

# Railway safety deterioration as a potential hazard

**Wei-Ting (Kevin) Hong**

whon2038@uni.sydney.edu.au

Supervised by

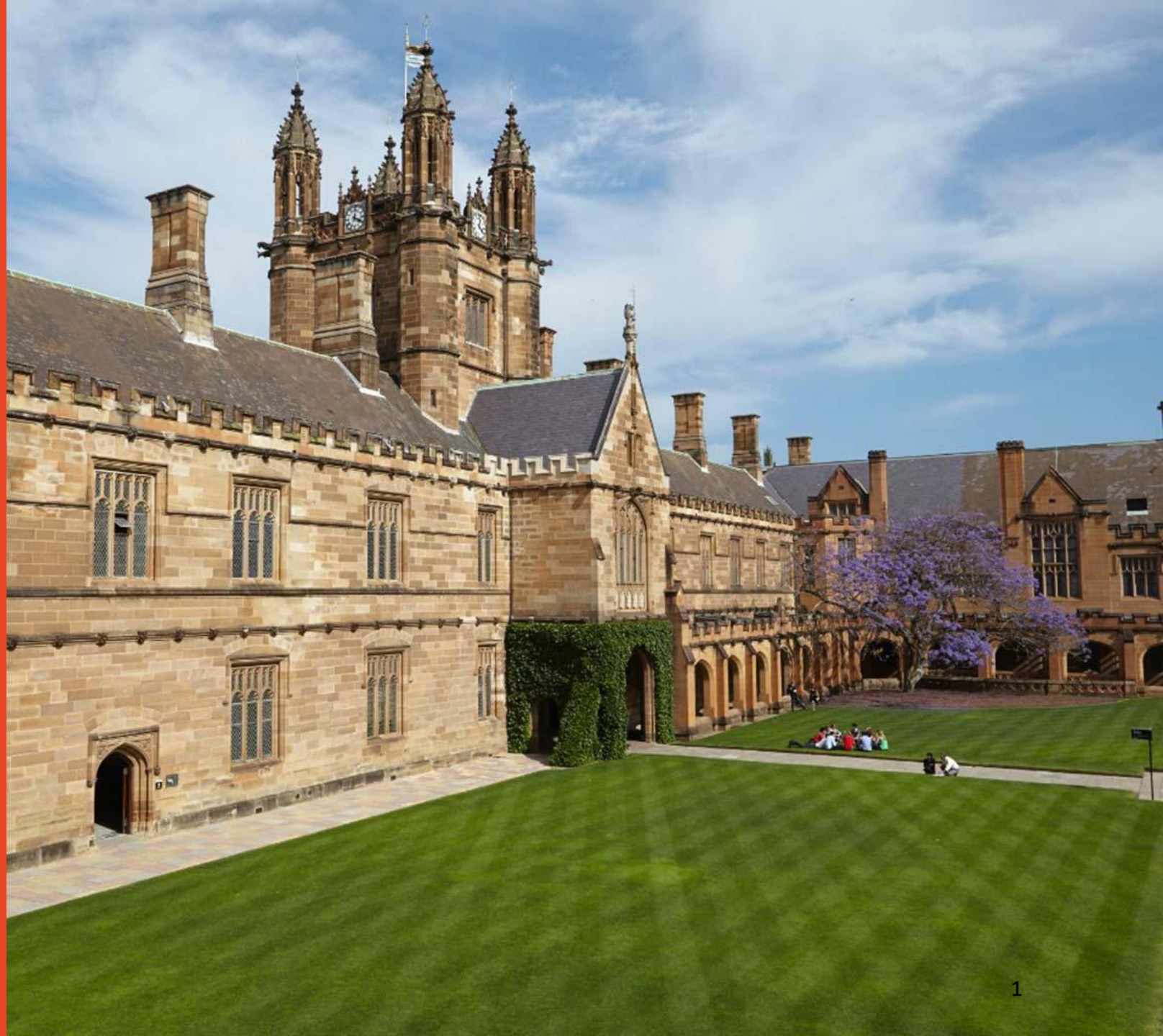
Dr. Geoffrey Clifton

Professor John Nelson

Presenting in *TRANSW Symposium 2023*



University of Sydney,  
Institute of Transport  
and Logistics Studies



