

# Why Brownfield Re-signalling Projects always require a Transition State

Nick Terry, BA, CEng, MIET, FIRSE, RPEQ

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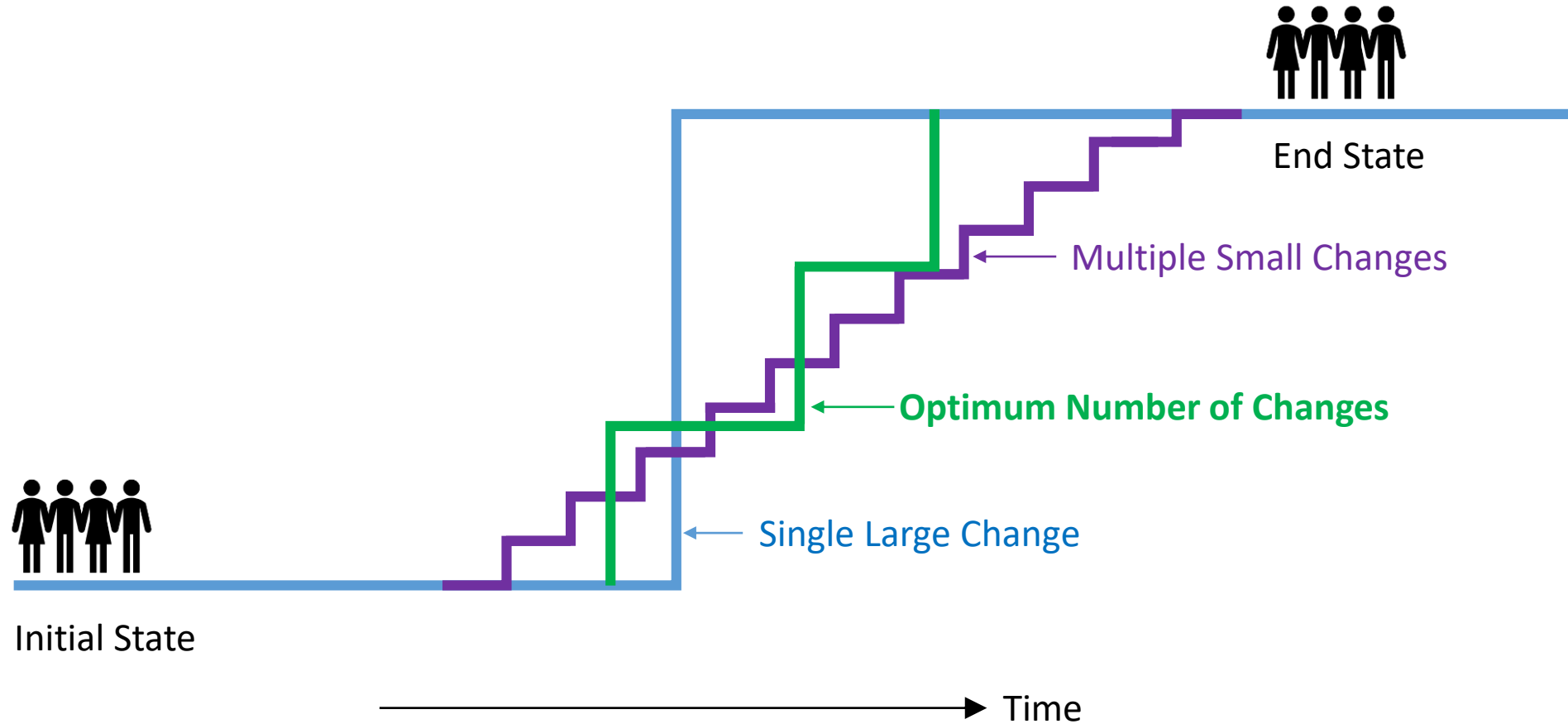


# Why Brownfield Re-signalling Projects always require a Transition State

- What is a Transition State?
- The users' perspective
- Costs and benefits
- Complexity of Changes
- Methods of Changeover
- Choice of transition path
- Conclusion



