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SINO-SCIENTIFIC-SATELLITE MONITOR: A GENERAL PLATFORM OF MONITORING AND DISPLAY FOR SCIENTIFIC SATELLITE MISSION

Abstract

The Chinese Academy of Sciences initiated the strategic pilot project of space science in January 2011, a series of scientific satellites represented by the Dark Matter Particle Explorer(DAMPE; also known as 'Wukong' in China), Quantum Teleportation Satellite (known as 'Mozi' in China) and Insight-HXMT (Hard X-ray Modulation Telescope) were launched successively and many major scientific discoveries were announced one after another.

These discoveries are based on the monitoring and collaborative analysis of large-scale satellite data, and the monitoring platform behind plays a key role. It helps to monitor the working status of the on-orbit satellite intuitively and efficiently, detect abnormal conditions in time and analyse to obtain valuable information from massive data. Monitoring platforms of scientific satellites is mainly to serve the researchers and security personnel who are usually located in various geographical regions. The differences between duties determine an enormous amount of demands. Therefore, traditional monitoring platforms for scientific satellite missions tend to be customized and can only serve a single category of scientific satellites, which result in poor reusability and economic efficiency.

This paper describes a web-based common platform for real-time satellite mission monitoring and display–Sino-Scientific-Satellite Monitor (SSS-Monitor). The platform is divided into several configurable function modules according to the common demands, making it possible for different scientific satellite missions to share one single platform. At the same time, the hardware architecture of the platform has strong scalability to adjust the hardware cost flexibly.