# Introduction

## Motivation

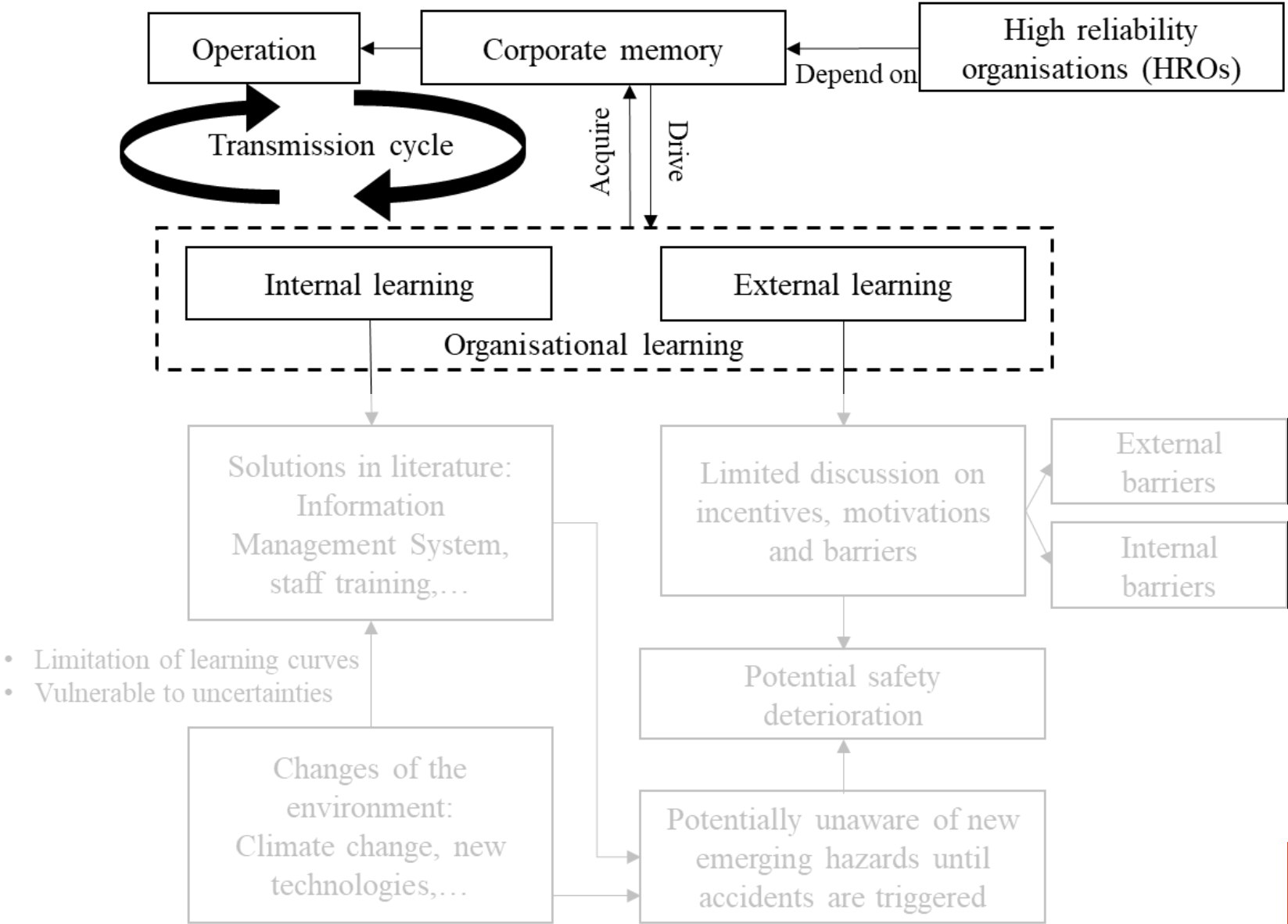
- Repetition of similar accidents across the world
- Limited understanding of learning behaviours in the railway industry
- Risks of advancements in technology, infrastructure, and operational practices
- Inconsistency of knowledge/ information flow in the railway industry

