BRIEFING NOTE

TECHNOLOGY IN RAIL

Importance of technology

Investing in technology and innovation is a key part of ensuring the rail industry's international competitiveness for years to come.

Technology will be key to enhancing supply chain capabilities and support the sustainable development of rail suppliers over time. The long term success of the rail industry will require it to build its reputation as a leading innovator and adopter of technology and smart solutions. Supporting the industry in this work is one of the Australasian Railway Association's (ARA) strategic objectives.

Challenges

Research and Development (R&D) is a crucial component of innovation and a key factor in developing new competitive advantages. R&D contributes to innovation, improved productivity and, ultimately, to jobs creation and economic growth. Yet, investment in R&D in Australia remains relatively low compared to other OECD countries. The Australian rail sector has lagged in the adoption of new technologies. This has been partly constrained by existing procurement processes.

It is crucial governments support R&D and commercialisation activities to promote continued investment in the rail industry and the transport sector more broadly. Local suppliers must be encouraged to embark on R&D or invest in new technologies that make our supply chain more effective. The benefits of doing so is clear: more efficient operations that generate new opportunities for growth.

The current uncertainty and risk related to international supply chains as a result of COVID-19 highlights the importance of reliable, local capability and, in turn, the importance of investment in R&D to identify and maintain areas of competitive advantage for Australian industries.

The key challenges faced by the Australian rail industry supply chain include:

- limited funding and access to R&D and collaboration mechanisms
- risk averse nature of rail procurers regarding the adoption of new technologies
- procurement approaches based on prescriptive standards and products, instead of procuring a solution to a problem
- protracted approval processes
- differing approaches by states and territories to support 'local suppliers', without national considerations
- lack of visibility and certainty of long term project pipelines, where economies of scales can be achieved to invest in new technologies, and the vulnerability of projects based on politics
- lack of a national technology roadmap and leadership by government

Background

With significant capital expenditure planned in the rail industry over the next 10 years, a cohesive approach to R&D and technology development, supported by government incentives, will be crucial to maximising efficiency and productivity gains. However, there is currently a disconnect between planning, action, support and adoption when in comes to investment in these areas. The ARA seeks to create clarity on the role overnments, purchasers, suppliers and researchers should play to foster a strong innovation culture in the industry and support the development and adoption of new technologies.

The need for clarity was identified in *The Smart Rail Route Map* in 2019. The map identified 10 priority initiatives to improve the industry's ability to adopt and keep pace with digital and telecommunication technologies over the next 30 years. The report provides the framework for how the next generation of rail technologies can be integrated and supported in the areas of standardisation, integration and harmonisation, but doesn't dictate technologies.

Research in the rail industry has been driven in part by Cooperative Research Centers (CRC) since 2001, providing opportunities for collaboration between researchers and industry with co-funding support available. The previously established Rail CRC and Rail Innovation CRC are no longer in operation.

The Rail Manufacturing CRC, which is due to conclude in June 2020, was established in response to the 2012 technology roadmap *On Track to 2040*. The roadmap sought to provide a strategic plan for the next phase of technology development and innovation in the rail industry. When the Rail Manufacturing CRC concludes, it is expected to leave a significant void in the rail manufacturing and suppliers' sector.

Beyond the CRCs, universities and the Australasian Centre for Rail Innovation (ACRI) support the industry by undertaking targeted, applied research and strategic analysis to solve issues for rail clients and partners.

The ARA also acknowledges the Federal Government has provided R&D tax concessions, commercialisation support programs and research funding over many years. State and territory governments have also contributed, and some continue to support R&D and the commercialisation of new technologies and products.

A cohesive business case is now needed to support the industry's growth and competitiveness over this next period of growth.

Next steps

The ARA has commissioned L.E.K. to undertake research to:

- benchmark Australia's investment, development and adoption of technology in the rail industry, compared to overseas
- outline and quantify the benefits of supporting R&D, innovation and new technology adoption for the Australian rail supply chain
- outline the challenges and barriers that currently exist for rail contractors and suppliers in developing new technologies
- outline the challenges and barriers for purchasers to adopt new technologies, including tendering practices, type approval processes and risk management considerations
- review and identify the effective mechanisms and policy settings, to provide the best conditions to support technology development and commercialisation and adoption
- identify solutions and make recommendations to overcome the identified challenges and barriers to technology, R&D adoption in Australia's rail supply chain

The report is expected to be published in August and will assist in providing a compelling and justified business case for change to support a more innovative, productive and successful rail industry.

Want to know more?

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