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29 April – 1 May 2019

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A Rail Case Study: Engaging Design Teams in Requirements Management Using Effective Requirements Management Tools

Lauren Thompson MIEAust, B.Eng(Hons)



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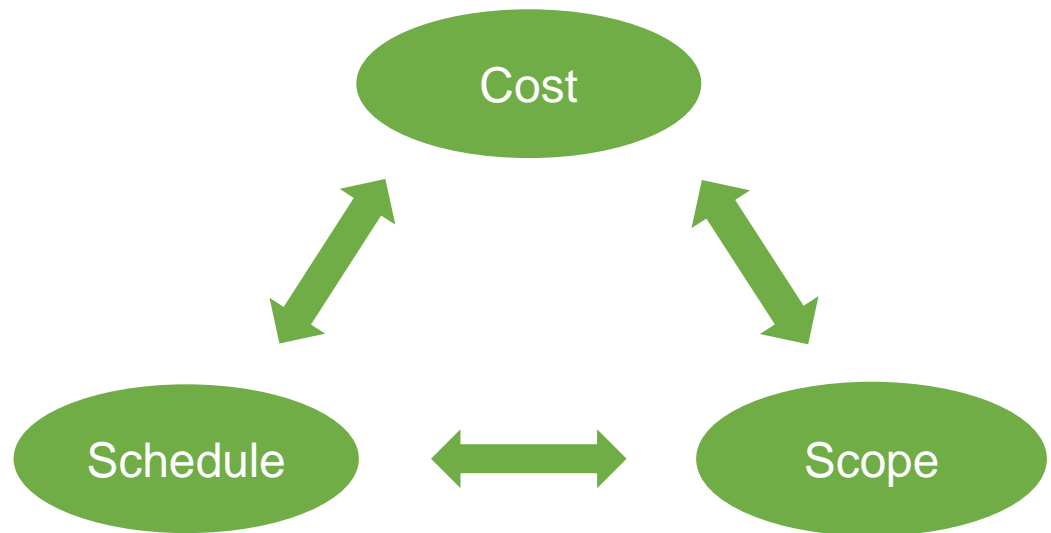


- 13 Packages
- 1,700 km span
- largest freight rail infrastructure project in Australia
- ONRSR Mandating adoption of “good practice system engineering principles”



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Challenges

Designers
resistant to change

Infrastructure is
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systems-led
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Requirements
approach not well
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- ONRSR mandates the adoption of “good practice system engineering principles”
- Requirements management is attracting attention as essential part of ‘technical project management’

The key factors in successfully engaging the design team in requirements management are:

- 1) **Communication** and sharing the benefits
- 2) A **simple** requirements management tool
- 3) A **familiar interface** used to interact with the tool
- 4) Project Coordinators and Project Directors **driving the process**
- 5) Visual tools to **display traceability**



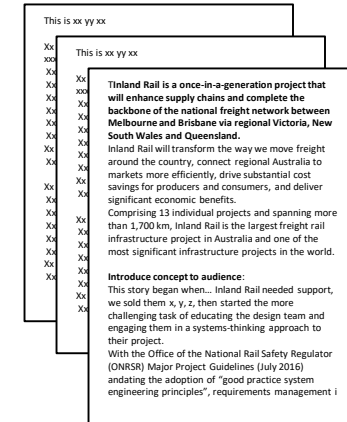


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1) **Communication** and sharing the benefits with the team

- Requirements management plan
- Kick off meeting
- Regular meetings





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Requirements Management Plan

1. Purpose and Scope
2. Introduction
3. Requirements management tool configuration
 - a) Projects
 - b) Objects
 - c) Attributes
 - d) Trace types
 - e) Workflows
 - f) Implementation
4. Reporting and document management
5. User roles and permissions
6. Resources and personnel
7. Quality assurance

