Considerations on the Increasing Use of Space for MDA/MSA

Krystal Wilson
Project Manager
Secure World Foundation

Secure World Foundation

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

- **Our vision:** The secure, sustainable and peaceful uses of outer space contributing to global stability and benefits on Earth

- **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

Trends in space

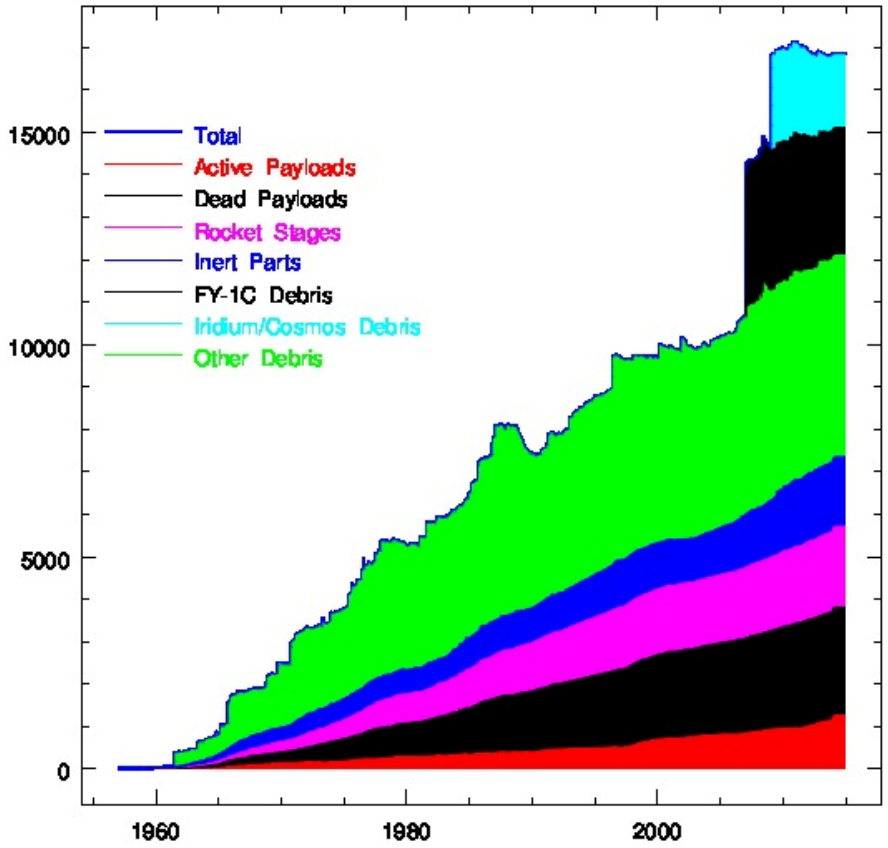
- **Space is becoming more *globalized***
  - Growing access to space technology
  - Growing interest by many countries in utilizing space for national benefits (socioeconomic development, prestige, national security)

- **Space is becoming more *commercialized***
  - Space began as part of competition between governments (US and USSR)
  - Influx of technology, talent, and capital from other sectors

