



Promoting Cooperative Solutions for Space Sustainability

Space Resources: International Legal Frameworks

Ian Christensen

Director of Private Sector Programs

Secure World Foundation

The New Space Economy:

Opportunities and Challenges for the European Space Industry

SDA Bocconi School of Management

Milan, Italy

June 4, 2018

Secure World Foundation is a **private operating foundation** that promotes cooperative solutions for space sustainability

- Why **space sustainability**? Increasing reliance on space assets coupled with potentially destabilizing trends
- **Our mission:** To work with governments, industry, international organizations, and civil society to develop and promote ideas and actions to achieve the secure, sustainable, and peaceful uses of outer space benefiting Earth and all its peoples

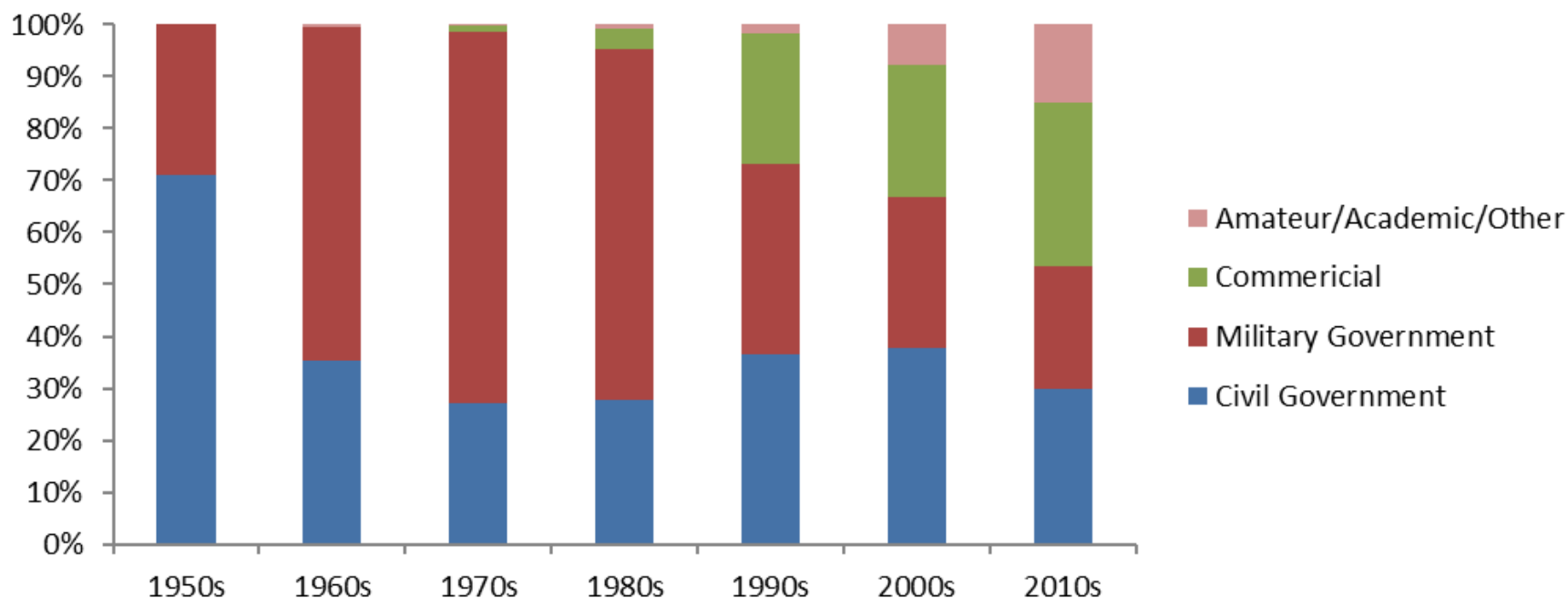
What We Do



The Foundation acts as a research body, convener and facilitator to examine key space policy topics often through partnership.

More Private Sector Actors

Share of Satellites Launched per Decade, by Operator Type



Source: McDowell, Jonathan C, 2017—Satellite Statistics http://www.planet4589.org/space/log/stats2/own_categ.txt

“Non-traditional” Space Applications

Rapid expansion in the number & types of commercial space applications is challenging existing policy context for space activities



Image Source: NASA

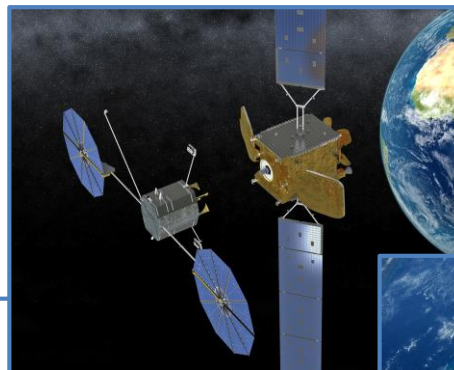


Image Source:
Orbital ATK



Image Source: Planetary Resources



Image Source: UNOOSA / Sierra Nevada Corp

Governmental policy and regulation must be developed to support these activities, in manner that is consistent with international obligations, and that provides for benefit.

