



TRACK CONSTRUCTION AND MAINTENANCE IN AUSTRALIA

GLEISBAU UND INSTANDHALTUNG IN AUSTRALIEN

Gerfried (Garry) Thür
ÖVG Tagung, 17.9.2015

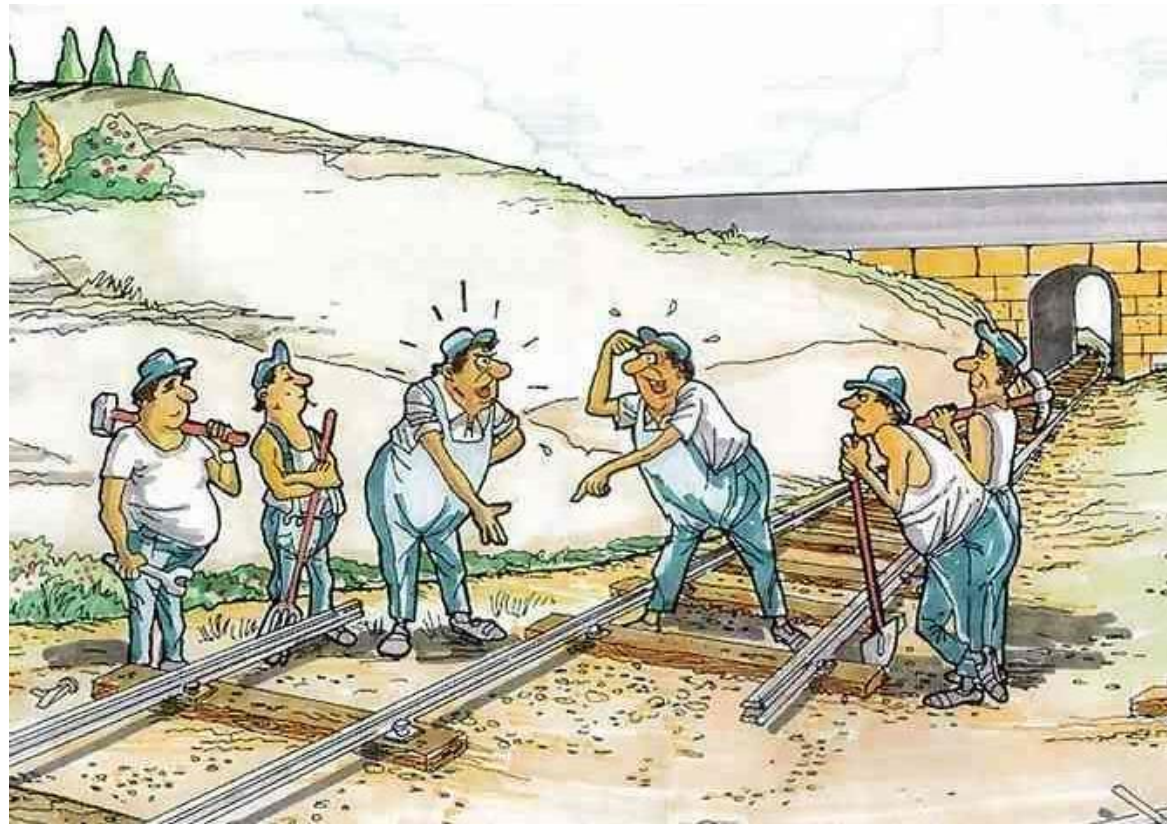


Australians were “unaware” that a number of the country’s key freight systems, “are just not up to scratch due to neglect, regulatory overload and short-termism”.

“Australia’s enduring success has bred complacency in many quarters – the ‘she’ll be right, mate’ attitude.

(Lance Hockridge on 11 June 2015, Chief Executive of Aurizon, Australia’s largest rail freight operator (hauling 250 million tonnes per year) and heavy haul infrastructure owner of 2,670km in Queensland)

IS IT REALLY SO BAD?