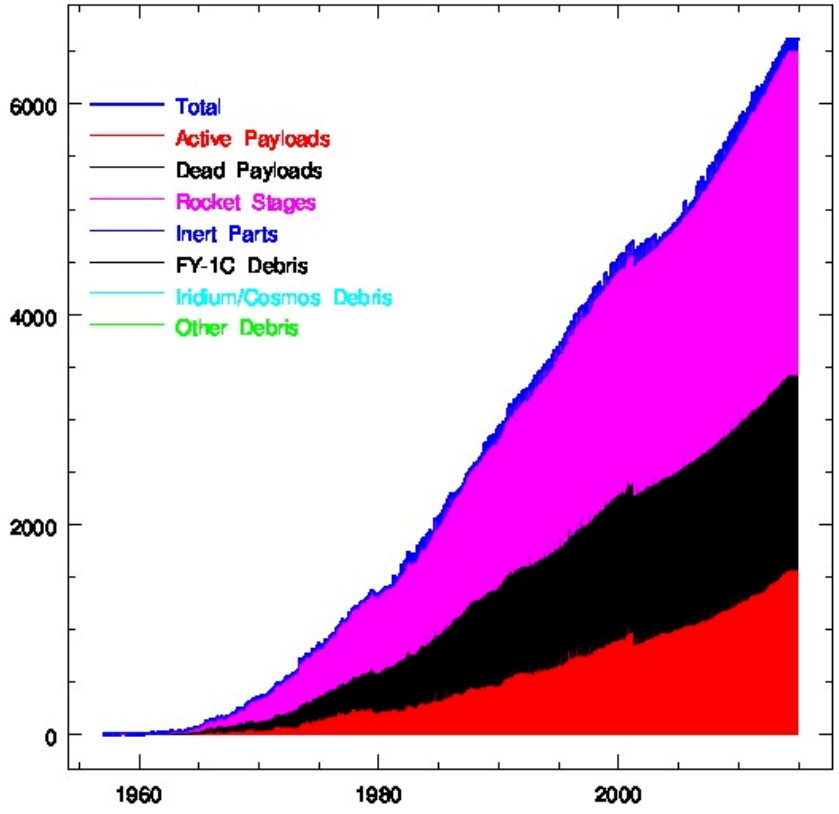
How do we manage the influx of new actors and growth in space activities to ensure long-term sustainability of space?

What are the policy issues that those interested in space-based MDA/MSA should be paying attention to?

