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ReSHIFT

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THE LEGAL FRAMEWORK APPLICABLE TO SPACE DEBRIS

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Outline

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III. Major concerns with regard to the legal framework for space debris mitigation

I. The legal framework applicable to the protection of the space environment

The legal framework applicable to the protection of the space environment

1. The five treaties on space law

- Outer Space Treaty (1967)
- Rescue Agreement (1968)
- Liability Convention (1972)
- Registration Convention (1975)
- Moon Agreement (1979)

- plus general international law (Art. III OST)

2. Non-binding international instruments

- 2002/2007 IADC Space Debris Mitigation Guidelines
- 2010 UNCOPUOS Space Debris Mitigation Guidelines
- 2011 ITU Recommendation ITU-R S 1003.2 for the GSO environmental protection
- 2011 Standard on Space Debris Mitigation Requirements of the ISO

3. National space legislation and other normative documents related to space debris

- Australia – incorporation of SDM guidelines envisaged
- Austria – accordance with the international SDM guidelines
- Belgium – compliance required for licensing
- Canada – requirements for remote sensing systems
- China - SDM as national industry standard
- Finland – national SDM requirements
- France – national SDM standards; adherence to ESA's CoC for SDM
- Germany – DLR standards; adherence to ESA's CoC for SDM
- Italy - adherence for ASI projects to ESA's CoC for SDM
- Japan – JAXA standards consistent with IADC/ISO SDM guidelines
- Russia – ROSCOSMOS standard consistent with IADC/ISO SDM guidelines
- United Kingdom – SDM requirements for licensing
- USA – national standard practices for all governmental projects

3. National space legislation and other normative documents related to space debris

- Most states which have space legislation have not yet adopted specific rules on space debris mitigation.
- Nevertheless, most of them (e.g. Argentina, Chile, the Netherlands, Poland, Spain, Switzerland) confirm their adherence to the UNCOPUOS Guidelines and their support to the other instruments.
- There are also states which have adopted national legislation on space debris mitigation, such as Austria and France. Other States have national standards or requirements, such Australia, Japan, Russia, Germany, UK, US, etc.
- In these cases, space debris mitigation instruments are incorporated in the authorization requirements.
- Two major problems can be identified: no uniformity of national standards (e.g. different definitions of protected regions in LEO, MEO and GEO; waivers with justification, for example for small satellites).

4. Regional normative documents

- **2004 ESA Code of Conduct for Space Debris Mitigation**

Applicable to projects of European space agencies, projects conducted in Europe as well as by European entities outside Europe and to all space systems and launch vehicles orbiting or intended for orbiting the Earth.

- **2014 ESA Space Debris Mitigation Policy for Agency Projects**

Applicable to the procurement of all ESA space systems and all operation under the responsibility of ESA

5. Deficiences on various normative levels

International law	Non-binding regulations	National laws	Regional normative documents
Binding on an international level, however not specific	Specific, but non-legally binding; no enforcement mechanisms	Enforceable; specific; binding on a national level	Specific; binding on a regional level

II. Definitions and the legal status of space debris

1. The universal non-binding definition

- The notion ‚space debris' is not legally defined
- IADC/UNCOPUOS Guidelines on Space Debris Mitigation (non-binding, but widely accepted):

*„all **man-made** objects, including **fragments and elements** thereof, in Earth orbit or re-entering the atmosphere, that are **non-functional**"*

- **Main elements of the definition:**
  - man-made
  - including fragments and elements
  - non-functional (permanent cessation of the function)

2. The binding circular definition

- The term ‚space object' is only partially defined in Art. I (d) Liability Convention / Art. I (b) Registration Convention

*„The term 'space object' includes **component parts** of a space object as well as its launch vehicle and parts thereof"*

- 'Space object' vs. ‚space debris': no legal consensus
  - both are man-made
  - the IADC/UNCOPUOS def. includes „fragments and elements", not only „component parts"
  - **are all non-functional space objects space debris?**

3. Are all non-functional space objects space debris?

	Opinion 1: **YES (prevailing)**	Opinion 2: **NO**
Argument	Any man-made object in outer space is a space object	Not all space debris can be considered to be component parts of a a space object
Consequence	The legal norms appying to space objects (jurisdiction, control, registration, liability) apply equally to all classes and sizes of space debris	The legal norms applying to space objects apply to space debris only insofar as (only some) space debris are space objects
Advantage	Def. is applicable to all types of non-functional space objects	Liability only for objects that can be identified
Disadvantage	„Functionality“ is a subjective criterion	Contradicts the victim-orientated logic of the *corpus iuris spatialis*

