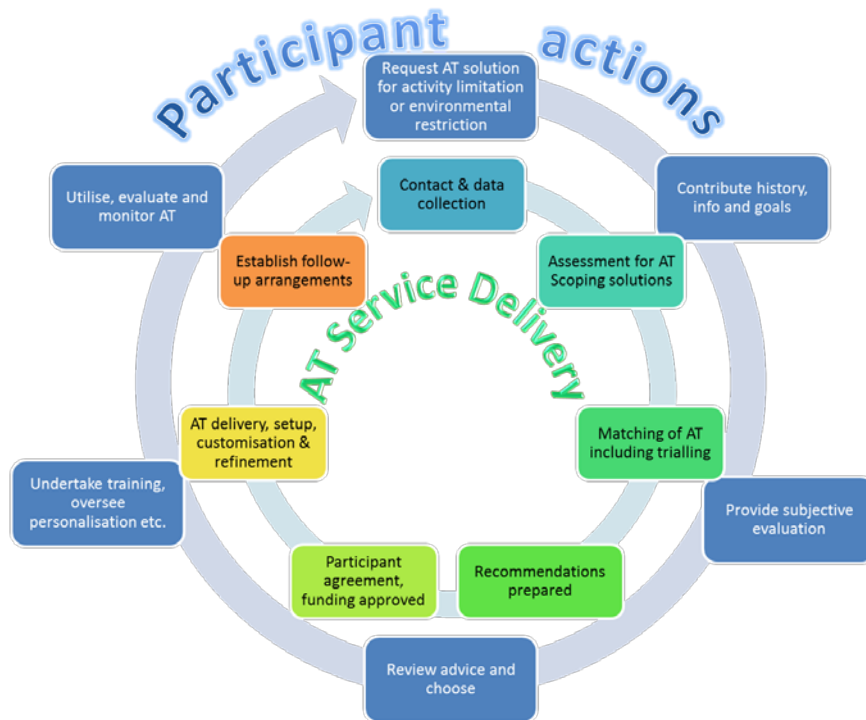
Adapted from Federici, S., Scherer, M. J. and Borsci, S. (2014) 'An ideal model of an assistive technology assessment and delivery process', Technology and Disability, 26(1), 27-38.

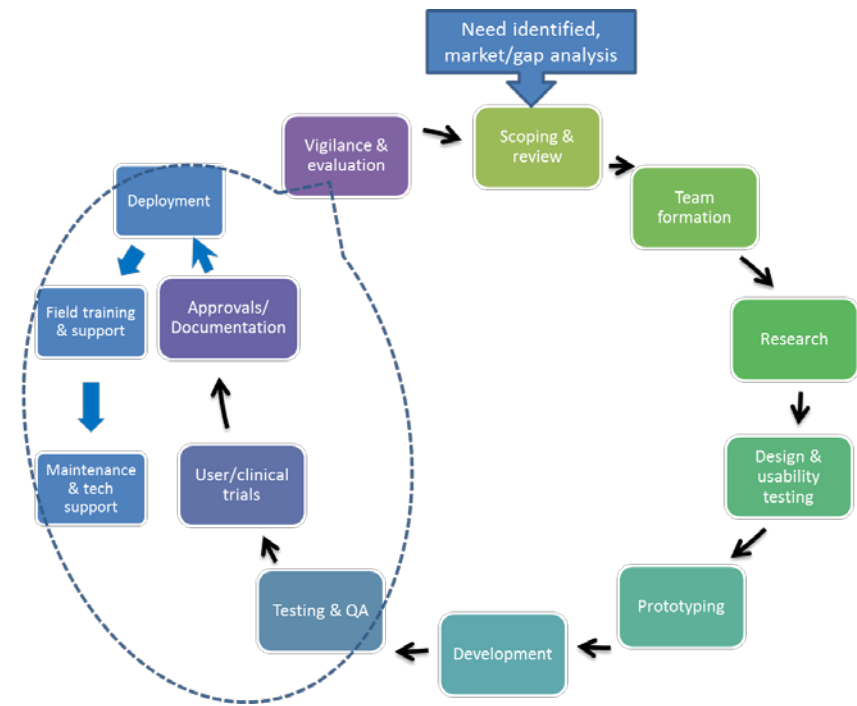**Figure 3: AT User & Service Delivery interaction (ideally)**

Figure 2: Product development and lifecycle. Repurposing of technology can cut out some of these steps. The dotted oval highlights all the elements that are monitored and reviewed under a sound vigilance system which may trigger a fresh cycle.