Space Resources – Current Status

Technology / Business

- “Mining” of in-space resources is technically feasible
- Fundable business plans have been presented
- Several years (at least) away from commercial-scale operations
- Market focus on in-space applications
- Timeline for return on investment is long: more risk?

Policy / Legal

- Overarching legal context: the Outer Space Treaty (1967) – but a gap in the law relative to space resources
- Emerging consensus that space resources utilization is not prohibited
- What is the meaning of “appropriation?” Of “use?”
- How are benefits realized and shared?
- What balance between domestic law and international law?

Outer Space Treaty of 1967

(105 State Parties)

- ARTICLE I: “Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States...”
- ARTICLE II: “Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”
- ARTICLE VI: “The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.”

International law provides a framework under which all space activities are conducted but does not address space resources with any specificity



Promoting Cooperative Solutions for Space Sustainability

Policy Discussions – National Level



ECONOMY

NATIONAL SECURITY

BUDGET

IMMIGRATION

THE OPIOID CRISIS

PRESIDENTIAL MEMORANDA

Space Policy Directive-2, Streamlining Regulations on Commercial Use of Space

THE WALL STREET JOURNAL.

Home World U.S. Politics Economy **Business** Tech Markets Opinion Arts Life Real Estate



Musk, Zuckerberg, Nadella: CEOs to Watch This Week



Could India's Cash Blitz Kill Off Cards, ATMs?



Exxon, Chevron Earnings Point to Industry Recovery



Dealers Decide Cars Are Taking Up Too Much Prime Space

BUSINESS | ASIA | ASIAN BUSINESS NEWS

Japan Joins Race for Space Resources

Resources extracted from the moon could be used as fuel, allowing space missions to cut launch costs



HOME SERVICES NEWS EDUCATION ABOUT US

Search

Luxembourg and the United Arab Emirates to Cooperate on Space Activities with Particular Focus on the Exploration and Utilization of Space Resources



THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG
Ministry of the Economy

Luxembourg to Launch a Fund Offering Financial Support for the Space Resources Industry

Luxembourg, April 13, 2017 – To promote Luxembourg as a European hub for the exploration and commercial use of space resources, the Ministry of the Economy conducted from April 9th to April 13th an economic mission headed by Luxembourg's Crown Prince to the U.S. West Coast. The mission aimed to identify and develop new business opportunities and to promote the governmental SpaceResources.lu initiative that offers an attractive overall framework for space resource utilization related activities, including but not limited

SPACENEWS

NEWS

OPINION

VIDEO

LAUNCH

BUSINESS

Luxembourg adopts space resources law

by Jeff Foust — July 17, 2017

The need for regulation – to provide industry certainty and implement international obligations.

The role of policy – to provide a context for development.

The New Space Economy:
Opportunities and Challenges for the European Space Industry
Milan, Italy June 4, 2018

www.swfound.org

Law and Policy – Coordination?



- The Hague International Space Resources Governance Working Group aims to build consensus on regulatory “concepts needed to enable, support and co-ordinate the use of space resources and be acceptable for space-faring nations and other interested states”
- Industry, government, and civil society participation from across the globe

Coordination of principles at national and international level will help States establish the conditions under which socio-economic benefit might result from space resources development

Terms of Reference - Objectives

- Assess the need for a framework for space resource activities
- In case of need, to lay the groundwork for the definition of such a framework based on the UN Space Treaties
- The groundwork required will include the identification and formulation of building blocks for the governance of space resources with possible implementation of a relevant forum for the negotiations
- Following its conclusions the Working Group would like to encourage States to start negotiating a framework

Platform

The WG is hosted by a Consortium of organizations located in all continents:



International Institute of Air and Space
Law (Leiden University, The Netherlands)



Secure World Foundation (USA)

**NISHIMURA
& ASAHI**

Nishimura Institute for Advanced
Legal Studies (Japan)



University of Luxembourg
(Luxembourg)



University of Cape Town (South Africa)



Catholic University of Santos (Brazil)



