



Promoting Cooperative Solutions for Space Sustainability

Future Governance of the Space and Cyber Commons

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- Both space and cyber domains are increasingly being used by more and more actors for many benefits, leading to many traditional commons problems
- Governance regimes for space and cyber needs to shift from one dominated by one/few powers to one that includes many stakeholders



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SPACE

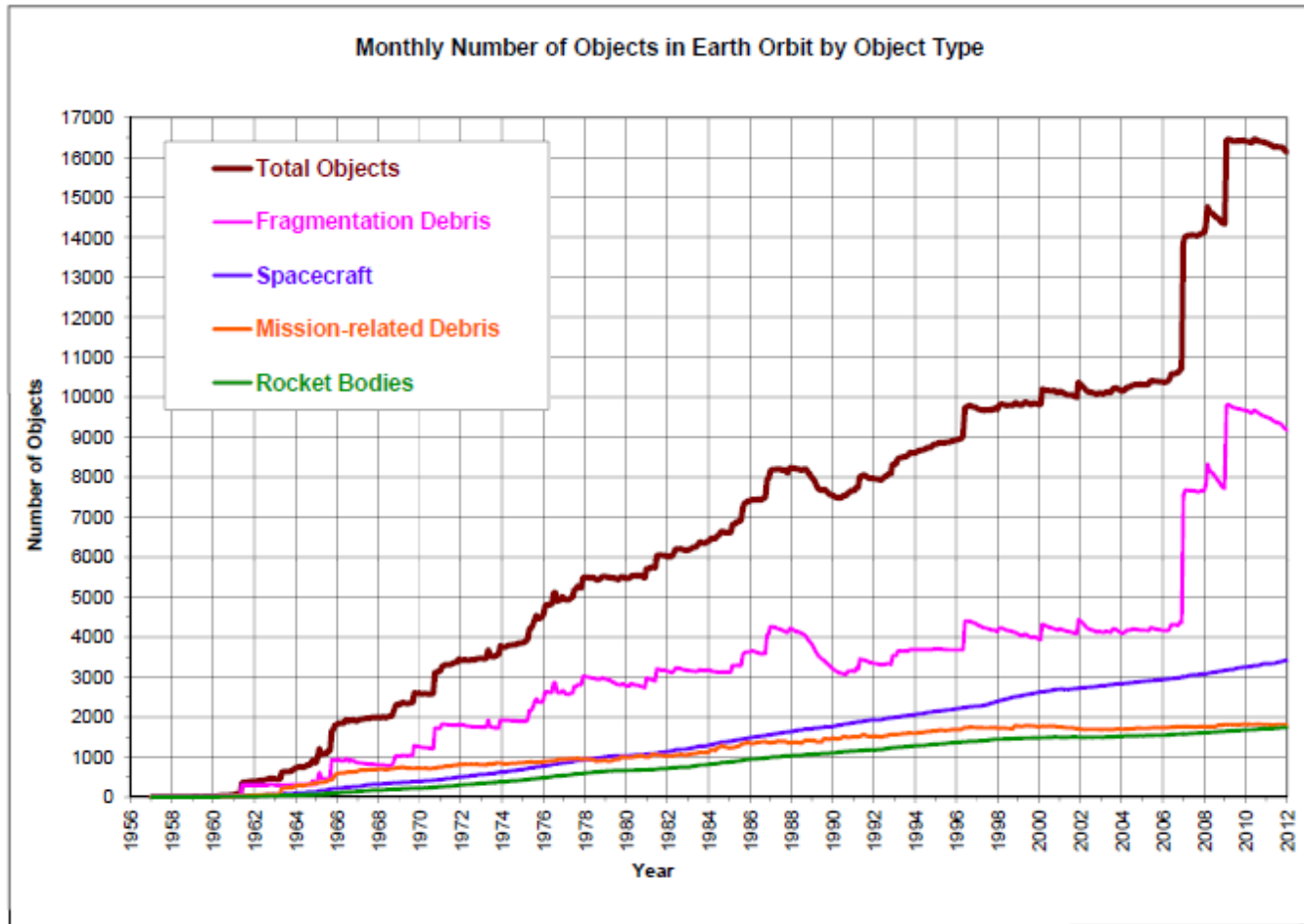
Benefits from use of outer space

- Communications
 - Broad area “one-way data” (television)
 - Voice and data links to remote or sparsely populated areas
- Navigation and precision timing
 - Transportation, banking, and precision munitions
- Remote sensing
 - Weather detection and prediction
 - Management of natural resources
 - Climate monitoring
 - Scientific research
 - Intelligence and reconnaissance

Space Security Trends/Issues

- **Shift in use** by superpowers for national security to many countries (and private actors) for many purposes
- **Shift in threat** from war and weaponization of space to physical/electromagnetic crowding and degradation of the space environment
- Key governance problem: **lack of sovereignty**
 - Either not allowed or undefined
 - Increasing number of actors, and irresponsible actions by one can have disastrous long-term consequences for all
 - How do you promote/enforce responsible behavior while maintaining freedom of action?

Number of tracked space objects in orbit



Operational Satellites

~1,000

Debris
Tracked (>10cm)

~22,000

Untracked (<1 cm)

~450,000

Current Space Security Initiatives

- Long-term sustainable use of the space environment
 - UN Committee on the Peaceful Uses of Outer Space (UN COPUOS)
 - Major element of US and European national space policy
- Transparency and confidence building measures (TCBMs)
 - UN Group of Governmental Experts for Space (GGE)
- Establishing norms of behavior
 - European proposed Code of Conduct for Space Activities in 2010
 - US just announced process to develop International Code of Conduct for Space Activities



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CYBER

Cyber domain is inherently disruptive

- Global communications
 - Ability to talk to anyone, anywhere, at almost zero cost
- Democratization of knowledge
 - Wikipedia, MIT Open Courseware Initiative, Khan Academy
- “Maker” culture
 - Digital products can be copied and redistributed
 - Revolution in manufacturing from 3-D printers
- Warfare
 - States have very few inherent advantages over non-State actors in cyber

Cyber Security Trends/Issues

- Balance between freedom/liberty on the Internet and control/attribution
 - The same tools created to fight digital piracy and child pornography are being used for repression and censorship
- “Internationalization” of Internet governance
 - Moving governance of key elements of the Internet infrastructure and governance away from the US
- Key governance problem: *too much sovereignty*
 - Many jurisdictions, often with conflicting laws and regulations
 - How does a country enforce its laws on an entity that exists in a completely different jurisdiction where it’s actions are legal?
(Megaupload)

Current Cyber Security Initiatives

- Transparency and confidence building measures (TCBMs)
 - UN Group of Governmental Experts for Cyber
- Code of Conduct
 - Shanghai Group (Russia, China, Uzbekistan, and Tajikistan) proposed “International code of conduct for information security”
- Cyber Treaty
 - Russian proposal for legally binding “Convention on International Information Security”
- Many smaller initiatives and meetings

Relationship to broader issues

- Space and cyber do not exist off to the side, they are integral to every other discussion we have had in the conference
- Example: China
 - Long-term plan to develop space capabilities and infrastructure to support economic development and national security
 - Space plays a critical role in their anti-access/area denial strategy
 - Space is an important tool in developing geopolitical power
 - Relationships with key resource partners (South America and Africa)
 - Huge user (and victim) of cyber espionage