

The Interface Between Systems Engineering and Program Management

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Abstract: Project/program management is arguably the primary function of all engineering managers. A clear understanding of the interface, and the supporting role by the systems engineer (SE), is critical to effective execution of any project/program. This article explores the interface between the project/program manager (PM), the chief or lead engineer, and the SE in their roles of performing on a project to develop and produce a product. All have unique roles but must work as a cohesive team to assure success of the project. The article also presents how the SE processes interface with the total PM process.

Imagine the game of communicating through cans on a string. Now imagine two people tightly wound together in the string with the cans to their ears. Metaphorically, this is how closely linked the program/project manager (PM) and the engineering lead, or chief engineer (CE), must operate. Fundamentally, the health of any contract-based business depends on meeting performance requirements on schedule and within cost targets. PM and SE share responsibility for these goals and only through close interaction and open communication can success be assured. We often describe the CE and the PM as being “joined at the hip,” where neither can function without the other. They are supported by a multidisciplinary team lead by systems engineering. Systems engineering consists of two significant disciplines: the technical knowledge domain, in which the SE operates, and systems engineering management. This article focuses on the management discipline and the support role to the management of a project. Vital to a project’s success is a clear definition of roles and responsibilities and how the team works together effectively. Of equal importance is a consistent terminology for planning and monitoring a project/program.

PM and its success is arguably the primary function of all engineering managers. A clear understanding of the relationships, and the supporting role by the SE, is critical to effective execution of any project/program. This article explores

that relationship from an SE’s perspective and terminology unique to the systems engineering domain.

Roles and Interfaces Between SE, PM, and CE

Before discussing relationships, however, we need to first recognize the breadth of support required to run a successful program. Managing the development and fielding a product requires three basic activities: technical management, business management, and contract management. These responsibilities are collectively the responsibility of the program management and engineering teams with the support of a large infrastructure. Exhibit 1 shows the many disciplines involved. Every organization shown has an important role and must be linked as a cohesive team. The linking of this support team is one of the most important roles of the PM. In most organizations today, the structure is matrixed, meaning that not all support organizations do not report to the PM. In this environment, the PM, along with the CE, must coordinate the project support through a management hierarchy. Exhibit 1 illustrates the notion that the PM and the CE provide horizontal and vertical integration of the entire team. This leads to the simple definition of roles:

- The *program manager* has the overall responsibility for the program very much like the CEO has overall responsibility for a company. The PM is essentially running “a business-within-a-business” and is heavily reliant on the company organizations. The PM authorizes the work, distributes the budget, monitors the progress, and is the primary interface with all of the stakeholders. One very important PM role is facilitator: the focal point of responsibility, insight, and oversight. He or she is the conduit for both information and corporate attitude.
- The *system engineer* has overall responsibility for the technical performance of the program. In the acquisition reform we have seen within Department of Defense and numerous large corporations, the trend in procurement of

About the Author

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