System of Systems Engineering Collaborators Information Exchange (SoSECIE)

June 14, 2022
11:00 a.m. to Noon Eastern Time

Leveraging Set-Based Practices to Make Agile Practices More Effective for System-of-Systems Engineering

Presenter: Brian M. Kennedy, CTO, Targeted Convergence Corporation

Abstract

We begin by looking at some fundamental differences between system-of-systems engineering and typical software engineering, and how those differences are problematic for certain of the typical Agile practices. Among those differences are the constraints imposed by the laws of physics, the constraints imposed by manufacturing, the many specializations that emerge due to all those constraints, and the larger and less-dedicated teams that result from all that specialization. We then propose how some of the mechanisms used to implement Set-Based Practices can be further leveraged to overcome the hurdles in applying Agile Practices to System-of Systems Engineering. We walk through each and show how the hurdle is addressed, and then describe the resultant Agile Practices and the benefits that can be expected in your System-of-Systems Engineering. For example, one of the other fundamental differences is that the direct customer of the system-of-systems engineering is not really the end user (they are supplied by manufacturing); rather, the direct customer is manufacturing and what they need is the knowledge of what to manufacture. Given that, traditional Agile's user stories need adjustment. And that leads to adjustment in the Backlog prioritization which is central to many of the Agile Practices. But with those adjustments made, we can show the numerous benefits that a System-of-Systems Engineering effort can expect to see from shifting to such Agile + Set-Based Practices.

Biography

Brian is an author of the book Success Is Assured and is an INCOSE Certified Systems Engineering Professional (CSEP) who has spent more than 30 years designing complex software systems. He was Chief Architect of i2 Technologies' Supply Chain Planner and Demand Fulfillment applications, applying Toyota lean manufacturing, Theory of Constraints, and advanced optimization to the planning and scheduling of the larger supply chain, helping to establish a new market space (Supply Chain Management) and generating billions of dollars of value for i2's customers. Brian was named the first i2 Fellow and holds more than a dozen patents on the inventions that were the basis for those software systems. As co-founder and CTO of Targeted Convergence Corporation, Brian is responsible for the systems engineering of TCC's Success Assured® software and the associated training, which are both designed for superior systems and mission engineering in the early conceptual stages of development.