



The Boeing Company
2020 E. Imperial Highway
S24 Conference Center
Building S24
El Segundo, CA 90245

May 11-12, 2010

Topic Teams

Guidelines for Flight Unit Qualification

Problem Statement: Unit level (thruster, TWTA, RWA, etc.) qualification planning and execution is often incomplete and/or inadequate resulting in late discovery of design and/or manufacturing issues. There is currently not an industry-wide complete and concise reference guide that provides practical tools and guiding principles for unit qualification.

Charter: Develop guiding practices for development of comprehensive unit qualification plans to include the integration of plans below the unit level. These practices will mitigate technical risks as early as possible in the design/development process.

Objective Criteria for Heritage Hardware Reuse

Problem Statement: The term heritage lacks objective criteria to quantify the hardware pedigree. Poor assumptions are sometimes made regarding the heritage hardware suitability for new programs. Decision makers often lack the appropriate tools and/or methods to make decisions regarding the reuse of heritage hardware. Having such tools would facilitate realizing the cost/schedule benefits sought with the heritage concept.

Charter: Develop objective criteria for evaluating heritage of unit-level designs and product (hardware and firmware) at key program milestones. Provide methodology for reuse assessment, risk analysis, and unit qualification planning.

MA Program Framework

Problem Statement: The term "mission assurance" can mean different things to different stakeholders (customers, industry, suppliers, FFRDC, etc.). Those differences in understanding can result in miscommunications among stakeholders within and across programs, leading to potential gaps or overlaps in the planned mission assurance process.

Charter: Form a working group to capture the current state of mission assurance primary objectives, focus areas, and requirements. Identify uniform mission assurance processes and products for use by government organizations and industry (primes and major subcontractors).



The Boeing Company
2020 E. Imperial Highway
S24 Conference Center
Building S24
El Segundo, CA 90245

May 11-12, 2010

Modeling and Simulation

Problem Statement: Modeling and simulation are critical components in the development of many systems. It would be almost impossible to develop an aerospace platform without the aid of computer modeling and simulation. Modeling and Simulation is often used for tasks such as integration, verification, validation, and uncertainty quantification and managing complexity, while maintaining fidelity is essential to worthwhile tasks. There is a need for a sound program-focused modeling and simulation plan to support decisions impacting program and mission assurance. This plan should be developed with a disciplined process that is suitable and valid for its intended use.

Charter:

Establish common modeling and simulation perspective and lexicon and develop guidance documents focusing on criteria for identifying modeling and simulation applications that should be formally planned/managed, categorization based on significance in decision making or systems engineering process, approaches for verification/validation, and expectations for deliverable products.

Test Beds and Simulators:

Problem Statement: Inadequate types, availabilities, and capabilities of test beds/simulators throughout the program lifecycle resulted in incomplete V and V of flight hardware with flight and ground software. This has resulted in costly integration and rework, as well as on-orbit operational issues. Inadequate emphasis on the planning, development, and efficient use of appropriate test beds/simulators to support the growing complexity of spacecraft increases mission success risk.

Charter: Examine the state-of-the-industry and best practices regarding space vehicle simulator capabilities (including hardware test beds) and provide recommendations for lifecycle application of appropriate fidelity simulators and hardware test beds to best support program needs.

Note: The focus is on factory development and verification activities and is not intended to include on-orbit planning/anomaly resolution.