

Independent Verification & Validation

Safety critical systems experience covers the entire life cycle from concept to changes and upgrades.

Lockheed Martin Nuclear Systems & Solutions (NS&S) offers engineering services consisting of Independent Verification and Validation (IV&V) of electrical, electronic and software-based safety system elements for nuclear electrical generating stations. IV&V is performed throughout an entire program life cycle from concept through maintenance.

Independent V&V is required for safety-related equipment in nuclear facilities, such as reactor trip systems (RTS) and engineered safety features actuation systems (ESFAS). Lockheed Martin ensures this independence by assigning V&V personnel who have had no influence on the design of the equipment, and by managing the V&V program under an appropriately independent organizational structure. Lockheed Martin V&V personnel thoroughly document the results of V&V activities, providing clear and objective evidence of compliance for licensees and applicants.

NS&S has decades of experience performing V&V on safety critical systems both internal and external including aircraft, weapon systems and chemical control systems.

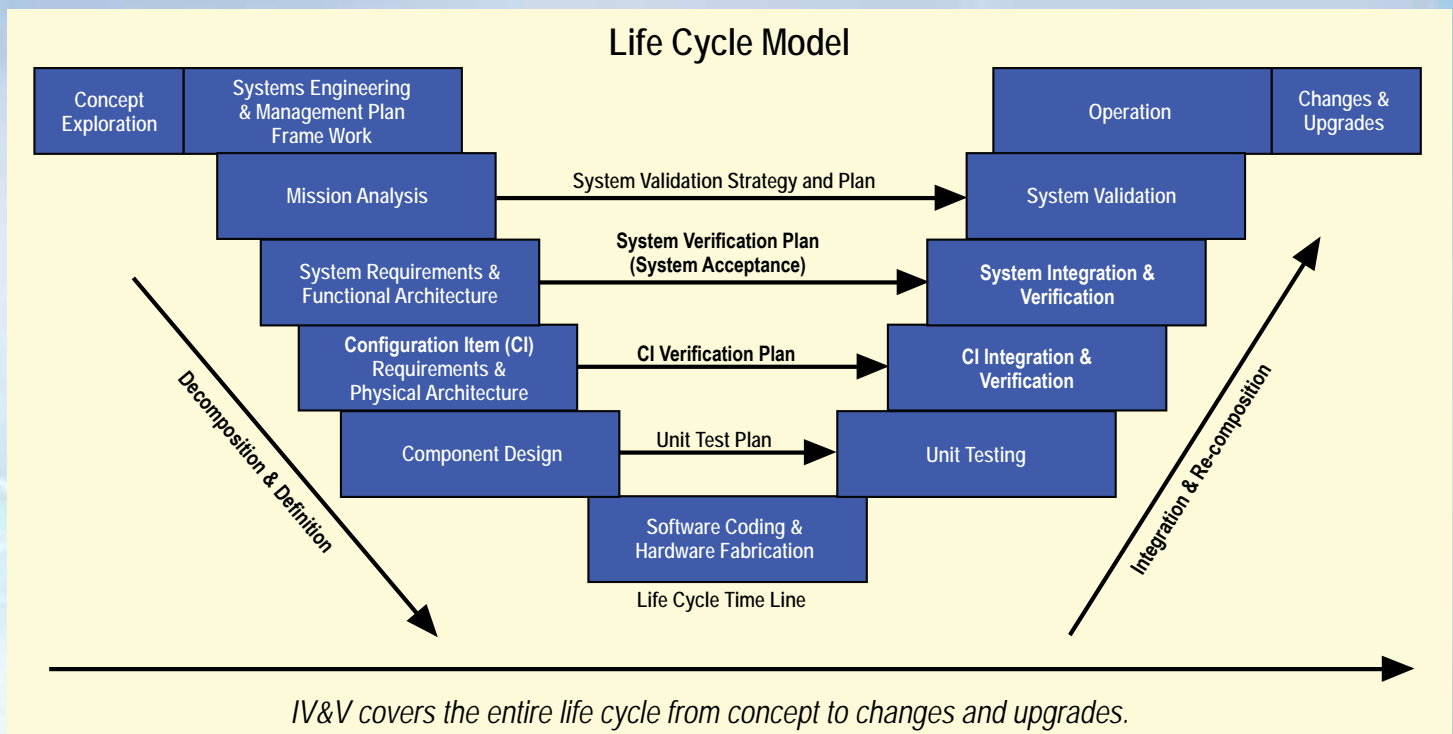


Independent Verification and Validation

Verification and validation address two important aspects. Verification answers “was the system built right?” while validation answers, “was the right system built?”

NS&S is available to perform IV&V of safety and non-safety systems for nuclear electrical generating stations. IV&V is performed by comparing third-party development and design-to-commercial regulatory standards. The approach is in accordance with US. NRC Reg. Guide 1.168, which endorses IEEE STD 1012-1998, the Institute of Electrical and Electronics Engineers (IEEE) Standard for Software Verification and Validation.

IEEE STD 1012-1998 defines software verification and validation (V&V) processes, which determine whether development products of a given activity conform to the requirements of that activity, and whether the software satisfies its intended use and user needs. This determination may include analysis, evaluation, review, inspection, assessment, and testing of software products and processes. V&V processes assess the software in the context of the system, including the operational environment, hardware, interfacing software, operators and users.



Features

- Comprehensive IV&V services available
- In accordance with US. NRC Reg. Guide 1.168
- Consistent with IEEE STD 1012-1998
- Planning and execution at all lifecycle design phases
- Conformant to NQA-1 requirement 3 design control

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