

SPACE SYSTEMS SYMPOSIUM (D1)

Hosted Payloads - Concepts, Techniques and Challenges, Missions and Applications (7)

Author: Ms. Yanmei Jia

The Federal University of Technology, Akure (FUTA), China, jiayanmei@csu.ac.cn

Mr. Tao Zhang

Beijing Aerospace Command and Control Center (BACCC), China, zhangtao0530@hotmail.com

Dr. honggen zhong

Chinese Academy of Sciences, China, zhonghonggen@aoe.ac.cn

Ms. Liping Zhao

China, zhaoliping@aoe.ac.cn

Dr. Yufeng He

China, heyufeng@csu.ac.cn

PAYLOADS INTEGRATION PROCESS ON CHINESE SPACE STATION

Abstract

The objective of this paper is to introduce a new concept for the process of payloads integration and to provide a more practical template for PDs and PIs' payloads integration on Chinese space station. Payloads integration characteristic of Chinese space station is analyzed. There will be many scientific experiments on the station. These scientific experimental devices will be operational and changeable. Science modules or scientific samples will be delivered by space shuttle transportation. Science program will be planned and integrated in a short time and transported to space station. The life cycle of the Chinese space station is longer than any Chinese spacecraft before. These devices which will stay on the station until the end must be reliable and durable. These modules which will be change in a short time must be developed quickly and adaptive for the launch and space environment. Traditional payload integration process of Chinese spacecraft is introduced. Many payloads have been integrated on Chinese manned spacecraft. They are earth or atmosphere observational payloads, science experimental payloads, new technology validation payloads etc. When payloads will be integrated on spacecraft, the first consideration is development flow. Hardware, software, reliability, test, science research and ground support development have to be considered parallel. The drawing up method of development flow for the Chinese space station payload integration is based on the analysis above and the traditional payload integration methods. The development flow of payloads on Chinese space station will be more complex and challenging. More flexible and diversity development flow is required in order to meet different needs of the long life cycle and short life cycle payloads. More reasonable and effective development templates are needed for the process of payload planning, integration and operations. It is suggested that scientific research process should be independent with device development. Integration process should be different with each other for short life cycle and long life cycle payloads.