ABSTRACT AND BIOGRAPHY

Application of ISS Lessons Learned to Systems Integration

NASA's Constellation program is facing many of the same challenges that previous human spaceflight endeavors have addressed. The challenges include developing complex, human-rated systems that operate in dynamic and harsh environments; fielding operational capabilities over a span many years; infusing new technologies; managing geographically dispersed development, production and operations teams; and integrating the overall cost, schedule and technical performance of multiple systems and elements. The complex systems of people, products, processes, tools and facilities include space based systems; ground production and processing systems; mission operations systems; and other external interfaces (e.g., international partner contributions, ISS, etc). As it has on other large complex programs such as Apollo, Shuttle, and ISS, the Constellation approach to program and system integration can have a significant effect on the program's success. A variety of additional factors present challenges to programs – budget stability, technology maturity, requirements achievability, and scope creep – and effective program and systems integration has a mitigating effect on them all. Lessons learned from the International Space Station program offer insight into what worked well and what didn't in the area of program and system integration.

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Mr. Wood joined Boeing in 1986 in Wichita, Kansas where he was responsible for subsystem design and integration for the Air Force - One Presidential aircraft. Following the Air Force - One program, Mr. Wood began work on the Space Station Freedom program in Huntsville, Alabama. There he served as a lead test engineer and later a lead design engineer through the program Critical Design Review. Mr. Wood moved to Houston in 1993 to lead the Boeing effort for the ISS Environmental Control and Life Support System team. In 1995, Mr. Wood was appointed the Deputy Program Manager for the FGB Zarya spacecraft, the first element of the International Space Station. Mr. Wood remained manager of the FGB program through the successful launch and on-orbit check out of the FGB in 1998. For his role in leading the FGB team, Mr. Wood was awarded the NASA Public Service medal. In 1999, Mr. Wood was named the Director of the Thermal and Environmental Control Systems (TECS) team. In that capacity, he led a team to develop, test and integrate the active and passive thermal control systems and the environmental control and life support systems of the International Space Station. Mr. Wood's responsibilities include the development and production of multiple subsystems and major assemblies comprised of over 50 distinct component types, built in-house and at over 20 subcontractors.