

Applied Systems Engineering: Fundamentals for Project Success

Zane Scott (Vitech Corporation) - zscott@vitechcorp.com

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Abstract. Systems engineering methods are critical to project success. The world of systems engineering is changing rapidly. Rather than confining our practice to the realm of large stand-alone, single purpose military/aerospace systems, we must now develop military and commercial systems across a wide range of size, cost, and complexity. Many principles remain constant, but the systems engineering processes of yesterday are no longer universally applicable. At its heart systems engineering is a disciplined application of creative thought to the practical problems facing the engineer. The way in which you think about the problem and the possible systems solutions controls the outcome of your design effort. This tutorial will bring into focus the issues and considerations surrounding the choice of methods and approach. We will consider the classic systems engineering domains of requirements, behavior, architecture, and V&V. But instead of treating these in isolation, we will handle these fundamentals within a flexible systems engineering process suitable for system development tasks spanning the complexity spectrum. Our emphasis will be on eliciting the proper requirements, understanding both the problem and solution domains, enhancing communication among the design team and the stakeholders, and satisfying the system need. Throughout the tutorial we will address methods for banishing rework, minimizing risk, and meeting cost and schedule targets- all the while maintaining a high level of confidence in our solution. Through discussions of the fundamental concepts integrated with sample exercises, we will maintain our focus upon the true deliverables – the system itself and overall project success.

Biography

Zane Scott (Vitech Corporation) - zscott@vitechcorp.com

Zane is the VP of Professional Services at Vitech Corporation. For the last 15 years (following an 18 year career in litigation) Zane has applied his extensive background in communications, organizational development, large and small group mediation, and conflict management to process design and improvement. Prior to joining Vitech Zane was a Senior Consultant with Transformation Networks using model-based systems engineering (MBSE) in process design. While there he helped to develop the Iterative Interview technique for eliciting “as is” process models to use as the basis of process improvement projects. This process also made significant improvements in the area of change management and implementation. He has been an active advocate of the marriage of process improvement techniques and models with the principles of MBSE. Zane is a member of the Chesapeake INCOSE SE/PM joint working group. Zane has a broad background as a speaker, presenter, and instructor having taught in a variety of professional education settings as well as the college classroom. He is the co-author (with David Long) of the Vitech MBSE Primer and has presented a number of MBSE tutorials and webinars.