RTSA SA CHAPTER NEWSLETTER

February 2020 EDITION

WORDS FROM THE DEPARTING CHAIR – PHILLIP CAMPBELL

2019 was a good year for the SA Branch of the RTSA, with interesting site visits and presentations. My thanks to your committee for their hard work throughout the year. I would like to acknowledge the contribution of our former Chair, Mark Jordan, who returned to the UK with his family during 2019. I am pleased to handover the Chair to Stratton Killis and wish him every success in the role.

WORDS FROM THE INCOMING CHAIR – STRATTON KILLIS

Dear RTSA SA chapter members,
Happy new year to you all, I wish everyone a successful new year, along with a fresh start. My name is Stratton Killis, and I will be fulfilling the role as RTSA SA chapter chair for 2020. I would like to extend my thanks and gratitude to the outgoing chairs Mark Jordan and Phillip Campbell for all their hard work during 2019.

For those out there who do not know me, please let me introduce myself. I'm a Project Engineer with Agonis Group, and have spent the last year working as the Track Engineer for the PTPA Oaklands Grade Separation Project and the City South Tramline Renewal. I am currently engaged with DPTI on the Gawler Rail Electrification Project assisting with design process and then moving onto construction later on in the year. I hope as Chair this year, with the support of the newly elected committee, we can continue to provide our members quality presentation, networking event and site visits which are of interest to our members. If any of our members have any suggestions as to what they would like to see this year, please let one of the committee members know so we can take it into consideration.

Speaking of the new committee, please let me introduce you to them:

Chairman – Stratton Killis

Secretary – Gary Sharpe

Treasurer – Barry Aw

Committee members:

- Phillip Campbell OAM

RTSA & PWI Meeting

Meyer Road Bridge Replacement

ADDRESS
Fedora's Restaurant,
Hilton Hotel, South Road & Sir Donald Bradman Drive, Hilton SA 5033

DATE: Thursday 6th February 2020

TIME: 5.45pm for 6pm start

COST:
RTSA and EA Members- Free
Students - Free
Non Member - $30

RSVP:

Maximum CPD Hours: 1 hour(s)

www.rtsa.com.au

- Kuldeep Zala

- Tony Carbone

- Danny Chau

- Homer Milanes

A big congratulations to all elected, especially new committee members, Danny and Homer. The RTSA is always looking for new committee members, if you have any interest in joining the RTSA committee, please contact any member of the RTSA committee for more information

CORE 2020

CORE 2020 is almost upon us, don't forget to block out the 11th to the 13th of May in your calendar to attend the RTSA's flagship event. This year, CORE will be held in gorgeous Perth. Given the significant investment from both State and Federal government in WA passenger rail via the Metronet program, this is sure to be an exciting CORE

