An established approach to cost and risk reduction in space programs is the use of heritage systems. A heritage system is a system which is based on a proven system design [1]. A design is a set of engineering drawings, plans, etc. which are used to manufacture a system [2]. Heritage is the degree to which a system is proven. One example for a system with a high degree of heritage would be a communication satellite where satellites with similar designs have been successfully flown over a dozen times in the same orbit. In the following, an element of a system is called "component". Almost all newly developed space systems to some degree rely on preexisting components. Recent examples are NASA's Space Launch System (SLS), and the Ares V and Area I vehicles for the Constellation program. All these vehicle designs rely on components from the Space Shuttle program, such as the solid rocket boosters and the external tank. However, the use of heritage systems is not as straightforward as one might expect. According to the Governmental Accountability Office (GAO), more than 50...

This paper presents a framework and methodology for assessing heritage in the early stages of development. The methodology allows for identifying heritage with respect to a new application as well as identifying areas where it is missing. Second, possible modifications to the design can be assessed in terms of their impact on the expected development schedule and cost. Lastly, a system design which fits a new application is useless, if it cannot be implemented. Therefore, the ability to assess technological capabilities for implementing a system is also vital for assessing heritage systems. The methodology is applied to a case study which compares the Saturn V with SLS variants.
Proceedings of the 6th International Conference on Systems & Concurrent Engineering for Space Applications

Jahr:
2014

Occurences:
· Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Luft- und Raumfahrt > Lehrstuhl für Raumfahrttechnik (Prof. Walter) > Wissenschaftliche Veröffentlichungen
· Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Luft- und Raumfahrt > Lehrstuhl für Raumfahrttechnik (Prof. Walter) > 2014

entries: