IAASS: Space Safety Legal & Policy Committee

Proposal for an Operational and Regulatory Framework to Ensure Space Debris Removal

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Institute of

Making Space: Safe, Sustainable and Shared

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There are major legal, political and financial challenges that presently prevent or pose difficulty to the conduct of active debris removal (ADR) activities. Commercial initiatives or unilateral national programs are not enough. International cooperation among all stakeholders following proven models is needed.

PROPOSAL KEY ELEMENTS

A study conducted by the McGill University and IAASS (International Association for the Advancement of Space Safety), in brief called "Assured Debris Removal", has developed the operational and regulatory key elements for making space debris removal feasible. The elements are:

- Establishment of an inter-governmental organization on the model of the early INTELSAT to procure the development, deployment/operations and commercialization of satellites for space debris removal. This organization could later transition to a private corporation (as INTELSAT did). (We tentatively refer to such organization by calling it INREMSAT for <u>International Debris Rem</u>oval <u>Satellite</u>).
- 2) INREMSAT Subscribing Governments would concurrently commit, through the signature of a separate legal instrument (treaty or agreement), to procure on commercial basis the removal of a number of existing "big" space debris (dead satellites and spent upper stages) created by <u>their national</u> space missions or by the commercial space activities of their nationals. Criteria for selection will be agreed but the ultimate decision will be with each country. Countries not participating to the INREMSAT consortium would be also invited to join such treaty/agreement.
- 3) A country which commits to the removal of (its own) space debris would be allowed (by the WTO?) to impose a national "space-garbage-collection" tax. Such tax would be levied on the final users of space-based commercial services available in the country.
- 4) Space-faring countries would make changes to their national space licensing rules by introducing an "assured removal" clause as prerequisite to obtain a license to launch/operate a satellite, by means of national or foreign launcher. Such clause would apply to both the satellite and the upper stage of the launcher used for the launch. Specifically, the "assured removal" clause would require that the operator demonstrates that either the systems in question have capability (and plans) to perform autonomously at the end-of-life/mission a safe controlled re-entry or removal to a graveyard orbit, or that they have contracted INREMSAT or similar commercial service provider for such activity. Furthermore, the operator would be required to take an insurance policy in case a failure/malfunction prevents performing the initially foreseen autonomous disposal. The insurance company would then procure and cover the cost of the relevant disposal service.

THE INTELSAT STORY

With the advent of satellite communication technology in the early 1960's, the United States government led an effort to establish a global system for satellite communications. Preliminary negotiations were held in 1962 with, and at the instigation of the governments of, the United Kingdom and Canada. Subsequently, European countries and other nations joined the negotiations. The negotiations eventually culminated in

the adoption of the Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System signed by Governments at Washington on August 20, 1964 (Interim Agreement), and the agreement signed on August 20, 1964, by Governments or telecommunications entities designated by Governments, pursuant to the provisions of the Interim Agreement (Special Agreement). These instruments marked the birth of INTELSAT in 1964: a multinational organization established initially to provide the space segment of a global satellite communications system. In 1971, the 1964 instruments were respectively superseded by the Agreement relating to the International Telecommunications Satellite Organization "INTELSAT" (Intelsat Agreement) and the Operating Agreement relating to the International Telecommunications Satellite Organization "INTELSAT" (Intelsat Operating Agreement). As such, INTELSAT was formally established in 1971.

The Intelsat Agreement itself was a multilateral treaty that could only be signed by States. However, under the provisions of the Intelsat Agreement, each State Party was required to sign or to designate a public or private telecommunications entity to sign the Operating Agreement. Thus, membership in INTELSAT was thereby opened to private sector telecommunications entities from States Parties to the Intelsat Agreement. The original INTELSAT may be conceived as a group of public and private joint venturers, combining their technical and financial resources to establish and operate facilities which each participant intended to use to provide services within its defined market area. Each participant therefore obtained the technical, economic, and even political, benefits flowing from a common cooperative effort. Private sector involvement and participation in the scheme could only be achieved by virtue of the two instrument approach.

The Intelsat Agreement clearly set out the scope of activities of the organization, the financial principles upon which its activities would be funded as well as the structure of the organization among many other things. With regard to the structure of the organization, the following four organs were established: (1) the Assembly of the Parties; (2) the Meeting of Signatories; (3) the Board of Governors; and, (4) an Executive organ responsible to the Board of Governors. Despite the fact that the Intelsat Agreement spelt out the role to be performed by each of these four organs, it would seem that in practice there were significant overlaps (and redundancies) between the roles respectively performed by the Assembly of the Parties and the Meeting of Signatories.

The Operating Agreement on the other hand set out the rights and obligations of each signatory thereto, including the obligation to make financial contributions to INTELSAT, the basis and modalities for determining investment shares in the organization, the utilization of charges and revenues and many others. The establishment of principles for determining investment and ownership shares, and setting specific investment percentages [in INTELSAT] presented one of the more thorny problems for negotiation. The determination of investment shares had to be predicated on a principle with which all or most of the participants could agree; one which was pertinent to the nature and purpose of the venture; which minimized or eliminated strictly political consideration; and, which objectively reflected the potential use of the system by the respective participants. Failing agreement on a rational and objective standard, the negotiation would have floundered. The principle agreed upon was that each signatory to the Operating Agreement would have an investment share in the organization proportional to its use of the INTELSAT space segment during the six month period immediately preceding the date of determination of investment shares. After 30 years of successful operations, INTELSAT was transformed from an international organization into a private company in 2001.

CONCLUSION

In essence, the INTELSAT scheme allowed for governments, public and private telecommunications entities to collaborate in a hitherto unprecedented manner to provide global satellite communications infrastructure and services reaching all corners of the earth and providing mutual benefit to all participants. Although this occurred during an era of increased international cooperation within the framework of the ITU, it nevertheless provides several lessons worthy of emulation and capable of adaptation to meet the current space debris scenario. First, it is clear that ADR activities can only be successfully and economically conducted in an environment of increased cooperation between governments acting in close collaboration with each other as well as public and private space operators. The adoption of a two instrument approach (as was done in the case of the original INTELSAT) for the establishment of a regulatory regime and an international organization for ADR activities would no doubt facilitate the conduct of such activities. The use of a concept similar to the investment shares concept of the Intelsat Operating Agreement to fund the activities of the international organization proposed for ADR activities would also enhance its financial position.