

SHOAL

A Federated Approach to Systems Engineering and Safety Assurance on Complex Rail Projects

Charles Deeb, James Donovan, James Lee

Purpose

The importance of Systems Engineering (SE) within rail projects is gaining recognition, with most major projects across Australasia taking some form of systems engineering approach. While this is a positive step in reducing the risk within a complex project, oftentimes each project finds itself re-inventing the wheel, taking alternative approaches to apply the various components of systems engineering to meet the specific project goals.

This poster explores Shoal's systems approach to integrating systems engineering & safety assurance (SESA) and other specialty engineering processes into a modular, pre-developed, digital engineering framework for the whole-of-infrastructure design lifecycle of complex rail projects.

Benefits

A consistent digital approach

Allows for a consistent digital approach to develop, manage and exchange data from SESA and interrelated engineering activities such as RAM. This streamlines the front-end effort required during project initiation, assists in breaking silos and minimises the duplication of work throughout the project lifecycle.

Tailorable and modular

The framework and its application can be tailored based on services required i.e., modules can be applied to a project individually or in unison, and scaled according to the SE scope on the project.

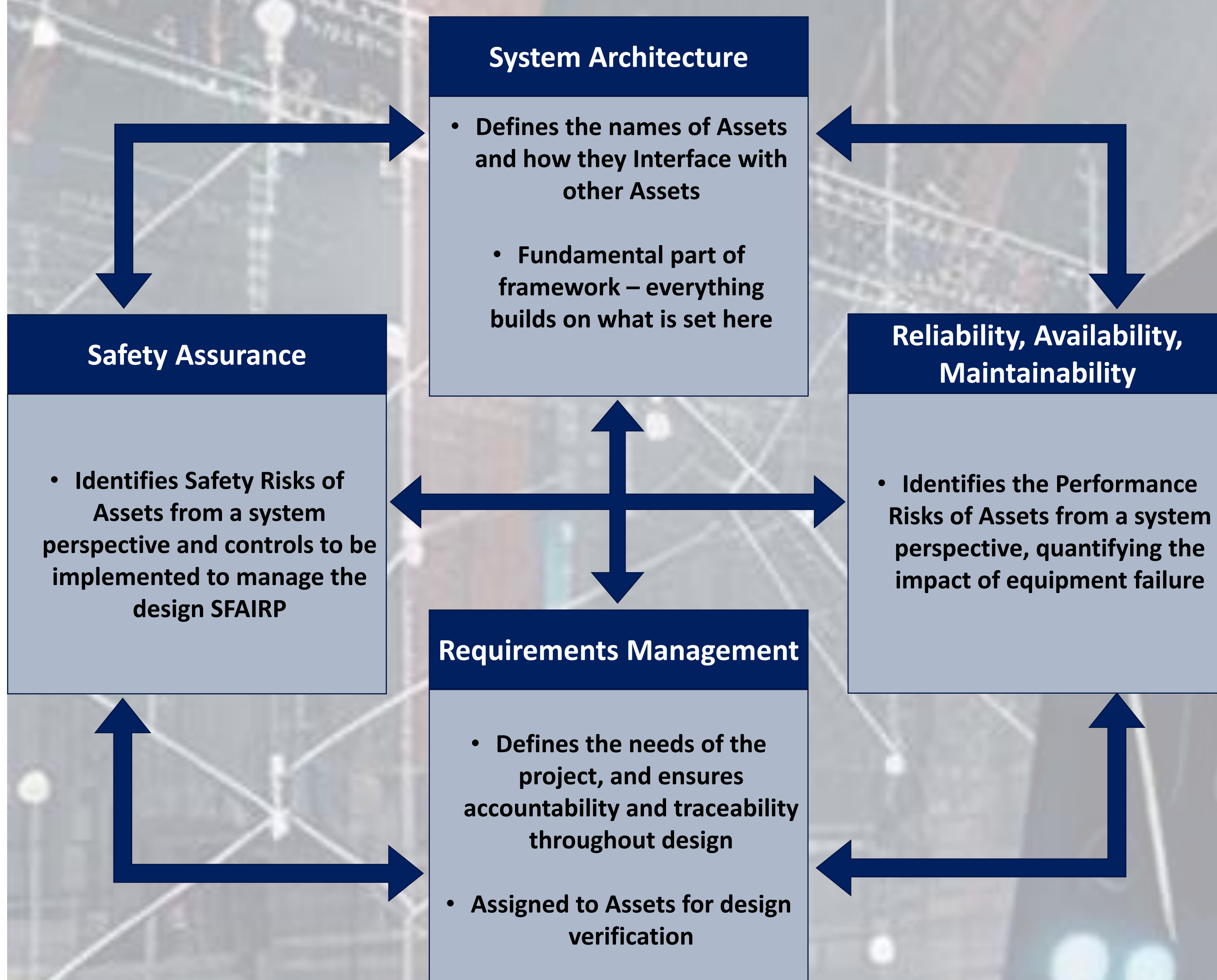
Tool integration

A consistent and tool-agnostic data framework allows for the exchange of information between common and best-practice SE tools in the rail industry.

Common Language

Applies a common language for use across the project, helping communication within SESA and across other project and design disciplines, getting everyone on the same page on definitions of key project terms.

Framework Overview



Application



Development

Project experience and lessons learned

Builds on Shoal's extensive capability in Model Based Systems Engineering and lessons learned from current and previous work on complex infrastructure projects delivering metro, heavy rail, light rail and other transport modes.

Digital engineering working groups

Continuous development through regular working groups that focus on developing our digitally-enabled systems engineering capability for rail projects.

Intensive development workshop

Invested in intensive workshops, bringing together engineers in our Transport and Infrastructure business to consolidate expertise and develop the Framework.

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