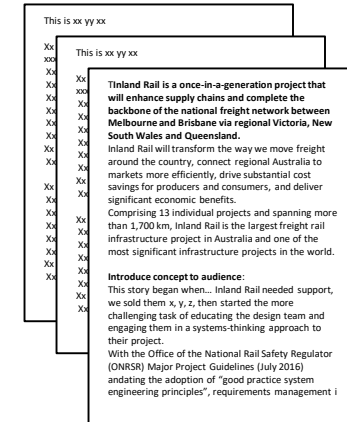


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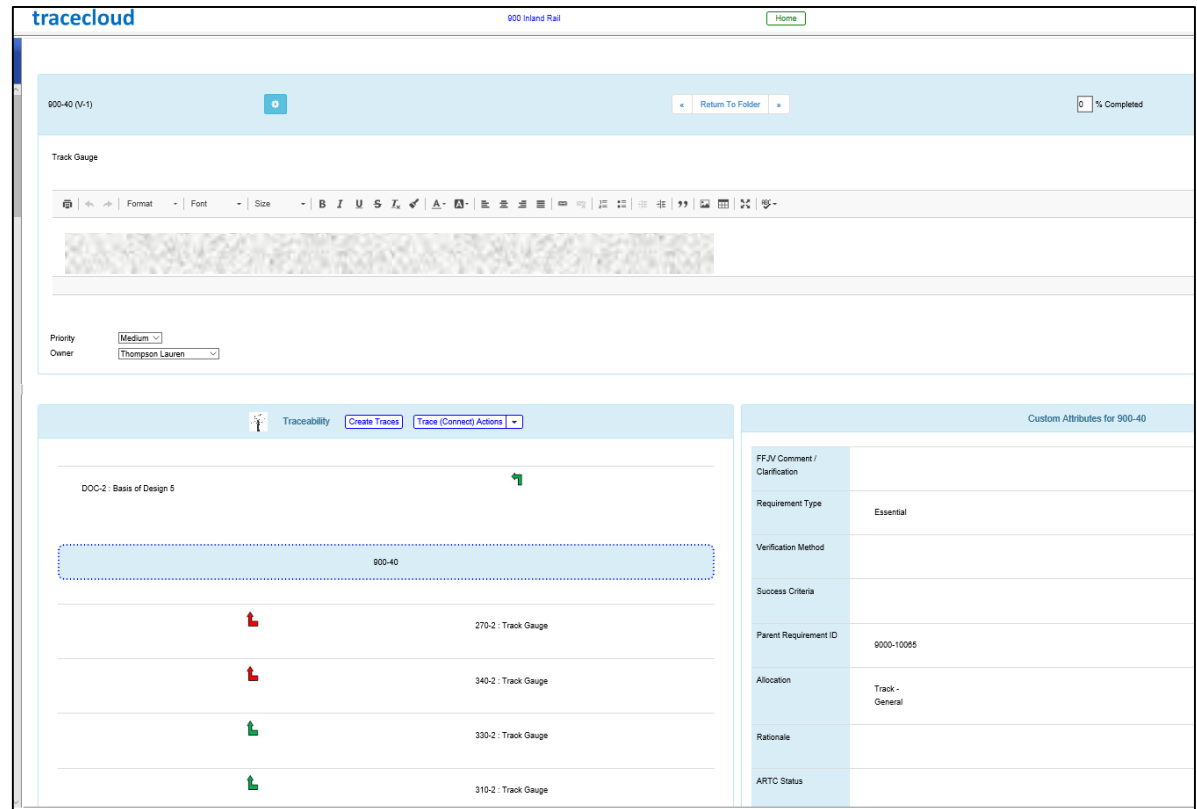
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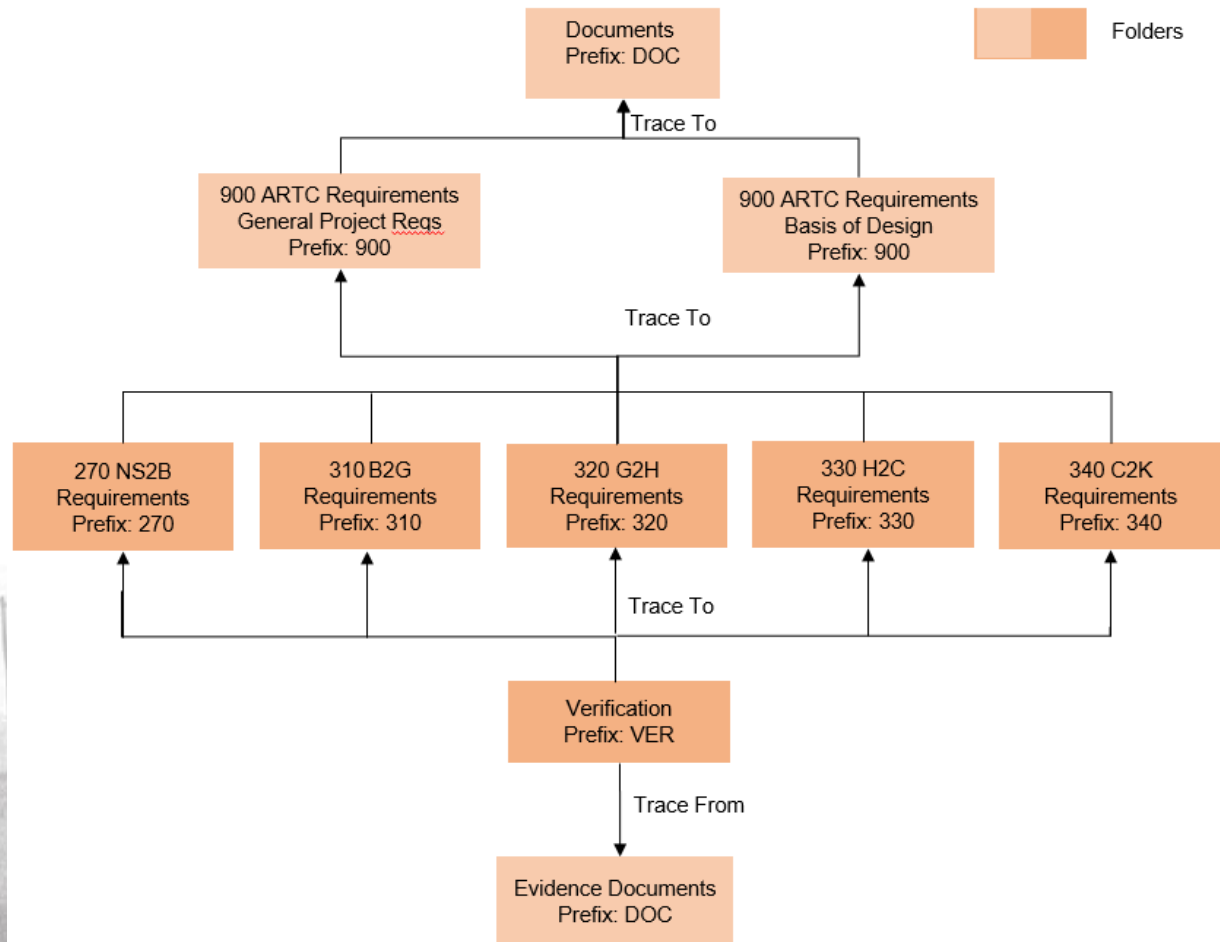


