CRC for Rail Innovation
Australia

David George
CRC for Rail Innovation

Established and Supported under Australia’s Cooperative Research Centres Programme
Australian Railways
An Exciting Time for Rail

- Long term growth and major investment
- Rail providing solutions to environmental and congestion problems
- Challenge of attracting and retaining employees
- Unprecedented opportunities for innovation and development and adoption of new technologies
Rail Industry: Size

- Labour force: 100,000 people (+70,000 working in industries supporting rail)
- Investment Commitments in rollingstock and track $36bn
- Track: 44,262 km
- 725 million annual customer journeys
- 720 million tonnes of freight moved across the country
- Over 1,800 locomotives; 32,000 wagons and carriages
Collaborative Research to achieve more with less

- $100m research program over 7 years
- Collaboration between rail industry and seven Australian universities
- Over 50 projects underway
- Industry driven, adoption focused research
Collaborative vs Competitive Research

CRC Collaborative Research

Increasing size of industry cake

Not Competitive, Geography or Supply Chain specific research

Industry fighting for its slice of the cake, Not Geographically or Supply chain specific research
Six Research Themes

The Rail CRC research program is focusing on six themes:

- Safety & Security
- Climate Change and the Environment
- Performance
- Smart Technologies
- Urban Rail Access
- Workforce Development
Safety & Security

- **Fatigue and Safety Culture**
  Improved operational flexibilities and increased safety.

- **Level Crossings** –
  - Affordable level crossings
  - ITS for safer level crossings

  Suite of research targeting 15% reduction in level crossing accidents from all initiatives.

- **Driving Strategies (Simulators)**
  - Route knowledge acquisition
  - Driving strategies
  - DOO
  - SPADS

  Reduced training costs and increased safety
Climate Change and the Environment

Catalyst for Environmental Improvement

- Improved Noise Management
- Climate Change
- Environmental Regulations & Promoting Technological Change
Performance 1

Rail & Structures

- Insulated Rail Joints
- Corrugation Detection
- Rail Grinding Best Practices
- Short Pitch Irregularities
- Rail Squat Strategies & Loco Adhesion
- Life Cycle Management of Bridges
Performance 2

Sub Rail
- Ballast Design & Non-Destructive Ballast Assessment
- Track Stability Management
- Wheel-Rail Interface
- New Wheel Steels
- Curve Lubrication
- Integrated Wear-Fatigue Lubrication
- Improved Standards/Operations
- Interoperability
- Extreme Weather Conditions
Smart Technologies

- Future Operations & Train Motive Power Technologies
- Train Planning Assessment Tools
- Dynamic Crew Allocation
- Human Factor Analytical Tools
Urban Rail Access

**Future Systems**
- Demand management
- Future growth strategies
- Urban rail travel behaviour
- Mobile technology

**Customer Service**
- Urban rail demand management
- Station design
- Station access

All Australasian urban rail operators are in the CRC.

**High Speed Rail in the Australian context**

**Light Rail study**
Time for High Speed rail in Australia
Workforce Development

- Skilled Migration
- Attraction and Industry Image
- Staff Retention and Engagement
- National Rail Safety Management Program
- Leadership capability development
- Scoping the potential of e-learning in rail
- Skills Recognition
Adoption and Commercialisation

- Delivering tools and knowledge to industry
- Delivering maximum benefit to participants through early and effective collaboration, and adoption or commercialisation of research outcomes.
4 Courses to Masters Level

- **Courses** – Railway Signalling & Telecoms, Railway Operations, Rollingstock, Infrastructure

- **Graduate Certificate** – 3 courses, March to February – one course per term sequentially – delivered on-line

- **Graduate Diploma** – Graduate Certificate plus 3 courses, March to February – one course per term sequentially – delivered on-line

- **Masters** – Graduate Diploma plus 3 courses, March to February – one course per term sequentially – delivered on-line

- Available to international students
Knowledge Bank and IRRB Research Portal
Thank you for your attention
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