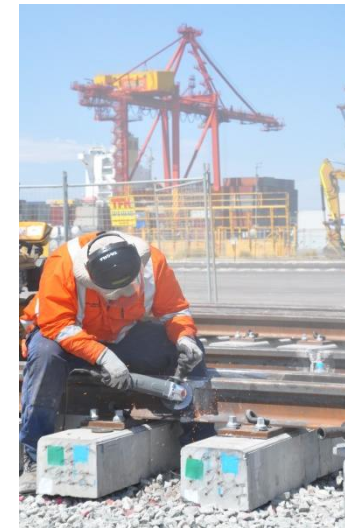
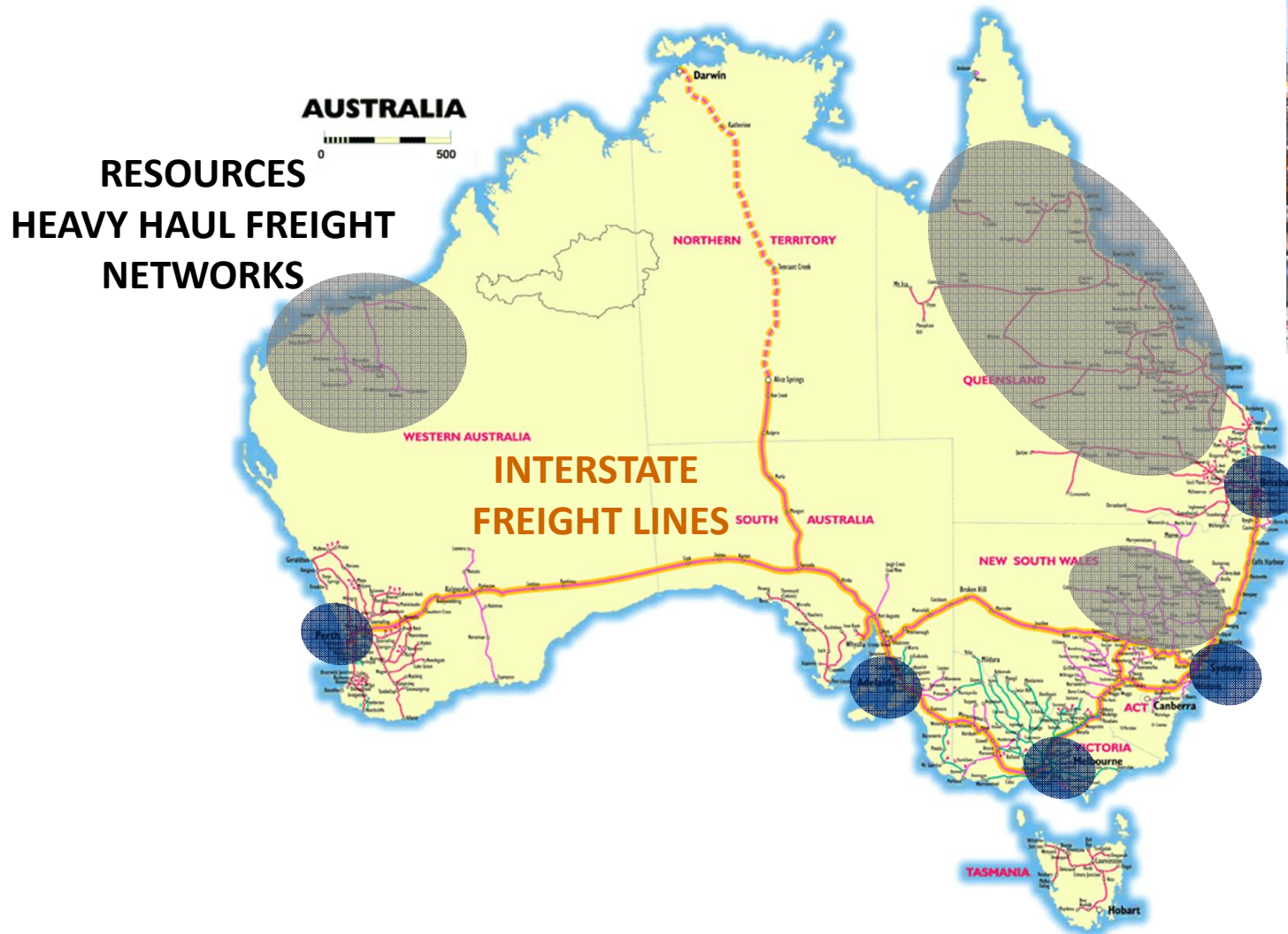


