



## Assistive technologies & industrial transformation

The Australian Workplace Innovation and Social Research Centre (WISeR) and the Stretton Centre, in association with the South Australian Government Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) and Fraunhofer Gesellschaft, has embarked on a major project to investigate the potential for accelerated transition of businesses and workers from declining manufacturing industries into new and growing industries – industrial transformation and diversification.

### Economic and policy context

South Australia urgently needs to diversify its industry base. It is necessary to respond to the impending loss of sophisticated manufacturing capabilities, such as automotive production, through diversification strategies. Otherwise key industrial capabilities will be lost permanently.

The current shake out of Australian manufacturing has many sources. But today, Australian manufacturing business cannot be competitive where the primary basis of competition is scale and unit cost. Given its cost structures, Australia needs to focus on knowledge-intensive, complex high margin products and services that provide opportunities for internationally competitive manufacturing based on short production runs, medium to high complexity, high variability of output and high levels of customisation. This is ‘new manufacturing’, and significant segments of the assistive technologies market align with it.

### What are Assistive Technologies?

**Assistive Technologies (AT)** are devices that enable individuals to perform tasks they would otherwise be unable to because of age or disability; or technologies that increase the ease and safety with which tasks can be performed. AT comprises an ensemble of devices from the reasonably simple to more complex technologies as shown in Table 1.

Table 1: Simple and complex AT

Simple AT	Complex AT
<ul style="list-style-type: none"> <li>• Trolleys</li> <li>• Walking frames</li> <li>• Beds</li> <li>• Hoists</li> <li>• Hygiene items</li> <li>• Electric wheelchairs &amp; scooters</li> <li>• Home modifications</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic magnifying devices</li> <li>• Prosthetics</li> <li>• Cognitive software</li> <li>• AT for visual impairment</li> <li>• Augmented &amp; alternative communication</li> <li>• Domestic robots</li> <li>• Personal emergency response systems</li> </ul>

ATs have been usefully arranged into the following typology:<sup>1</sup>

- aids, appliances and equipment (from handles to special computer interfaces);
- environmental adaptations (e.g. remote control of doors, windows & locks);
- remote monitoring devices (telecare & telehealth); and
- integrated systems (smart homes, etc.)

We do not have precise data on growth in demand for AT. But we do know that the related medical technology market is valued at over US\$300 billion per annum<sup>2</sup>. We also know that disability rates rise with the ageing of the population. By 2050 the number of Australians aged 65-85 will have doubled, whilst the number over

<sup>1</sup> Connell, Greal, Olver and Power, *Comprehensive Scoping Study on the Use of Assistive Technology by Older People Living in the Community*, Urbis for the Dept. of Health and Ageing (2008).

<sup>2</sup> Medical Technology Association of Australia. *Medical Technology: Key Facts and Figures 2012*.

85 will have quadrupled. Ageing alone will have doubled the cost healthcare<sup>3</sup>.

### Assistive Technologies Mapping & Opportunities Project (ATMOP)

ATMOP is a practical economic development project centred on diversifying our economic base by identifying and capturing high value targets in high growth AT. It is a critical element in the urgently needed response to the demise of the automotive sector by transitioning certain manufacturing businesses and workers into ‘Assistive Technologies’ (AT) – products and services used in the care and support for aged and disabled people.

ATMOP will identify credible high value opportunities and targets for an industry development and investment attraction strategy.

The project is based on a structured on-going industry engagement program including workshops, to examine opportunities for SA firms to benefit from opportunities in this sector, including understanding international trends and future technologies. It will include consideration of an **Assistive Technologies Industry Innovation Centre (ATIIC)** as an enabler for the industrial transition of northern Adelaide in association with the SA Government, WISeR, the newly established Stretton Centre and northern Adelaide local councils, together with medical technology researchers and the Medical Devices Partnering Program centred at Flinders University and Tonsley Park. Importantly, the project includes the participation of Germany’s premier technology and industry development body, Fraunhofer Gesellschaft, which has extensive expertise in the area of industry policy and innovation strategy. The project will draw from Fraunhofer’s expertise in international trends in technology, industry economics and industry development strategy relevant to Assistive Technologies.

Research for this project is well underway with two studies now completed:

