

Dar Al Riyadh Insight #78

Relationship of Complexity, Uncertainty and Large Complex Projects

Dar Al Riyadh Insights reflect the knowledge and experience of our Board, executives and staff in leading and providing PMC, design and construction management services. Dar Al Riyadh believes in the importance of broadly sharing knowledge with our clients and staff to improve project outcomes for the benefit of the Kingdom of Saudi Arabia.

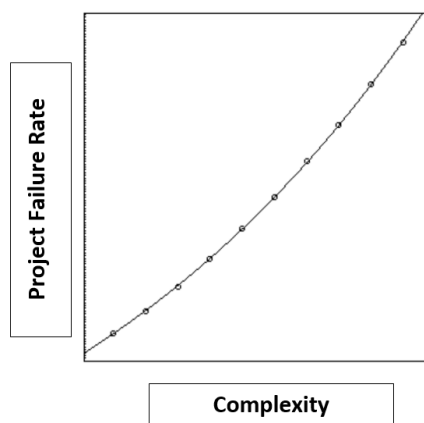
Relationship of complexity, uncertainty and large complex projects

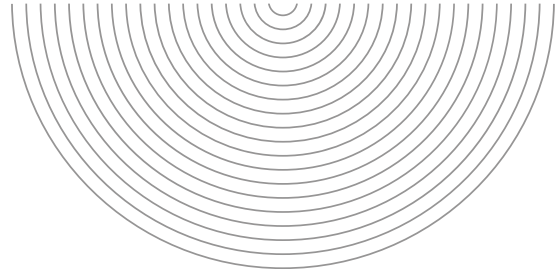
The increasing complexity of projects necessitates a focus on better understanding increasing risk and uncertainty. Underestimating complexity results in a mismatch of risk and uncertainty.

Sources of complexity include:

- Technical complexity
- Financial/funding complexity
- Time

Complex projects have an inherently contingent nature of outcomes resulting from the multiplicity of interactions that are characteristic of such projects. There is a degree of unpredictability and unknowability despite our efforts to provide structure, control and risk assessment.





Uncertainty is a compounding factor in complex projects and is in itself integral with complexity. Uncertainty exists not just in the interactions within a complex project but often exists in the form of ambiguity in strategic business objectives (SBO) the project is to accomplish. Additionally, given the longer durations of many of these projects, it is not unusual to see these SBOs change in response to perceived changes in future uncertainty. The result is changed project requirements, scope, frameworks and potentially stakeholder relationships. Even means and methods experience added complexity as the goal posts are moved or even the game itself is changed.

If we are to understand uncertainty, we must begin by measuring and tracking complexity, recognizing that complex projects have “unstable input-output relationships, changing system boundaries over time, and system behavior that is not (fully) depending on the past.”