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# RESEARCH ON DEMONSTRATION AND VERIFICATION OF SKY, AIR AND SPACE COLLABORATIVE REMOTE SENSING SYSTEM FOR COMPREHENSIVE APPLICATION

**Abstract**

Sky, Air and Space Collaborative Remote Sensing System (SAS-CRSS) uses space-based satellite, near space airship, aviation remote sensing aircraft, low-altitude small UAV and other means and comprehensively use various modern information technologies to aggregate and obtain space, near space and air-to-ground based multi-source, multi-dimensional and heterogeneous data, so as to achieve precise user service and command decision-making. It has a wide coverage, fast response speed and high positioning accuracy and can be used in resources wide area survey, target area precise detailed survey, temporary and emergency places (such as urban anti-terrorism, earthquake relief, maritime emergency rescue, major activity security, forest fire monitoring, urban fire emergency) and other fields. SAS-CRSS is a very complex system, with huge investment scale, high technical difficulty and wide range of applications, In order to ensure the smooth construction of the system and give full play to the supporting role of the system in various industries, it is necessary to demonstrate and verify the key technologies, products, workflow and service capabilities of the system, and evaluate the comprehensive application efficiency of the system scientifically. This paper analyzes the work flow of the system under the rapid response mode and the conventional response mode, describes a typical structure of the SAS-CRSS, for the proposed typical structure, outlines the overall capability level of the system from the perspective of system operation, and on this basis, puts forward a method of building the system comprehensive efficiency evaluation index system, which provides the basis for system evaluation. The effectiveness of the system is analyzed comprehensively, according to which the evaluation framework of the comprehensive application effectiveness of SAS-CRSS is proposed from the aspects of system multi-domain multi-platform collaborative remote sensing, fast response ability, multi-source multi-phase data aggregation service, etc. The architecture and operation characteristics are analyzed, the minimum and simplest configuration of the system is studied, and a construction method of the system minimum closed-loop airborne demonstration and verification system is proposed, the comprehensive demonstration and verification of the system performance can provide guidance for the optimization of the system application mode and application process.