

15th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)

Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development (1)

Author: Mr. Jonathan Faulk
International Space University (ISU), Ireland

Ms. Tara Foster
The Netherlands

A HOLISTIC INTEGRATION OF THE GLOBAL SPACE ENGINEERING SECTOR

Abstract

Over the last 50 years many countries have become space faring and in doing so have constructed most to all of the required hardware to do so. In recent years the drive has been toward more international cooperation in order to minimise financial costs and to further expand space capabilities. This is most notably seen with the international construction and operation of the International Space Station with the majority of the heavy space hardware manufacture being done by several key states (US, Russia, EU, China, India, Japan, and Canada). Each of these have different approaches to space hardware construction that arise from a variety of factors.

The goal of this paper is to explore the different global manufacturing techniques that are involved in the construction of space hardware (rockets, spacecraft, space stations, etc.), in order to characterise the advantages and disadvantages of each technique and to examine how best they can be combined in the construction of future space hardware.

The motivation to conduct this research is to identify areas that would allow optimisation of future international space hardware construction. Based on the current strengths of each state, how could the various techniques and expertise be combined to produce the best, holistic spacecraft possible.