Centre for Resources, Energy and
Environmental Law (University of
Melbourne, Australia)



Indonesian Centre for Air and Space Law
(Padjajaran University, Indonesia)

Ten to the Ninth Plus
Foundation (USA)



Draft Building Blocks for the Development of an International Framework on Space Resource Activities

As released in September 2017

1. Objective
2. Definition of key terms
3. Scope
4. Principles
5. International responsibility for space resource activities and jurisdiction over space products
6. Access to space resources



Draft Building Blocks (cont'd)

7. Utilization of space resources
8. Due regard for interests of all countries and humankind
9. Avoidance of harmful impacts resulting from space resource activities
10. Technical standards for prior review of, and safety zones around space resource activities
11. Monitoring and redressing harmful impacts resulting from space resource activities
12. Sharing of benefits arising out of the utilization of space resources

Draft Building Blocks (cont'd)

- 13.Registration and sharing of information
- 14.Provision of assistance in case of distress
- 15.Liability in case of damage resulting from space resource activities
- 16.Visits relating to space resource activities
- 17.Institutional arrangements
- 18.Settlement of disputes
- 19.Monitoring and review

Invitation to submit comments on the Draft Building Blocks

The preliminary result of the work of The Hague Space Resources Governance Working Group can be found at:

<https://www.universiteitleiden.nl/en/law/institute-of-public-law/institute-for-air-space-law/the-hague-space-resources-governance-working-group>

The Working Group invites any interested organisation or individual to submit comments and remarks on the text of the Building Blocks by **15 October 2018** to spaceresources@law.leidenuniv.nl or via this [questionnaire](#).

A Stable, Predictable, and Sustainable Operating Environment in Space

How can governments and the private sector work together to ensure sustainability of the domain?

Issues/Topics

- Policy context for identifying and obtaining benefit
- Regulatory authority, structure & process
- Space traffic management
- Norms of behavior
- New actors & best practices
- Government role as both customer & operator

Example Efforts

UNISPACE +50 and High Level Fora

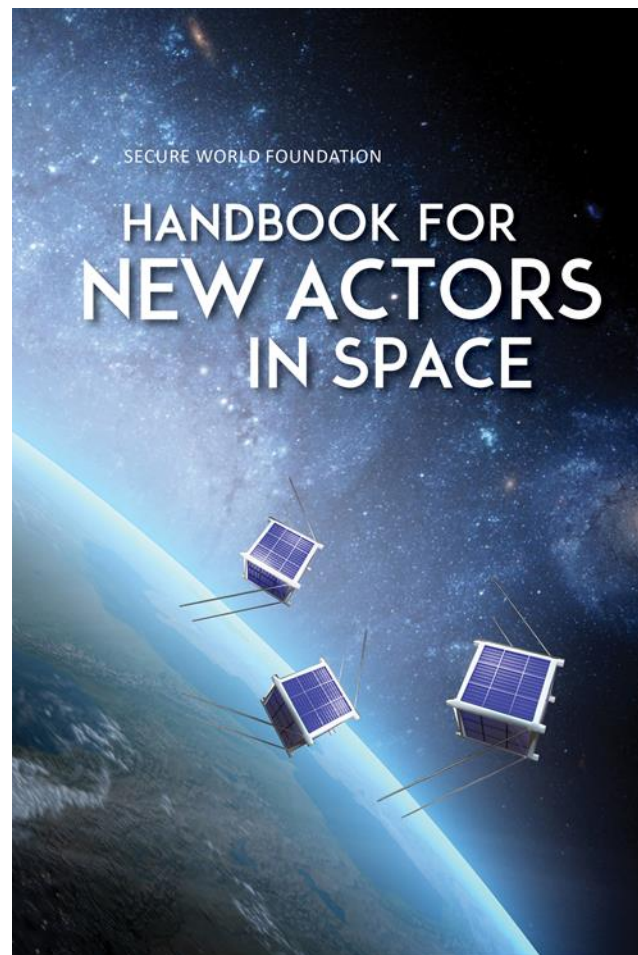
- Agenda-setting for future multilateral discussions

The Hague Space Resources Governance Working Group

- Multilateral, multi-sectoral effort to define policy and legal “building blocks”

SWF Handbook for New Actors in Space

- Overview of fundamental principles, norms, and best practices for safe, predictable, and responsible activities in space



Thank You!



Source: USAToday

**Dagger from King Tut's Tomb, analyzed to
contain iron from a meteorite**

**We've been using space
resources for a long time...**

...accessing them in space is new

Questions and Discussion?

ichristensen@swfound.org