SMART RAIL ROUTE MAP

30 YEARS OUTLOOK

2019 2025 review 2030 2035 2040 2045 2050

VISION FOR TECHNOLOGY AROUND FOUR FOCUS AREAS

SHORT TERM PRIORITIES & LONGER TERM INITIATIVES FOR REVISION

Id	PRIORITISED INITIATIVES FOR SHORT-TERM COMMENCEMENT	Id	
i1	Disruption management for passenger rail	i1	**Passenger Customer Experience** — Safe, Streamlined value from data
i2	Customised information services for passenger rail	i2	
i3	Predictive journey planning techniques for passenger rail	i3	
i4	Real-time information for freight customers	i4	**Freight Customer Experience** — Cost effective on-time delivery
i5	Data sharing platform across the supply chain	i5	
i6	Identify key data requirements for T&NM	i6	**Traffic & Network Management** — Automated, Integrated Optimisatised & Adaptable culture
i7	AI and automation for system management	i7	
i8	Management of technology legacy systems	i8	
i9	Up skill the industry	i9	**High Performing Railways** — Efficient & Reliable
i10	Improve safety through advanced technology	i10	

Id	LONGER-TERM INITIATIVES	Id
i11	Management plan for interconnected rail systems	i11
i12	Integration plan for TMS into other transport modes	i12
i13	Change management program for industry culture transition	i13
i14	Predictive information services	i14
i15	Automated disruption management	i15
i16	Multi-modal efficiency	i16
i17	Management plan for digital train control	i17
i18	Incentives for investment and productivity	i18
i19	Digital & communications technology upgrade strategy	i19
i20	Cyber-security	i20
i21	Customer centric framework	i21
i22	Strategic surveillance for future threats and opportunities	i22

AUSTRALASIAN RAILWAY ASSOCIATION

RAIL MANUFACTURING CRC

IISRI — INSTITUTE FOR INTELLIGENT SYSTEMS RESEARCH AND INNOVATION

DEAKIN UNIVERSITY

> *The Route Map project is about addressing a fundamental need in Australia... it is about creating a foundation to allow the rail industry to be prepared for change and to be able to be more adaptable, more flexible and more capable of rapidly adopting technology in terms of standards, protocols and skill requirements.*
>
> *Professor Doug Creighton*
> *Deputy Director – Institute for Intelligent Systems Research and Innovation, Deakin University*

Smart Rail: Planning and Preparing for Change

With the ever-increasing rate of technological change in our industry, it is difficult to accurately predict how our industry will look in 30 years from now. We can, however, prepare for these inevitable changes which will put the rail industry in a stronger position to adapt to them when they occur.

The Smart Rail Route Map has a 30 year horizon, and identifies a long-term common view of priorities, themes, timelines and actions.

It embodies industry's commitment to ensure the rail industry does more to prepare for and proactively manage change and improve our ability to adopt, deploy and keep pace with changes in the future.

> *Technology is the key to getting more out of the assets – there are a huge amount of assets in the rail industry – and without a technology route map we won't have the direction we need to ensure the technology is optimised and industry gains the maximum benefit.*
>
> *Paul Harris*
> *Chair, ARA Telecommunications Committee; Principal Engineer - Operational Control Systems, Public Transport Victoria*

Developing a long-term vision for the Australian Rail Industry

The Smart Rail Route Map is an industry-owned and industry-driven initiative, spearheaded by the Australasian Railway Association and the Rail Manufacturing CRC, being developed by Deakin University's Institute for Intelligent Systems Research and Innovation.

The Smart Rail Route Map outlines a series of objectives and initiatives to address key challenges for the rail sector over the next 30 years. In effect, it provides a framework through which next generation rail technologies can be integrated and supported efficiently in the Australasian rail environment.

It is a strategic framework to support the adoption and deployment of digital and communication technologies in the rail industry and will provide a basis for defining the rail industry direction, development initiatives and research programs.

www.smartrail.net.au

SMART RAIL

DEVELOPED BY INDUSTRY. FOR INDUSTRY.

High level priorities

Smart Rail maps ten programs, actions and initiatives which industry members have identified as high-level priorities for development. These short term programs, actions and initiatives are structured against four focus areas: Passenger Customer Experience; Freight Customer Experience; Traffic and Network Management and High Performing Railways.

01 **Disruption management for passenger rail:** *Communicating effectively with customers during disruption.*

02 **Customised information services for passenger rail:** *Developing information services to passengers.*

03 **Predictive journey planning techniques for passenger rail:** *Providing journey listing options for current and future travel.*

04 **Real-time information for freight customers:** *Supporting the ability of freight customers to secure on time delivery and to track and trace their location using the Internet of Things.*

05 **Data sharing platform across the freight supply chain:** *Implementing a data sharing platform across the industry.*

06 **Identify key data requirements for traffic and network management:** *Defining what information and knowledge can be developed from data.*

07 **AI and automation for system management:** *Working towards industry agreement on the adoption of a global approach for a standard data exchange and formatting.*

08 **Management of technology traffic and network legacy systems:** *managing the transition to new digital technologies.*

09 **Upskill the industry:** *A staged program to up-skill the industry.*

10 **Improve safety through advanced technology:** *A program to introduce new technology systems that facilitate early detection of safety threats and an early response.*

> *Smart Rail is important because it has been a collaboration of all parts of the rail industry and it sets out how we are going to embrace the latest technology. It is also important because it sets out some important objectives and initiatives and timescales with those, and so it is a very concrete piece of work.*
>
> Anna Squire
> ARA Board Member
> Australasia Rail Business Leader, Arup

> *Harmonisation is critical to the future of the rail industry, particularly in the digital age and the development of SMART RAIL is an important step in bringing efficiencies and improved productivity across the rail industry at a time when change is rapid and pronounced.*
>
> Paul Daly
> Chief Executive Officer
> Rail Industry Safety and Standards Board (RISSB)

Potential Benefits

☑ passenger rail safety, timeliness, convenience and value-added services

☑ freight customer cost-effective services and on-time delivery

☑ harmonised and integrated public transport systems that enable seamless end to end journey

☑ cost effective and efficient customer centric operations

☑ smart asset management and maintenance

☑ workforce digital and technological skills and competencies

> *Smart Rail is a fundamental initiative that will allow the rail industry to come together, collaborate on some really important issues and to lay some critical foundations for the digitalisation of the industry moving forward.*
>
> Bonnie Ryan
> Director, Centre for Supply Chain & Logistics, GS1 Australia

Consultation

The ARA has held a number of industry workshops throughout 2018 to develop the Smart Rail Route Map, with more than 250 people taking part. This has included the 2018 Telecommunications and Technology Forum, where delegates and speakers provided feedback on the draft report.

The Smart Rail draft interm report is being released at AusRAIL 2018 to provide industry with a further opoprtunity to provide their input, feedback and comments. Following this, the ARA will establish an Executive Committee to priortise the actions and initiatives for ongoing development and implementation.

> *The key to Smart Rail is that it is an industry-led initiative involving a large cross section of the rail sector. Collaboration of this kind is the first step to ensure the outcomes of Smart Rail are implemented and will add value to Australasia's rail industry.*
>
> Dr Stuart Thomson
> Chief Executive Officer
> Rail Manufacturing CRC

SMART RAIL WORKSHOP TWO - SYDNEY (AUGUST 2018)