Track Preference: lessons learned or systems engineering

Presentation Title: Achieving Maximum Integration Utilizing Requirements Flow Down.

Synopsis (50 Words)
This presentation will provide a real-life example of a NASA project team dealing with complex systems engineering challenges based on planning for the Ares I Integrated Vehicle Ground Vibration Test (IVGVT). This presentation will provide examples of applied systems engineering practices and suggestions for future programs.

Abstract (250 Words)

A robust and experienced systems engineering team is essential for a successful program. It is often a challenge to build a core systems engineering team early enough in a program to maximize integration and assure a common path for all supporting teams in a project. Ares I was no exception. During the planning of IVGVT, the team had many challenges including lack of: early identification of stakeholders, team training in NASA's system engineering practices, solid requirements flow down and a top down documentation strategy.

The IVGVT team started test planning early in the program before the systems engineering framework had been matured due to an aggressive schedule. Therefore the IVGVT team increased their involvement in the Constellation systems engineering effort. Program level requirements were established that flowed down to IVGVT aligning all stakeholders to a common set of goals. The IVGVT team utilized the APPEL REQ Development Management course providing the team a NASA focused model to follow. The IVGVT team engaged directly with the model verification and validation process to assure that a solid set of requirements drove the need for the test event.

The IVGVT team looked at the initial planning state, analyzed the current state and then produced recommendations for the ideal future state of a wide range of systems engineering functions and processes. Based on this analysis, the IVGVT team was able to produce a set of lessons learned and to provide suggestions for future programs or tests to use in their initial planning phase.

Biography
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Mr. Archiable is currently a Lead Associate at Booz Allen Hamilton in the NASA Ground Operations and Logistics Branch at MSFC supporting the NASA Ares I Integrated Vehicle Ground Vibration Test. He serves as book manager for the IVGVT Implementation Plan, the IVGVT Test Plan and the IVGVT First Stage Test Article Specification Document.

Prior to this position, Mr. Archiable was involved in large scale test events supporting the Boeing Company on the Delta IV Evolved Expendable Launch Vehicle (EELV) program. Tasks included: Test Engineer for Delta IV qualification tests and first flight instrumentation, Project Manager for the hold down and release system for the Delta IV launch vehicle, Project Manager for the structural qualification of the hold down system components and book manager for the integrated test and evaluation plan. He also provided operations support and systems engineering oversight for the Ground Based Midcourse defense program.

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Bruce is the IVGVT lead which he took on in August 2010 from Meg Tuma. He was previously the IVGVT deputy and before that he was the Ares I-X Project Integration Manager. He has been with NASA for over 29 years and worked on numerous NASA vehicles and task including the Shuttle, Hubble, Chandra, and the International Space Stations robotic arm from Canada.