Management of Operation and Mission in Ground Processing System for Disaster Monitor Constellation+4

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Abstract:

OMS (operation and mission subsystem) is a critical part in the ground processing system for the Chinese satellite DMC+4(Disaster Monitor Constellation), which will be launched in June of this year. Our China Remote Sensing Satellite Ground Station has developed the ground processing system for it. In this paper, we will give an overview of this system, and mainly describe the operation and mission subsystem.

This ground system can be viewed as a multi-purpose, multi-user and multi-product processing system. It is developed for DMC+4, but the design and the architecture are adapted to any other mini-satellite with minor modifications. Our cluster-based parallel computation environment provides high-speed processing of multi-band downlink data, and our product generation service provides multi-level data product which accord to all common geographic standards. Meanwhile, the NAS data archivement and the comprehensive user interface plus the above modules form this multi-platform system. And besides, varieties of I/O hardware link to the system for data transmission and storage, such as scanners and super-DLT tape library. So OMS (operation and mission subsystem) plays an essential role on how to manage and schedule these modules and devices.

OMS enable operators to control the flow of both processing and data automatically or manually. The design for OMS is based on workflow concepts, which consists of a serial of components and prototype steps. We will here describe the typical process and control mechanism of OMS in detail, including 1) the communication model between the user interface and Parallel Image Processing System, 2) the interactive method between archive system and operators, 3) the flow control of orders processing, and 4) the schedule strategy for the states of all tasks. And the user security management is also included in OMS.

Finally, we will demonstrate some results and give a summary about OMS.