# The Role of Systems Engineering in Organisational Performance: An Evidence-based Study

Ali Zalzala, PhD, SMIEEE

### Concept

Systems Engineering (SE) is a multidisciplinary approach that extends beyond engineering disciplines to include diverse areas such as management and data governance.

However, practitioners in most disciplines grew to have different definitions and descriptions so much so that SE is no longer that recognised.

What evidence do we have that SE is a multidisciplinary approach and widely relevant today?

### Purpose and Objective

This study conducts an evidence-based examination of related bodies of knowledge to identify how and where SE is relevant.

The study considers a systematic literature network analysis (SLNA) of topics contributing to organisational performance based on the multidisciplinary governance, risk and compliance (GRC) frameworks.

The study methodically examines the relationships between GRC and selected theoretical domain areas, standards, and software solutions.

The primary objective is to identify capabilities, gaps, and potential for optimization within technology-based GRC frameworks.

## Agenda

- Describe the SLNA methodology, the structure of examined topics, and the topicrelated keywords captured from the literature analysis.
- Explain a form devised to seek crowd-sourced expert feedback for the study, and to invite contributions from the audience.

## Outline

This study conducts in-depth investigations into the relationship of

Governance, Risk, and Compliance (GRC)

with theoretical domain areas, namely

Data Governance, Enterprise Governance, Business Process Management, and Systems Engineering.

The research explores the associations between GRC frameworks and corresponding <u>software solutions</u>, namely

Corporater, SAP GRC, Bizagi, Archi and RUBiQ,

while considering established <u>standards</u>, namely COBIT, ISO, and IT4IT.

#### Systematic Literature Network Analysis





4. Data interpretation

### Structure of Topics

**GRC Framework** 

Governance	Risk Management	Compliance						
This is relevant to the organization's project management of strategies and operations. It includes the management and oversight of activities relevant to the organization's strategic and operational objectives, as well as remaining current with external requirements.	This is relevant to the organization's <u>capabilities</u> , namely <u>processes</u> , <u>people</u> and <u>technologies</u> It involves identifying and assessing risks to the organization, as well as implementing controls and mitigation strategies to minimize the impact of those risks.	This is relevant to standards, regulations and policies It encompasses the organization's adherence to internal policies and external regulations according to best-practice standards, as well as monitoring and reporting on compliance- regulated issues.						
Enterprise Governance	Business Process Management	ISO COBIT IT4IT						
	Enterprise Governance							
Systems Engineering								
Corporater SAP	RUBIQ	Archi Bizagi						

This figure depicts the study topics – GRC, theoretical domain areas, standards and software solutions.

### Structure of Keywords from Topics



Based on an initial literature review, main keywords representing each of the topics are selected and listed in a top-down mind map structure. The mind map visualises the relationships between the keywords, thus highlighting their associations within the GRC framework. A presentation for the meeting of the IEEE Systems Council Technical Committee on Systems Engineering Methods on 10 October 2023

### Qualitative Coding of the Keywords



A presentation for the meeting of the IEEE Systems Council Technical Committee on Systems Engineering Methods on 10 October 2023

>>

### Research Methodology Workflow



### Call for Focus Group Volunteers

Focus group volunteers are sought to verify, justify, and expand on the selected keyword structure.

The specific aims of a focus group are as follows:

- Provide feedback on the completeness and relevance of the selected keywords for the purpose of the study.
- Provide expert insights and suggestions to enhance the overall quality of the study.

A working <u>Assessment Form (in pdf format) can be downloaded</u> for use by a volunteer focus group member.

#### Assessment Form

No	Topics	Topic Tools/Standards	Agree/ Disagree	Comments		
	These are the <b>three pillars</b> and the related <b>theoretical areas</b> (the latter are in two levels)	These are the actionable tools or standards associated with a theoretical area.	Tick the box if you agree on this item.	Add your comments on the topic or tool selection, why you agree or disagree, and any other relevant information. (Please use additional pages at the end of the document for more explanations if needed).		
2	Enterprise Governance [11]					
	Strategic Thinking [15]	Balanced Scorecard [33]				
		Model-Based Systems (Processes) [49]				
		Value Chain Analysis [34]				
		Porter's Five Forces [31]				
	Strategic Planning [12]					

## Focus Group Timeline and Activities

Date	Session	Duration	Activity
Within 10 days from reading this table	<ul> <li>individual expert completing the Assessment Form (asynchronous):</li> <li>Verify keywords,</li> <li>Suggest amendments,</li> <li>Suggest other keywords, and</li> <li>Provide overall feedback.</li> </ul>	2 hours	Download the Assessment Form, complete the form, and email the form to <u>zalzala@ieee.org</u> .
Around two weeks from submitting the assessment form	<ul> <li>First group session (via Zoom):</li> <li>Discussing the differences between experts' individual forms, emphasising clarity, relevance, and completeness, and</li> <li>Sharing critical evaluation perspectives on the GRC landscape.</li> </ul>	2 hours	Attend the meeting on Zoom and participate in the discussion.
Around one weeks from the first group session	<ul> <li>Second group session (via Zoom):</li> <li>Follow-up with concluding discussions, and</li> <li>Final group recommendations.</li> </ul>	2 hours	Attend the meeting on Zoom and participate in the discussion, offering final conclusions.

### Benefits to Focus Group Participants

- Understanding of current connections of GRC and related theoretical domain areas, standards and software solutions.
- Potentially influence the improvements of GRC software solutions and practices.
- Expand their professional network with other focus group participants.
- Gain early access to preliminary findings of this study and final report in early 2024.

#### Data Control

All forms, communications, and volunteer data will be used strictly for the purpose of this study only.

Any documents resulting from this study will acknowledge the contributions of individual focus group volunteers. However, a volunteer will have first option to remain anonymous.

#### Expression of Interest

If you are interested in contributing within a Focus Group and for further details of the project, please contact

Ali M S Zalzala, PhD

zalzala@ieee.org

linkedin.com/in/alizalzala

Director, Community Tracks Ltd, London, UK