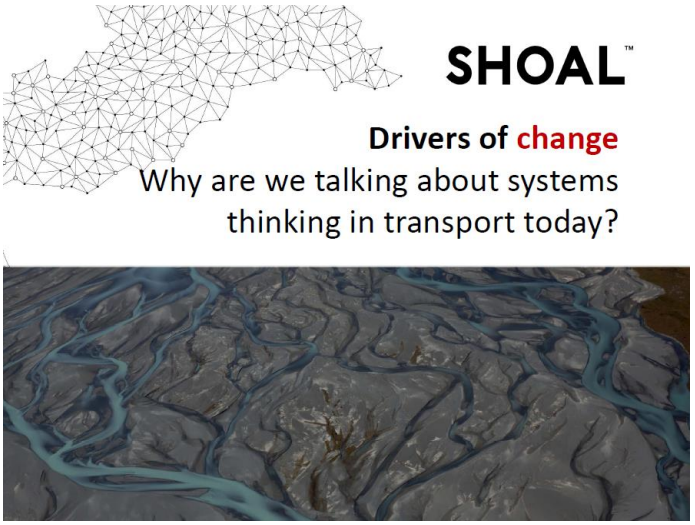
SA Chapter Next

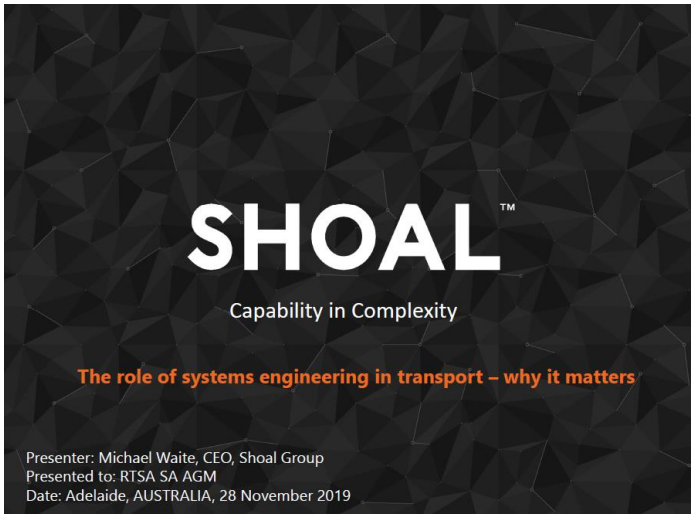
Following our General meeting at the Adelaide Convention Center and presentation from Michael Waite CEO of Shoal Group, the RTSA and PWI will be hosting a joint meeting, comprising of a presentation from Darren Crowther, Delivery Manager, PTPA on the topic of the Meyer Road bridge replacement over the electrified Seaford line in Adelaide. Immediately following the presentation, we will be hosting a networking session with a tab on the bar. Please join us to learn about the complicated bridge replacement, and network with your peers.

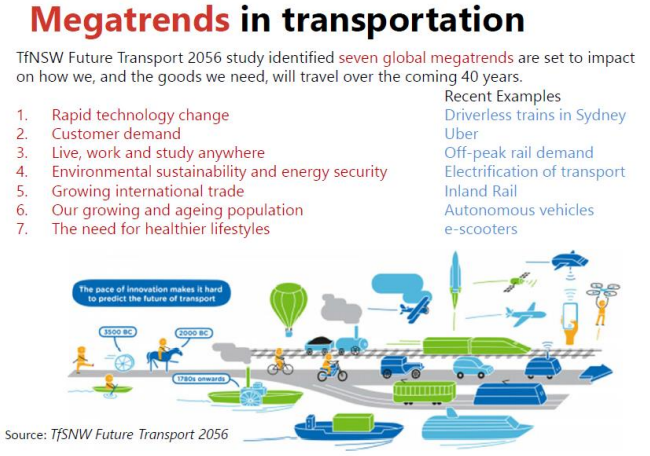
The role of systems engineering in transport – why it matters

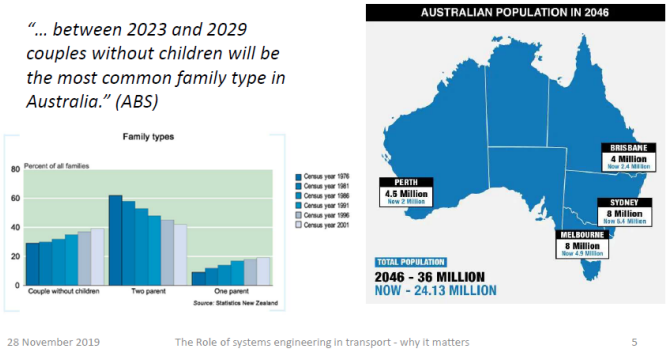
Presentation by Michael Waite, Chief Executive Officer Shoal Group

Michael is the CEO of Adelaide founded consultancy Shoal Group. He is responsible for leading the organisation, with a strong focus on a commitment to company values and culture. A passionate leader, Michael works closely with the corporate leadership team to make Shoal a leading-edge consultancy, where people are inspired to be their best. Michael is an experienced systems engineer, highly skilled in complex problem definition and system architecture, in particular using a model-based systems engineering (MBSE) approach. Micheal has an Executive Masters of Business (Complex Program Leadership) from Queensland University of Technology and a Bachelor of Engineering (Mechatronic) from the University of Adelaide.



