



Shaping the future of rail

Urban Rail

The CRC for Rail Innovation continues to support a wide portfolio of research into urban railways. Significant research developments have expanded knowledge and resulted in improvements to Australian urban railways.



An Australian Government Initiative





Our projects

URBAN RAIL TRAVEL BEHAVIOUR R1.130

Over the past decade, most Australian urban rail networks have seen significant increases in rail patronage. These increases have placed considerable stress on rail services in some areas and have resulted in excess capacity in others. Urban rail managers and planners are faced with the challenge of keeping up with service demand now and into the future. They need to be able to understand the major drivers and influences on urban rail trip making behaviour in order to be able to predict, accommodate and influence changing patterns and levels of rail patronage. This project seeks to improve capabilities in forecasting urban rail trip behaviours and provide clear guidelines for the development of better forecasting and analytical models.

Improved methods for data collection from commuters on their rail choices have enabled researchers to better understand the options for managing peak demand. These benefits have been passed on to urban rail managers and planners as best practice guidelines. These guidelines can be readily incorporated into current strategic planning and management processes. These outcomes could lead to better planning and utilisation of rail operating budgets, higher levels of service deliveries, enhanced financial performance and business viability for rail operators.

STATION DESIGN R1.134

Successful railway station design underpins the safe access to and efficient use of services by commuters and their level of trip satisfaction. Rail operators across the nation are searching for ways to upgrade railway stations economically to deliver enjoyable travel experiences to their customers. To improve the image, design and architectural functions of new and redeveloped railway stations, rail operators must research passenger movements, safety and security and internal circulation. This project follows on from an earlier CRC scoping project which developed draft 'principles' for station design.

The creation of guidelines and principles will support rail operators to achieve better customer service, improve the customer experience, increase patronage and support cost-effective station designs for Australian railway networks.

DEMAND MANAGEMENT R1.107

Over the past decade, Australian metropolitan areas have experienced significant increases in urban rail patronage during peak hours. Rail operators across Australia are being challenged to meet peak demands. In many cases, rail network capacities are stressed and peak demand heavily impacts service levels and commuter satisfaction. The value of the travel experience under peak demand conditions can only be safeguarded by use of integrated approaches, improved techniques and maintenance of high standards of service.

The outcomes of this research have provided more effective approaches to balance passenger demand with the physical capacity of urban rail systems. This could lead to increases in patronage and profits as well as a reduction in traffic congestion. The findings suggested ways to improve productivity and efficiency of urban passenger rail infrastructure and services without requiring additional capital expenditure.

LIGHT RAIL R1.132

Light rail systems have the potential to relieve the stresses of road traffic congestion from Australian cities. Several systems have been built or proposed for Australia, yet debate still lingers regarding the benefits of light rail systems in Australian urban contexts. This project provides information and examples from various overseas light rail operations which show the strengths and limitations of this method of moving people about our cities.

Information on light rail systems needs to be comprehensive in scope and able to match local needs. The researchers have made accessible detailed specifications and insights on the experience of introducing light rail to traffic congested cities. Australian urban planners, rail operators and government officials can all benefit from the educational content of this research.

MOBILE TECHNOLOGY R1.129

Mobile Technology has the potential to provide 'smartphoned' commuters with useful communications on their travel choices, timetables, ticketing and real-time schedules. This research investigates the application of mobile technology to upgrade customer services across the Australian rail network. The expected outcome is enhanced customer satisfaction through improved access to timely information. The project builds on an earlier CRC scoping project, which identified a number of methods for using mobile technology to assist in communications with public transport customers.

The implementation of mobile technology will provide a number of advantages for consumers and transport operators. For the consumers, such a system would result in a streamlined transport experience, ease of access to travel information and widespread availability. The transport operators could benefit from reduced queues, less demand for cash and ticketing facilities, improved customer satisfaction and reduced infrastructure costs.

FUTURE GROWTH STRATEGIES R1.131

Urban rail operators subsidised by government funding are challenged to lighten the taxpayer's burden by improving their financial efficiency. The research project investigates several urban rail operators in Asia and Europe that achieve profitability, or nearly so, through their business activities. The reasons behind their financial success are identified and various models are suggested for Australian rail operators that have potential to provide a wider revenue base and improved profitability.