## Objective

- Understand the current learning behaviours in the railway industry
- Identify the potential consequence of maintaining such a safety culture
- Explore the railway safety knowledge retrieval, processing, and dissemination in the industry

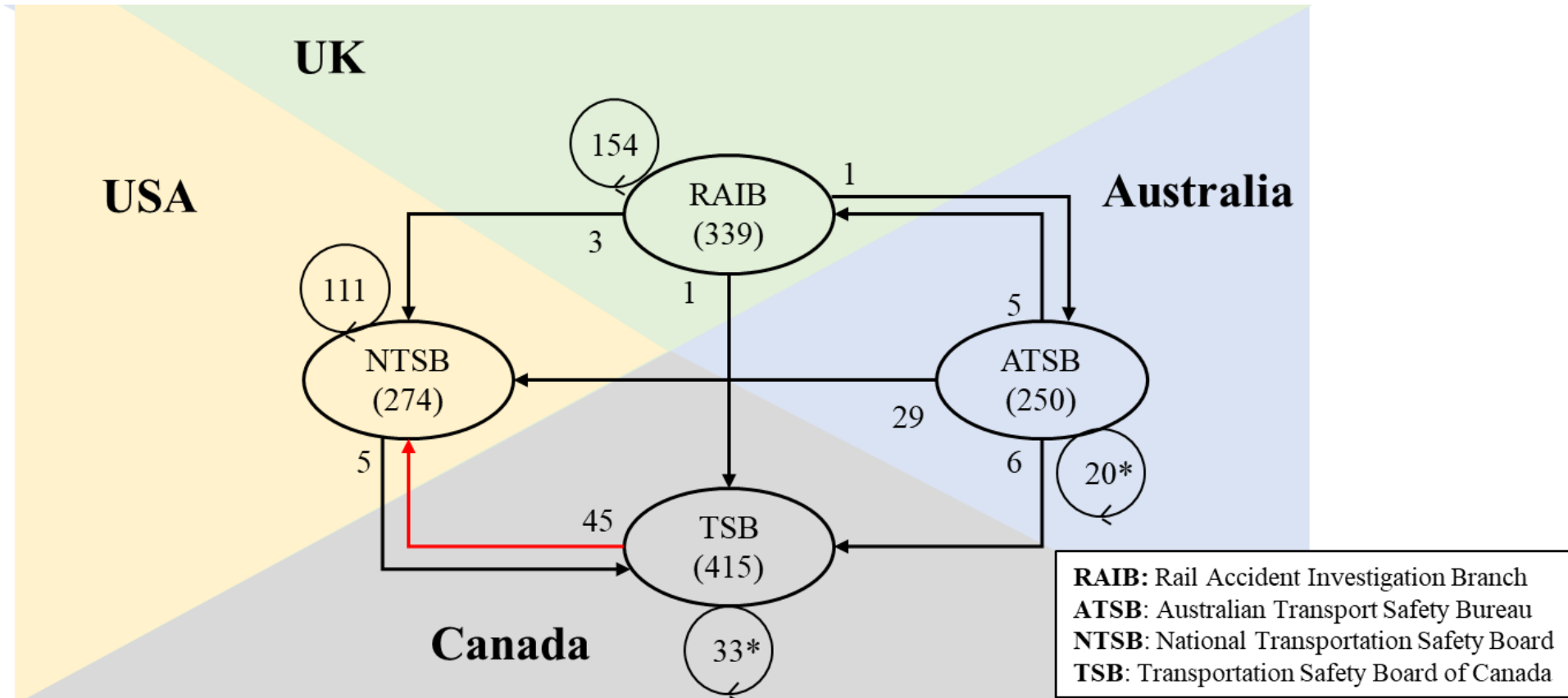