2) A simple **requirements management tool**

- Fit for purpose (simplicity)
- Set tools and reports up with users in mind
- Clear planning of requirements structure
- Cheat sheet

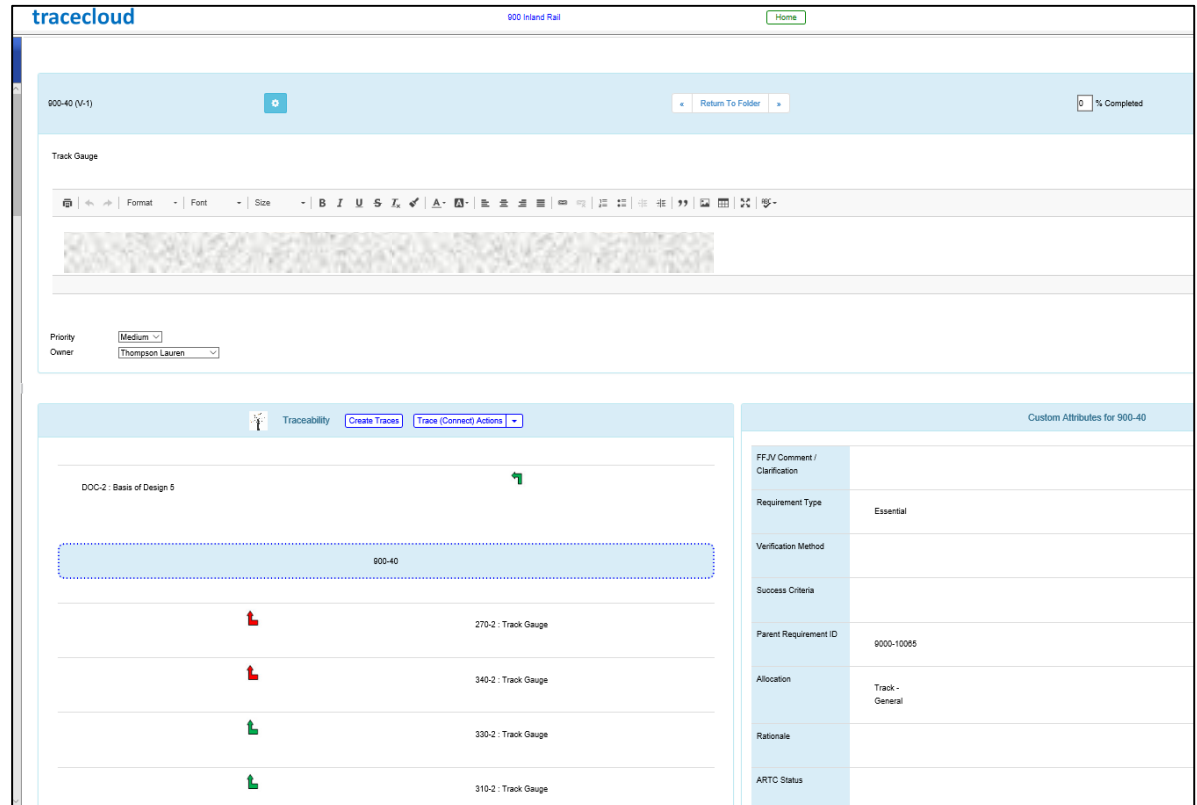


Custom Attributes for 900-40	
FFV Comment / Clarification	
Requirement Type	Essential
Verification Method	
Success Criteria	
Parent Requirement ID	9000-10005
Allocation	Track - General
Rationale	
ARTC Status	



3) A familiar interface used to interact with the tool

- Excel imports and exports if necessary
- Ideally use the tool directly
- Client engagement



The screenshot displays the 'tracecloud' web interface for a project named '900 Island Rail'. The main view shows a requirement traceability diagram for requirement '900-40'. The parent requirement is 'DOC-2 : Basis of Design 5'. Below it, five child requirements are listed: '270-2 : Track Gauge', '340-2 : Track Gauge', '330-2 : Track Gauge', and '310-2 : Track Gauge'. Each child requirement has a small icon indicating its status (red for failed, green for passed). The interface includes a search bar, a 'Return To Folder' button, and a '% Completed' indicator. A right-hand sidebar shows 'Custom Attributes for 900-40' with fields for 'FF/J Comment / Clarification', 'Requirement Type' (Essential), 'Verification Method', 'Success Criteria', 'Parent Requirement ID' (900-1005), 'Allocation' (Track - General), 'Rationale', and 'ARTC Status'.



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4) Project Coordinators and Project Directors **driving the process**

- Support from Project Director and Design Managers
- Design coordinators / junior support
- Embed in the design process
- Help team to see the benefits
- Culture shift
- Design thinking vs. systems thinking approach





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5) Visual tools to **display traceability**