By learning from a wide range of successful Asian and European rail operation examples, Australian rail management can identify and exploit innovative opportunities for financial growth. Successful application of the research findings will improve the returns on existing investments, expand the financial base through a wider range of revenue activities, delay the requirements for certain capital projects and lessen, or even eliminate, the need for taxpayer subsidies of present rail activities. The project also provides a better understanding of what mechanisms could be used to increase patronage.

STATION ACCESS R1.133

All rail journeys begin and end at railway stations. The accessibility of these stations is a key component of a customer's overall experience. Ease of access to and from the rail station by different transport modes has a significant effect on the number of riders as well as the overall attractiveness of rail as a transport option. Different transport modes used by the public to reach their station include walking, cycling, feeder buses, park and ride and passenger drop off. Each mode has particular requirements to interface the passengers their stations.

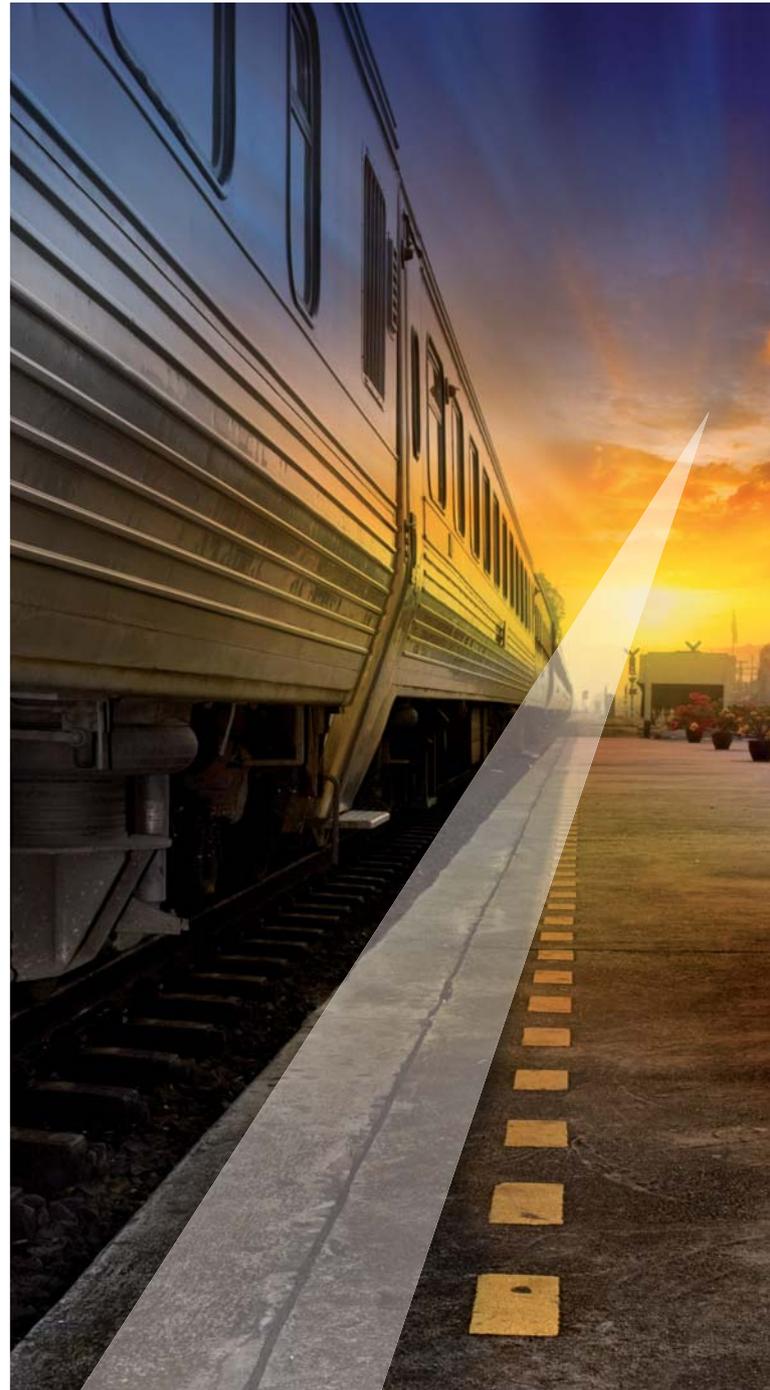
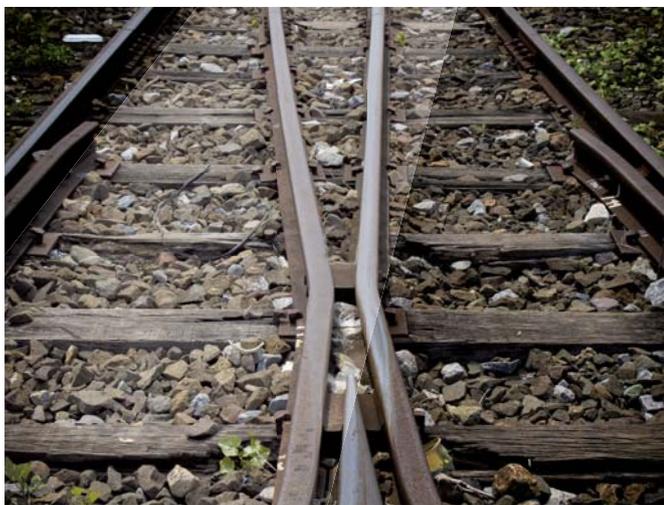
The research project investigates access to train stations, the potential for conflict between the various modes used and management of these access modes to meet customer needs and suggests ways to improve a customer's station experience. Through improvements to station access design other access modes can be supported and overall transit ridership can be increased.

