Paper ID: 36707
oral

SPACE OPERATIONS SYMPOSIUM (B6)
New Space Operations Concepts and Advanced Systems (2)

Author: Ms. Bai Meng
CSSAR/CAS, China

Mr. Li Dalin
National Space Science Center (NSSC), Chinese Academy of Sciences, China

QUICK COLLABORATIVE RESPONSE PLATFORM FOR OPPORTUNITY SCIENCE EVENTS

Abstract

The quick collaborative response platform is designed to support the implementation of the rapid cooperative observation plan for the opportunity science events. It helps the scientists and operation workers to mission analysis and multiple satellites collaborative scheduling for opportunity science events, generate observation plan, display the task status and evaluate the effects of the observation plan. Different from the traditional uplink ways, the platform considers multiple routing integration channels and various information of heaven and earth. Through scheduling and decision-making, it choose the suitable way to uplink the tele-command in the fastest way, shorten the normal tele-command uplink time. For the opportunity science events, it collects data and analysis rapidly, then decision-making and scheduling, finally generating a multiple satellite joint observation plan. In this way, it implements for the quick response and task coordination for opportunity science events.

The quick collaborative response platform is consist of four parts. Firstly, the multiple routing fusion and information channel front-end component. It is the communication part of the platform, including the input channel and output channel. Secondly, the decision support component for the opportunity science events. It provides an effective and convenient tool for the scientists to arrange the task, analysis the ToO and opportunity science events. Then the tool will generate a collaborative observation plan of multiple satellites in detail. It can also evaluate the observation plan, and modify and optimize the scheduling algorithm of the observation plan through simulation by the scientists. Thirdly, the multiple satellites coordinate observation rapid implementation component. It fast extracts task information to generate a single satellite plan and command by single satellite scheduling. Finally, the observation plan effective analysis component. The main function of the part is to evaluate the execution of the plan, analysis the performance and satisfaction, to support fir the scientists to evaluate the scientific data and revise rapidly the observation plan.

Traditional way of communication and satellite mission support cannot satisfy the opportunity science events and more and more rapid response for multiple space science mission parallel efficient implementation. The platform is designed to overall arrange the multiple mission scientific events, make the observation plan efficient and reasonable, and generate an operational plan, to satisfy the rapid response and implementation of scientific events.