

Why Systems Engineers are Essential to Your Organization

A systems engineer is invaluable to an organization by preventing system problems from impacting the cost and schedule of programs. They rely on their technical and leadership skills to reduce the potential for rework associated with changes in design, interpretations with requirements, or confusion with the user's intent. They are the ones who pay attention to the system details and ensure the user, the buyer, and the investor are all satisfied with the project's outcome – which is the ultimate measure of success.

It is the systems engineers' role to understand the intended use and ultimate purpose of the system, and then to clearly communicate the proper system design to component builders. This begins by translating the user's vision into information required by the architecture team to generate an optimal systems design. It is followed by the systems engineer providing component builders with a translation of the architecture teams' vision, along with the appropriate technical requirements for building each component within the system.

Yet systems engineers know it is not enough simply to deliver a solution that works. To meet the user's highest expectations, they use their skills and insight to understand the user's perspective and to establish those expectations in the technical language of systems builder. Often, this involves helping the end-user think through a more complete definition of a successful outcome by producing missing details critical for influencing the systems design. Only when the systems engineer gets it right, will the user – as well as the investor and the buyer – completely embrace the result.



Systems engineers also recognize that they have to match what the architecture team is hoping to accomplish with what the component builders can best provide. Through their leadership skills, the systems engineer works toward an ideal balance between the user's vision, and a systems design that is easily implemented. When this balance is achieved, the systems engineer packages the builder information into three critical areas: 1) how the component must function; 2) how it needs to interface with the other components; and, 3) how it must adapt to the larger operational environment.

When these "translation" activities occur correctly, the user's vision is achieved akin to providing a finely-tuned racing bike suitable for the Tour de France. When these activities are missing or poorly accomplished, the bike intended for the Tour de France may wind up with knobby tires and a heavy frame, not the ideal bike a rider needs in order to win.

Across an organization's products or services, systems engineers also provide critical leadership for integrating the technical activities. They have skills to influence multidisciplinary teams to reach consensus on how the system solution should come together. As problem-solvers, they focus on outcome, not process. They "own" the project: they don't start from the position that expensive rework or user dissatisfaction -- or for that matter, a builder delivering less than ideal components -- is someone else's responsibility. They step in and resolve the issue, often before most others even know the risk exists.





As translators, systems engineers can prevent many of the system problems that tend to derail projects. As leaders, they deal with the complexity of those problems as they arise. This powerful set of skills, abilities and know-how is why systems engineers are a valuable resource to an organization.

