



Dar Al Riyadh Insight #2

Aspects of 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.

Large complex projects differ in many aspects from more traditional projects. These differences drive different precepts, assumptions, focus, and leadership behaviors. Various differences are outlined in this Insight and will be developed, together with other related aspects, in subsequent Insights. Some of the aspects of large complex projects that differ from more traditional projects include:

Project time scale — Large complex projects frequently have extended timeframes, which often result in project organizations that range from semi-permanent endeavors to life-cycle provision of services.

Outcomes — A strong outcomes focus is needed on large complex projects. Strategic Business Outcomes (SBOs) become more important than requirements. In some instances large complex projects may be faced with emergent SBOs.

Stakeholder roles — Large complex projects require the design and outcomes to satisfy the owner as well as a network of enabling and potentially blocking stakeholders. Stakeholder engagement versus stakeholder management is a core activity.

Boundary conditions — Large complex projects are not well bounded, as classical project management theory might suggest. Influences acting to create a semi-permeable boundary include the emergence of new outcomes, new stakeholders, and large numbers of ex-project inputs and assumption drivers.

Flows— Flows acting on large complex projects include *transformative* flows inside a task and between tasks; *influencing* flows from external stakeholders or a changed project environment; and *induced* flows from interactions of one or more influencing flows. Flows include physical, information and instructional exchanges, the arrows if you will, between tasks.

Flows across boundaries — Influencing flows shape more traditional transformative flows and may arise from flows crossing semi-permeable boundaries, as well as the interaction between two or more transformative flows present within the project context.

Requirements — Owner project requirements (OPRs) often prove to be optimistic (the “planning fallacy”) or incomplete and too narrowly defined. Also, new requirements that emerge during execution is characteristic of long duration complex projects.



Scope — Scope must go beyond simply the project’s technical requirements. It must explicitly include a broader set of OPRs, including owner strategic outcomes and mandatory/quasi-mandatory requirements from external stakeholders.

Tasks — Tasks are increasingly interdependent, coupled by constraints and white space risks. Tasks may become coupled and entangled, and task limits may change and become open-ended.

Project organization — Organizations must be adaptive, flexible, self-renewing, resilient, learning, and capable of responding intelligently to change. The rules of connection within the organization must be simple to facilitate flexible responses to complexity.

Knowledge management: Knowledge sharing is a central execution principle:

- Everyone has access to all information needed to do their jobs.
- New information is continuously created and shared, including through these Insights.

Execution focus: Simplification and flexibility become core features of execution. There is an increased emphasis on fabrication, modularization, and standardization of systems, structures, components, and work processes.