# Space Traffic Management as a Guiding Principle of the International Regime of Sustainable Space Activities

Yu Takeuchi *

*The necessity of Sustainable Development of Space Activities, which can be seen as a concept receiving some impression from Sustainable Development, has been actively debated over last decade. This paper examines the current status of the international regime of space activities by comparing the international regime of sustainable development and analyzing the norms and principles applied in the Draft Code of Conduct of Space Activities of the EU and the Long Term Sustainability of Space Activities. The paper concludes that the Space Traffic Management system should set the guiding principles for international space activities.*

**Keywords**
Space Traffic Management, Long Term Sustainability of Space Activities, Draft Code of Conduct of Space Activities of the EU

## I. Introduction

'Space activities' have drastically changed in the past half a century in terms of actors.[1] In the beginning, only the United States and the Soviet Union could conduct space activities. Governments were expected to exclusively carry out space activities at that

* Associate administrator at the Japan Aerospace Exploration Agency ("JAXA"). LL.B.(Sophia), M.A.(Hitotsubashi). The views expressed herein are entirely those of the author and do not necessarily reflect those of JAXA or the Government of Japan by any means. The author may be contacted at: takeuchi.yu@jaxa.jp/Address: 1-6-5 Marunouchi, Chiyoda-ku, Tokyo 100-8260 Japan.

1 There is no official definition for 'space activities.' However, this paper will use this term to mean every activity expected to reach outer space and contains the possibility to interfere the current activities. It includes launch, operation, maneuver or re-entry of orbital or suborbital objects.

time. The number of participants, however, has gradually increased. Entering into the 21st century, the international community faces a different situation. Today, the UN Committee on the Peaceful Use of Outer Space ("COPUOS") counts 70 countries in its membership as of 2010.[2] Commercial space flights have become a usual launch activity in spacefaring nations. Satellites, including those for government use, are under consideration for private sector operation, introducing a financial system of Public-Private Partnerships ("PPP") or Private Finance Initiatives ("PFI"). Even space tourism is under development. Though the space industry still remains at an early stage in its development, the activities themselves increase the number of participating actors as well as sectors.

This situation has triggered the space debris problem.[3] It has been recognized since the late 1980s; the temporary results of its discussion were concluded in the UN Space Debris Mitigation Guidelines of 2007.[4] On February 12, 2009, however, there was a serious collision for the first time between two large-scale satellites.[5] In January 2007, China's Anti-Satellite ("ASAT") missile demonstration resulted in more than 3000 pieces of space debris in scattered orbit.[6] The international community shared a sense of crisis about these situations and raised the issue of maintaining long-term sustainability of space activities as a primary international issue.[7] Though the issue of the sustainability of space activities first arose to prevent an arms race in outer space, harmonizing the development and protection of the environment is a parallel and common interest for sustainable development. Both goals are equally important to pre-empt international conflicts.

This paper attempts to develop a Space Traffic Management ("STM") system as a guiding principle for preventing conflicts among space activities in the international community. Part II will examine the current international legal regime governing space

2 United Nations Office of Outer Space Affairs ("UNOOSA"), United Nations Committee on the Peaceful Uses of Outer Space: Members, *available at* http://www.oosa.unvienna.org/oosa/en/COPUOS/members.html (last visited on Aug. 09, 2011).

3 UN Technical Report on Space Debris, U.N. Doc. A/AC.105/720, at 26 & 39 (1999).

4 Space Debris Mitigation Guidelines of the Scientific and Technical Subcommittee of the COPUOS, U.N. GAOR 62nd Sess., U.N. Doc. A/AC.105/890 (2007), *available at* http://www.reachingcriticalwill.org/legal/paros/DebrisMitigationGuidelines.pdf. (last visited on Aug. 9, 2011).

5 Cosmos 2251, a Russian Non-Functional Satellite, and Iridium 33, a US Functional Satellite Crashed at the 789km altitude of North Siberia. *See Collision Between Two Satellites in Orbit: Iridium 33 and Cosmos 2251, available at* http://www.n2yo.com/collision-between-two-satellites.php (last visited on Aug. 9, 2011).

6 National Aeronautics and Space Administration ("NASA"), *Chinese Debris Reaches New Milestone*, 14 ORBITAL DEBRIS QUARTERLY NEWS 3 (Oct., 2010), *available at* http://www.orbitaldebris.jsc.nasa.gov/newsletter/pdfs/ODQNv14i4.pdf (last visited on Aug. 9, 2011).

7 Gerard Brachet, *Long-Term Sustainability of Space Activities, in* SECURITY IN SPACE: THE NEXT GENERATION PROC. (UNIDIR ed., Mar. 31 - Apr. 1, 2008).