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**HOW TO NURTURE AND DEPLOY RAILWAY SAFETY INSPECTOR COMPETENCIES IN THE
RAILWAY INDUSTRY:
A PLAN FOR THE 4TH INDUSTRIAL REVOLUTION (4IR)**

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INTRODUCTION

What System Safety Engineering Can Learn from the Columbia Accident

“the vestiges of a once robust safety program.”

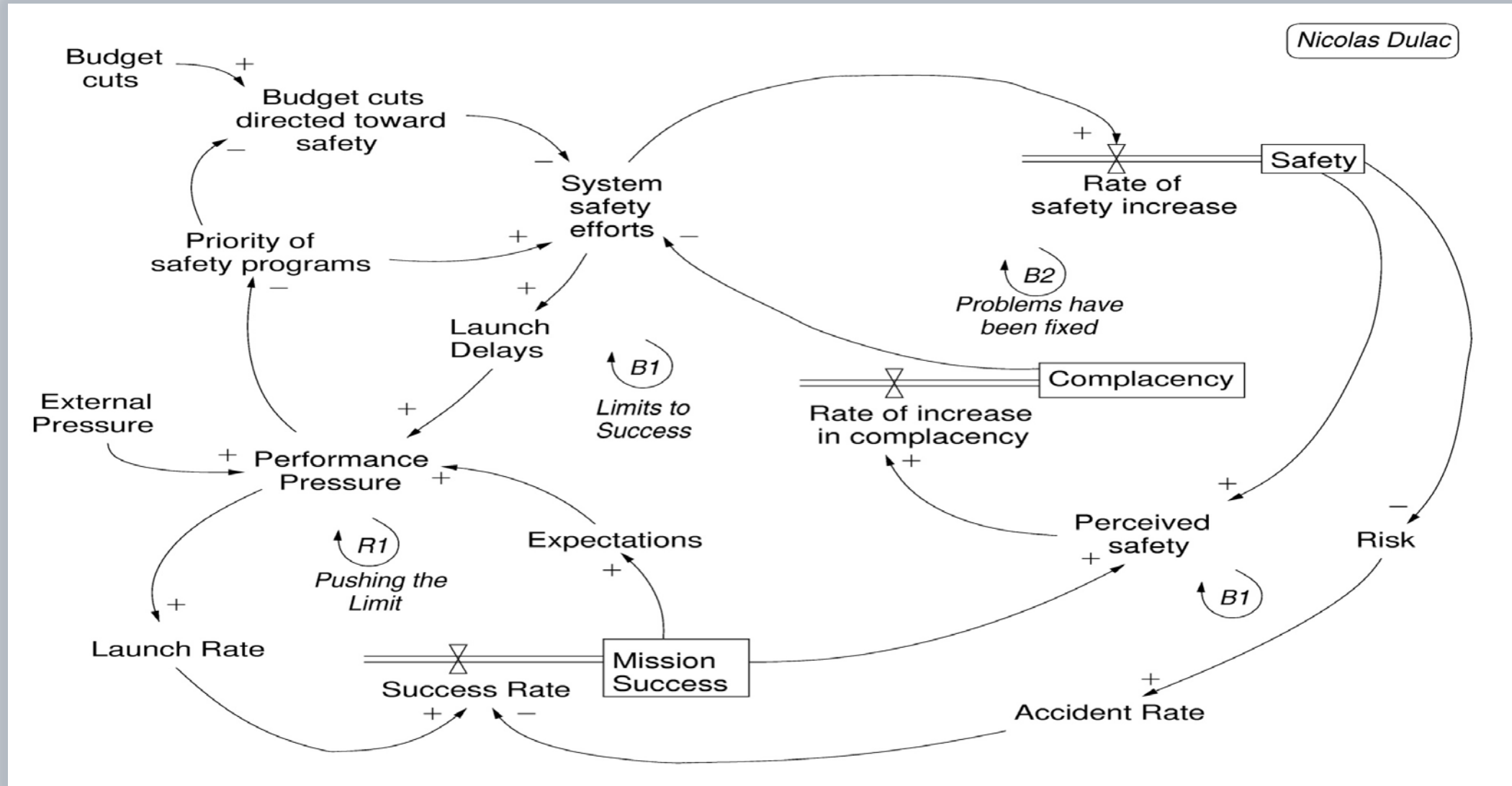
–Columbia Accident Investigation Board (CAIB)–

“Budget cuts without concomitant cuts in goals led to trying to do too much with too little”. –

Nancy G. Leveson, Ph.D.; MIT; Cambridge, MA Joel Cutcher-Gershenfeld, Ph.D.; MIT; Cambridge, MA

Simplified System Dynamics Model of Columbia Accident¹

¹ Nicolas Dulac, a Ph.D. student at MIT, created this model for Prof NG Leveson, Professor of Aeronautics and Astronautics, and Engineering Systems, also at MIT.



The Aim:

- To share a process that was followed in developing a formal qualification for railway safety inspectors (RSIs) in South Africa.
- *Reason:* 'Baby Boomers', have recently been exiting the industry; mainly through retirement.
- The recently developed (RSI) curriculum aims to equip railway safety inspectors (RSIs) with a formal qualification to close the lacuna left by the 'Baby Boomers'.