# Organisational learnings and corporate memory in the railway industry



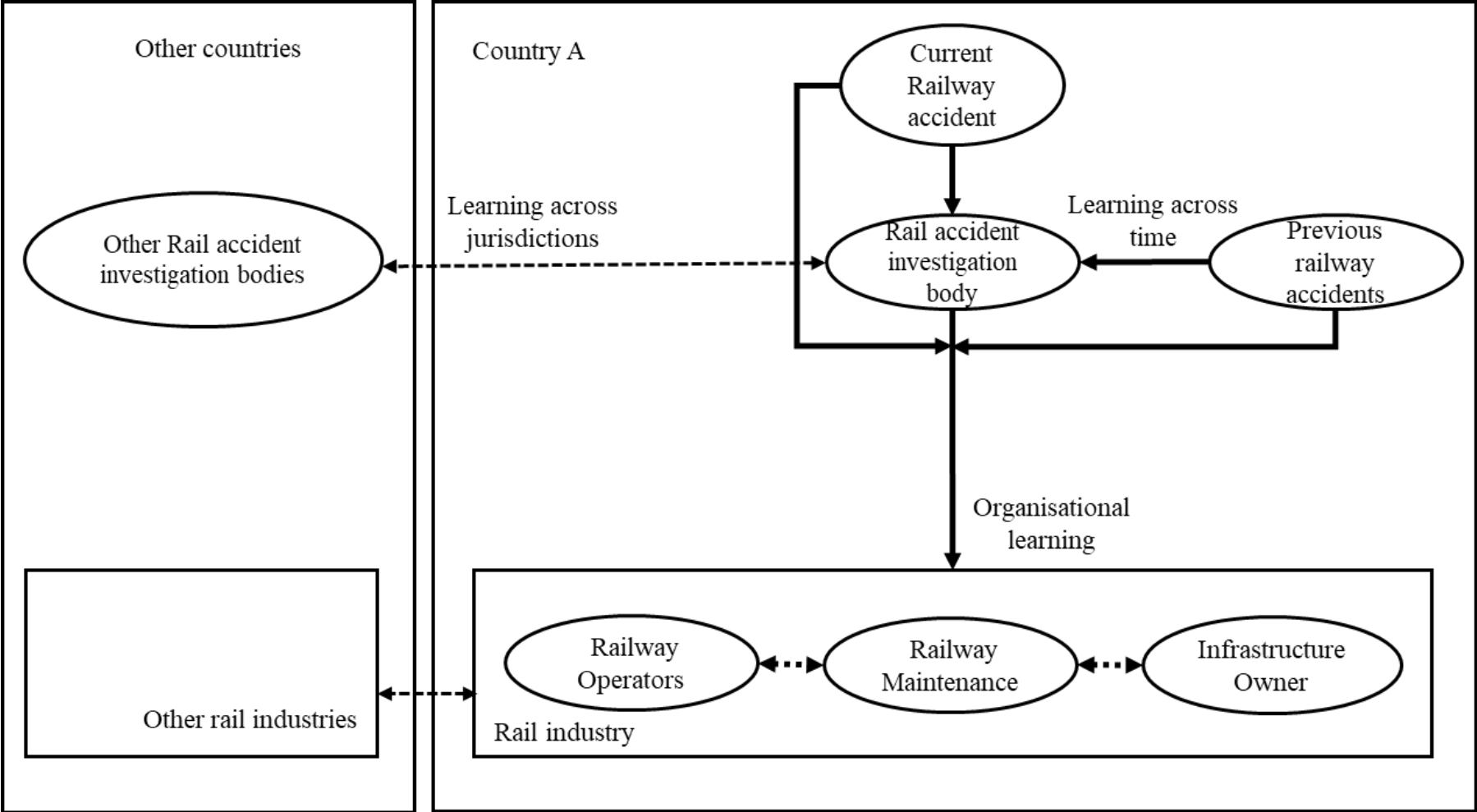
# Co-reference between railway accident investigators

- Co-reference: the extent to which a group of documents references other groups of documents
- Self-reference: the extent to which a group of documents references its own documents