# Changing States



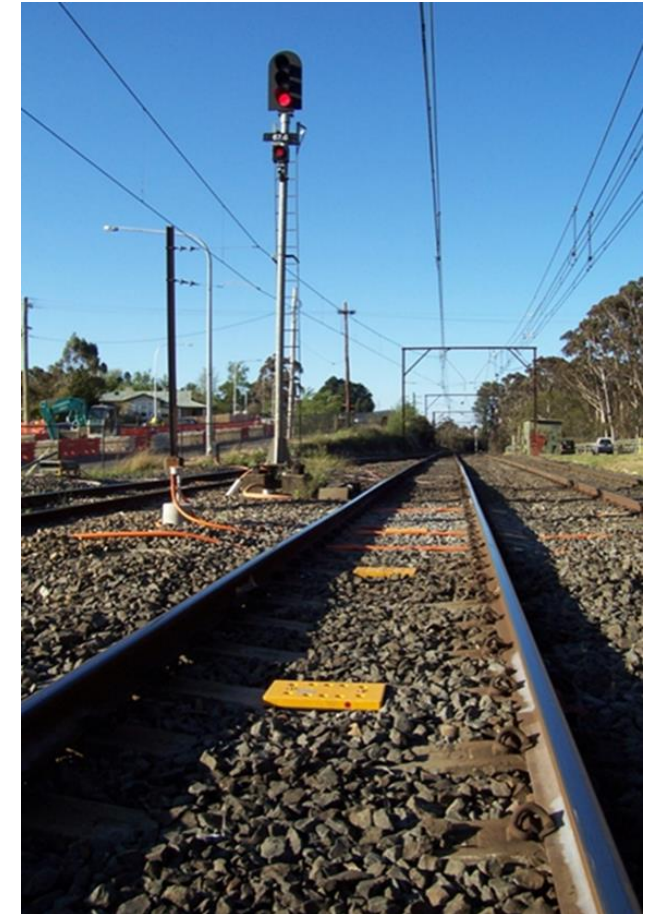
# The Users of the System

- Signal Controllers
- Maintainers
- Train Drivers
- Managers
- Customers

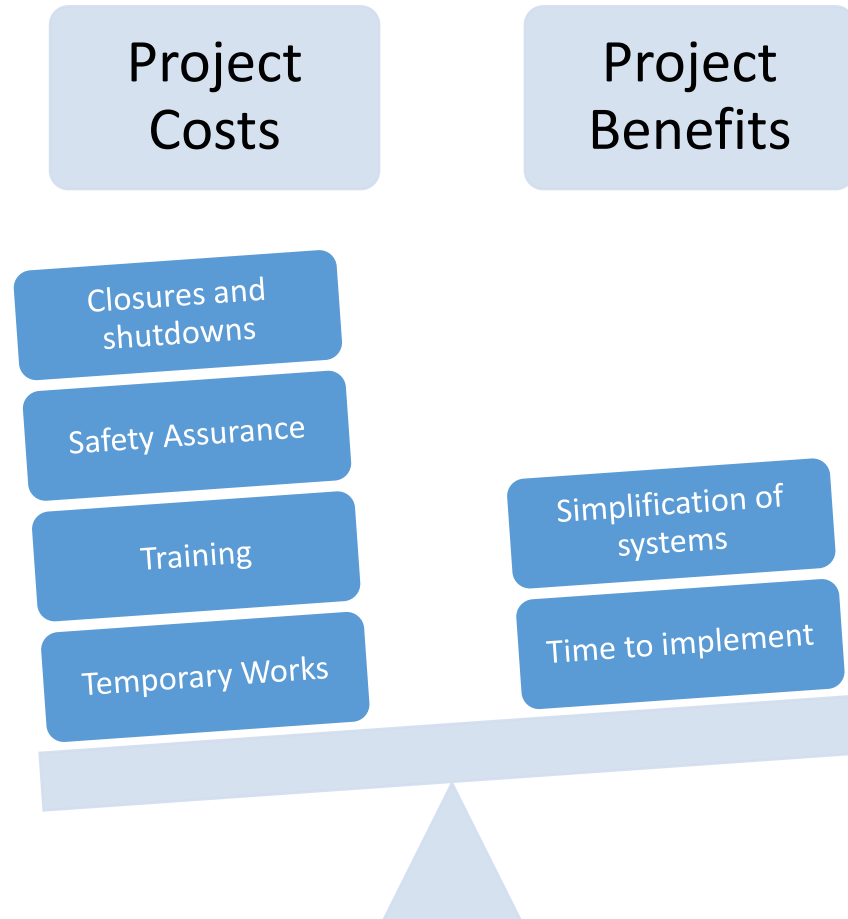


# Why Transition States are becoming more