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DIVERSE RAIL NETWORK WITH DIFFERENT DEMANDS



**CITIES –
METROPOLITAN
RAIL NETWORKS;
LIGHT RAIL**

KEY PROJECTS AROUND AUSTRALIA

National

- Inland Rail: Brisbane - Melbourne
- ARTC Advanced Train Management System

Western Australia

- Perth City Link
- Forrestfield-Airport Link
- LightMax

South Australia

- Gawler line electrification
- New electric rolling stock

Victoria

- Regional Rail Link
- Cranbourne-Pakenham Rail Corridor
- Metro Rail Capacity
- Melbourne Airport Rail Link
- Yarra Tram's Route 96
- New rolling stock and E-Class Trams
- Murray Basin Rail Project

Tasmania

- Bell Bay Port expansion
- Freight Rail Revitalisation

East Coast

- High Speed Rail: Brisbane - Sydney - Canberra - Melbourne

Queensland

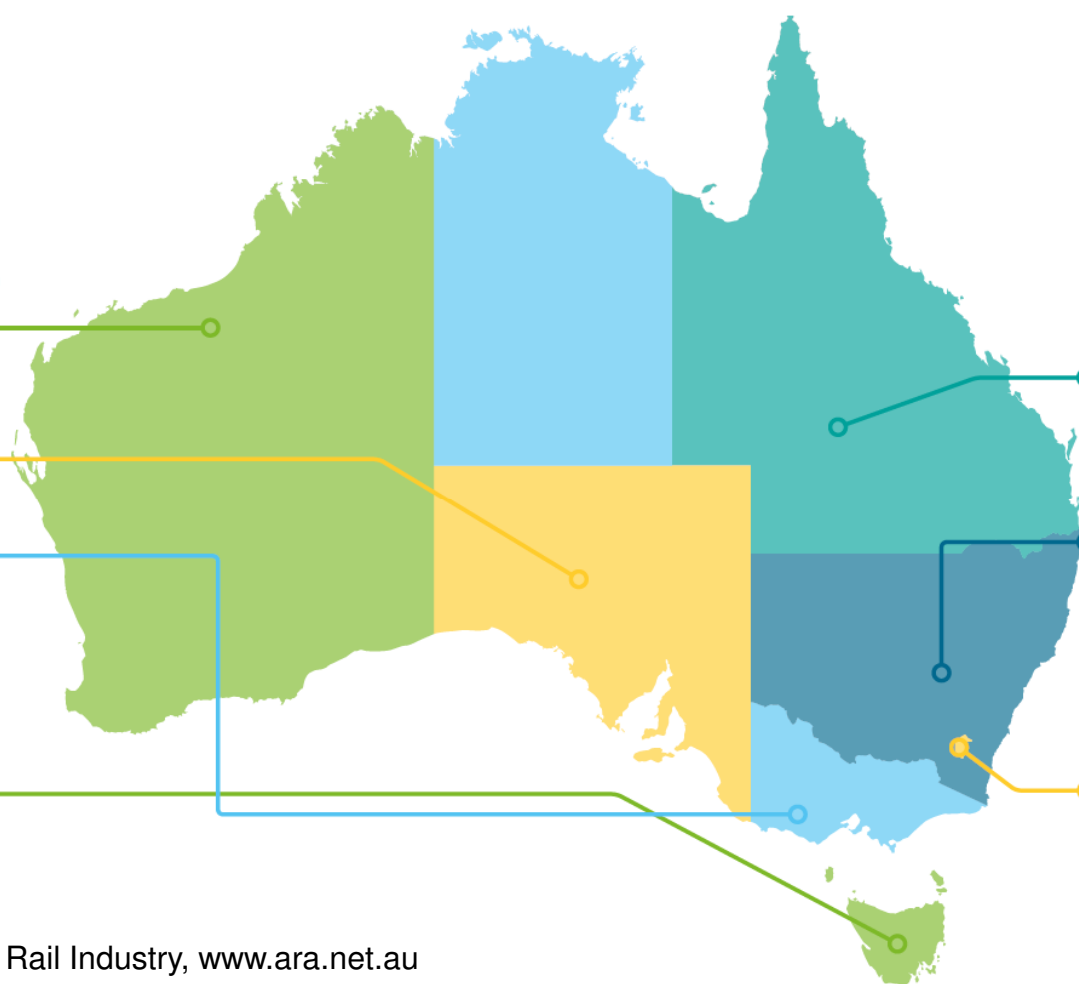
- Moreton Bay Rail Link
- Brisbane BAT Tunnel
- Gold Coast Light Rail Stage 2
- Sunshine Coast Light Rail