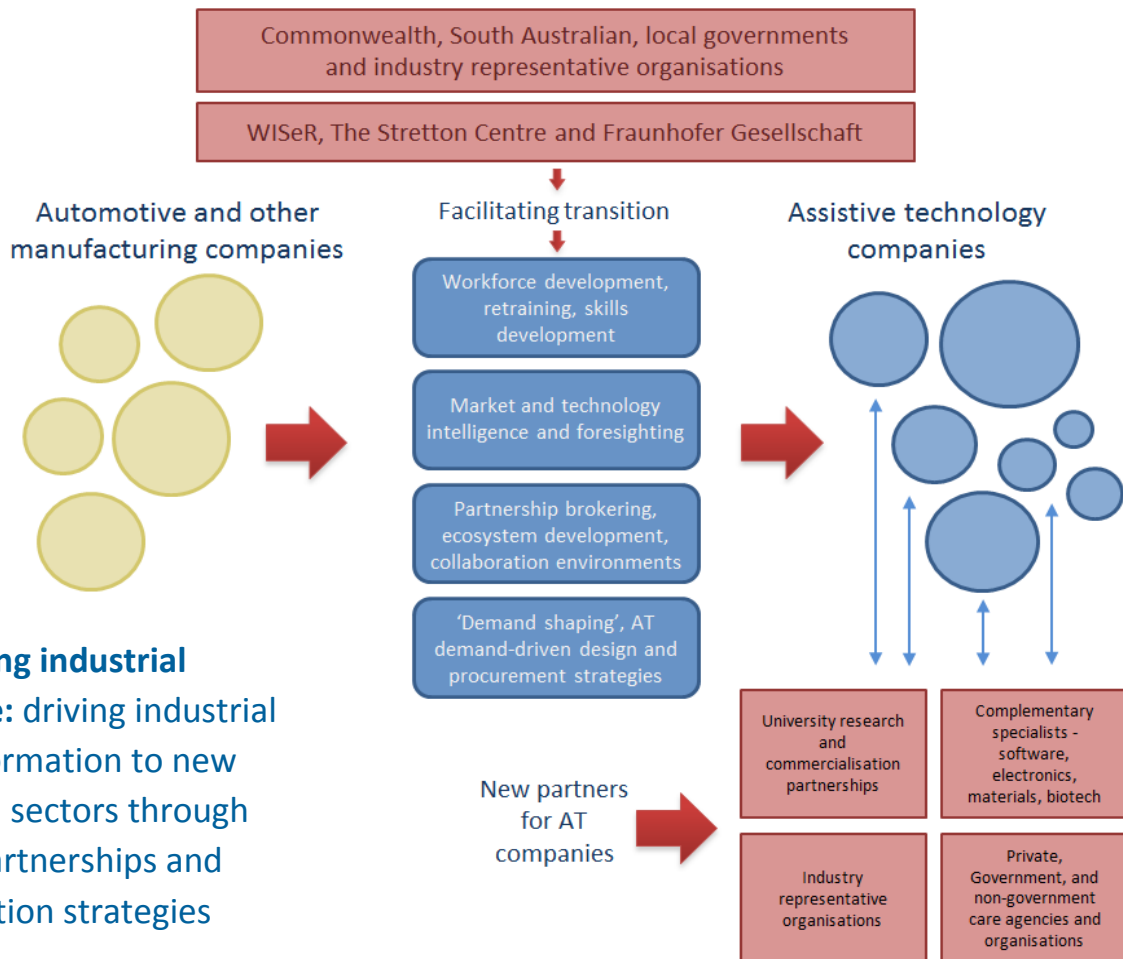
- a survey and analysis of purchasing and use of AT by SA care providers; and
- a survey and analysis of the readiness and capabilities of SA automotive manufacturing businesses to respond to opportunities in AT.

### Opportunities in Assistive Technologies

There are opportunities to carefully target and lead local industry and business development toward areas of strong potential demand growth along selected parts of the Assistive Technologies value chain. The growth in demand for assistive technologies in wealthy societies is being driven by:

- greater life expectancy and concomitant increases in age-related health expenditures;

<sup>3</sup> Ibid



## Mapping industrial change: driving industrial transformation to new growth sectors through new partnerships and facilitation strategies

- demands for higher quality disability support and care, resulting in establishment of Disability Care Australia and the national disability insurance scheme;
- the general shift towards higher consumption of services as income grows;
- the increasing bundling of services with advanced manufacturing, highly evident with AT;
- rapid technological innovation that makes the satisfaction of these demands possible, alongside the creation of new wants; and
- reform in aged care through the *Living Longer, Living Better* policy agenda, a key focus of which is Consumer Directed Care (CDC).

Assistive Technologies include market segments that are precisely the type of 'new manufacturing' South Australia needs and in which we can be competitive. In many product/market segments, assistive products are not reliant on low costs, they are characterised by high-income elasticity of demand (the demand for them grows disproportionately as consumer income grows) and generally command high margins. They are, prime facie, well-suited to high-wage, high cost and high knowledge and skill economies such as Australia. **A growing class of relatively well-off self-funded retirees is likely to demand high quality assistive products and services.**

Furthermore, the technical characteristics of production in many segments within Assistive Technologies do not necessarily require large scale to achieve competitiveness. And many new technological applications, such as additive manufacturing, will reinforce the ability of smaller firms and clusters of firms, to be competitive internationally. This opens up opportunities for SA as a small business state.

These potential local advantages are further reinforced by:

- the high service and customisation requirement inherent in the sector, favouring local activity;
- the aged and disability sector's high service and labour intensive characteristics;

- the potential to use standards, including sophisticated testing and compliance, as a competitive advantage, including rapidity to market, to favour local activity;
- the requirement for use of materials that are both very light and very strong, such as titanium (Australia has abundant titanium dioxide, and the CSIRO is interested in helping to develop an Australian processing capability);
- the potential to apply strengths from auto to AT, including high process engineering skills, expertise in materials science and technology, and computer controlled processes, etc.;
- the opportunity to use deliberately cultivated closeness between end-users, industry, suppliers, prescribers, funders and the education and research sector; and
- the potential to leverage public procurement and major projects<sup>4</sup>, including the impacts of 'Manufacturing Works', the SBIR and the new Industry Participation Policy, the new RAH and SAHMRI, the Lyell McEwen upgrade, the National Broadband Network rollout, and the development of the Tonsley Park precinct.

### Next steps

WISeR is working with State and Local governments, Fraunhofer Gesellschaft, South Australian universities and specialist university-based research organisations, industry associations, and care providers. Over 2014 WISeR, DMITRE and Fraunhofer will work with SA industry to first identify and second capture, high value industry development opportunities in Assistive Technologies.

<sup>4</sup> Some of the \$120 billion of annual Australian health expenditure can be leveraged in this way, as is explicitly done in the UK, for example.