THE PURPOSE OF THE PROPOSED RSI CURRICULUM

- To prepare a learner to operate as a *suitably* qualified RSI whilst performing duties such as;

- (1) inspection of railway operations,
- (2) auditing a railway SMS and
- (3) investigating railway occurrences.

In order to: (1) promote and monitor the enforcement of safety compliance
and
(2) continuous improvement of safety in the rail environment.

PROJECT APPROACH

- A multidisciplinary working group across the railway industry in South Africa was assembled in order to:

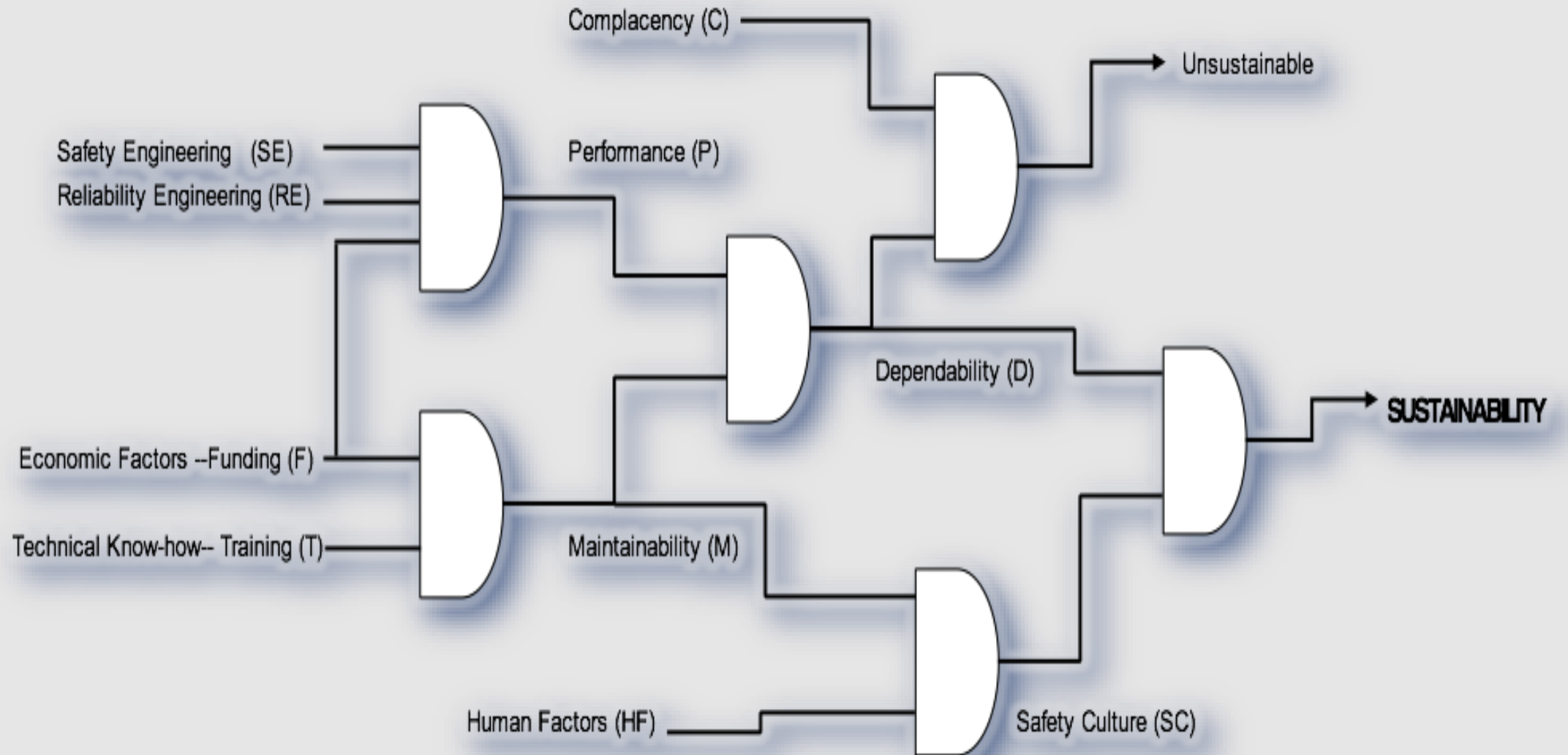
(1) solicit their opinions on the purpose of the project.

(2) develop a qualification for practising and future inspectors.

This project was initiated, and continues to be nurtured, by the Railway Safety Regulator (RSR).

