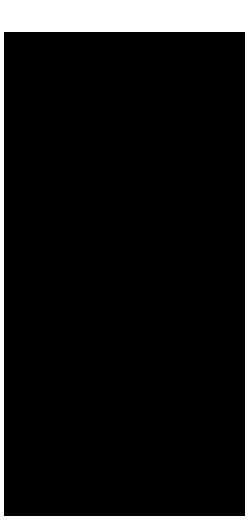
Swinburne University of Technology



Victoria's Future Industries - Transport Technologies

Swinburne discussion paper

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Transport Technologies - Swinburne discussion paper

Introduction

Swinburne University of Technology ("Swinburne") is pleased to make this submission to the Victorian Government's Future Industries taskforce. We believe it is vital for Victorian business, industry, government and communities to have these discussions about how we grow, or transition existing industries into new and emerging markets.

The Swinburne response focuses on the University's areas of research expertise in manufacturing including Industry

1. Question 1: How can Victorian businesses best access new sales channels and emerging markets?

In order for Victorian businesses to understand their unique selling proposition and to be globally competitive, it is critical for them to understand global markets, trends and opportunities. One key element of this is to gather and distribute market intelligence. University market research expertise, combined with information from their global partner networks can be a valuable resource in identifying research opportunities, emerging trends, potential partners and untapped markets.

In terms of relationship management and development, Austrade is a very effective and highly regarded channel to connect Australian businesses into global supply chains. One of Government's key roles in the export trade space is to facilitate ongoing communication with supply chains and organise trade missions.

2. Question 2: What is the transport equipment sector's unique selling proposition in international markets?

The transport equipment sector has two unique selling propositions in international markets: 1) expertise in light weighting and 2) quality of our engineers.

In terms of light weighting, Australian research is developing light vehicle structural components that have a high capacity to absorb energy. The goal is to reduce the weight and increase the safety in the newly designed vehicles. While this technology will benefit all vehicles, this is an enabling technology for electric vehicles which must to reduce weight to maximise range, yet still be capable of securely holding batteries in a collision.

In regard to engineering standards, Australian engineers are recognised for their world-class design capabilities, their systems approach, their ability to work flexibly across functions and their ability to do more with less.

There are many examples of Australians coming up with ingenious, low-cost solutions to problems in manufacturing that would otherwise have been resolved with less efficiency and higher capital investment. One example is the paint facility at Kenworth trucks. This system was designed for larger, more complex facilities in North America, but was installed in a more compact, budget constrained operation in Australia. The programming and application in the Australian facilities pushed the limits of the technology, but has resulted overall in a better technical result.

Unfortunately, as a result of our positive international reputation, skilled Australian engineers are leaving the country in great numbers as multinational companies (e.g. Tesla, Apple, Google) aggressively recruit design capabilities and automotive experience. At the same time, the severe contraction in automotive manufacturing means that there are fewer local opportunities for this home-grown, world-class talent.

Recommendation 3

To limit the loss of engineering expertise to international organisations, and to benefit from the knowledge gained by Australian engineers whilst working overseas, it is recommended that an incentivised, strategic approach is employed to retain and bring key expertise back to Australia. Elements of the VESKI fellows programs are already effective in encouraging successful expatriate academic leaders to return to Australia and could serve as a model.

3. Question 3: Where are the opportunities for Victorian firms to partner with overseas companies to take advantage of their greater scale and technology?

A fundamental means for Victorian firms to partner with overseas companies is through collaborative schemes, CRCs and other technology hub initiatives. With the exchange of applied know-how, enabling technology and product development methods, we can liaise with overseas organisations to access their capacity (i.e. capability for capacity).

An example of this is the eBus program at Swinburne. This program is providing technical capability via a collaborative applied research project for a joint venture between Australian bus manufacturer Bustech, and Malaysian joint venture start-up Amber Dual. A new product offering is being developed, with Swinburne as a key technology provider. The expected outcome is international market access and growth for Bustech, and potentially a new supply chain into Australia for sub-assemblies that have a high labour content.

Australia must consider how we can partner more closely with German industry and universities with the aim of successfully emulating the Leading-edge "*Spitzencluster"* model. German industry is leading the world in adopting the Industry 4.0 model and incorporating process automation. We have an opportunity to partner with them and learn from their experiences to ensure we are not left behind.

Recommendation 4

Victorian industry would welcome the opportunity to meet more potential international business partners through government facilitated inbound and outbound trade missions. This needs to be complemented by facilitated access to information about EU funding programs that are potentially relevant to partnerships involving Victorian companies. An emphasis on German companies would be welcomed by the local manufacturing sector, given that Germany has a similar high wage economy to Australia and an enviable record of industry-research partnerships.

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skills requirements, ensuring a large proportion of local professionals find employment with these organisations.

On a local level, the Victorian Government can play a role to facilitate business to business connections and to support the development of clusters around key technologies. Professor Goran Roos, a renowned academic in innovation management, has worked with the Geelong Manufacturing Council to establish clusters in the Geelong region. This model could be rolled out to other areas, based on a clear understanding of the technology needs of specific industries.

Recommendation 5

Develop a relationship with best practice agencies, such as IDA Ireland or Scotland's Interface, and understand the drivers of their success. This will enable the Victorian Government to build on the good work from Invest Victoria and develop a very long-term, strategic plan to attract multinational corporations to Victoria, bringing new technology and global linkages.

Recommendation 6

Consider how Professor Goran Roos' work with the Geelong Manufacturing Council can be expended to other industries in Victoria.

7. Question 7: How can Victorian transport equipment manufacturers capitalise on the state's strong research base?

Victoria has a strong research base and Universities are increasingly becoming more outwardly focussed on understanding and solving the challenges faced by industry. Effective research organisation/industry liaison is fundamental to maximising the success of such collaborations. Many businesses don't understand the required investment in time and resources to obtain successful outputs from research.

An interesting case-in-point is the proliferation of crowd-funded new product development. The majority of crowd-funded programs are underfunded and underestimate the time and effort required to bring new technology to market. Effectively they become market research exercises, rather than genuine providers of capital that allows research to be commercialised. The successful ones are not only the most tenacious, but they only promise what they can deliver and have a clever way of managing downside risk.

Recent national dialogue and numerous well credentialed studies highlight the poor performance of Australia (within the OECD) on industry-research collaborations. This unarguable market failure warrants concerted action by both state and federal governments though programs that improve industry-research linkages (see Recommendations 5 and 6 above) and support a more robust venture capital sector in Australia.

11. Question 15: Where are the specific skills and training gaps and how best can we build, attract and retain the right skills in the transport equipment sector?

Local industry has identified a need for training in industrial automation of processes, control systems, mechatronics and robotics.

To facilitate the

From a personnel perspective, having the ability to attract and retain our top graduates is integral to the future success of the industry in Australia.

Swinburne thanks the following for their contribution to this paper:

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Sincerely,

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