New South Wales

- North West Rail Link
- Rapid Transit Rail Network, including a second Sydney Harbour Crossing
- CBD and South East Light Rail
- Newcastle and Parramatta Light Rail
- New rolling stock
- Northern Sydney Freight Corridor
- Moorebank Intermodal Terminal

Australian Capital Territory

- Capital Metro Light Rail



Source: ARA, Australia's Rail Industry, www.ara.net.au

TRACK QUALITY AND STANDARDS

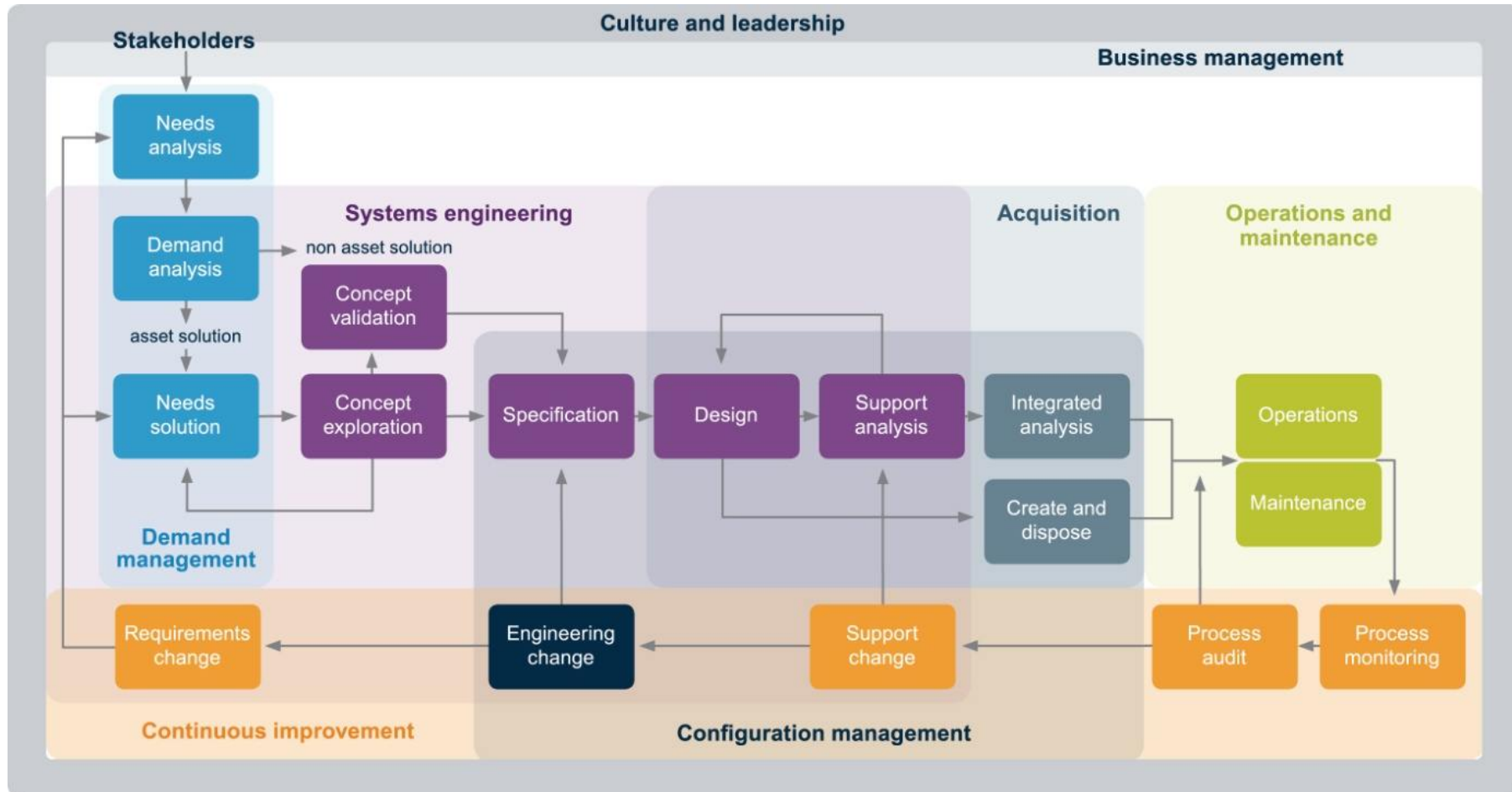
Handover tolerances for maintenance works