Critical

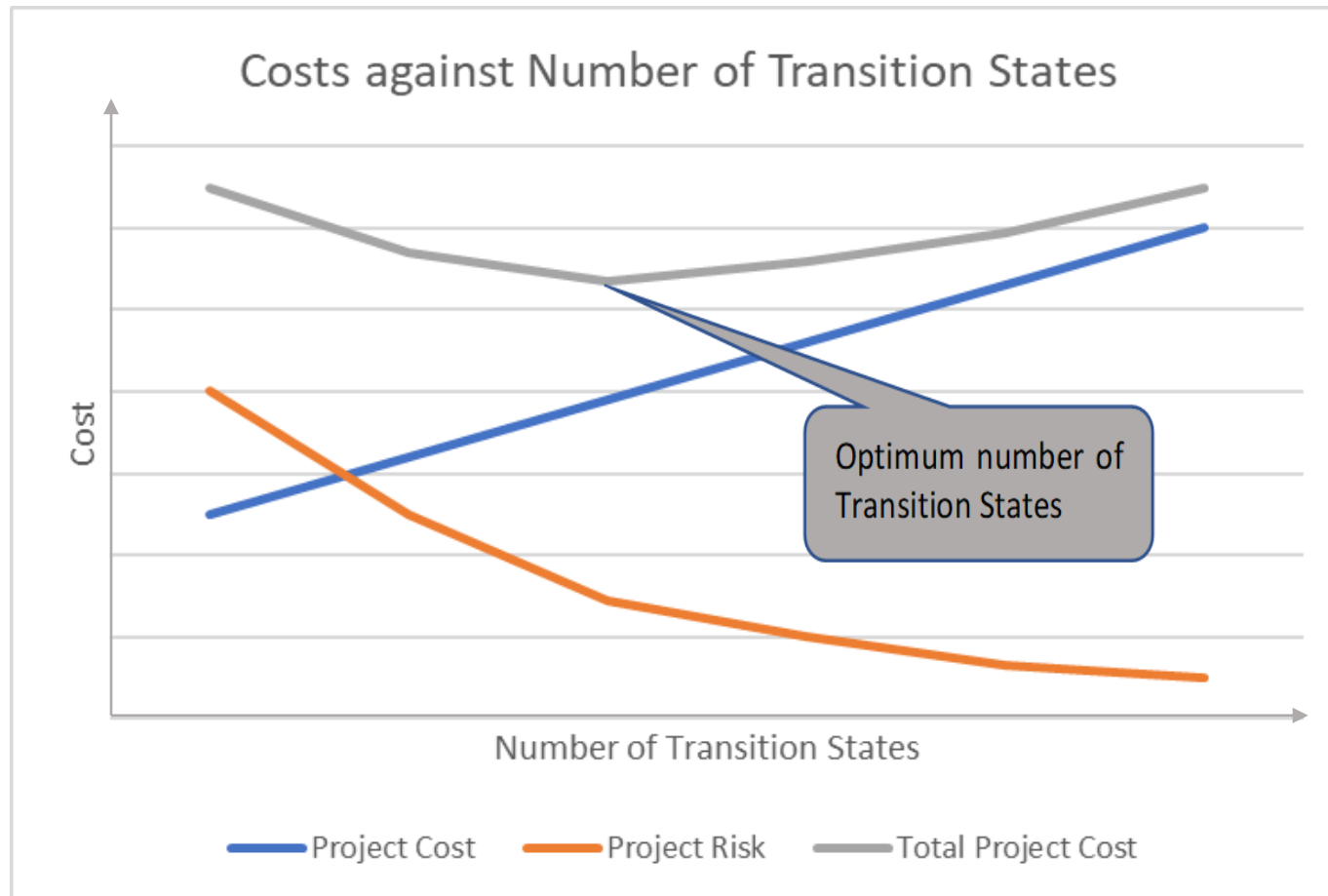
- Signalling has moved onboard
- Number of impacted stakeholders has increased
- Commercial arrangements have become more complex
- Utilisation of the railway has increased
- Safety rigour has increased



