

# Guide to Complexity



**H**elmsman created the complexity analysis that was recently used to evaluate the Australian Defence Project Portfolio from five years of research across multiple sectors. This work produced a “Helmsman Complexity Scale” measure that is underpinned by scientific and analytical rigour.

This scale ranges from 1 to 10, and is designed to mimic the Richter Earthquake scale in terms of significance.

Helmsman Scale	Organisational Level	Difficulty Level	Project Characteristics	Examples
< 4	SME	Minor/large	Projects that can be done by smaller organisations	Build new custom home
4 - 5	Large	Small	Projects normally performed in the business units of large organisations.	Product maintenance and competitive enhancements to ongoing business operations
5 - 6		Core	Standard core projects in the top 50-100 organisations. Normally has executive attention.	Regulatory, environmental, business upgrades. GST, Y2K, Clean fuels
6 - 7		Large	Largest projects commonly undertaken across the top 50-100 organisations. Normally have board attention.	Merger integration, core system replacement. A380 introduction
7 - 8	National National	Large National	Largest projects commonly undertaken in the Nation. Creates a noticeable impact on the economy.	BHP Olympic dam, Broadband Rollout Some defence projects
8 - 9		Nationally significant	Rare and highly complex projects, seldom undertaken in the country. Creates significant impact on national economy.	Snowy river scheme, Olympics, Collins
9 - 10	International	International	Significant multi-national project	Hadron Collider, Apollo, Joint Strike Fighter, BASEL II

Table 1: The Helmsman Complexity Scale

The scale is derived from underlying complexity data which is normalized through forced ranking to ensure that all industries can be properly compared. The model is part of the over arching Helmsman Project Success Framework. This Framework looks at the three critical disciplines that need to be in alignment in an organisation for projects to be consistently successfully delivered.

This framework is illustrated in Exhibit 1a below.

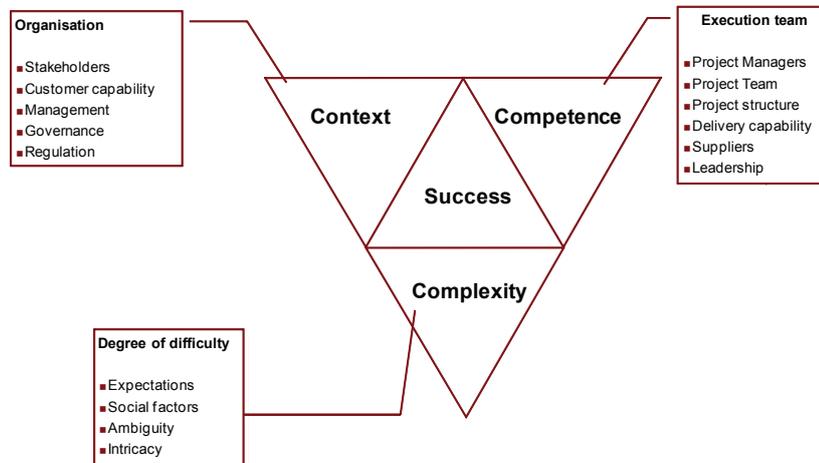


Exhibit 1a. The Helmsman Project Success Triangle

Within the overall framework, with respect to complexity, projects are evaluated against criteria in five main areas:

- 1) Context Complexity
- 2) People Complexity (Change management)
- 3) Ambiguity
- 4) Technical Challenge
- 5) Project Management Challenge

- 1) *Context Complexity* looks at the complexity of the leadership and political environment faced by the project. That is, how many key stakeholder communities need to be managed for project success, what are their expectations, and how aligned is the stakeholder leadership.
- 2) *People Complexity* evaluates how deep the sociological change will be for the recipients of the project and how large the recipient group is. Large groups of people who have to undergo deep cultural change creates one of the more difficult issues to deal with in project performance due to the emergent understanding of how to deal with these issues.
- 3) *Ambiguity* creates complexity as decisions need to be defined, decision makers engaged and considerable effort expended in clarifying and defining areas that lack ambiguity. Helmsman measures ambiguity across two core areas. Approach uncertainty arises when the approach and method needed to execute the project is unclear. Design uncertainty arises when the requirements, definition or design are unclear.
- 4) The *Technical* challenge faced by a project is often given the most attention, although it is often not the most critical driver of complexity for the project. It is, however, a critical driver of complexity. Helmsman measures technical complexity by looking at the definition, history of development and number of core subsystems expected in the final solution. In addition the previous experience of subsystems integration is evaluated to understand the complexity challenge of the systems integration required
- 5) *Project Management* complexity arises from the methods that are used to bring the project under control. The areas evaluated here include areas such as contract complexity, risk sharing, schedule and project structure, supplier complexity and external project interdependencies