Categories	Passenger Ballasted track	Freight Ballast, 80km/h
Alignment Line / Horizontal	$\pm 8\text{mm}$	$\pm 4\text{mm}$
Alignment Top / Vertical	+50/-0mm	$\pm 25\text{mm}$
Superelevation	$\pm 4\text{mm}$	$\pm 5\text{mm}$
Track Gauge	$\pm 3\text{mm}$	$\pm 4\text{mm}$
Alignment at platforms	$\pm 15\text{mm}$	



ASSET MANAGEMENT AND MAINTENANCE APPROACH

National Regulator promotes integrated AM Model

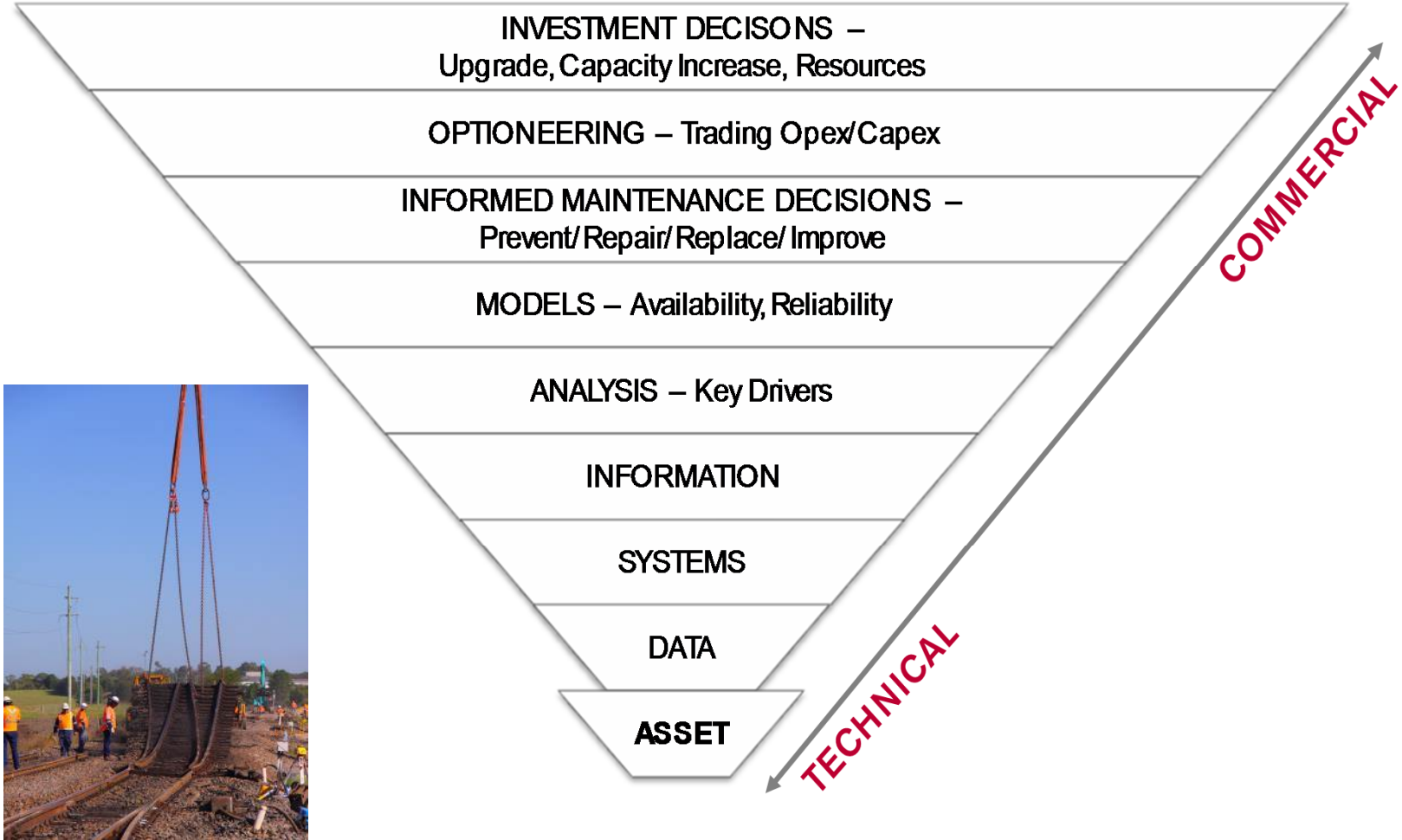


Source: Australian National Rail Regulator ONRSR

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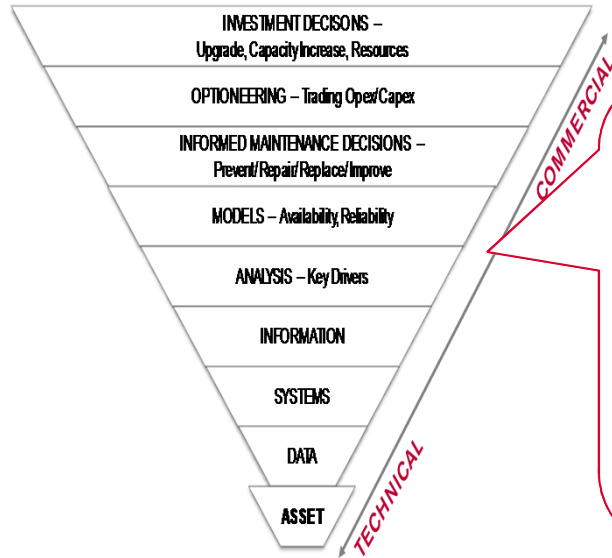
THE ASSET MANAGEMENT CHALLENGE

How to balance Technical Needs with Commercial Objectives?



KEY CHARACTERISTICS IN AUSTRALIA

What circumstances drive maintenance strategies?