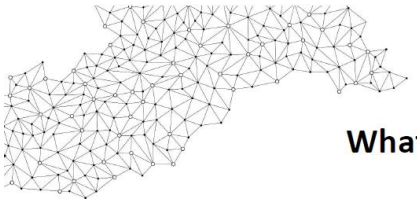






Changes in technology

Automation, digitisation, robotisation



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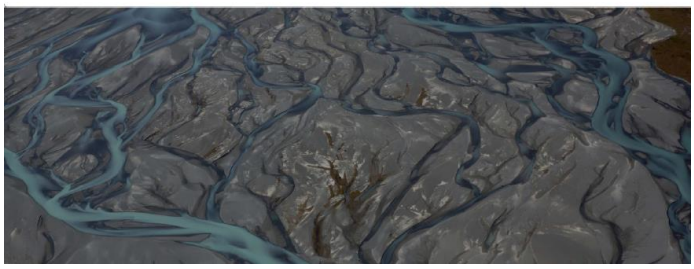
What is the market response ?

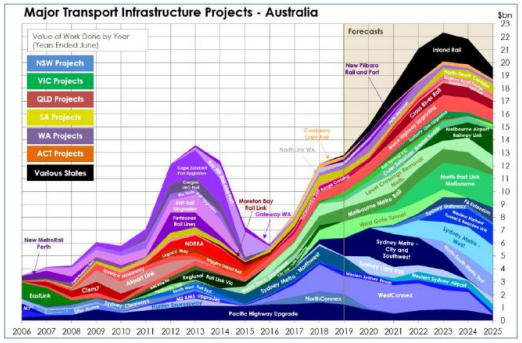


Changes in connectivity

Seamless multi-modal Information to the edge

"Lyft and Amtrak now let passengers book rides to and from the train station"

Investment in transport infrastructure

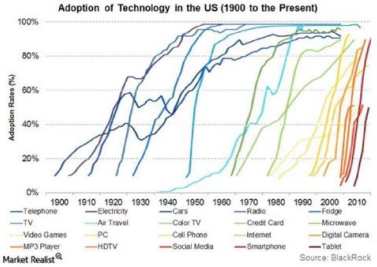


Source: Macromonitor

"It shows without a shadow of a doubt that when your population growth is over 2 or 2.5 per cent a year you really need to have substantial investment in infrastructure" – Professor John Stanley, University of Melbourne, October 2018

Changes in societal expectation

Empowered consumer



So …

… how should or can we use this unprecedented investment in public transportation to close opportunity gaps in society?

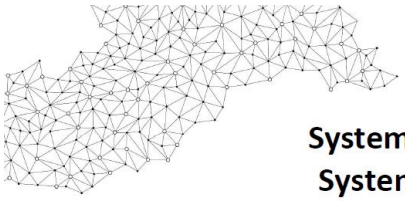
… what design approaches will help us to deliver what's needed?

ENGINEERS AUSTRALIA

RAILWAY TECHNICAL SOCIETY OF AUSTRALASIA

The RTSA is a joint technical society of Engineers Australia and Engineering New Zealand

ENGINEERING NEW ZEALAND AFFILIATED GROUP



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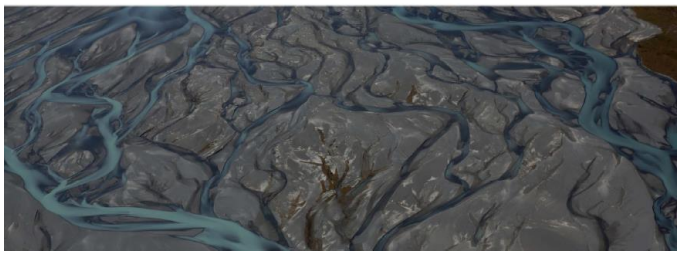
Systems thinking and Systems engineering What is it?



Systems thinking – Definitions

"Systems thinking is a management discipline that concerns an understanding of a system by examining the linkages and interactions between the components that comprise the entirety of that defined system."

The Institute for Systemic Leadership

"Systems thinking is a world-view that provides the appreciative and reflective practice based on the 'systems paradigm' concepts, patterns, etc"

Professor Stephen Cook, University of Adelaide/Shoal

"Systems thinking is a discipline for seeing wholes. It is a framework for seeing interrelationships rather than things, for seeing 'patterns of change' rather than static 'snapshots.'"