Simplified Framework for Development and Sustainability of Railway Safety Inspector Qualification

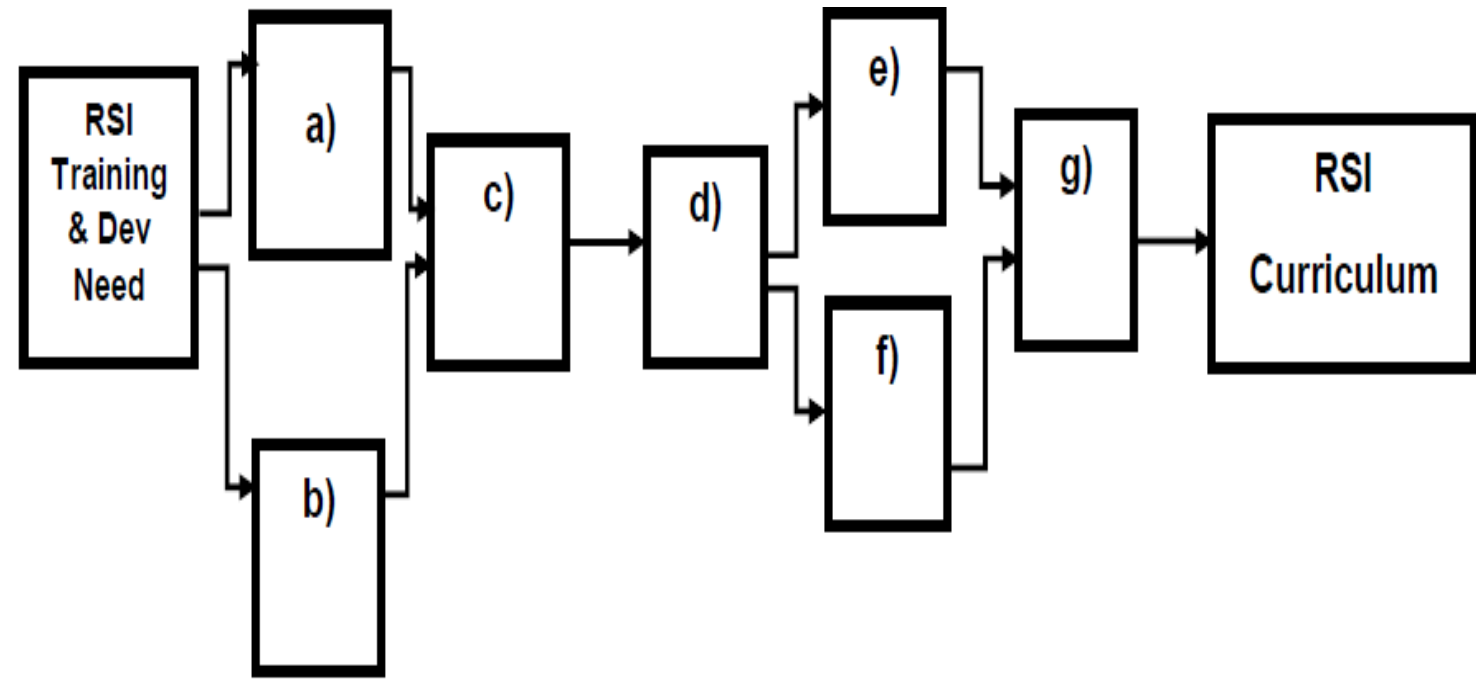
(Source: P Sopazi)



Activity Diagram for RSI Development

(Source: P Sopazi)

- a) Feasibility Study & Rationale for the Qualification
- b) Learners & Trainers
- c) Development Quality Partners (DQP)
- d) Assessment Quality Partner (AQP)
- e) Community of Expert Practitioners (CEPs)
- f) Funding Considerations & Learning Material Development
- g) Process Verification & Registration:
For recognition by the National Qualifications Authority



Registration Status, Requirements, Next Step:

- **Registration Status:** South African Qualifications Authority (SAQA) under the National Qualifications Framework (NQF).
Period: 5 years (07/02/2018 – 07/02/2023)
NQF Level 6 (330 credits) --Advanced Occupational Certificate/Diploma.
- **Requirements for Entry:** NQF Level 4 (i.e. High School Exit Level Certificate) with Mathematics and Physical Science & 3 years of relevant work experience in the railway environment (or related environment).
- **Next Step:** learning material development to be reviewed periodically.
- **Articulation options:** Advanced Diploma in Safety Management (*vertical*) and Diploma in Safety Management (*Horizontal*).

A Proposed and Simplified Example of RSI Training and Monitoring Schedule for a Period of 24 Months.

Month	Induction	Audits & Task Observe	Inspection	Investigation	Permit Assessment	Technology Reviews	Monthly Training Sessions based on RSI Courses	Submit Monthly/Quarterly/Annual Reports Feedback Assessment									
		Audit Team Member	Task Observe	Inspection Team Member	Task Observe	Investigation Team Member	Task Observe		Training	Training	Training	Training					
1	X(1)	1	x	1		X	1	x		1	1	1	1	X	X	X	X
-		1	x	1		X	1	x		1	1	1	1	X	X	X	X
24		1	x	1		X	1	x		1	1	1	1	X	X	X	X

ACKNOWLEDGEMENTS

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- Railway Safety Regulator (RSR): An Agency of the Department of Transport in the Republic of South Africa.
- Transport Education Training Authority (TETA): Republic of South Africa.
- Quality Council for Trades and Occupations (QCTO): Republic of South Africa.

-----THANK YOU-----