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A STUDY ON A DEVELOPMENT CONCEPT OF A SPACE TRAFFIC MANAGEMENT SYSTEM IN KOREA SUBJECT TO AN INTERNATIONAL COOPERATION

Abstract

Since the former Soviet Union launched first artificial satellite, Sputnik, to the outer space, space development had been accelerated every year. As space powers have launched many satellites to satisfy the national needs for space, it is making the number of rocket launches ever grown. With the launch of artificial satellite, upper stage of rocket, adaptors, and other debris have populated same space where the artificial satellites orbit around. The number of space debris has been increased discretely as events happened like China's anti-satellite test (2007) and Iridium-cosmos satellite collision (2009). Some portion of space debris has been re-entered into the Earth's atmosphere and still remained many of them could threat the active satellites as well as the International Space Station. In 2012, the Russian Fobos-Grunt (Phobos-Grunt) Mars explorer was failed to enter the interplanetary orbit to Mars, it fell back to the Earth's atmosphere in uncontrolled re-entry. Nevertheless, the world dealt with a Fobos-Grunt re-entry situation effectively, it carried 7.51 metric tons of highly toxic hydrazine and nitrogen tetroxide on board. Situation of space object's re-entry and threat of a number of space debris should have to require more international attention. UN established the Committee on the Peaceful User of Outer Space (UN COPUOS) in 1958 to deter space powers from an indiscreet act. But, space powers show obvious differences in opinion on the peaceful use of outer space due to the needs not to be infringed upon national interest. In August 1992, Korea successfully launched the first domestic satellite, KITSAT-1, mainly coordinated by Surrey University in England. Korea had been putting a lot of efforts to make a domestic satellite independently since the launch of KITSAT-1. In May 1999, seven years after the first launch, Korea showed its ability of developing a satellite independently by the successful launch of KITSAT-3. Korea had launched more than dozen low Earth orbit satellites and seven geostationary Earth orbit satellites until the end of 2013. With the fleet of satellites, Korea needs responsibly to act according to the UN code of conduct in space activity. We focused on the collaboration of space powers and new players by introducing an international frame of space law for the peaceful use of outer space and the observation of UN recommendations for the sustainable use of outer space. Also we suggested an alternative way of cooperation about the arrangement of satellite orbits using Space Traffic Management.