- Large country - long distances to worksites
- High temperatures & high temperature differences (rail temperatures can reach 55-60°, 70° in Pilbara)
- Good access to track
- High importance of revenue trains
- Disciplined short term budget culture, profit oriented mind-set
- Aging workforce with rail knowledge



METROPOLITAN RAIL NETWORK

- Vertically integrated railways
- Sydney ahead of the pack
 - 1 million customers per weekday
 - 284 million passengers per year
 - 961km electrified track
 - 25t axle load
 - 60kg rail, concrete sleepers
- Maintenance
 - Weekend possessions
 - Conservative approach regarding materials and processes (e.g. M-FBW, USP)
- 24/7 Railways achievable?



METROPOLITAN RAIL NETWORK



Track Reconditioning
Sydney Trains



Slab Track
Epping-Chatswood
Tunnel, Sydney

INTERSTATE FREIGHT & COUNTRY NETWORK

- Australian Rail Track Corporation (ARTC) track access provider
 - 8,500 route-kilometres across Australia
 - 25t axle load, 60kg rail interstate, 47/53kg rail intrastate
 - Concrete sleepers interstate, timber/steel sleepers intrastate
 - Long single line sections
- Maintenance
 - 3 to 4 days possessions or in between trains
 - Revenue trains drive maintenance decisions



INTERSTATE FREIGHT & COUNTRY NETWORK



Pre-Build
Turnout Installation
with good track access



Typical Worksite
Adjacent Line Open

INTERSTATE FREIGHT & COUNTRY NETWORK



“Budget driven”
Concrete Re-Sleeping
outcomes

HEAVY HAUL RAIL NETWORK

- Private Sector owned and fully vertically integrated iron ore railways in Western Australia
 - 40/42t axle load, 68kg rail, up to 1200:18.5 turnouts (65m long)
 - concrete sleepers (2.5m x 23cm deep x 20/25cm wide),
 - Maintenance in between trains, ALO working
 - Revenue trains that generate each up to \$750,000 profit
- Private Sector and Government owned coal networks on the East Coast in Queensland and New South Wales
 - 32t axle load, 60kg rail, concrete sleepers
 - Maintenance in 3 to 4 days possessions or in between trains
 - Revenue trains drive maintenance decisions



HEAVY HAUL RAIL NETWORK



SAFETY ALERT

Pacific National Coal

Northern SEA

Issued 29th November 2012

Boggabri Derailment

28th November 2012 | Actual 2 | Potential 1

What happened?

At approximately 2:37pm on 28th November 2012 loaded Coal Service NB942 unit 35 was involved in a multiple wagon derailment at Cox's Creek Bridge in the Boggabri to Emerald Hill section. Preliminary information to date indicates that the last six wagons of this train have derailed, spilling approximately 500 tonnes of coal.

What injury & damage has occurred?

No injuries were sustained by the crew.
Significant damage to the last six wagons of NB942.
Extensive damage is visible on Cox's Creek Bridge and spillage of coal.

What immediate action has been taken?

Required personnel have been deployed to site to assist with site management and information gathering. The site has been quarantined by OTSI until further notice. The site has been quarantined by OTSI until further notice. Security arrangements have been made to ensure safety of personnel, public and rolling stock.

Further information will be communicated as information is made available.



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Example what happens when Annual Tonnages get way ahead of the track component Maintenance/technology regime



HEAVY HAUL RAIL NETWORK

Major Periodic Maintenance in the Pilbara on FMG Rail Line



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HEAVY HAUL RAIL NETWORK

Ballast Cleaning in the Hunter Valley



CONCLUSION

Australian rail track construction and maintenance rely on:

- Experienced rail professionals that know “their” track
- Integrated Asset Management Systems for Maintenance Planning
- Track construction with smaller type and flexible rail plant rather than big track laying machines
- Selective number of high performance maintenance machines for
 - Track geometry inspection
 - Tamping and Regulating
 - Grinding
 - Ballast Cleaning



MERCI THANK YOU GRACIAS DANKE

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