

## Systems Engineering and Project Management - Top Ten Tips

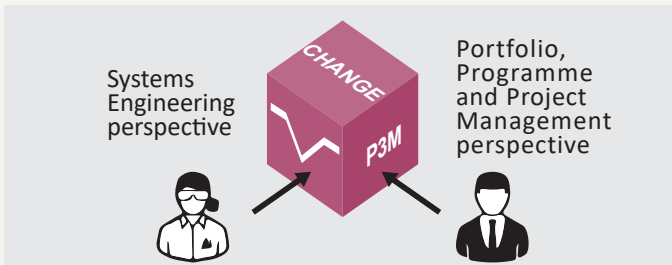
### This guide's purpose is to:

Identify the Top Ten Barriers for successful integration of Systems Engineering (SE) and Project Management (PM) disciplines on typical projects.

Set out the High Level Principles for the two disciplines to work together.

Define the Top Ten Tips (things) that every project should do from Systems Engineering and Project Management point of view.

*In other words - "if you do anything – you should do these things ... "*



1

## High Level Principles

### Common Goal

Both disciplines to be striving towards the same solution and ensuring they are addressing the right problem.

### Defined Scope

Defining the scope from the outset of a project can prevent confusion and tension.

### Clarity of Responsibility

Ensuring all members of the team are clear on their responsibilities and their timelines for delivery when defining the scope.

### Common Clear Communication

This principle refers to both internal and external communication. It can prevent SE and PM communicating with external stakeholder in ways that can seem diametrically opposed.

### Mutual Respect and Recognition

SE and PM will naturally have differing focus, skills, competencies, perspectives and culture. Good working relationships start with understanding the value that the other discipline brings to the project.

### Recognise and Manage Tensions

Healthy tension between SE and PM disciplines can drive a great outcome for a project. These tensions need to be recognised and managed in order to drive performance.

### Collaborative Behaviours

Planning upfront is important, however all projects will face emergent issues. Resolving these in a collaborative manner will ensure the optimum solution is found.

Follow these principles

2

## Top Ten Barriers

### 1. Documentation

Lack of understanding of what documentation needs to be delivered.

### 2. Language / Use of Jargon

Misleading or misunderstood terms between the two disciplines.

### 3. SE / PM Culture

Different priorities, behaviours and ways of working.

### 4. Lack of "Left Shift" - Not Fixing Problems Early

Seen as an unnecessary cost and schedule burden.

### 5. Lack of Understanding of Risk

What is the technical maturity and risk exposure of the project.

### 6. Not Integrating Early

Leaving integration of aspects of project too late - issues become late surprises.

### 7. Planning and Estimating

No integration of SE Management Plan with Project Management Plan.

### 8. Old Practices

"This is the way we have always done it."

### 9. Organisational Silo Mentality

Working in discipline-based stove pipes.

### 10. Unclear Decision Making

Lack of understanding of Who (authority), When (lifecycle related), What (decisions need to be made).

Prevents SE and PM working well together

3

## Top Ten Tips

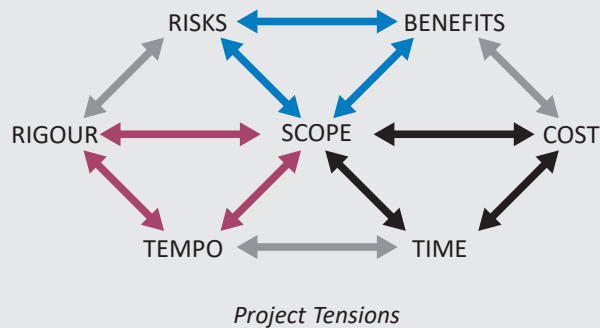
### Organised into four categories:

#### Promote the value of SE and PM integration.

1. Clearly articulate the benefits of integration including front end loading and be clear on the benefits of each discipline.
2. Continue to develop discipline competency.
3. Establish a community to run internal induction and training sessions.

#### Create a collaborative environment of healthy challenge.

4. Clarify the language, roles, responsibilities and expected behaviours.
5. Recognise and manage tensions, see figure below.



Project Tensions

### What you should do

### Integrate SE & PM early and maintain it through lifecycle.

6. Establish SE and PM “one” team approach from the outset.
7. Adapt the relationship throughout the lifecycle.

### Develop an integrated plan.

8. Agree the sequence of deliverables and tailor the design of the delivery system as well as the product.
9. Process tailoring by Suitably Qualified and Experienced People.
10. Establish integrated governance (programme & technical).

### Recognise the Clear Benefits of Both Disciplines

Appreciate and leverage the strengths of both SE and PM.



SE and PM “one” team

## About This Z Guide

This leaflet highlights key barriers for integrating SE and PM on projects, identifies high level principles for SE and PM to work together and defines top tips that every project should do in order to integrate SE and PM well.

To learn more about Project Management and Systems Engineering, please see our earlier Z11 Guide.

For further information, advice and links to helpful websites go to: [www.ifse.org.uk](http://www.ifse.org.uk)

For more information about Project Management, go to the Association for Project Management website at: [www.apm.org.uk](http://www.apm.org.uk)

Download copies of this leaflet and other Systems Engineering resources online at: [www.ifse.org.uk](http://www.ifse.org.uk)

For more information about the worldwide Systems Engineering professional community, go to: [www.incose.org](http://www.incose.org)

Leaflet prepared and published by INCOSE UK / The Institute for Systems Engineering (IfSE). Lead author: Doug Cowper, [dcowper@cleavesystems.co.uk](mailto:dcowper@cleavesystems.co.uk)

©2025 The Institute for Systems Engineering & Association for Project Management



This guide is created in collaboration with the Association for Project Management / INCOSE UK Systems Thinking SIG. For more details visit: [www.apm.org.uk/community/systems-thinking-sig/](http://www.apm.org.uk/community/systems-thinking-sig/)



[www.ifse.org.uk](http://www.ifse.org.uk)



[enquiries@ifse.org.uk](mailto:enquiries@ifse.org.uk)



Institute for Systems Engineering (IfSE)