The attractiveness of rail is underpinned by its ease of access for local commuters. This research is focussed on providing the planning and design tools required for improving station access, enhancing the customer's rail experience to and from station precincts, and ultimately increasing rail ridership.

CROWDING R2.104

The cost of running an urban railway in part relates to the number of people that can be accommodated on trains and platforms. Optimising the number of passengers on metropolitan railways contributes to the triple-bottom line value of Australian metropolitan rail services through the provision of efficient services for customers, return on investment for providers and increased usage of a form of transport with relatively low carbon emissions. However, the crowd density tolerance of rail-users is not well understood, especially in an Australian context. The research was designed to provide an understanding of the contributing factors to physical, emotional and cultural dimensions of crowding and alleviating factors that make the experience tolerable.

This project defined achievable areas for service improvement which, when implemented, could reduce feelings of crowdedness amongst metropolitan rail users. A book has been produced for rail industry professionals. It will assist designers with laying out carriages and using materials to improve the passenger experience and minimise or lessen the impacts of crowding.





Committed to industry led research for
the Australasian Rail Industry...

Improving urban railways

Population increases in Australia have put our urban rail networks under pressure as more people are travelling by train. In response to urban rail challenges, the CRC for Rail Innovation has brought together researchers, rail operators and regulators to find solutions to both existing issues and anticipated problems.

The CRC for Rail Innovation is supporting a number of research projects which have resulted in expanded knowledge and understanding of urban railways in an Australian context.

Developments of CRC for Rail Innovation projects studying the urban rail system are summarised in the following sections.

For more information

Visit www.railcrc.net.au for full details on Urban Rail Access projects and a range of others covering the Australian Rail Industry.

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www.railcrc.net.au

Featured Projects		Scoping and Other Projects			
R1.130	Urban Rail Travel Behaviour	R1.109	High Speed Rail	R1.124	S Urban Rail Metrics
R1.134	Station Design	R1.114	High Speed Rail – Quantification of Non-Commercial Benefits	R1.125	S Trip Generating Factors
R1.107	Demand Management	R1.116	S Strategic Urban Transport Assessment	R1.126	S Future Urban Rail Scenarios
R1.132	Light Rail	R1.118	S Urban Rail Performance	R1.127	S Emerging Technologies
R1.129	Mobile Technology	R1.119	S Business Models	R2.106	S Vandalism Literature Review
R1.131	Future Growth Strategies	R1.120	S Station Design and Experience	R3.115	S Platform Access
R1.133	Station Access	R1.121	S On-Train Experience	R3.116	S Carriage Way Access
R2.104	Crowding	R1.122	S High-Tech Customer Tools	R3.125	Carriage Way Finding Stage 2
		R1.123	S Rail Station Access		

S = Scoping