



The Value Proposition: Better Project Outcomes when Project Management and Systems Engineering work together

“At its most fundamental, project management is about people getting things done”

Dr Martin Barnes, APM President 2003-12

“Systems engineering is the art and science of creating optimal solution systems to complex issues and problems.”

Derek Hitchins, founding president of INCOSE UK, 1994-5.

Complex projects need both technical and managerial leaders who understand each other’s needs and requirements, and who consequently can work in an integrated way.

There is substantial evidence that an integrated approach adds value by reducing the need for re-planning and rework, and optimising the risk margin, allowing projects to fulfil their objectives both on time, and to budget. Recent studies have found that the return on investment in improved collaboration between the disciplines is better than 7:1¹. Better, more integrated working practices between PM and SE result in²:

- Greater stakeholder engagement throughout the project, leading to a better understanding of the problem, the real requirements and the right solution;
- More comprehensive risk planning and mitigation activities leading to higher confidence in final cost and schedule;
- Coverage of all activities, with no missed features or requirements, enabling a more successful acceptance and handover phase;
- Better planning and progress reporting of multi-discipline work to cope with complexity, leading to a more truthful statement of the project’s current status.

A number of common, key enablers and findings have been identified across a number of large studies³, which improve PM & SE integrated working practices and consequently reduce cost and schedule overruns. The individual practice assessed to correlate most highly with business success⁴ was project planning, specifically the planning of integrated engineering effort. The next-best practices - requirements and verification – also show strong overlap with key PM competences. Other factors highlighted were:

- The use of standards from both domains to formalise (“language”) the project;
- A formal definition of the integrated working practices between the disciplines;
- Holding integrated project and programme assessments – for example, conducting reviews that objectively assess technical readiness in parallel with cost and timescale;
- Formal definition of role responsibilities in overlap areas, with sole accountability but shared responsibility. Typical instances include reviews, earned value assessment and risk.

Most convincingly, the studies showed that the business benefit of *combining* project planning and systems engineering practices was higher than each alone.

¹ Two independent studies found that on projects and enterprises with low levels of integrated practice, the return on investment for adding effort here was between 7:1 and 10:1

² Findings from a survey conducted jointly by PMI and INCOSE in 2012-13, compiled and published by MIT.

³ Studies conducted by MIT, PMI, INCOSE, Carnegie Mellon University and the University of South Australia

⁴ (US) National Defence Industries Association studies from 2008-13, brokered and published by Carnegie Mellon University covering 100 major projects

1. Cutting the true cost



Delivering value through:

- Cutting rework costs
- Cutting delay costs
- Cutting change costs

Delivering the right solution as quickly as possible is usually the most economic way to complete a project

2. Delivering tangible benefits



- Fit for purpose – design is fundamentally correct

So:

- Robust to changes in requirements
- Reduced slippage
- Improved morale – flaps and panics reduced
- H&S built in - cutting injuries and deaths
- Project delivers:
 - Solution that is a success
 - On plan
 - Cost-effective

3. Less unproductive tension



- Reducing start-up delays on projects
- Clarifying roles and responsibilities
- Optimizing planning around technical design and delivery gives best return on investment
- Earliest assurance of benefits delivery
- Increased performance from PM and SE resources