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.

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.incoseonline.org.uk

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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**

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).

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

- **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.
  10. Establish integrated governance (programme & technical).

**Recognise the Clear Benefits of Both Disciplines**

- Appreciate and leverage the strengths of both SE and PM.

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**What you should do**

- **Prevents SE and PM working together well**
- **Recognising the benefits**
  - RISKS → BENEFITS
  - SCOPE → COST
  - TEMPO → TIME

*Project Tensions*