Long-term growth in space objects



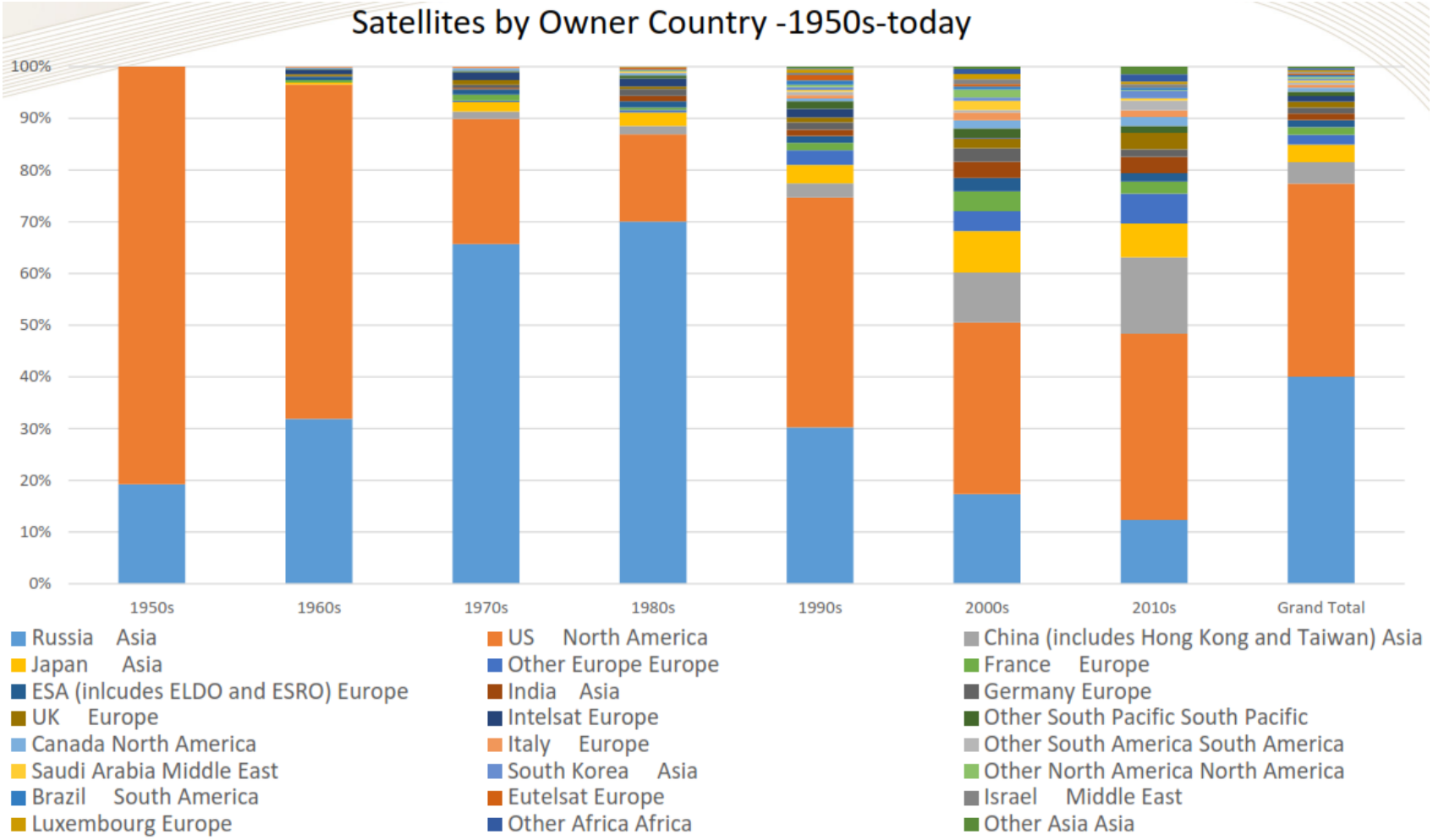
Number of objects



Mass of objects

Graphs from Jonathan's Space Page http://planet4589.org/

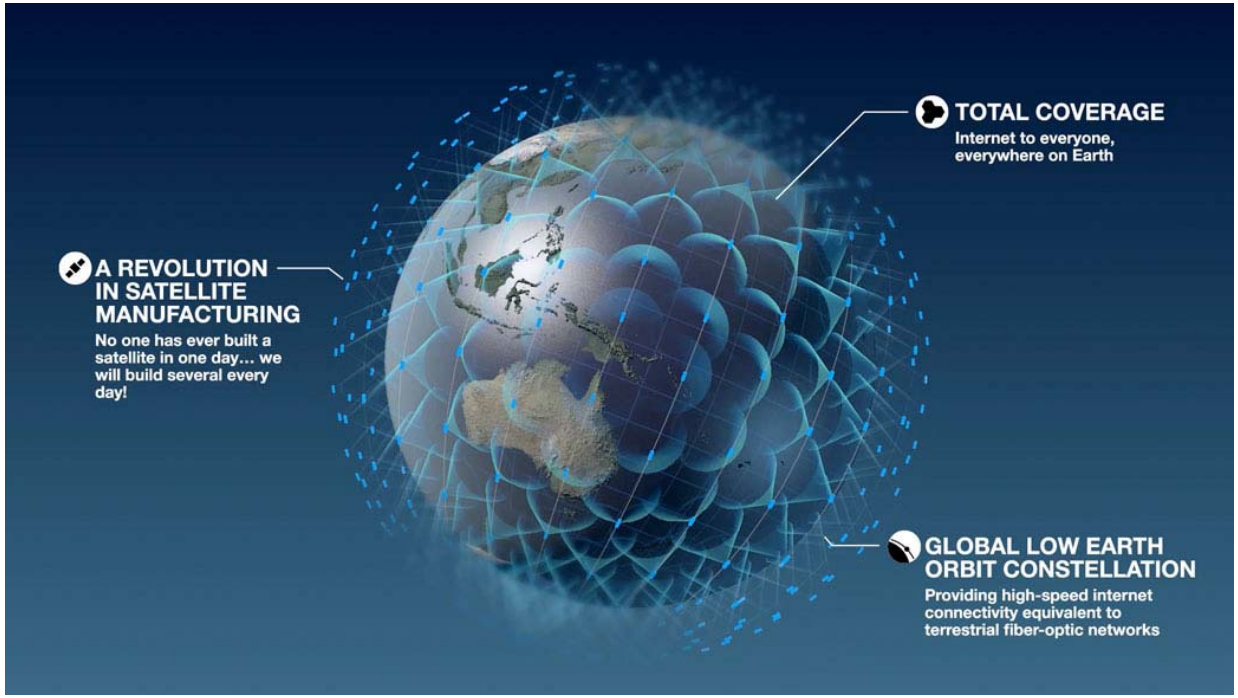
Space is becoming more international



Adapted from [IDA Global Trends in Civil and Commercial Space Study]

104 satellites deployed from Indian PSLV

Increased competition for spectrum



OneWeb constellation and service concept

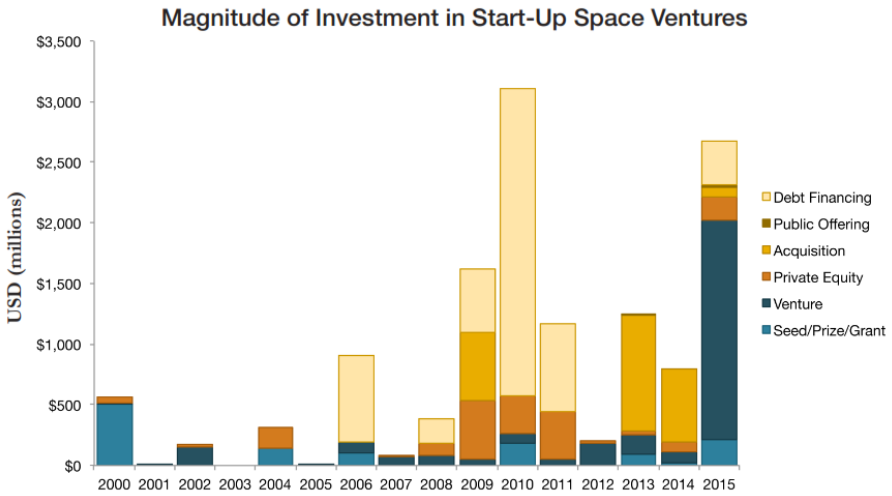
Signs of a Satellite Internet Gold Rush in Burst of ITU Filings

by **Peter B. de Selding** — January 23, 2015

PARIS — The international agency that regulates satellite orbital slots and broadcast frequencies has registered at least a half-dozen filings for massive constellations of satellites in the past eight weeks, a development that suggests a gold-rush mentality may be taking hold.

Surge in New Companies

Company	Sector	Projected # of satellites	Mass (kg)	Altitude (km)	First Launch
SkyBox Imaging	Imagery	12-24	120	800	2013
Planet	Imagery	100	3	550	2013
Spire Global	Weather/ Maritime Domain Awareness	50	3	800	2014
OmniEarth	Remote Sensing	15-18	110	800	2018
NorStar	Imagery	40	?	800	?



Source: Tauri Group (2015)

A Multiplying Set of Stakeholders

- International Maritime Organization
- Information Sharing and Analysis Centers
- Developing Nations
- Flag States
- Military
- Ship Owners/Associations
- Vessel Masters
- Data Analytics Companies
- Universities
- Development Banks
- Non-profits
- International Telecommunications Union
- Environmental Scientists
- United Nations
- Coast Guard and Border Control
- Satellite Companies
- Hardware Developers

Even just within the cross-section of space and maritime, the number of actors is growing and becoming more complicated.

Sustainable Development Goals

Space and maritime can contribute to sustainable development

- Millennium Development Goals
  - In effect from 2000-2015
  - Successful at focusing attention and encouraging action
- Sustainable Development Goals
  - Renewed interest
  - Technology seen as key resource
  - Variety of actors & industries

How does this relate to space and maritime?