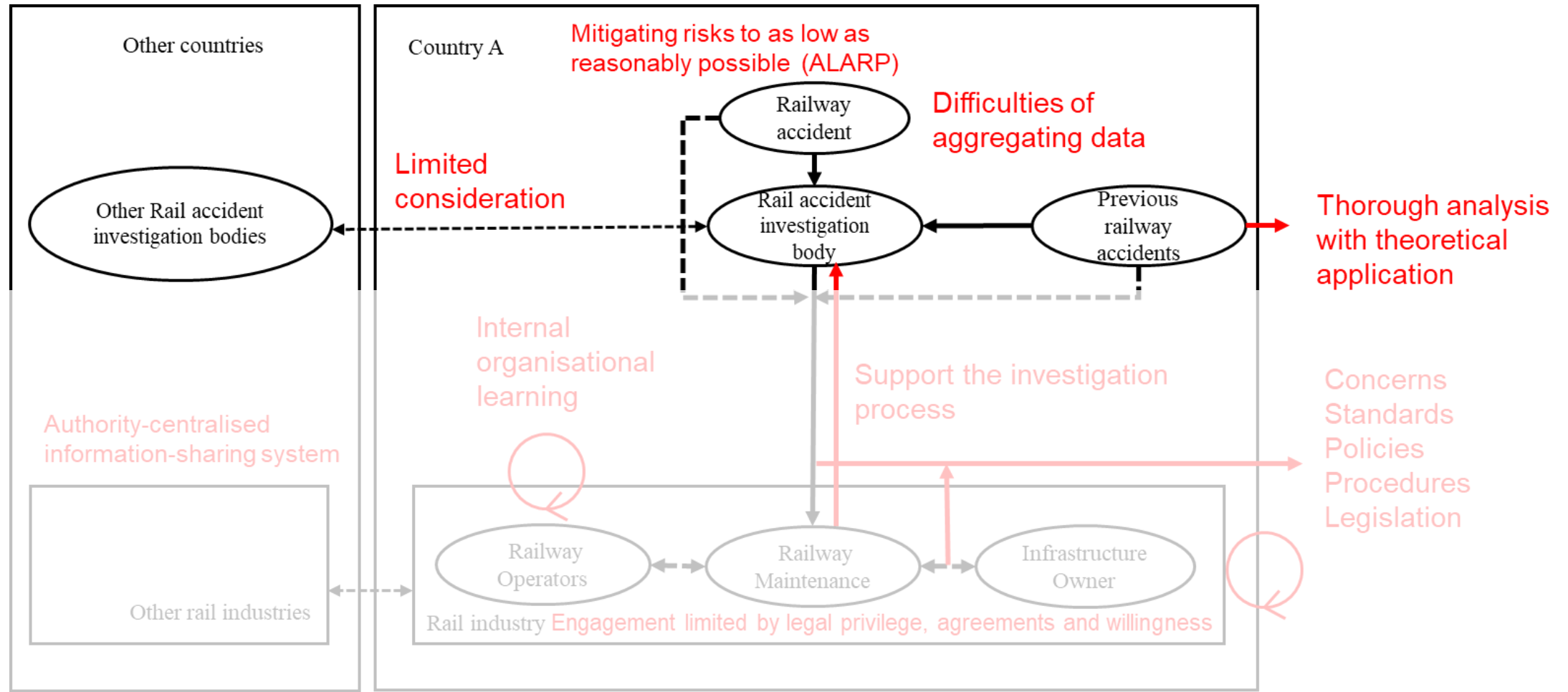
\* The occurrences of self-reference might be underestimated because some reports published by TSB and ATSB do not provide reference list or the self-reference is not listed in the reference.