Peter Senge, MIT

28 November 2019 The Role of systems engineering in transport - why it matters 15

Holistic understanding needed

Of individual transportation systems

28 November 2019 The Role of systems engineering in transport - why it matters 13

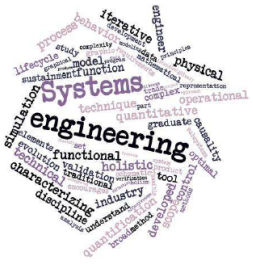
What is Systems Engineering?

"A transdisciplinary approach that applies to systems principles and concepts to enable the successful realization and use of engineered systems and whole-system solutions."

INCOSE Fellows

Focuses on defining customer needs and required functionality early in the development cycle, capturing requirements, then proceeding with design synthesis and system validation while considering the complete problem:

- Operations
- Cost & schedule
- Performance
- Training & support
- Test
- Manufacturing
- Disposal



28 November 2019 The Role of systems engineering in transport - why it matters 16

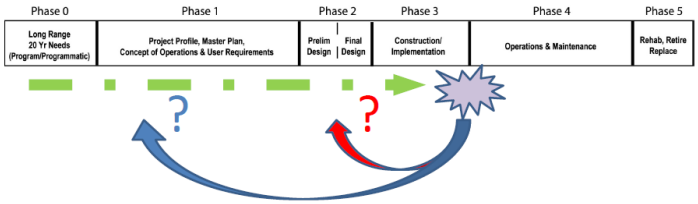
Systems of systems

The entire transport network

Key concept – Lifecycle

A mechanism for handling risk and change

Large complex projects may take many years before they are operational



Validation: Did we build the right system? Verification: Did we build the system right?

28 November 2019 The Role of systems engineering in transport - why it matters 17

Key concept – V Model

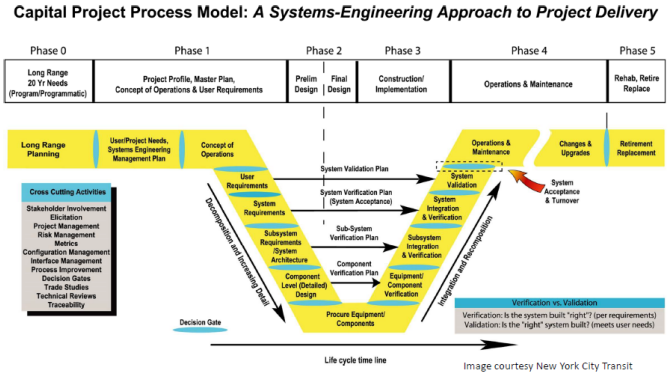
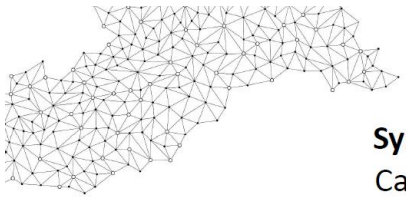


Image courtesy New York City Transit



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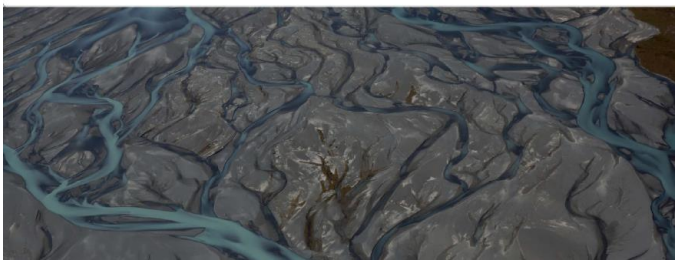
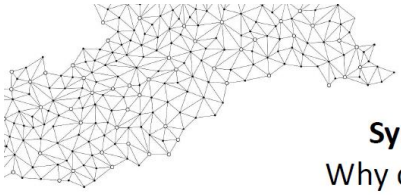
Systems thinking

Case Study - iReX





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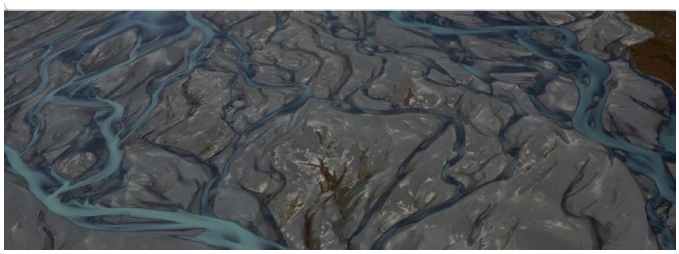
Systems thinking

Why does it matter?



