

IISL COLLOQUIUM ON THE LAW OF OUTER SPACE (E7)

Space Traffic Management: From Space Situational Awareness and Space Surveillance and Tracking to developing Rules of the Road (4)

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EARTH, SOLAR AND LUNAR LAGRANGIAN POINT MANAGEMENT IN THE MITIGATION OF ANTI-COMPETITIVE CONDUCT AND MANAGEMENT OF NATURAL MONOPOLIES IN COMMERCIAL SPACE ACTIVITIES

Abstract

Abstract: Lagrangian points constitute a stable gravitational point between two or more celestial bodies. Lagrangian points have been previously used by scientific endeavours such as the SOHO mission for solar and near-Earth asteroid observation. In the future, Lagrangian points may also prove to be commercially advantageous as they can be used to maintain station-keeping, altitude and attitude control relative to the celestial body whose gravitational field they are in without either nil or marginal external energy expended by either the orbital craft within the Lagrangian point, or by external actors.

Given the nominal amount of resources required to keep a satellite or similar orbital asset in station-keeping on a Lagrangian point, these points may also prove to be commercially advantageous as they represent a potentially low-cost means of providing on-orbit station keeping and servicing of satellites, telecommunication services or similar telemetry services. To that extent, Lagrangian points may be viewed as having a commercial 'value' because of the competitive advantage afforded to the owner/operator of a spacecraft occupying such a position. This 'value' proposition has certain similarities with geostationary orbital positions in earth orbit.

Although propertisation of space and celestial bodies is prohibited under the Outer Space Treaty 1967 (UN), orbits within space still remain rivalrous and commercially lucrative (Green, Neumann, Grey 2018). By operating in a Lagrangian point, satellites could effectively exclude competing services from also operating within those Lagrangian points. For example, where one satellite - or a satellite-servicing cluster - operates within a Lagrangian point, another satellite or satellite servicing cluster might be precluded from operating within the same space of that Lagrangian point, or its proximity.

This paper builds on previous work regarding the regulation of natural monopolies to mitigate anti-competitive behaviour risks (Green, Neumann, Grey, 2018) and proposes recommendations on how the risk of natural monopolies forming amongst Lagrangian point missions may be mitigated under a variety of instruments available to both UNOOSA and the ITU.