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LEO BROADBAND SATELLITE COMMUNICATION SYSTEM AND COMMERCIAL AEROSPACE

Abstract

Access to the internet at anytime and anywhere is the prominent characteristic and essential condition of the information era. With the rapid development of modern small satellite technology and information communication technology, LEO satellite communication system makes the dream of global mobile interconnect and high-speed network access come true. In this paper, we will mainly describe a new LEO broadband mobile satellite communication system, namely, Hongyun Project, which is one of the five major projects in the field of commercial aerospace carried out by China Aerospace Science & Industry Corporation(CASIC). The description in this paper includes the system structure, technical specifications, development plans and innovative business model of Hongyun Project. Based on Ka-band LEO small satellites constellation and its ground stations, Hongyun Project will build a space-ground integrated information network system, which mainly consists of 156 500kg-class LEO satellites, intergrated ground operation control center and TT&C station. The orbit altitude of the satellites is about 1040km. In general, Hongyun Project uses a combination of global coverage of satellite network, broadband transparent forwarding and Quasi-broad-band processing forwarding, and also combines general services and regional enhancement services. Through these ways, it enables the users to access to the internet at anytime and anywhere through a variety of user terminals, such as fixed terminal, mobile platform terminal, portable terminal and so on. So far, CASIC is organizing Hongyun Project company through investment and financing, in which way to open possibility of business-model innovation and resource configure optimization in the field of small satellites. The research and development of Hongyun Project is devided into three stages: technique-validating stage, service-testing stage and business-operating stage. The technique-validating satellite will be sent up in 2018, and the service-testing one will be sent up in 2020. The whole system is scheduled to provide formal operation services in 2021.