



Toward a New Mindset: Bridging the Gap Between Program Management and System Engineering

What is systems engineering? What is program management?

Depending upon who responds to those questions, the answers could vary considerably. And in the end, those questions are not the critical ones that need answering.

The International Council on Systems Engineering (INCOSE) and the Project Management Institute (PMI) believe that program management and systems engineering share vital objectives:

- Delivering value and benefit to customers and/or end users;
- Integrating the required experience, knowledge and roles to successfully achieve objectives and complete initiatives; and
- Functioning effectively in a more complex environment where program requirements and outcomes are not clearly defined or have numerous components to manage.

PMI and INCOSE believe that through strong collaboration, the two organizations can help their practitioner communities achieve their shared objectives.

Problem Statement

Over the years, a cultural barrier has grown between practitioners of systems engineering and of program management. System engineers and program managers have developed the mindset that their work activities are separate from each other, rather than part of an organic whole. The unfortunate

consequence is that the work often costs more, takes longer, and provides a sub-optimal solution for the customer/user.

Leaders of PMI and INCOSE believe this cultural barrier and mindset, can and must be overcome. By working together, the organizations hope to foster a team approach that will benefit the members and their organizations, and ultimately the stakeholders who depend on them.

Historically, program managers and system engineers have viewed the stakeholder problem entirely from within their own disciplinary perspectives (see Figure 1). As a result, the two groups have applied distinctly different approaches to the key work phases—managing the planning and implementation, defining the components and their interactions, building the components, and integrating the components.

Instead of seeing that both groups have a shared responsibility in all phases, the focus often shifts from the customer/user to the individual practitioner's perceived professional "turf." As a result, "disintegration" occurs. For example:

- Costs and schedules are developed independently of the technical scope, and so lack integrity.
- Efforts are duplicated, and program team members often receive conflicting direction.
- Requirements are tracked and managed separately, often resulting in something different from what the customer/user expects.

The "disintegration" between the system engineering and program management processes produces a "solution" that is really no solution at all—the work inevitably exceeds budgets and timetables, and the user is not satisfied.

New Mindset

What is required is a different mindset, one that redefines professionalism as achieving the mission and having a satisfied customer/user versus struggling over protecting turf. Systems engineers and program managers bring unique skills and

experiences to the programs on which they work. Those unique competencies are essential for the successful execution of a program, as are the skills and competencies of team members from other disciplines (e.g., cost accounting, legal, procurement, etc.). But there is also a “shared space” where program managers and systems engineers collaborate to drive program team performance and success. That shared space includes, but may not be limited to, such capabilities as:

- Leadership
- Negotiation
- Communications
- Collaboration/teaming
- Sustained focus on mission
- Risk management
- Configuration management

This new mindset recognizes there cannot be two separate views of the stakeholder problem, but a single one that incorporates all elements of the program (see Figure 2). It requires that practitioners have the attitude and desire to engage in the “shared space.”

What ultimately emerges is an understanding that all of the work is relevant to both groups, and that the program cannot be successful without an appropriate contribution from both areas of professional expertise. Each discipline would also benefit from each having an understanding of the other’s discipline. The major focus of program management remains the integration of effort, cost and schedule across multiple aligned projects to deliver value to customers. The major focus of system engineering remains the definition and integration of a system that delivers value to customers. It is imperative that each group has a minor focus in the processes of the others—in much the same way university students have major and minor areas of study.

Translating New Mindset into Collaboration

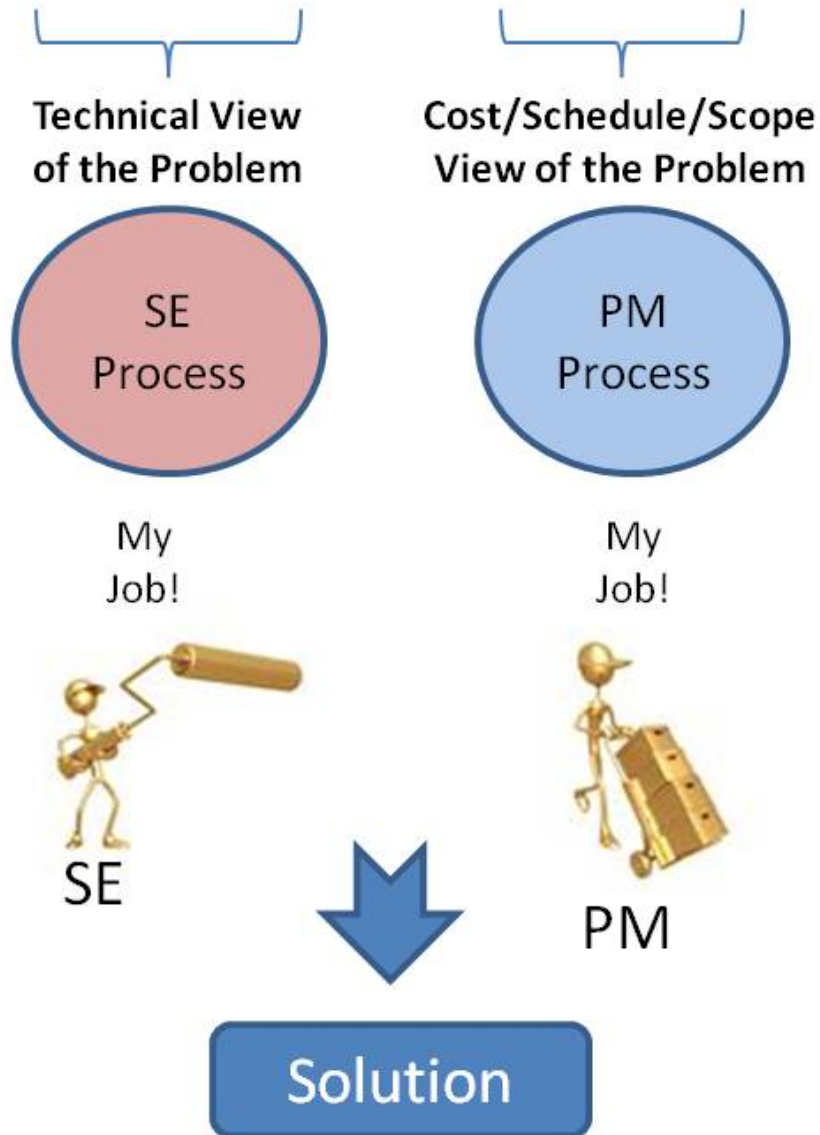
The analogy of the university student with a major and minor area of study can be a template for the approach that PMI and INCOSE might take to break down the

cultural barrier that separates their practitioner communities. The two organizations can work together to use the resources they have developed for their “major” curricula to create “minor” curricula for members of the other group. Most importantly, the two organizations can collaborate on activities that will help shift the focus to the “shared space” and the competencies that practitioners of both disciplines need to sustain an integrated focus on achieving the mission.

In this way, program managers and system engineers will develop an appreciation for the dual roles that each group must play, and an understanding that they are like two interlocking pieces of a puzzle. When they are separate, we see just partial views of reality. Only when they are synergistically brought together can the larger picture become clear, and the puzzle can be solved. The whole can become greater than the sum of its parts.

FROM

Stakeholder Problem



TO