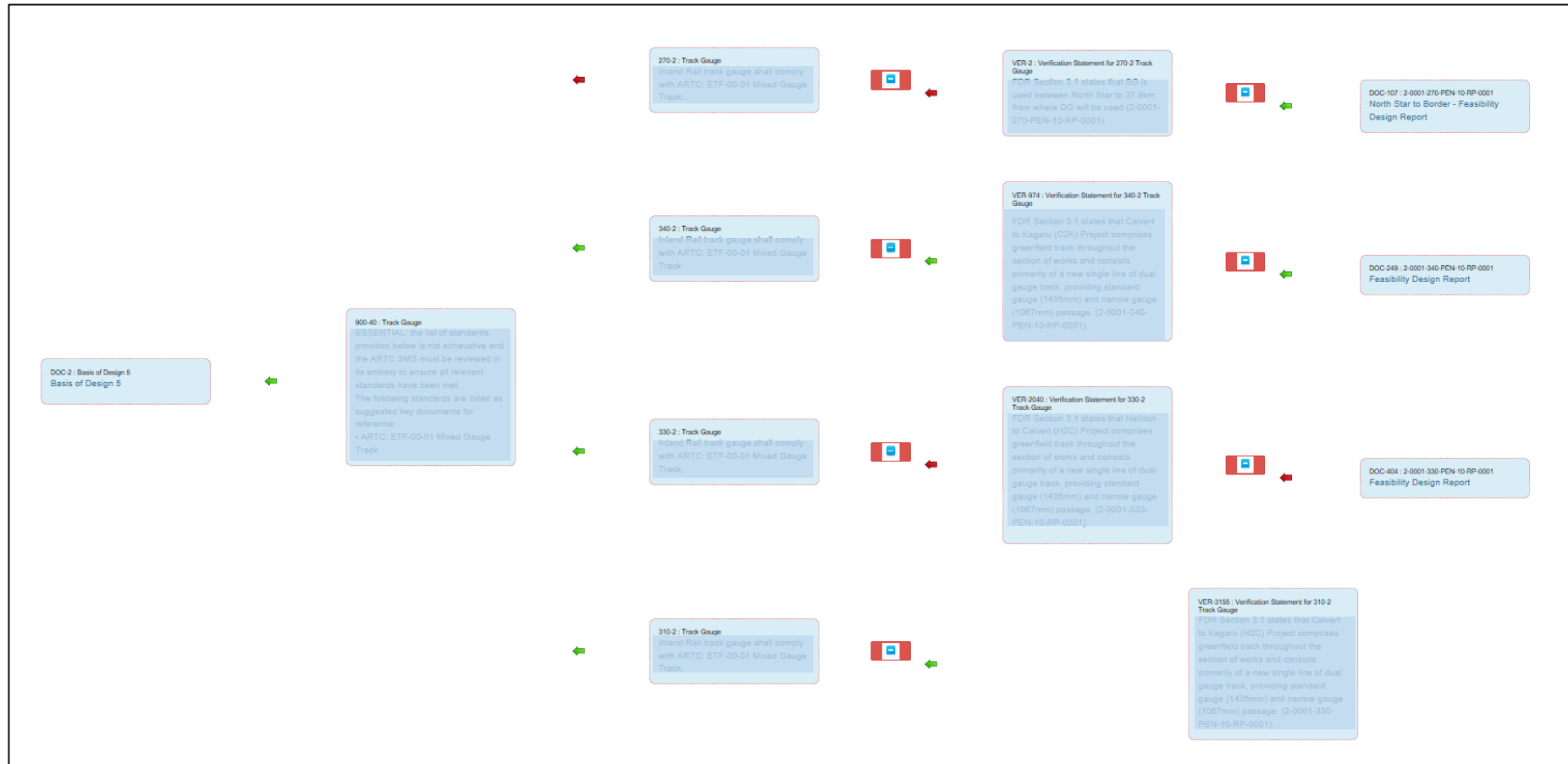
- Opportunity to convey scope and design requirements in a more engaging way
- Added value from the use of a requirements management tool

12109	900-1099 : Telecommunications			3G Coverage - ES& accordance with th	als will be in
12110	310-937 : Telecommunications			Inland Rail tunnels shall ha	
12111		VER-4090 - Verification Statement for 310-1071 Telecommunications		Not part of FFJV's Scope of Works for B2G Project	
12112	270-994 : Telecommunications			Inland Rail tunnels shall ha	
12113		VER-3109 - Verification Statement for 270-994 Telecommunications		Future crossing loop extension c	n. Drawings 2-0001-310-CCW-10-DR-2007 to 2-0001-310-CCW-10-DR-2009
12114			DOC-713 : 2-0001-310-CCW-10-DR-1xxx	RAIL CIVIL - GENERAL ARRANGEMENT	
12115	330-1071 : Telecommunications			Inland Rail tunnels shall ha	
12116		VER-3131 - Verification Statement for 330-1071 Telecommunications		Not part of FFJV's Scope of Works for H2C Project	
12117	340-1088 : Telecommunications			Inland Rail tunnels shall ha	
12118		VER-3153 - Verification Statement for 330-1071 Telecommunications		This is not apart of FFJV's Scope of Works for C2K Project	



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12109	900-1099 : Telecommunications				3G Coverage - ESSENTIAL: [redacted] in tunnels will be in accordance with t [redacted] agreement.
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5 key success factors / takeaways:

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Thank you

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*Bringing ideas
to life*