KiwiRail Inter-Islander (iReX) Project

A systems methodology for replacement project

Goal

- Replacement project for current fleet of 3 ships that accommodate passenger, trucks, rolling stock

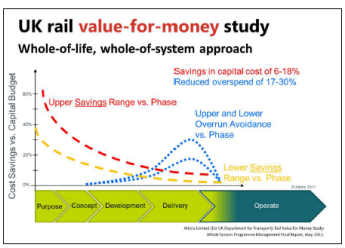
Drivers

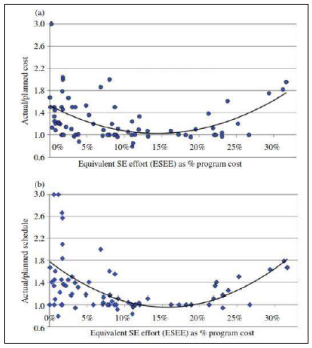
- Christchurch to Wellington/Auckland freight – road and rail
- Tourism ("Luxury service")
- Competing demands
- More volume
- Environmental

Challenges

- Impact on ports of new ships (e.g. increased # of freight cars and rail infrastructure)
- How to process unloading and offloading (Passengers and freight)

Studies demonstrate the financial benefit



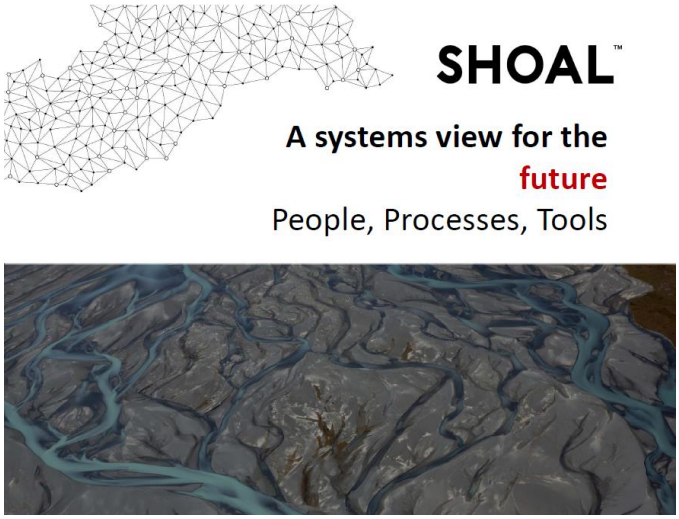


KiwiRail Inter-Islander (iReX) Project

How and Why systems engineering is helping ?

- Concept of Operations was developed (previously the Ship builder was driving the design)
- Through-life approach is complementary to other engineering
- Systems specification being developed for ship (functionality, performance, interfaces, testing regime – verification/validation)
- Leading to Improved engagement from all parties – better understanding of deliverables
- Requirements for port design (accommodation for other ships)
- Better articulation of what KiwiRail are looking for
- Designers (ships, ports) are better informed of what they need to provide to deliver the outcome

- KiwiRail now knows if they will achieve what they set out to do
- Less likely to encounter inconsistences, omissions
  - More collaborative projects
  - Schedule overrun, Dispute avoidance (see financial benefit)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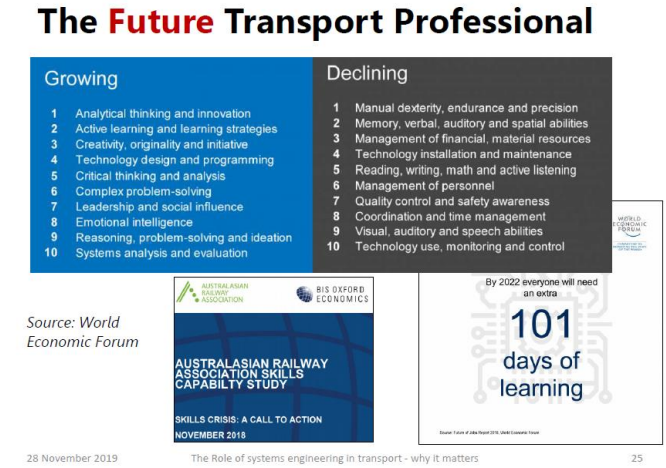
A systems view for the
future
People, Processes, Tools