Maritime Contributions

Moving Forward

- **The importance of innovative, cooperative solutions**
  - New Partnerships
  - Open Data
  - Big Data Analytics
  - Best Practices
  - Rule of Law

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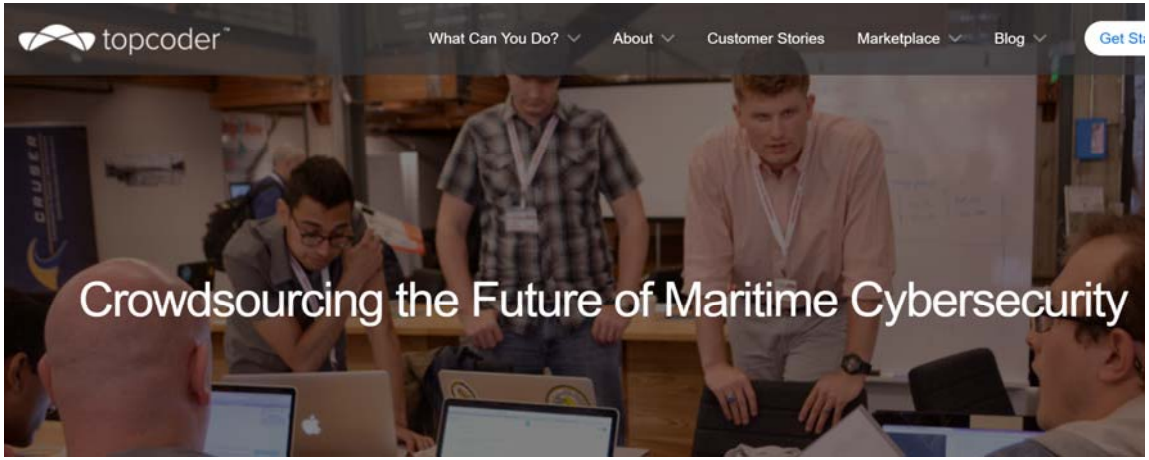
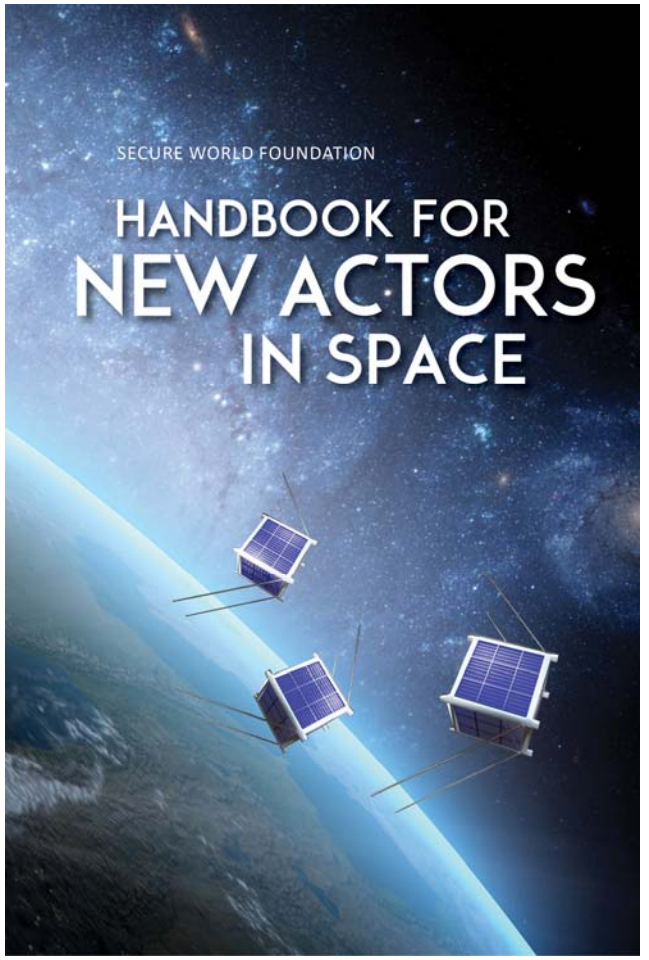
a project of the One Earth Future Foundation