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Starting with what is…	Moving to what could be…
1. Environmental scanning & sharing a) Regular international review of new technologies and processes, as well as developing research. b) Review how user needs & experiences of technologies and processes are being captured and used for innovation. c) Identify and appraise existing technology evaluation methods. d) Explore existing systems and partnerships that deliver innovative outcomes in AT	a) Prioritise technology/process areas for innovation investment using mixed methods approaches and wide consultation with stakeholders[1] b) Develop & implement the most appropriate methods to capture user needs & their evaluations of technologies and processes. c) Establish the most appropriate AT evaluation approaches for Australian need d) Develop networks/partnerships to share the insights gained as a resource for learning for all stakeholders.
2. Facilitation & coordination a) Review the pathway to final adoption/funding by the NDIS of new/novel AT or AT processes b) Review regulatory requirements that apply to AT from conception, through development/production/import and in use. c) Create respectful communication and sharing forums and processes for all stakeholders in the AT Service Delivery System[1] d) Identify facilitators for AT development and innovation in Australia (e.g. funding, policy, partnerships), and applicable international exemplars.	a) Build a collaborative forum to identify ways to streamline regulation and pathways to conceptualisation, delivery and use of innovative AT solutions. b) Facilitate (under the National Disability Strategy) adoption of the recommendations of the forum across all levels of government and industry. c) NDIA facilitate forums/networks of trust, respect and openness from all stakeholders in the AT Service Delivery System[1] that communicate to learn and deliver on the framework focus. d) NDIA facilitate the strengthening of a robust AT innovation sector: - encouraging partnerships, locally, nationally & internationally. - developing a register/database of potential contributors to all the stages highlighted in Figure 3. - embedding quarantined support for AT innovation within existing/new research/commercialisation schemes. - utilising collaborative procurement frameworks with a focus on the AT outcomes desired, and local engagement

[1] NOTE: Stakeholders at all stages could include AT users & caregivers, Allied Health Practitioners, other Health and Medical Practitioners, Planners, engineers & technologists (rehabilitation, biomedical, human factors, industrial), ergonomists, industrial designers, suppliers, manufacturers, funding providers, among others.

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3. Capacity Development a) Identification of innovators as educators – particularly people with disability whose lived experience of disabling environs has led them to push boundaries and think / create 'outside the square'. b) Review local and international approaches to optimising the involvement of end-users of AT in the innovation/development process through collaborative consultancies (e.g. www.fastuk.org) or individual research/development training (e.g. Toronto Rehab Scholarship). c) Coordinate events from government industry innovation support programs tailored for the AT sector.	a) Facilitate the skills of Planners & Allied Health Practitioners in linking new developments in technology and processes with unmet need of participants – "exploring possibilities". b) Consider developing a Centre (with high participation at all levels of people with disability) focused on education and sharing/ consultancy that fosters innovation and creative/disruptive thinking on technology and service use and development. Promote the Centre as a resource for broader industry and government accessible innovation. c) Facilitate the exchange of personnel and ideas between businesses, AT centres and government agencies to foster understanding, innovation and discovery (e.g. Engineers Australia NCRE Technician Exchange Program).
4. Program Evaluation & Monitoring a) Collate and review the findings of recent Australian studies on the AT system (e.g. Friesen (2013-), Layton (2011-), Schmidt(2011-)) b) Review national and international reviews of innovation programs to identify key metrics and aspects for evaluation within the NDIS Quality Framework c) Review and evaluate AT outcomes literature and the extent to which the innovation enhances or sustains health and wellbeing metrics (including avoiding any reduction in participant capacity) and other measures of participant goal achievement. d) Identify relevant international research work on AT outcomes to which NDIA (and Australia) could partner.	a) Form a specialist advisory group (including at least one international contributor) to specify the method for Innovation Framework Evaluation and Monitoring. b) Establish a requirement for all activities in AT innovation (supported by NDIA) to demonstrate: - equitable participation by appropriately qualified people with disability, - that they support this framework, - consumer input and knowledge translation are appropriately incorporated, and - they are conducted in accord with accepted ethical practice. c) Participate in national and international forums (e.g. WHO GATE) to facilitate the international development of AT.