

SMART Infrastructure Facility



ACRI

*Applying systems
methodology to
transport operations*

smart
infrastructure facility



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The SMART Infrastructure Facility is an industry partner with The Australasian Centre for Rail Innovation (ACRI) in two research projects – the Track Worker Safety (TWS) project and the Organisational Capability Maturity Model (OCMM) project.

These initiatives are developing models to ensure the effective and safe introduction of new technologies into the rail industry – at trackside level and throughout the organisations.

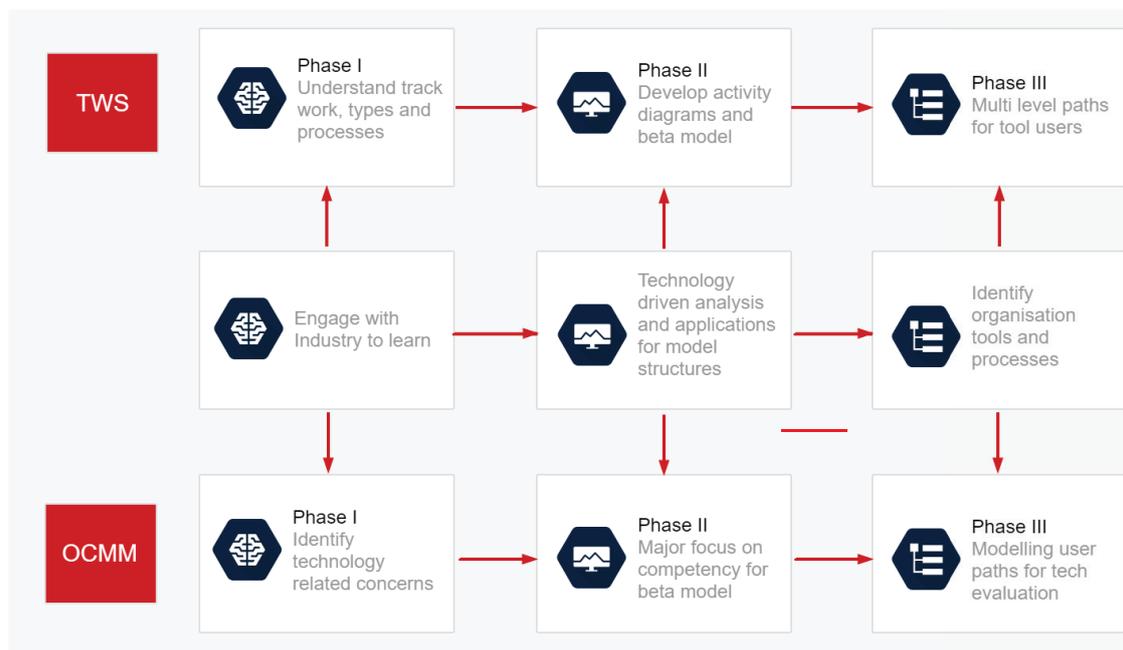
They are split into three phases.

Phase I: Knowledge gathering and development of framework models

Phase II: Detailed modelling, framework population, developing a generic model

Phase III: Integration of specific organisational tools and processes into the generic model

ACRI Phase Flow



I TRACK WORKER SAFETY

OVERVIEW

The Track Worker Safety model involves building a structured and evidence-based tool to enable rail organisations to effectively identify and respond to the effects of changes to trackside worker competence needs arising from the integration of new technology into existing systems. The tool is being built through the development of a modelling framework.

OBJECTIVE

To build a tool that will continue to evolve to address changes that result from the continued introduction of new technology in rail operations and their impact on track worker safety. It will inform management decisions by ensuring the organisation provides track workers with required competencies and processes in a timely manner and also provide track workers themselves with the means to adapt to new technologies.

PROJECTED OUTCOME

With a tool that also includes a safety assurance and risk evaluation component consistent with industry standards, rail organisations will have improved capacity to introduce new technologies and ensure continued track worker safety.

2 ORGANISATIONAL CAPABILITY MATURITY MODEL

OVERVIEW

The Organisational Capability Maturity Model addresses the complex issues which arise when installing new technologies into existing rail operation systems over extended periods of time. Specific issues include competency and training needs, safety assurance and risk mitigation, and cyber security. The model will support understanding and analysis of the effects of the introduction of new technology across all levels of a rail organisation's operations, in particular the impacts that these technologies have on human behaviour.

The model can be tailored to specific organisations and will provide insight into the human factor inter-relationships as well as system and operational performance.

OBJECTIVE

The overall purpose is to develop a modelling tool using architecture frameworks that will evolve to address the changes that result from the introduction of new technology. The approach adopted is similar to the Track Worker Safety tool however the scope of the effects of the technologies considered for introduction and the number of interdependencies at an organisational level is larger and more complex.

PROJECTED OUTCOMES

With full knowledge of new technology impacts and required staff competencies, rail organisations will have a tool to directly impact operational efficiency, providing greater value for investment and improving productivity.

COLLABORATORS



The Australasian Centre for Rail Innovation facilitates targeted, applied and collaborative research and strategic analysis to solve issues raised by rail industry participants or other entities to improve the safety, efficiency, connectivity and sustainability of the Australasian rail industry.

ACRI participants who have directly collaborated on the models described include Transport for NSW, Sydney Trains, Queensland Department of Transport and Main Roads, Queensland Rail, South Australian Department of Planning, Transport and Infrastructure, and Public Transport Authority of WA.

SMART Infrastructure Facility (SMART) is one of the largest research institutions in the world dedicated to helping governments and businesses better plan for the future. SMART's work is augmented by collaborations with experts across the University of Wollongong's faculties in infrastructure-related fields such as energy generation and storage, water sustainability, environmental engineering, spatial geotechnics and social planning.



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