European Commission
MARITIME AFFAIRS AND FISHERIES



SWF Handbook for New Actors in Space

- **Goal:** Create a publication that provides an overview fundamental principles, laws, norms, and best practices for safe, predictable, and responsible activities in space
- **Two specific audiences:**
  - Countries developing space programs and/or having to oversee and regulate their first satellites
  - Universities and start-up companies that are developing/operating satellites
- **Electronic copies** are available through the SWF website, free of charge: **www.swfound.org/handbook**



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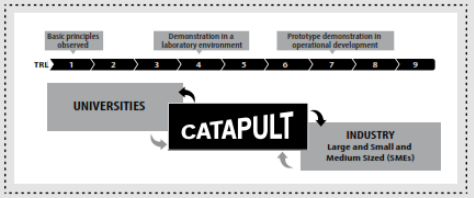
- Chapter 1 – International framework
- Chapter 2 – National policy and administration
- Chapter 3 – Responsible space operations

Case Study:
The United Kingdom Satellite Applications Catapult

The United Kingdom Satellite Applications Catapult was established by the government of the United Kingdom (UK) in May 2013 with the goal of creating economic growth in the UK through supporting the development, commercialization, and use of satellite applications. According to its Delivery Plan 2015–2020, the Catapult (Figure 8) aims to promote satellite application and technology development and to help domestic industry "bring new products and services more rapidly to market." The Satellite Applications Catapult is one of 11 "Catapults" operating in the UK, each focusing on different technologies and application areas. The Catapult operates as a private, not-for-profit research organization. It is governed by a board, which includes representation from the United Kingdom Space Agency (UKSA) and from Innovate UK—a government agency focused on fostering technology and economic development.



Part A:
Information provided in conformity with the Registration Convention or General Assembly Resolution 1721 B (XVI)

New registration of space object	*Yes* ☐	*Check Box*
Additional information for previously registered space object	*Submitted under the Convention: ST/SG/SER.E/* ☐ *Submitted under resolution 1721B: A/AC.105/INF.* ☐	*UN document number in which previous registration data was distributed to Member States*
Launching State/States/international intergovernmental organization		
State of registry or international intergovernmental organization		*Under the Registration Convention, only one State of registry can exist for a space object.*
Other launching States		
Designator		
Name		
COSPAR international designator		
National designator/registration number as used by State of registry		
Date and territory or location of launch		
Date of launch (hours, minutes, seconds optional)	*dd/mm/yyyy* *hrs* *min* *sec*	*Coordinated Universal Time (UTC)*
Territory or location of launch		
Basic orbital parameters		
Nodal period		*minutes*
Inclination		*degrees*
Apogee		*kilometres*
Perigee		*kilometres*

UNOOSA International Registry Form

OCEANS BEYOND PIRACY

a project of the One Earth Future Foundation

The Oceans Beyond Piracy program was launched in 2010 with the intent to develop a response to maritime piracy through:

- Mobilizing stakeholders from the maritime community
- Developing public-private partnerships to promote long-term solutions at sea and ashore
- Sustainable deterrence based on the rule of law

Secure Fisheries: A sister program to OBP, this project works to address one of piracy's perceived root causes by combating illegal, unreported and unregulated fishing in Somalia's EEZ and the Indian Ocean. Secure Fisheries bridges the gap between combating piracy and building a lasting solution through improved governance and monitoring, control and surveillance of fisheries resources.

Feedback on the handbook or other topics is welcome!

Thank You!

kwilson@swfound.org