The Future Transport Professional
Growing
1 Analytical thinking and innovation
2 Active learning and learning strategies
3 Creativity, originality and initiative
4 Technology design and programming
5 Critical thinking and analysis
6 Complex problem-solving
7 Leadership and social influence
8 Emotional intelligence
9 Reasoning, problem-solving and ideation
10 Systems analysis and evaluation
Declining
1 Manual dexterity, endurance and precision
2 Memory, verbal, auditory and spatial abilities
3 Management of financial, material resources
4 Technology installation and maintenance
5 Reading, writing, math and active listening
6 Management of personnel
7 Quality control and safety awareness
8 Coordination and time management
9 Visual, auditory and speech abilities
10 Technology use, monitoring and control
Source: World Economic Forum
AUSTRALASIAN RAILWAY ASSOCIATION SKILLS CAPABILTY STUDY
SKILLS CRISIS: A CALL TO ACTION
NOVEMBER 2018
By 2022 everyone will need an extra
101
days of learning
28 November 2019
The Role of systems engineering in transport - why it matters
25

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Capability in Complexity
RTSA / Engineering Australia
Adelaide, 28 November 2019

2020 RTSA MEETINGS AND EVENTS

DATE AND TIME	ACTIVITY	LOCATION
Thursday 6th FEBRUARY 2020 5:45 PM	Meyer Road Bridge Replacement	Fedora's Hilton Hotel, 264 South Road, Hilton SA (Corner of Sir Donald Bradman Drive)
Thursday 6th AUGUST 2020	PWI Awards Dinner	Fedora's Hilton Hotel, 264 South Road, Hilton SA (Corner of Sir Donald Bradman Drive)
Thursday 3rd SEPTEMBER 2020	IRSE / RTSA / PWI Joint Meeting	Fedora's Hilton Hotel, 264 South Road, Hilton SA (Corner of Sir Donald Bradman Drive)
Thursday, 26th NOVEMBER 2020	RTSA SA Division Annual Meeting	TBA

2020 RTSA Meetings will be nominally on the FIRST THURSDAY of each month from February to December. Any changes will be advised in the Newsletter, or if a last minute affair then by special notice. Presentations in BLACK are confirmed those in BLUE are provisional at this time of publication. Any reader with suggestions for a presentation that is topical and relates to the overall objectives of RTSA should contact Barry Aw (see last page for contact details).

RTSA CONTACT AND SOCIETY DETAILS

The SA Chapter Committee for 2020 comprises:

OFFICE HOLDERS	POSITION	EMAIL
Stratton Killis	Chair	stratton.killis@agonisgroup.com.au
Gary Sharpe	Secretary	gary.sharpe50@gmail.com
Barry Aw	Treasurer	barry.aw@sa.gov.au
Phillip Campbell	Committee member	PCampbell@artc.com.au
Kuldeep Zala	Committee member	kuldeep.zala@sa.gov.au
Tony Carbone	Committee member	tony.carbone@agonisgroup.com.au
Danny Chau	Committee member	danny.chau@agonisgroup.com.au
Homer Milanes	Committee member	Homer.Milanes@wsp.com

For matters directly related to the running of RTSA please contact the appropriate office holder as listed above. For general matters or membership enquiries you should contact:

RTSA SA Chapter, Engineers Australia, Level 11, 108, King William Street, Adelaide, SA, 5000

The easiest way to submit contributions for the Newsletter is by e-mail to the Editor sa@rtsa.com.au or alternatively to barry.aw@sa.gov.au.

Engineers Australia members are reminded that attendance at RTSA technical meetings and events contributes towards CPD requirements. Each RTSA technical meeting generally has a value of 1 CPD point.

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