Paper ID: 82915
student

35th IAA SYMPOSIUM ON SPACE AND SOCIETY (E5)
Interactive Presentations - 35th IAA SYMPOSIUM ON SPACE AND SOCIETY (IP)

Author: Mr. Paolo Mangili
University of Houston, United States

MODULAR SPACE MANUFACTURING CONCEPTS AND ARCHITECTURES FOR A DEEP SPACE CIS-LUNAR INFRASTRUCTURE

Abstract

The topic of Manufacturing is currently one of the most interesting within the Space Industry, as the industrialization of space activities, to be eventually coupled with interplanetary ISRU systems, is seen as a way to ease the burden on Earth-based infrastructures the industry has to rely upon as their unique supplies. This paper is concerned with the research and design of Space Architecture concepts to be developed by the Space Industry to achieve an increasing in-space Manufacturing capability, a goal to be accomplished by means of application of well-known architecture notions like systemic modularity to obtain a collection of designs enabling considerable adaptability and flexibility to the future market needs. An extensive survey of the available literature on the subject will serve to provide a notional and design basis to the arguments posited in the article, from will the design will be developed and expanded, allowing for a full implementation of Space Manufacturing to assure future stakeholders with corollary capabilities to the pure industrial production, such as Maintenance and Repair abilities by means of the designs put forward. Existing hardware, like the International Space Station modules and the International Standard Payload Rack will also be investigated in their potential to be implemented, at least on a notional level, to determine potential design iterations.