4. The legal status of space debris as space objects

- **Jurisdiction and control** as well as **ownership** over space debris are permanent and stay with the State of Registry
  - ➢ only the State of Registry can decide upon the legal and factual fate of the object
  - ➢ any non-consensual activity is infringement of jurisdiction
  - ➢ ADR? Trade-off in cases of collision threats?
- **Liability** for damages caused by space objects remain with the launching State
  - ➢ attributability of space debris might not be possible
- **Registration** of space objects
  - ➢ the existing requirements do not reflect changes in the control, functionality or location of the object

Definitions and the legal status of space debris

5. Art. IX OST: Space debris as harmful contamination and harmful interference

S.1 "In the exploration and use of outer space, including the moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co- operation and mutual assistance and shall conduct all their activities in outer space, including the moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty."

S.2 "States Parties to the Treaty shall pursue studies of outer space, including the moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose."

S.3 "If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment."

S. 4 "A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the moon and other celestial bodies, may request consultation concerning the activity or experiment."

6. Articles IV and VII Moon Agreement

Art. IV para. 1

"The exploration and use of the moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Due regard shall be paid to the interests of present and future generations as well as to the need to promote higher standards of living and conditions of economic and social progress and development in accordance with the Charter of the United Nations."

Art. VII para. 1

"In exploring and using the moon, States Parties shall take measures to prevent the disruption of the existing balance of its environment, whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra- environmental matter or otherwise. States Parties shall also take measures to avoid harmfully affecting the environment of the earth through the introduction of extraterrestrial matter or otherwise."

III. Major concerns with regard to the legal framework for space debris mitigation

Major concerns with regard to the legal framework for space debris mitigation

1. Interim results (1)

- The issue of space debris is not explicitly addressed in the five international Treaties on space law.
- So far, binding law does not provide for effective measures for space debris mitigation.
- It is not fully clear whether space debris can be qualified as ‘space objects’ as per the 1972 Liability Convention and the 1975 Registration Convention.
- Even if space debris are considered to be space objects, there is a lack of specific provisions for protection of the outer space environment and of specific mechanisms
- International (environmental) law is applicable to outer space activities; however, environmental law only provides with general guidelines (prevention principle, precautionary principle, principle of sustainability) which, although relevant for the protection of outer space environment, are not effective for space debris mitigation.

Major concerns with regard to the legal framework for space debris mitigation

2. Interim results (2)

- The regulation of space debris on the international level currently consists of specific guidelines that are, however, dependent on voluntary adherence.
- There are specific and binding requirements for space debris mitigation – on the national and the regional (ESA) level level.
- For international binding norms to evolve, two options are available:
  1) **the adoption of international rules** (problem: consensus)
  2) **the creation of international custom through *opinio iuris* coupled with state practice** = national legislation (problem: lack of uniformity, fragmentation)
- Thus, SDM guidelines may acquire binding character provided that
  1) **they are adopted in national laws** (nationally binding)
  2) **there is enough uniform practice which evolves to customary law** (internationally binding)

Major concerns with regard to the legal framework for space debris mitigation

- The development of technology is advancing much faster than the law.
- The dependence of law-making process in UNCOPUOS on consensus makes it difficult to enact binding international rules.
- The national laws do not provide very concrete guidance for national space actors but at least they are an expression of state practice and can contribute to „hardening“ the guidelines to legal obligations for States.
- Non-binding international instruments for space debris are prevailing.
- **!!** Even if adhered to, mitigation guidelines can not stabilize the existing debris population
- As the legal framework is not fully effective for space debris mitigation, other measures, e.g. collision prevention through space debris remediation (e.g. ADR for high-mass objects in LEO) have become a part of the space debris agenda. Here, major legal issues such as right/duty to removal of non-identifiable debris have to be discussed.
- Furthermore, apart from legal measures, economic incentives such as tax measures, or requirements for all space actors to pay a certain sum in a fund, following the strict liability for risky activities pricniple, may support the overall legal-political framework.

ReDSHIFT Legal Results

Method: analysis of the deficiencies on the existing legal framework, combined with understanding of the technical findings, resulting in proposals for amending and extending existing guidelines

Critical survey and analysis of existing space debris mitigation guidelines and practices in the legal field

Analysis of the possibilities for enforcement and applicability of mitigation measures

Re-definition of the existing mitigation guidelines

Revolutionary Design of Spacecraft through Holistic Integration of Future Technologies

HTTP://REDSHIFT-H2020.EU/