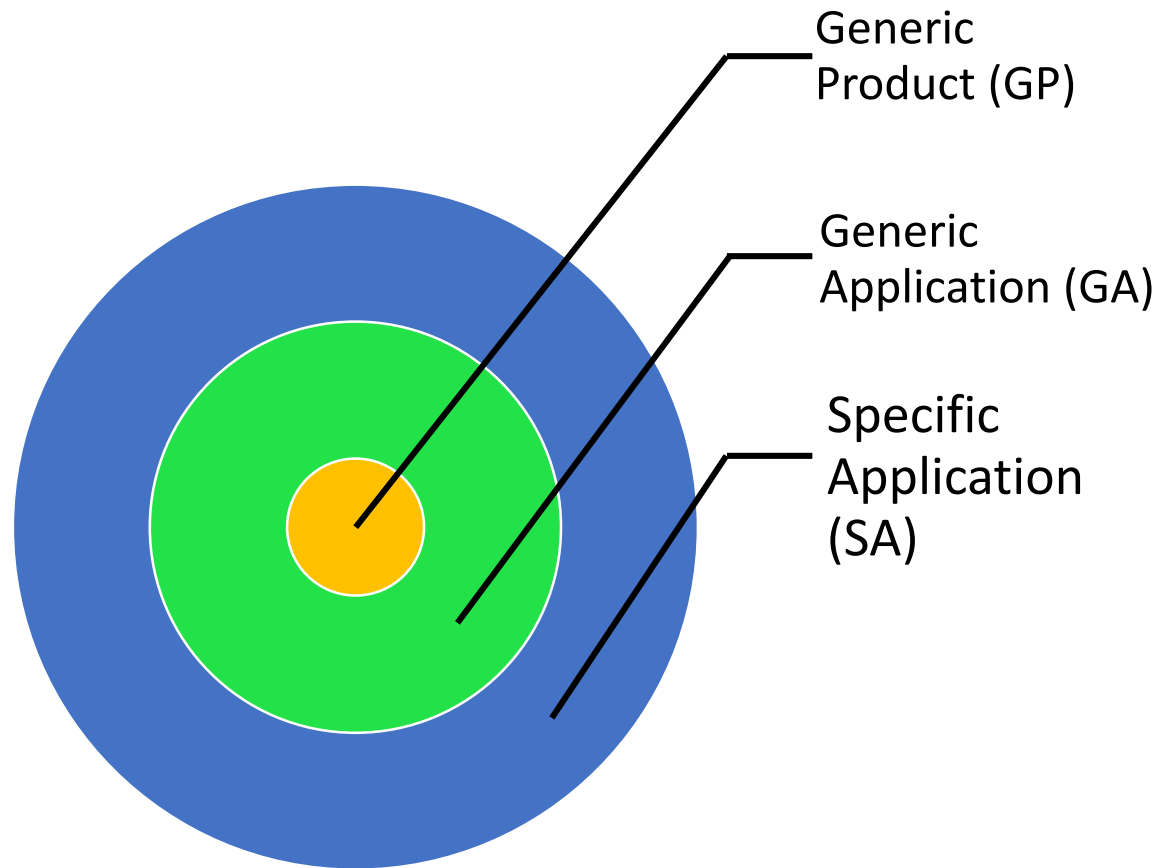
# Assess each possible path



# Cost Increases with the Number of Transitions



# Signalling System Model



Simple Changes only impact one layer:

➔ Business as Usual

Complex Changes impact more than one layer:

➔ Require careful consideration

# Method of Changeover

There are only three core changeover strategies:

1. Swap
2. Parallel installation, then changeover
3. Connected overlay

# Choice of Paths

1. Understand the project objectives
2. Brainstorm to obtain the list of major possible paths
3. In each possible path:
  - a. Identify the Complex Changes
  - b. Determine whether the project risk of the Complex Changes is acceptable to the organisation
  - c. Discard any paths which contain Complex Changes of too high a project risk
4. Assess the remaining paths against the project objectives
5. Select the path with the highest score

# Conclusions

- Select the shortest path where the largest change is just less than the maximum size the organization can manage
- Brownfield signalling projects always require a Transition State
- Consider all change options
- Assess the Complex Changes with care

