

SPACE SYSTEMS SYMPOSIUM (D1)
Enabling Technologies for Space Systems (2)

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DEVELOPING A PLUG AND PLAY SOLUTION FOR SATELLITE MANUFACTURING

Abstract

Plug and play technology can provide great benefits to satellite manufacturing. The ability to connect satellite avionics during manufacturing via an easy-to-use process enables a simpler and quicker assembly process. In the future, it will be possible to reuse existing sub-systems leading to a quick turn-round of new technology for the space industry.

The current process of satellite manufacturing for large satellites (>500 kg) starts with a satellite prime contractor designing both the mission and the satellite system. After the design phase, the prime issues contracts to sub-contractors to develop sub-systems such as for power, communications and attitude control. These contracts include the cost of hardware and customization for the mission, with the latter representing up to 60% of the total manufacturing costs.

These costs can be reduced by reusing previously developed sub-systems from similar missions. Reusing subsystems requires compatibility for both hardware and software. One solution is using a standard interface with a plug and play concept. This standardized interface will be able to identify the connected sub-system, install its drivers and initialize them without user intervention.

Current standardization efforts in Europe and the US are facing challenges from both primes and sub-contractors due to the high cost and low return on investment in the immediate future. Space Products and Innovation is currently studying these efforts with the goal to develop a roadmap for to reduce these challenges and increase competitiveness in the market. This study is performed in collaboration with ZARM institute of the University of Bremen and includes all European primes; The results of the study are presented in this paper along with a conclusion for the next steps of developing a plug and play solution for the satellite industry.