# Information flow between stakeholders in the railway industry



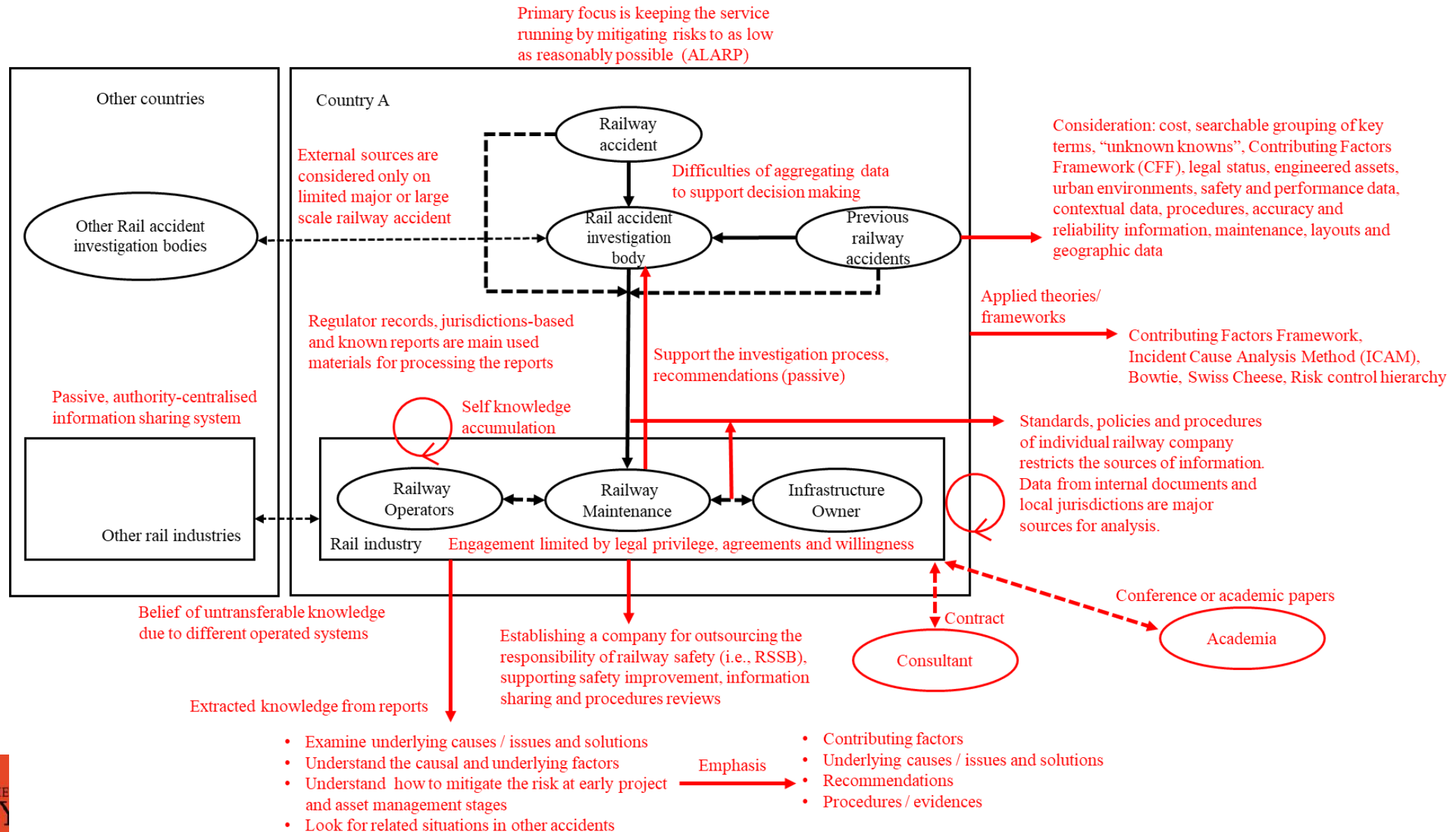
- > Observed information flow (semi- or bi- directions)
- .....> Information flow is limited or not clear (semi- or bi- directions)

# Information flow between stakeholders in the railway i

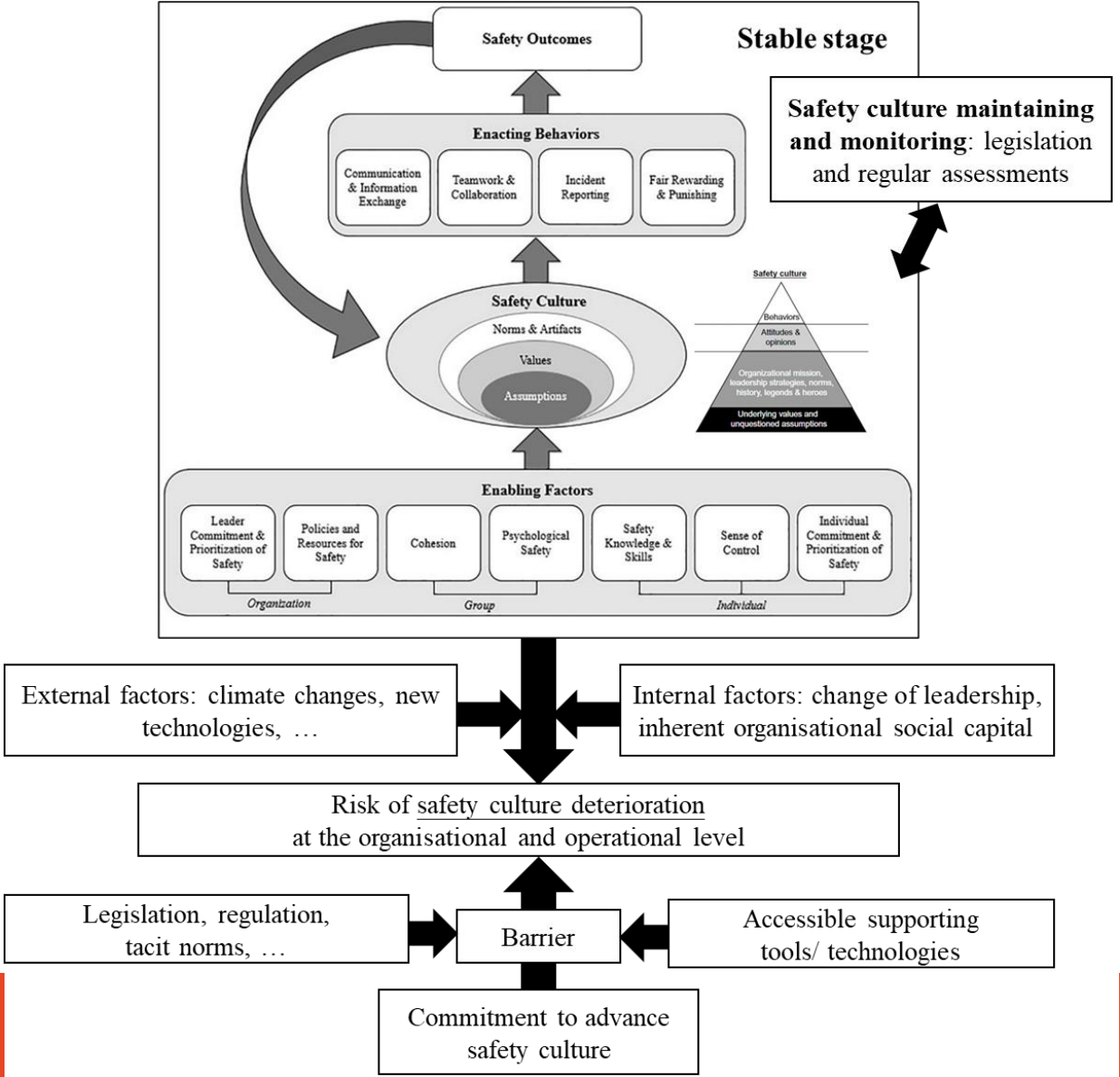


Different operated systems

# Information flow between stakeholders in the railway i



# Safety culture development and deterioration





# Conclusion

## Findings

- Experience and knowledge are well accumulated from previous accidents
- Potential barriers to learning across jurisdictions might deteriorate the organisational safety culture
- External and internal factors might become the catalyst for accelerating such deterioration
- Extending the breadth and depth of understanding to eliminate the deterioration of railway safety culture is a dynamic process

## Limitations

- A limited number of countries are investigated
- More quantitative data is needed for further validation
- The relationship between railway safety deterioration and decision-making remains unclear
- Consequences of railway safety deterioration have not been estimated



# Q & A

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